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Received: 6 March 2024 | Revised: 30 October 2024 | Accepted: 31 October 2024

DOI: 10.1111/famp.13085

FAMILY PROCESS

REVIEW ARTICLE

Transgenerational association of mentalization with child mental health: A scoping review

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Funding information
Ministerio de Ciencia, Innovación y Universidades (Spanish Ministry of Science, Innovation and Universities) (MCIN)/ Agencia Estatal de Investigación (Spanish State Research Agency) (AEI), Grant/ Award Number: PID2021-125444OB-I00 and PID2022-141403NB-I00; European Regional Development Fund (ERDF)

Abstract

This scoping review provides an overview of empirical research concerning the association between parents' mentalization and child mental health (0–12 years of age). Specifically, it aims at synthesizing the evidence regarding to what extent mentalization (a) is a protective factor for child mental health, and (b) moderates the transgenerational transmission of psychopathology. A total of 73 studies were selected out of 5112 identified (duplicates excluded). The results hint at a relation between parent's mentalization and child mental health: 88% of the studies showed significant associations between predictor and outcome dimensions across a variety of samples, research procedures, and assessment measures. About the direction of the associations, almost all of them behave as expected, supporting the statement that children of parents with healthy mentalization skills tend to have better functioning and show less psychopathology. The evidence indicates that parents' healthy mentalization strengthens children's well-being and helps them cope with stressors more effectively so it is acting as a protective factor against mental health problems. Eleven studies found moderating roles of parents' mentalization in the transgenerational transmission of psychopathology. In a context where mental ill-health is mostly addressed only once there is a problem, these results suggest that fostering parents' mentalization in clinical but also in non-clinical settings could help to improve child mental health in terms of symptoms, functioning, and well-being, and stop the growing incidence of mental disorders across development.

KEYWORDS

child, functioning, mental health, mentalization, psychopathology, transgenerational, well-being

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The importance of child mental health promotion and disease prevention cannot be stressed more than the words of Henrietta H. Fore, UNICEF Executive Director in 2019:

> Too many children and young people, rich and poor alike, in all four corners of the world, are experiencing mental health conditions. This looming crisis has no borders or boundaries. With half of mental disorders starting before age 14, we need urgent and innovative strategies to prevent, detect, and if needed, treat them at an early age. (United Nations International Children's Emergency Fund, 2019)

Recent research supports that mentalization could be a key factor for salutogenesis (Luyten & Fonagy, 2021). Mentalization is defined as the brain's capacity to be aware of one's own and others' mental states (e.g., emotions, intentions, desires, and thoughts; Frith & Frith, 2003). This higher order cognition has been approached with several terms across the last century. For instance, constructs such as theory of mind (Premack & Woodruff, 1978), social cognition (Moskowitz, 2005), empathy (Gordon, 2003), and emotional intelligence (Salovey & Mayer, 1990) refer all of them to the capacity to realize the mental states that underpin behavior. What the term mentalization provides is a transtheoretical umbrella concept that organizes this capacity in four polarities based on advances in neuroscience (Allen et al., 2008). Thus, mentalization can be either cognitive or affective, based on either internal or external cues, either explicit (deliberate) or implicit (automatic), and referred to either one's own or others' mental states (Luyten et al., 2020).

An increasing volume of research supports the notion that mentalization can be a necessary factor for mental health. Reciprocally, mentalization is affected in the presence of psychopathology regardless of the type of disorder (Sharp et al., 2008) and numerous psychopathologies—such as depression, anxiety, eating disorders, and borderline personality disorder—have been found to be associated with impairments in mentalization (Katznelson, 2014). Mentalization is also a key factor in all psychological treatments and is probably the most important common active ingredient of most empirically validated treatments (Bateman & Fonagy, 2004). Thus, psychotherapy is not possible without mentalization (Allen et al., 2008).

The association between mentalization and mental health seems to be transdiagnostic (Katznelson, 2014) and trans-symptomatic (Ballespí et al., 2021) both in clinical and non-clinical ranges of the mental ill-health continuum, and not only regarding symptoms but also functioning and well-being. This deserves a reflection around the mental health conception. While mental health has long and largely been regarded by the scientific community as the absence of mental illness (FrameWorks Institute, 2009), according to the World Health Organization (2022):

> Mental health is a state of mental well-being that enables people to cope with the stresses of life, to realize their abilities, to learn well and work well, and to contribute to their communities. Mental health is an integral component of health and well-being and is more than the absence of mental disorder. (p. 8)

In the more refined terms of Galderisi et al. (2017), it is "a dynamic state of internal equilibrium which enables individuals to use their abilities in harmony with universal values of society" (p. 408).

Consequently, mental health should be operationalized not only via the number of psychological symptoms and problem behaviors but also through the level of social- and role functioning, including measures of psychological well-being. Using this broader conception of mental health, recent studies demonstrated different associations between mentalization polarities and specific aspects of mental health. Thus, self-mentalizing is more associated with self's processes like internalizing symptoms, self-esteem or well-being, while other-mentalizing is more associated with social and role functioning (Ballespí et al., 2021).

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To date, empirical research supports a transdiagnostic and a trans-symptomatic relationship between mentalization and mental health. In this review, we wonder if this association is also transgenerational, that is, to what extent mentalization is not only associated with one's own mental health but also with the mental health of family members, specifically offspring.

There are reasons and even some evidence supporting that parent's mentalization could be associated with their child's mental health. First, early relationships—particularly child's attachment to their primary caregiver—are crucial in shaping mental health outcomes (Bowlby, 1982), and the development of secure attachment in a child is linked to the capacity of their parent to treat them as a psychological agent (Fonagy & Bateman, 2016), that is, to keep the child's mind in mind, something referred to with several terms such as parental mentalizing, reflective parenting, or mind-mindedness (Camoirano, 2017; Sharp & Fonagy, 2008). Second, several studies provide direct or indirect support to the association between parents' mentalizing capacities and aspects of child mental health (CMH). Nevertheless, beyond the recent review of Mora et al. (2023), focused on fathers' mentalizing, to the best of our knowledge, no review about the association between parents' mentalization and CMH has been carried out. The effects of sensitive parenting on child development are extensively observed in the clinical setting. However, to distill the evidence supporting the role of parents' mentalizing on CMH might provide additional scientific support for evidence-based practice. Furthermore, in a context where CMH is mostly addressed only when there is a problem, the support for the association between parents' mentalization and their children's mental health might open a door to improve children resilience, functioning and well-being by enriching with mentalization the environment where children grow up, that is, by helping caregivers to improve mentalizing in their daily interactions with children. This might support strengthening the use of mentalization as an active ingredient not only in clinical settings, but also in non-clinical ranges of the mental ill-health continuum (i.e., general population).

The present scoping review explored the evidence concerning the association between parents' mentalization and CMH (0–12 years of age), covering both the domain of psychological functioning and that of psychopathological symptoms. Specifically, we synthesize the evidence regarding to what degree parents' mentalization (a) is a protective factor for CMH, and (b) moderates the transgenerational transmission of psychopathology.

METHOD

The protocol of this review was prospectively registered at INPLASY (Moreira et al., 2023). This review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines (Page et al., 2021) along with the guidance of PRISMA-ScR (PRISMA Extension for Scoping Reviews) guidelines to maximize quality of reporting (Tricco et al., 2018).

Literature search and eligibility criteria

The following databases were searched: PsycINFO (Proquest), PubMed (NCBI), Web of Science, Scopus, Cochrane Library, and PROSPERO. A Google Scholar search was also conducted. The literature search included documents published up to September 30, 2023. Some articles were retrieved by contacting the authors directly and further information was requested if necessary. Reference lists of relevant articles were also screened. The search strategy followed the Peer Review of Electronic Search Strategies (PRESS) guideline (McGowan et al., 2016). Searches were adapted to each database based on the following query: ((“mentaliz*” OR “reflective function*” OR “social cognition” OR “theory of mind” OR “ToM”

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OR "emotional intelligen*" OR "mind-minded*" OR "empath*") AND ("mental health" OR "well being" OR "well-being" OR "wellbeing" OR "happiness" OR "quality of life" OR "functioning" OR "psychological adjustment" OR "impairment" OR "distress" OR "psychopathology" OR "mental disorder*" OR "mental illness" OR "psychiatric disorder" OR "internali*" OR "externali*" OR "psychopathologic* symptom*" OR "psychological symptom*" OR "psychiatric symptom*" OR "emotional symptom*" OR "behavior* symptom*" OR "behavior* symptom*") AND ("parent*" OR "father*" OR "mother*" OR "carer*" OR "caregiv*" OR "famil*" OR "offspring" OR "attachment figure" OR "home" OR "household") AND ("child*" OR "infan*" OR "toddler*" OR "kid" OR "kids" OR "kindergar*" OR "school*" OR "preschool*")).

Following the Preferred Reporting Items for reporting Literature searches in Systematic Reviews (PRISMA-S; Rethlefsen et al., 2021), searches were registered in the Open Science Framework (OSF) platform and are accessible at https://doi.org/10.17605/OSF.IO/P6YXT.

Eligible for the review were all types of empirical quantitative studies, provided that they evaluated the association of parents' mentalization on CMH and that it was measured between ages 0 and 12 years. In addition, articles had to be published in English or Spanish. There was no criterion for publication year. Excluded from the search were any case studies or review articles, and any studies containing data gathered from foster families.

Study selection, data extraction and synthesis

After removing duplicates, all records were screened by title and abstract by one reviewer (AM). A second reviewer (JV) randomly screened 10% of the records and found no discrepancies. The full-text selection followed the same process. Two discrepancies were found and were resolved through discussion by the third author (SB). The selection process is depicted in Figure 1 (Page et al., 2021).

Once full-text articles were retrieved, data were extracted by one reviewer (AM), and a second reviewer (JV) randomly extracted data from seven articles (10%) and found no relevant discrepancies. A spreadsheet was used for the data extraction containing the following information: study name; publication year; aims; sample sizes; ages of children; measures; moderating effect of mentalization in the transgenerational transmission of psychopathology; and relevant findings about associations between parents' mentalization and CMH. Predictors were classified according to the specific construct belonging to the mentalization paradigm. Outcomes were classified according to the domain of CMH (i.e. functioning and symptoms).

RESULTS

Out of 5112 unique references obtained from the searches carried out in the databases, a total of 73 studies were selected for inclusion in this review. Table 1 contains the details of each study, including country setting, whether it was cross-sectional or longitudinal, total sample size, children's age, predictors and outcomes investigated, and reported significant associations with p-value not greater than 0.05. If an association was limited to a subsample or a specific mode or scale of a test, it is also indicated according to the notation used by the authors. Pearson correlations are listed first, indicating if they are confirmed by multivariate analyses. Associations coming from multivariate analyses that do not confirm correlations are listed then, indicating only the variables of interest for this review giving significant coefficients.

Most of the research is recent and the rate of growth has increased much lately, with the following publications by 5-year period: 1996–2000 ($n = 3$), 2001–2005 ($n = 1$), 2006–2010 ($n = 4$), 2011–2015 ($n = 9$), 2016–2020 ($n = 21$), and 2021–present ($n = 35$). The studies were carried out in

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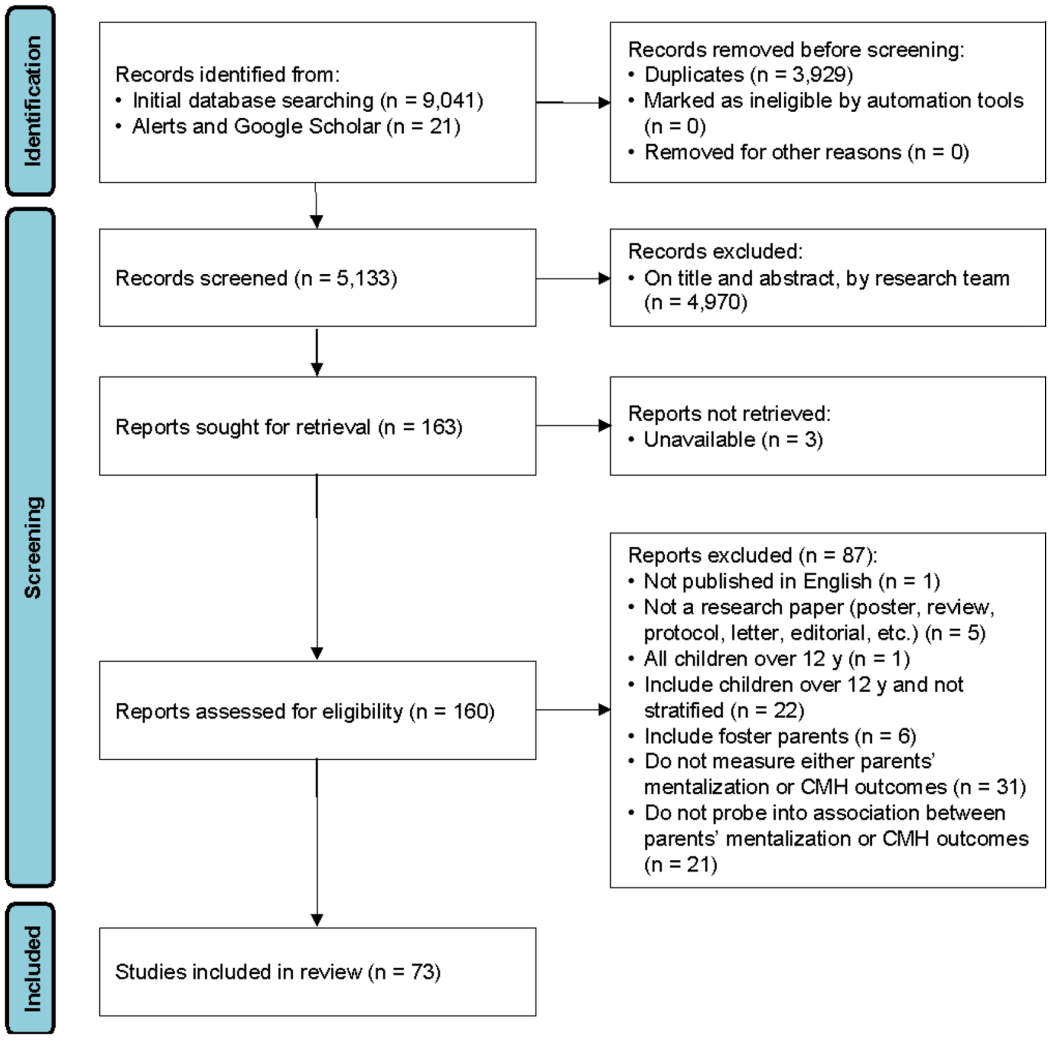

FIGURE 1 PRISMA flow diagram of the selection process.

North America ($n = 27$); Europe ($n = 25$); the Middle East ($n = 16$); the Far East ($n = 3$); Oceania ($n = 1$); and South America ($n = 1$).

The aggregated sample—once excluding 19 studies whose samples are shared with others' in this review—included at least 16,493 primary caregivers (almost exclusively parents, especially mothers, reason why caregivers will be referred to as parents from this point forward) and 15,460 children. The size of the samples was varied, ranging from 18 children to the order of the thousand in three cases. Parents were recruited through various sources: school/preschool/daycare ($n = 10$); health system ($n = 23$); social care system ($n = 5$); mixed (education, health, and social services; $n = 8$); social media platforms, advertisement, or networking ($n = 10$); and other sources ($n = 12$); five studies did not provide information. Most of the studies ($n = 49$) sampled exclusively mother–child dyads. Twenty-three studies also recruited fathers in varying proportions, always smaller than the mothers'. Only one study focused on the father–infant dyad. Two research studies sampled adoptive parents.

Forty-one studies were cross-sectional and 32, longitudinal, which allowed for the investigation of both synchronic and diachronic associations (with child outcomes measured at the same or different times than parental predictors, respectively). Four studies assessed pregnant

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TABLE 1 Characteristics of the reviewed studies.

Number. first author surname (year). [citation]	Country setting	Type	Sample	Age	Predictors investigated	Outcomes investigated	Significant associations reported
1. Gurion (1996)	USA	Cross-sectional	87	4–6 y	• Empathy	• Adaptive behavior • Behavior(al) problems • Anxiety • Depression • Agressive behavior • Hyperactivity • Inattention	
2. Carpenter (1999)	USA	Cross-sectional	75	4–5 y	• Empathy	• Behavior(al) problems • Anxiety • Agressive behavior • Hyperactivity–Inattention	
3. Priel et al. (2000)	Israel	Cross-sectional	130	8–12 y	• RF (global scale)	• Social competence • Activity • School competence • Internalizing symptoms • Externalizing behaviors	• [RF(gs) (child-focused), EB] ($n = 50$, only adopted children) $\Longrightarrow \Longrightarrow \Longrightarrow$ • MLR-h[RF(gs) (child-focused) → EB]
4. Ferguson (2002)	USA	Cross-sectional	259	8–12 y	• Empathy	• Adaptive behavior • Behavior(al) problems	• [E, AdB] • [E, AdB] ($n = 144$, boys) • [E, AdB] ($n = 115$, girls)[g] $\Longrightarrow \Longrightarrow \Longrightarrow$ • SEM[E → BP] ($n = 115$, girls)
5. Walker and Cheng (2007)	USA	Longitudinal T1: 6 & 12 m (not relevant) T2: 12 & 18 m (mother empathy) T3: 30 & 36 m (child behavior)	122	12–18 m (@T2) 30–36 m (@ T3)	• Empathy	• Internalizing symptoms • Externalizing behaviors	• SEM[E → IS, EB]
6. Psychogiou et al. (2008)	UK	Cross-sectional	268	5–10 y	• Empathy	• Emotional symptoms • Conduct problems • Hyperactivity–Inattention	• [E, CP][e]
7. Whiddon (2009)	USA	Cross-sectional	97	4–12 y	• Emotional intelligence	• Internalizing symptoms • Externalizing behaviors	• SEM[EI → IS]
8. Ilardi (2010)	USA	Cross-sectional	18	7–10 y	• RF (global scale)	• Social skills • Internalizing symptoms • Externalizing behaviors	
9. Pitzer et al. (2011)	Germany	Longitudinal T1: 3 m T2: 2 years T3: 8 years	308	3 m (@T1) 2 y (@T2) 8 y (@T3)	• Empathy	• Externalizing behaviors	• MLR-s[E → EB] ($n = 148$, boys)

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TABLE 1 (Continued)

Number. first author surname (year). [citation]	Country setting	Type	Sample	Age	Predictors investigated	Outcomes investigated	Significant associations reported
10. Aminabadi et al. (2012)	Iran	Cross-sectional	117	4–6 y	• Emotional intelligence	• Generalized anxiety • Social anxiety • Separation anxiety • Physical injury fears • Obsessive Compulsive Disorder	• [EI, GA]
11. Walker et al. (2012)	UK	Cross-sectional	49	3–5 y	• MM (total)	• Prosocial behavior • Behavior(al) problems • Peer relationship problems • Emotional symptoms • Conduct problems • Hyperactivity–Inattention	• [MM(t), BP] ($n=25$, community group) • [MM(t), CP] ($n=25$, community group) • [MM(t), H-I] ($n=25$, community group)
12. Esbjorn et al. (2013)	Denmark	Cross-sectional	38	7–12 y	• RF (global scale)	• Anxiety	• MLR[RF(gs) (mother)→Anx]
13. Longoria (2013)	USA	Cross-sectional	40	9 m–1 y	• MM (total)	• Socio-emotional adjustment • Adaptive functioning • Interaction with people • Self-regulation	
14. Meins et al. (2013)	UK	Longitudinal T1: 8 m (PRF measurement) T2: 26 m (not relevant) T3: 44 m (child difficulties measurement) T4: 61 m (child difficulties measurement)	171	8 m (@T1) 44 m (@T3) 61 m (@T4)	• Appropriate comments	• Internalizing symptoms • Externalizing behaviors	• PA[MM+→EB, IS] ($n=60$)
15. Gregl et al.l (2014)	Croatia	Cross-sectional	157	4–7 y	• Emotional intelligence	• Behavior(al) problems • Internalizing symptoms • Somatic complaints • Withdrawn/isolated behavior • Anxiety/Depression • Sleep problems • Externalizing behaviors • Agressive behavior • Dysregulation • Inattention	• [EI, A/D] ($n=97$, clinical sample) • [EI, SP] ($n=60$, peer sample)
16. Kapeleris (2014)	Canada	Cross-sectional	75	6–12 y	• RF (global scale)	• Social skills • Internalizing symptoms • Posttraumatic stress • Externalizing behaviors	• [RF(gs), SS][f] • [RF(gs), IS][f] • [RF(gs), EB]
17. Kårstad et al. (2015)	Norway	Longitudinal T1: coinciding with the health check-up appointment that is routinely scheduled for all Norwegian 4-year-olds T2: after 2.4 years, when each child started first grade	926	4 y (@T1)	• Accuracy of parental mentalization	• Social skills	• [APM, SS]

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TABLE 1 (Continued)

Number. first author surname (year). [citation]	Country setting	Type	Sample	Age	Predictors investigated	Outcomes investigated	Significant associations reported
18. Centifanti et al. (2016)	USA	Longitudinal T1: 8 months (maternal mind-mindedness was assessed) T2: 51 months (children's ToM, emotion understanding, and receptive verbal ability were assessed) T3: 61 months (parents and teachers reported on children's behavioral) T4: 10 years (children's CU traits were assessed)	203	8 m (@T1) 51 m (@T2) 5 y (@T3) 10 y (@T4)	• Appropriate comments	• Externalizing behaviors • Callous-unemotional traits • Impulsive/Irresponsible traits	• [MM+, CU][f] ⟹ ⟹ ⟹ • PA[MM+ → IT]
19. Ensink et al. (2016)	Canada	Cross-sectional	168	7–12 y	• RF (global scale)	• Depression • Externalizing behaviors	• [RF(gs), EB][f]
20. Ensink, Bégin, Normandin, and Fonagy (2017)						• Depression • Dissociation • Externalizing behaviors	• [RF(gs), Diss] • [RF(gs), EB]
21. Ensink, Bégin, Normandin, Godbout, and Fonagy (2017)			154	2–12 y		• Internalizing symptoms • Externalizing behaviors	• [RF(gs), IS][f] • [RF(gs), EB][f]
22. Smaling, Huijbregts, van der Heijden, Hay, et al. (2016)	The Netherlands	Longitudinal T1: Prenatal T2: 6 m T3 12 m T4: 20 m	96	6 m (@T2) 12 m (@T3) 20 m (@T4)	• RF (global scale)	• Physical aggression	• [RF(gs), PA (@T2)][h] • [RF(gs), PA (@T3)] • [RF(gs), PA (@T4)][h]
23. Smaling, Huijbregts, van der Heijden, van Goozen, and Swaab (2016)			123			• Externalizing behaviors • Physical aggression	• [RF(gs), PA] • [RF(gs), EB]
24. Easterbrooks et al. (2017)	USA	Longitudinal T1: (pregnancy or newly parenting) T2: + 1 y T3: + 2 y	212	1 y (@T2) 2 y (@T3)	• MM (total)	• Social–emotional competence • Behavior(al) problems	
25. Shai and Belsky (2017)	Israel	Longitudinal T1: (pregnancy or newly parenting) T2: + 1 y T3: + 2 y	200	1 y (@T2) 2 y (@T3)	• Parental embodied mentalizing	• Social skills • Social competence • Academic skills • Internalizing symptoms • Externalizing behaviors	• MLR[PEM → SS] • MLR[PEM → SC] • MLR[PEM → AS] • MLR[PEM → IS] • MLR[PEM → EB]
26. Wong et al. (2017)	USA	Longitudinal T1: N/A T2: 7 m T3: 16 m T4: 18 m	84	7 m (@T2) 16 m (@T3) 18 m (@T4)	• RF (global scale)	• Behavior(al) problems	

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TABLE 1 (Continued)

Number. first author surname (year). [citation]	Country setting	Type	Sample	Age	Predictors investigated	Outcomes investigated	Significant associations reported
27. Bekar et al. (2018)	USA	Cross-sectional	130	2–4 y	• RF (global scale)	• Cooperative behavior • Social competence • Behavior(al) problems • Internalizing symptoms • Withdrawn/isolated behavior • Externalizing behaviors • Agressive behavior	• [RF(gs) (causal connections with mental states), SC] ($n = 122$) • [RF(gs) (references to children's perceptual states), SC] ($n = 122$) • [RF(gs) (references to children's cognitive states), SC] ($n = 122$) • [RF(gs) (causal connections with mental states), CB] ($n = 115$) • [RF(gs) (references to children's perceptual states), CB] • [RF(gs) (references to children's cognitive states), CB] ($n = 115$) • [RF(gs) (references to own mental states), CB] • [RF(gs) (causal connections with mental states), BP] ($n = 122$) • [RF(gs) (references to children's perceptual states), IS] $\Longrightarrow \Longrightarrow \Longrightarrow$ • PC[RF(gs) (references to own mental states), WB] ($n = 116$)
28. Camisasca et al. (2018)	Italy	Longitudinal T1: 0 m (not relevant) T2: 3 m (not relevant) T3: 17 m (measures of PRF and child symptoms)	46	17 m (@T3)	• MM (total)	• Internalizing symptoms • Externalizing behaviors	• [MM(t), IS][f] • [MM(t), EB][f]
29. Senehi et al. (2018)	USA	Longitudinal T1 T2: after 7 m	95	2–4 y (@T2)	• MM (total)	• Self-regulation	• [MM(t) (Mental state words), SR (Effective coping)] • [MM(t) (Mental state words), SR (Effortful control)] • [MM(t) (Mental descriptors), SR (Effective coping)] • [MM(t) (Mental descriptors), SR (Delay of gratification)] ($n = 25$, 24–29 m) $\Longrightarrow \Longrightarrow \Longrightarrow$ • SEM [MM(t) (Maternal mentalization-related parenting (T1)) → SR (Toddlers' self-regulation (T2))]
30. Buttitta et al. (2019)	USA	Cross-sectional	77	2 y	• RF (global scale)	• Distress	• [RF(gs), Dist]
31. Borelli et al. (2021)			131	18 m–2 y	• Certainty about Mental States • Interest & Curiosity • Prementalizing		• [IC, Dist]

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TABLE 1 (Continued)

Number. first author surname (year). [citation]	Country setting	Type	Sample	Age	Predictors investigated	Outcomes investigated	Significant associations reported
32. Colonnesi et al. (2019)	The Netherlands	Longitudinal T1: 4 m (PRF measurement) T2: 12 m (PRF measurement) T3: 30 m (PRF measurement) T4: 4.5 y (Child symptoms measurement)	104	12 m (@T2) 30 m (@T3) 4.5 y (@T4)	• Appropriate comments • Non-attuned comments	• Social competence • Internalizing symptoms • Externalizing behaviors	• [MM+ (30 m–father), IS] • [MM+ (4 m–father), EB] • [MM− (12 m–mother), SC][d] • [MM− (12 m–father), SC] • [MM− (30 m–father), SC] • [MM− (12 m–mother), IS][d] • [MM− (12 m–mother), EB][d] • [MM− (30 m–father), EB][d] ⟹ ⟹ ⟹ • MLR-h[MM+ (4 m–mother × father) → IS] • MLR-h[MM+ (30 m–mother × father) → EB] • MLR-h[MM− (30 m–mother × father) → EB]
33. Nikolić et al. (2022)		Longitudinal T1: 12 m T2: 30 m T3: 4.5 y	111	12 m (@T1) 30 m (@T2) 4.5 y (@T3)		• Self-regulation	• [MM+ (father), SR (behavioral)][g] • [MM− (mother), SR (effortful control)][g] • [MM− (father), SR (effortful control)][g] ⟹ ⟹ ⟹ • SEM[MM+ (father) → SR (effortful control)]
34. Condon et al. (2019)	USA	Cross-sectional	54	4–9 y	• Certainty about Mental States • Interest and Curiosity • Prementalizing	• School competence • Behavior(al) problems • Internalizing symptoms • Externalizing behaviors	• [PM, BP][b] • [PM, IS][b] • [PM, EB][b]
35. Dejko-Wanczyk et al. (2019)	Poland	Cross-sectional	39	7–10 y	• RF (global scale)	• Agressive behavior • Rule-breaking	• [RF(gs), AgB]
36. Frolli et al. (2020)	Italy	Cross-sectional	90	4–6 y	• Uncertainty • Certainty	• Internalizing symptoms • Externalizing behaviors	• [C, IS] ($n = 76$) • [UnC, EB] ($n = 76$)
37. Gordo et al. (2020)	Spain	Cross-sectional	546	2 m–2 y	• Certainty about Mental States • Interest and Curiosity • Prementalizing	• Socio-emotional adjustment	• [PM, SEA][g] • [PM, SEA] ($n = 433$, mothers)[g] • [PM, SEA] ($n = 113$, fathers)[g] • [CMS, SEA][g] • [CMS, SEA] ($n = 433$, mothers)[g] • [IC, SEA][g] • [IC, SEA] ($n = 113$, fathers)[g] ⟹ ⟹ ⟹ • SEM[CMS → SEA] ($n = 113$, fathers) • SEM[IC → SEA] ($n = 433$, mothers)
38. Álvarez et al. (2022)			381	0–2 y		• Emotion regulation	• [PM, ER][e] • [CMS, ER] • [IC, ER]

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TABLE 1 (Continued)

Number. first author surname (year). [citation]	Country setting	Type	Sample	Age	Predictors investigated	Outcomes investigated	Significant associations reported
39. Hu et al. (2020)	USA	Longitudinal T1: 18–37 m T2: + 8 m	60	18–37 m (@T1) 26–45 m (@ T2)	• Empathy	• Prosocial behavior	• PA[E, PSB] (n = 200)
40. Nijssens et al. (2020)	Belgium	Longitudinal T1: 8–13 months (not relevant) T2: 19–26 months (all relevant data measured here)	53	19 m–2 y (@ T2)	• Certainty about Mental States • Interest and Curiosity • Prementalizing	• Social–emotional competence • Behavior(al) problems	• [PM (mother), SEC][g] • [PM (father), SEC][g] • [PM (father), BP][g] • [IC (father), SEC] • [IC (mother), BP] ⟹ ⟹ ⟹ • SEM[PM (mother) → BP]
41. Suardi et al. (2020)	Switzerland	Cross-sectional	56	1–3 y	• RF (global scale)	• Internalizing symptoms • Externalizing behaviors • Dysregulation	• [RF(gs), Dys][c] • [RF(gs), Dys] (n = 33, mothers) • [RF(gs), IS] • [RF(gs), IS] (n = 33, mothers) • [RF(gs), EB] • [RF(gs), EB] (n = 33, mothers)
42. Arikan and Kumru (2021)	Turkey	Cross-sectional	537	10 m–3 y	• RF (global scale)	• Internalizing symptoms • Externalizing behaviors	• [RF(gs), IS] • [RF(gs), EB][f]
43. Taşdelen et al. (2022)							• [RF(gs), IS] • [RF(gs), EB]
44. Costa-Cordella et al. (2021)	Chile	Cross-sectional	55	8–12 y	• RF (global scale)	• Stress	• [RF(gs), S]
45. Dollberg et al. (2021)	Israel	Cross-sectional	78	3–5 y	• MM (total)	• Internalizing symptoms • Externalizing behaviors	• PA[MM(t) → EB]
46. Halfon and Besiroglu (2021)	Turkey	Longitudinal T1: Treatment baseline T2: Children problem outcomes assessed monthly along 6 y of treatment	60	6–10 y	• RF (global scale)	• Behavior(al) problems	• MLR-m[RF(gs) → BP]
47. Khoshroo and Mousavi (2021)	Iran	Cross-sectional	685	3–10 y	• Certainty about Mental States • Interest and Curiosity • Prementalizing	• Internalizing symptoms • Externalizing behaviors	• [PM, IS] (n = 461, 3–5 y) • [PM, IS] (n = 224, 6–10 y) • [PM, EB] (n = 461, 3–5 y) • [PM, EB] (n = 224, 6–10 y) • [CMS, IS] (n = 461, 3–5 y) • [CMS, EB] (n = 461, 3–5 y) • [IC, IS] (n = 224, 6–10 y) ⟹ ⟹ ⟹ • MLR-h[CMS → EB] (n = 224, 6–10 y)

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TABLE 1 (Continued)

Number. first author surname (year). [citation]	Country setting	Type	Sample	Age	Predictors investigated	Outcomes investigated	Significant associations reported
48. Menashe-Grinberg et al. (2021)	Israel	Longitudinal T1: pre-intervention T2: post-intervention T3: 6-month follow-up	70	1–6 y	• RF (global scale) • MM (total)	• Social skills • Self-regulation • Behavior(al) problems	
49. Menashe-Grinberg and Atzaba-Poria (2023)			70	1–6 y	• MM (total)	• Behavior(al) problems	
50. Salo et al. (2021)	Finland	Longitudinal T1: 3 m T2: 12 m	556	3 m (@T1) 12 m (@T2)	• RF (global scale) • Interest & Curiosity • Appropriateness of reasoning	• Social–emotional competence • Behavior(al) problems	• [IC (3 m), SEC] (n = 429, mothers) • [IC (3 m), SEC] (n = 127, fathers) • [IC (12 m), SEC] (n = 429, mothers) • [IC (12 m), SEC] (n = 127, fathers) • [IC (3 m), BP] (n = 127, fathers) • [IC (12 m), BP] (n = 429, mothers) • [IC (12 m), BP] (n = 127, fathers) • [AR (3 m), SEC] (n = 429, mothers) • [AR (3 m), SEC] (n = 127, fathers) • [AR (12 m), SEC] (n = 127, fathers) • [AR (3 m), BP] (n = 429, mothers) • [AR (12 m), BP] (n = 429, mothers) • [AR (3 m), BP] (n = 127, fathers) • [AR (12 m), BP] (n = 127, fathers) ⟹ ⟹ ⟹ • PA[RF(gs) (12 m) → BP] (n = 429, mothers) • PA[RF(gs) (12 m) →, BP] (n = 127, fathers)
51. Salo et al. (2022)		Longitudinal T1: Pregnancy T2: 3 m T3: 12 m T4: 24 m	1016	3 m (@T2) 12 m (@T3) 24 m (@T4)	• RF (global scale)	• Internalizing symptoms • Externalizing behaviors	
52. Wade et al. (2021)	Canada	Longitudinal T1 2 m T2: 18 m (PRF measurement) T3: 36 m	385	3 y (@T3)	• RF (global scale)	• Executive functioning • Behavior(al) problems • Internalizing symptoms • Externalizing behaviors	• [RF(gs), IS][g] ⟹ ⟹ ⟹ • SEM[RF(gs) → EB]
53. Agbaria (2022)	Israel	Cross-sectional	524	4–5 y	• Emotional intelligence	• Behavior(al) problems • Internalizing symptoms • Externalizing behaviors	• [EI (teacher report), BP][e] • [EI (parent report), BP][e] • [EI (teacher report), IS] • [EI (parent report), IS] • [EI (teacher report), EB] • [EI (parent report), EB]
54. Brady et al. (2022)	USA	Cross-sectional	196	3–6 y	• Emotional intelligence	• Callous-unemotional traits	• MLR[EI → CU] (n = 186) • MLR[EI → CU] (n = 172)

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TABLE 1 (Continued)

Number. first author surname (year). [citation]	Country setting	Type	Sample	Age	Predictors investigated	Outcomes investigated	Significant associations reported
55. Charpentier Mora et al. (2022)	Italy	Cross-sectional	50	8–12 y	• Certainty about Mental States • Interest and Curiosity • Prementalizing	• Social–emotional competence • Behavior(al) problems • Internalizing symptoms • Externalizing behaviors	• [CMS (mother), SEC (mother report)][d] • [CMS (father), SEC (mother report)][d] • [IC (father), SEC (father report)][d] • [PM (mother), SEC (mother report)][d] • [PM (mother), SEC (father report)] • [PM (mother), BP (mother report)][d] • [PM (mother), BP (father report)][d] • [PM (mother), IS (mother report)][d] • [PM (father), IS (father report)][d] • [PM (mother), EB (mother report)][d]
56. Dollberg and Hanetz-Gamliel (2022)	Israel	Cross-sectional	152	3–12 y	• MM (total)	• Internalizing symptoms • Externalizing behaviors	• PA[MM(t) (Low level) → IS] (3–5 y) • PA[MM(t) (Medium level) → IS] (3–5 y) • PA[MM(t) (High level) → IS] (6–12 y) • PA[MM(t) (Low level) → IS] (3–5 y) • PA[MM(t) (Low level) → EB] (3–5 y) • PA[MM(t) (Medium level) → EB] (3–5 y) • PA[MM(t) (Low level) → EB] (3–5 y)
57. Dollberg et al. (2023)			140	3–6 y			• PA[MM(t) → EB]
58. Garon-Bissonnette et al. (2022)	Canada	Longitudinal T1: Pregnancy T2: 11–36 m	111	1–2 y	• Uncertainty • Certainty	• Global development	• [UnC, GD][g] • [C, GD][g]
59. Ghanbari et al. (2022)	Iran	Cross-sectional	257	4–6 y	• Certainty about Mental States • Interest and Curiosity • Prementalizing	• Prosocial behavior • Social skills • Emotion regulation • Behavior(al) problems • Peer relationship problems • Emotional symptoms • Conduct problems • Hyperactivity–Inattention	• [PM, ER][g] • [PM, BP][g] • [PM, PSB] • [PM, SS] • [PM, H-I][g] • [PM, CP][g] • [PM, PRP][g] • [PM, ES][g] • [CMS, PSB] • [CMS, SS] • [CMS, ES] • [CMS, PRP] • [IC, ER][g] • [IC, BP] • [IC, PSB][g] • [IC, SS][g] • [IC, ES] • [IC, CP] • [IC, PRP]

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TABLE 1 (Continued)

Number. first author surname (year). [citation]	Country setting	Type	Sample	Age	Predictors investigated	Outcomes investigated	Significant associations reported
60. Goldstein et al. (2023)	Israel	Longitudinal T1: prenatally (not relevant) T2: 6 months (partner and parental RF) T3: 24 months (child effortful control)	91	24 m (@T3)	• RF (global scale) • Partner RF	• Self-regulation	• PA[PrRF →, SR]
61. Hobby et al. (2022)	UK	Longitudinal T1: 3 m (not relevant) T2: 10 m (PRF measurement) T3: 51 m (child difficulties measurement)	91	51 m (@T3)	• Appropriate comments • Non-attuned comments	• Peer relationship problems • Emotional symptoms • Conduct problems • Hyperactivity–Inattention	• [MM+, PRP] • [MM+, ES][f] ⟹ ⟹ ⟹ • PA[MM+ → CP]
62. Laflamme et al. (2022)	Canada	Longitudinal T1: 6 months T2: 12 months T3: 18 months	108	6 m (@T1) 12 m (@T2) 18 m (@T3)	• Appropriate comments	• Behavior(al) problems	• [MM+ (mother), BP (12 m)][c] • [MM+ (father), BP (12 m)] • [MM+ (father), BP (18 m)] ($n = 101$) • [MM+ (father), BP (18 m)] ($n = 101$)
63. Lee and Choi (2022)	South Korea	Cross-sectional	46	8–12 y	• Theory of mind	• Social functioning • Dysregulation	• [ToM, Dys][d]
64. Lindblom et al. (2022)	Finland	Longitudinal T1: 32 gestational weeks T2: 6 m T3: 2 y	1367	6 m (@T2) 2 y (@T3)	• Certainty about Mental States • Interest and Curiosity • Dynamics	• Social–emotional competence • Self-regulation • Internalizing symptoms • Externalizing behaviors	• [CMS (@T2), SR] • [CMS (@T3), SR] • [CMS (@T1), SEC] • [CMS (@T2), SEC] • [CMS (@T3), SEC] • [CMS (@T1), EB] • [CMS (@T2), EB] • [CMS (@T3), EB] • [CMS (@T2), IS] • [CMS (@T3), IS] • [IC (@T1), SR] • [IC (@T2), SR] • [IC (@T1), SEC] • [IC (@T2), SEC] • [IC (@T3), SEC] • [IC (@T2), EB] • [D (@T1), IS] • [D (@T1), EB]
65. Malcorps et al. (2022)	Belgium	Longitudinal T1: 6 m after child arrival T2: 1 y after child arrival T3: 2 y after child arrival T4. 3 y after child arrival T5: 4 y after child arrival	48	6–12 m (@T1) 12–18 m (@T2) 24–30 m (@ T3) 36–42 m (@ T4) 48–54 m (@ T5)	• Certainty about Mental States • Interest and Curiosity • Prementalizing	• Behavior(al) problems	• PA[IC (mother), PM (mother), PM (father) → BP]

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TABLE 1 (Continued)

Number. first author surname (year). [citation]	Country setting	Type	Sample	Age	Predictors investigated	Outcomes investigated	Significant associations reported
66. Ojha et al. (2022)	USA	Longitudinal T1: 6 months (assessment empathy) T2: 12 months (assessment child's social–emotional functioning)	118	12 m (@T2)	• Empathy	• Social–emotional competence • Behavior(al) problems	• [E (dispositional–total), SEC] • [E (dispositional–affective), SEC] • [E (parental–total), SEC][c] • [E (parental–cognitive), SEC] • [E (parental–affective), SEC] • [E (dispositional–total), BP] • [E (dispositional–cognitive), BP][c] • [E (parental–total), BP][c] • [E (parental–cognitive), BP][c] • [E (parental–affective), BP]
67. Regueiro et al. (2022)	Canada	Longitudinal T1: 5 m (not relevant) T2: 18 m (paternal MM tested) T3: 2 y (not relevant) T4: 6 y (child executive functioning tested)	78	6 y (@T4)	• Appropriate comments	• Executive functioning	• [MM+ (father), EF][d]
68. Brown et al. (2023)	USA	Longitudinal T1: 13 m T2: 28 m T3: 39 m	98	13 m (@T1) 28 m (@T2) 39 m (@T3)	• Appropriate comments • Non-attuned comments	• Behavior(al) problems	• [MM+ (T2), BP (T3)] ($n = 54$, maltreated sample) $\Longrightarrow \Longrightarrow \Longrightarrow$ • PA[MM+ (T2) → BP (T3)] ($n = 94$)
69. Choi (2023)	South Korea	Cross-sectional	695	7–12 y	• Uncertainty • Certainty	• Internalizing symptoms • Externalizing behaviors	• [UnC, IS][g] • [UnC, EB][g]
70. De Palma et al. (2023)	Australia	Cross-sectional	350	0–3 y	• Certainty about Mental States • Interest and Curiosity • Prementalizing • Uncertainty • Certainty	• Socio-emotional adjustment	• [UnC, SEA][f] • [C, SEA] • [PM, SEA][f] • [CMS, SEA][f] • [IC, SEA]
71. Ghanbari et al. (2023)	Iran	Cross-sectional	357	2–12 y	• Certainty about Mental States • Interest and Curiosity • Prementalizing	• Internalizing symptoms • Externalizing behaviors	• [PM, IS][d] • [PM, EB][d] • [CMS, EB][d] • [IC, EB]
72. Madsen et al. (2023)	Denmark	Longitudinal T1: 2 m T2: 4 m T3: 7 m T4: 11 m	1755	2 m (@T1) 4 m (@T2) 7 m (@T3) 11 m (@T4)	• Certainty about Mental States • Interest and Curiosity • Prementalizing	• Socio-emotional adjustment	• MLR[PM, CMS → SEA] ($n = 1243$, mothers) • MLR[PM, CMS → SEA] ($n = 512$, fathers)

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TABLE 1 (Continued)

Number. first author surname (year). [citation]	Country setting	Type	Sample	Age	Predictors investigated	Outcomes investigated	Significant associations reported
73. Shao et al. (2023)	China	Cross-sectional	667	4–6 y	• Certainty about Mental States • Interest and Curiosity • Prementalizing	• Emotion regulation	• [CMS, ER][f] • [IC, ER][f] • [PM, ER][f]

Note: All associations are relevant with *p*-value not greater than 0.05.

Pearson correlations indicated by simple brackets []. Confirmation by multivariate analysis indicated by: [a]Partial correlation (PC); [b]Bivariate linear regression (BLR); [c]Multivariate linear regression, standard (single step) (MLR); [d]Multivariate linear regression, hierarchical (MLR-h); [e]Multivariate linear regression, stepwise (MLR-s); [f]Path analysis (PA); [g]Structural equation model (SEM); [h]Multivariate analysis of variance (MANOVA).

Multivariate associations are indicated by acronym and brackets [].

Unless otherwise indicated, the associations refer to the whole sample of the study.

Abbreviations: A/D, Anxiety/Depression; Act, Activity; AdB, Adaptive behavior; AF, Adaptive functioning; AgB, Agressive behavior; Anx, Anxiety; AR, Appropriateness of reasoning; APM, Accuracy of parental mentalization; AS, Academic skills; BP, Behavior(al) problems; C, Certainty; CB, Cooperative behavior; CMS, Certainty about Mental States; CP, Conduct Problems; CU, Callous-unemotional traits; D, Dynamics; Dep, Depression; Diss, Dissociation; Dist, Distress; Dys, Dysregulation; E, Empathy; EB, Externalizing behaviors; EF, Executive functioning; EI, Emotional intelligence; ER, Emotion regulation; ES, Emotional symptoms; GA, Generalized anxiety; GD, Global development; H, Hyperactivity; H-I, Hyperactivity–Inattention; I, Inattention; IC, Interest & Curiosity; IP, Interaction with people; IS, Internalizing symptoms; IT, Impulsive/Irresponsible traits; m, months; MM(t), Mind-mindedness (total score); MM+, Appropriate MM comments; MM−, Non-attuned MM comments; OCD, Obsessive Compulsive Disorder; PA, Physical aggression; PEM, Parental embodied mentalizing; PIF, Physical injury fears; PM, Prementalizing; PRP, Peer relationship problems; PrRF, Partner RF; PSB, Prosocial behavior; PTS, Posttraumatic stress; RB, Rule-breaking; RF(gs), RF (global scale); S, Stress; SA, Social anxiety; SC, Social competence; SomC, Somatic complaints; SchC, School competence; SEA, Socio-emotional adjustment; SEC, Social–emotional competence; SepA, Separation anxiety; SF, Social functioning; SP, Sleep problems; SR, Self-regulation; SS, Social skills; ToM, Theory of mind; UnC, Uncertainty; WB, Withdrawn/isolated behavior; y, years.

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mothers' mentalization. Two studies were carried out in a context of exceptionality: the global pandemic of COVID-19.

Instruments and measures

Forty different instruments—or versions and translations thereof—were used to measure predictors (constructs associated with parents' mentalization) and 47, outcomes associated with children's functioning or symptoms (Table 2). Those most commonly applied to measure parental predictors are the parent self-report Parental Reflective Functioning Questionnaire (PRFQ; Luyten et al., 2017), used by 21 studies, and the Mind-mindedness Coding Manual (MMCM; Meins & Fernyhough, 2015), by 19. As for the children's outcomes, the most popular by far is the Child Behavior Checklist (CBCL; Achenbach & Ruffle, 2000), used by 41 studies.

The number of different parental predictors that were analyzed separately was 17, which included eight full constructs that belong to the mentalization paradigm (i.e., reflective functioning, partner reflective functioning, mind-mindedness, parental embodied mentalizing, accuracy of parental mentalization, theory of mind, emotional intelligence, and empathy). It is noteworthy that the only study (Lee & Choi, 2022) that referred to social cognition actually measured the theory of mind construct (along with the emotion recognition ability).

As some of the most common measures contain subscales or dimensions that were analyzed separately by some of the studies and may differ crucially from the global score results, nine additional predictors were added: the three scales of the PRFQ—that is, pre-mentalizing, certainty about mental states, and interest and curiosity—along with the Appropriateness of Reasoning scale of the PRFQ-Fi (Pajulo et al., 2018) and the Dynamics scale of the P-PRFQ (Pajulo et al., 2015); the two scales of the Reflective Functioning Questionnaire (RFQ) and its versions (i.e., Certainty and Uncertainty; Fonagy et al., 2016); and—related to the MMCM—Appropriate and Non-Attuned Mind-Mindedness comments. In all these cases, the global score of the measure was attributed to the full construct. For those measures containing subscales that correlate well with the global score, no further predictors were needed even though the result tables point out if those subscales qualify the values.

Most of these measures have a positive valence, meaning that higher scores correspond to better mentalizing. Only three of them have a negative valence: the Pre-Mentalizing scale of the PRFQ family of measures (the pre-mentalizing modes capture a non-mentalizing stance that reflects a parent's inability to reflect on the child's mental states; Krink et al., 2018), the Uncertainty scale of the RFQ, and the Non-Attuned Mind-Mindedness Comments. The two other scales of the PRFQ do not have a definite valence—although they tend towards the positive—due to the fact that a particularly high or low response on the Certainty About Mental States or the Interest and Curiosity scales indicates nonoptimal mentalizing, for example, overinterpreting or lack of interest in the child's mental states (Krink et al., 2018). The former scale is the most salient and its non-monotonic feature was addressed in different ways in the statistical analyses: Condon et al. (2019) explicitly mention the recoding of the Certainty scale by scoring the mid-range responses highest to reflect "appropriate" certainty, while Arikan and Kumru (2021), and Taşdelen et al. (2022)—with related studies—use a composite score of the three scales of the PRFQ-1 (Luyten et al., 2009), which makes it difficult to discern whether the scale was used as published or was recoded in some way to make it monotonic. This is relevant as to how to interpret the sign and effect size of the associations.

The number of different CMH outcomes was 47 (the coincidence with the number of instruments is by chance, as some of them have multiple scales or measure the same constructs). These outcomes may be categorized as belonging either to the functioning or the symptoms domains. Most of the measures have low–high scales, meaning that higher scores correspond to a higher intensity of the construct, that is, more functioning or more symptoms. Exceptions

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TABLE 2 Instruments.

Predictor instrument	Name	#	Used in (study #)
PDI	Parent Development Interview	2	8, 20
PDI-RFS (Spanish ver.)	PDI-Reflective Functioning Scale	1	44
PDI-R	Parent Development Interview—Revised	6	19, 21, 30, 46, 48, 60
PDI-R2-S	Parent Development Interview Revised—Short version	2	23, 26
PartnerDI	PartnerDI	1	60
PI-R (Dutch trans.)	Pregnancy Interview—Revised	2	22, 23
WMCI coded w/PRF scale	Working Model of the Child Interview with PRF probes	1	41
PRFQ	Parental Reflective Functioning Questionnaire	10	31, 34, 37, 38, 40, 47, 55, 64, 65, 70
PRFQ (Chinese ver.)	Parental Reflective Functioning Questionnaire, Chinese version	1	73
PRFQ (Iranian/Persian ver.)	Parental Reflective Functioning Questionnaire, Iranian/Persian version	2	59, 71
PRFQ-1 (Turkish ver.)	Parental Reflective Functioning Questionnaire-1, Turkish version	2	42, 43
PRFQ-Fi (Finnish ver.)	Parental Reflective Functioning Questionnaire-1, Finnish version	3	50, 51, 64
PRFQ-I	Parental Reflective Functioning Questionnaire, Infant version	1	72
P-PRFQ	Prenatal Parental Reflective Functioning Questionnaire	2	51, 64
CMA+RP	Children's Mental Attributes | Reflective Parenting	1	52
CS-MST	Coding System for Mental State Talk in Narratives	1	27
PSRS	Parental Self-Reflectiveness Scale	1	3
AAI-RF	Adult Attachment Interview with Reflective Functioning Scale coding	2	12, 35
RFQ	Reflective Functioning Questionnaire	1	70
RFQ (French version)	Reflective Functioning Questionnaire, French Version	1	58
K-RFQ (Korean version)	Reflective Functioning Questionnaire, Korean Version	1	69
RFQ-46	Reflective Functioning Questionnaire–46	1	16
RFQ-8	Reflective Functioning Questionnaire—short version	1	36
MMCM free-play interactions	Mind-Mindedness Coding Manual—Free-play interactions	13	13, 14, 18, 24, 28, 32, 33, 48, 49, 61, 62, 67, 68
MMCM interview procedure	Mind-Mindedness Coding Manual—Interview procedure	6	11, 13, 29, 45, 56, 57
Mental state language	Mental state language	1	29
PEM coding system	Parental Embodied Mentalizing coding system	1	25
APM	Accuracy of parental mentalization	1	17

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TABLE 2 (Continued)

Predictor instrument	Name	#	Used in (study #)
SAT-MC	Social Attribution Task-Multiple Choice	1	63
EIQ	Emotional Intelligence Questionnaire	1	53
EQ-i	Bar-On Emotional Quotient Inventory, Iranian/Persian version	1	10
EQ-i:S	Bar-On Emotional Quotient Inventory, Short version	1	7
ESCQ-45	Emotional Skills & Competence Questionnaire-45	1	15
MSCEIT	Mayer–Salovey–Caruso Emotional Intelligence Test	1	54
Individual differences in empathy	Multidimensional approach to Individual differences in Empathy	1	1
IRI	Interpersonal Reactivity Index	4	4, 6, 39, 66
MES (Davis)	Maternal Empathy Scale	1	5
MES (Mannheim)	Maternal Empathy Scale (coded with the Mannheim Rating System for mother–infant interaction)	1	9
PEM	Parental Empathy Measure	1	66
P/PES	Parent/Partner Empathy Scale	1	2
Outcome instrument	**Name**	**#**	**Used in (study #)**
ASBI	Adaptive Social Behavior Inventory	1	27
ASQ-3 (French ver.)	Ages and Stages Questionnaires, Third Edition, French version	1	58
ASQ:SE	Ages and Stages Questionnaires: Social–Emotional	1	13
ASQ:SE-2	Ages and Stages Questionnaires: Social–Emotional, 2nd Edition	4	37, 38, 70, 72
BASC (PRS)	Behavior Assessment System for Children (Parent Rating Scale)	2	1, 4
Bear/Dragon + Grass/Snow	Bear/Dragon|Grass/Snow (executive functioning tasks)	1	52
BRIEF-P	Behavior Rating Inventory of Executive Function, Preschool version	1	67
CBCL/4–18	Child Behavior Checklist for ages 4–18	5	3, 7, 21, 25, 36
CBCL/4–18 (German ver.)	Child Behavior Checklist for ages 4–18, German version	1	9
CBCL/6–18	Child Behavior Checklist for ages 6–18	14	8, 16, 19, 20, 27, 28, 34, 48, 49, 51, 53, 55, 56, 65
CBCL/6–18 (Persian ver.)	Child Behavior Checklist for ages 6–18, Iranian/Persian version	2	47, 71
CBCL/6–18 (Polish ver.)	Child Behavior Checklist for ages 6–18, Polish version	1	35
CBCL/6–18 (Turkish ver.)	Child Behavior Checklist for ages 6–18, Turkish version	1	46
K-CBCL (Korean ver.)	Child Behavior Checklist for ages 6–18, Korean version	1	69

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TABLE 2 (Continued)

Outcome instrument	Name	#	Used in (study #)
CBCL/1½–5	Child Behavior Checklist for ages 1 1/2–5	11	15, 23, 26, 34, 42, 43, 45, 54, 56, 57, 65
CBCL/1½–5 (Persian ver.)	Child Behavior Checklist for ages 1 1/2–5, Iranian/Persian version	2	47, 71
CBCL/2–3	Child Behavior Checklist for ages 2–3	3	5, 21, 68
CPSCS	California Preschool Social Competency Scale	1	25
BPM	Brief Problem Monitor	1	46
CBQ	Children's Behavior Questionnaire	1	33
ECBQ	Early Childhood Behavior Questionnaire (Effortful Control subscale)	2	29, 64
CDC	Child Dissociative Checklist	1	20
CDI	Child Depression Inventory	2	19, 20
CICS	Cardiff Infant Contentiousness Scale	1	22
CSBQ	California Preschool Social Competency Scale	1	32
DECA	Devereux Early Childhood Assesment	1	27
DESSA	Devereux Student Strength Assessment	1	55
DERS-SF	Difficulties in Emotion Regulation Scale, Short Form	1	63
ECI	Early Coping Inventory	1	29
ERC	Emotion Regulation Checklist	2	59, 73
ITSEA	Infant-Toddler Social-Emotional Assessment	3	39, 41, 66
BITSEA	Brief Infant-Toddler Social–Emotional Assessment	7	24, 40, 50, 52, 62, 64, 65
Kochanska's Task	Kochanska's Tasks ([e.g. Gift Bag, Toy-Naming, Snack-delay)	4	29, 33, 48, 60
PASEC	Psysical Agression Scale for Early Childhood	2	22, 23
PBQ	Preschool Behavior Questionnaire	1	2
PIPPS	Penn Interactive Peer Play Scale	1	27
SAS	Social Aptitudes Scale	1	63
SCARED-R	Screen for Child Anxiety-Related Emotional Disorders	1	12
SCAS	Spence Children's Anxiety Scale—Parent Version; Iranian Translation	1	10
SCBE-30	Social Competence and Behavioral Evaluation-30	1	32
SDQ	Strengths and Difficulties Questionnaire	6	6, 11, 14, 18, 59, 61
SiC (Chilean ver.)	Stress in Children, Chilean Version	1	44
SSRS	Social Skill Rating System	6	8, 16, 17, 25, 48, 59
Toy Removal Task	Toy Removal Task	2	30, 31
TSCC-A	Trauma Symptom Checklist for Children, Alternate Form	1	16
WJACB	Woodcock-Johnson Achievement and Cognitive Batteries	1	25
YPTI	Youth Psychopathic Traits Inventory	1	18

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are the Ages and Stages Questionnaires: Social–Emotional (ASQ:SE and ASQ:SE-2; Squires et al., 2015), with high–low scales for functioning outcomes; in some cases, the authors inverted the scales. Álvarez et al. (2022) and Longoria (2013) were explicit in this matter; contrariwise, Gordo et al. (2020) reported correlations with the expected signs without mentioning a possible inversion, but the article's discussion makes it clear that the associations were as expected, which suggests that the direction of the scales was reversed. For the rest of the studies (De Palma et al., 2023; Madsen et al., 2023), the sign of the associations was changed in the analysis for this review for the sake of coherence.

Associations between parent's mentalization and child mental health

Sixty-four studies (88%)—corresponding to 56 independent samples—reported at least one significant association between parent's mentalization and CMH. Table 3 breaks down the results by outcome, including the predictors each one was measured together with, the studies that investigated it and those that found significant results, and a list of all associations. The total number of instances of actual combinations predictor-outcome measured together in at least one study was 154, of which 66% ($n = 101$) were significantly associated at least once. The results showed that almost all the associations between positive valence parental predictors linked to the mentalization and child functioning outcomes had a positive sign, and the associations with negative valence ones were negative, while the opposite happened with child symptoms outcomes. Therefore, as expected, a higher parents' mentalization was associated with a higher child functioning and with fewer symptoms.

The studies included in this review showed a clear focus on the children's symptoms rather than their functioning, given that 60 studies investigated the former and only 33 the latter; 20 studies assessed both domains of the CMH. In relation to the domain of symptoms, the externalizing behaviors, the internalizing symptoms, and the behavioral problems were the more studied outcomes. Both the externalizing behaviors and the internalizing symptoms were studied through 13 predictors related to parents' mentalization: reflective functioning (global scale), empathy, emotional intelligence, mind-mindedness (total), appropriate mind-mindedness comments, non-attuned mind-mindedness comments, parental embodied mentalizing, certainty about mental states, interest and curiosity, pre-mentalizing, uncertainty, certainty, and dynamics. There were no considerable differences between these two outcomes: 82% of the studies (27 out of 33) found associations with externalizing behaviors and 79% (22 out of 28), with internalizing symptoms. Behavioral problems were studied using 10 predictors of parents' mentalization: reflective functioning (global scale), empathy, emotional intelligence, mind-mindedness (total), appropriate mind-mindedness comments, non-attuned mind-mindedness comments, certainty about mental states, interest and curiosity, pre-mentalizing, and appropriateness of reasoning, with associations found in 64% of the studies (14 of 22).

Few studies ($n = 7$) focused on outcomes related to anxiety and depression (i.e., disorders such as anxiety, anxiety/depression, depression, and obsessive compulsive disorder). Through three predictors associated with parents' mentalization—that is, reflective functioning (global scale), empathy, and emotional intelligence—only three associations were found. Symptoms such as stress, distress, or childhood dissociation were studied in few studies (one, two, and one, respectively), with 100% of them reporting significant associations.

In relation to the domain of functioning, the dimensions associated with the child's socio-emotional development (i.e., socio-emotional competence/adjustment, and social competence/skills/functioning) were studied through 13 predictors related to parents' mentalization (i.e., reflective functioning (global scale), mind-mindedness (total), certainty about mental states, interest and curiosity, pre-mentalizing, uncertainty, certainty, appropriateness of reasoning,

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TABLE 3 Outcomes investigated.

Functioning outcome	Predictors investigated	Studies	Significant associations
Global development	Uncertainty, Certainty (Total = 2)	1/1 (100%) [58]	• [UnC, GD][g] [58] • [C, GD][g] [58] (Total = 2)
Socio-emotional adjustment	MM (total), Certainty about Mental States, Interest and Curiosity, Prementalizing, Uncertainty, Certainty (Total = 6)	3/4 (75%) [13, 37, 70, 72]	• [CMS, SEA][g] [37] • [CMS, SEA] (n = 433, mothers)[g] [37] • [CMS, SEA][f] [70] • [IC, SEA][g] [37] • [IC, SEA] (n = 113, fathers)[g] [37] • [IC, SEA] [70] • [PM, SEA][g] [37] • [PM, SEA] (n = 433, mothers)[g] [37] • [PM, SEA] (n = 113, fathers)[g] [37] • [PM, SEA][f] [70] • [UnC, SEA][f] [70] • [C, SEA] [70] (Total = 12) ⟹ ⟹ ⟹ • SEM[CMS → SEA] (n = 113, fathers) [37] • MLR[CMS, PM → SEA] (n = 1243, mothers) [72] • MLR[CMS, PM → SEA] (n = 512, fathers) [72] • SEM[IC → SEA] (n = 433, mothers) [37] (Total = 4)
Social–emotional competence	MM (total), Certainty about Mental States, Interest and Curiosity, Prementalizing, RF (global scale), Appropriateness of reasoning, Dynamics, Empathy (Total = 8)	5/6 (83%) [24, 40, 50, 55, 64, 66]	• [CMS (mother), SEC (mother report)][d] [55] • [CMS (father), SEC (mother report)][d] [55] • [CMS (@T1), SEC] [64] • [CMS (@T2), SEC] [64] • [CMS (@T3), SEC] [64] • [IC (father), SEC] [40] • [IC (3 m), SEC] (n = 429, mothers) [50] • [IC (3 m), SEC] (n = 127, fathers) [50] • [IC (12 m), SEC] (n = 429, mothers) [50] • [IC (12 m), SEC] (n = 127, fathers) [50] • [IC (father), SEC (father report)][d] [55] • [IC (@T1), SEC] [64] • [IC (@T2), SEC] [64] • [IC (@T3), SEC] [64] • [PM (mother), SEC][g] [40] • [PM (father), SEC][g] [40] • [PM (mother), SEC (mother report)][d] [55] • [PM (mother), SEC (father report)] [55] • [AR (3 m), SEC] (n = 429, mothers) [50] • [AR (3 m), SEC] (n = 127, fathers) [50] • [AR (12 m), SEC] (n = 127, fathers) [50] • [E (dispositional–total), SEC] [66] • [E (dispositional–affective), SEC] [66] • [E (parental–total), SEC][c] [66] • [E (parental–cognitive), SEC] [66] • [E (parental–affective), SEC] [66] (Total = 26)
Adaptive behavior	Empathy (Total = 1)	1/2 (50%) [1, 4]	• [E, AdB] [4] • [E, AdB] (n = 144, boys) [4] • [E, AdB] (n = 115, girls)[g] [4] (Total = 3)
Adaptive functioning	MM (total) (Total = 1)	0/1 (0%) [13]	
Cooperative behavior	RF (global scale) (Total = 1)	1/1 (100%) [27]	• [RF(gs) (causal connections with mental states), CB] (n = 115) [27] • [RF(gs) (references to children's perceptual states), CB] [27] • [RF(gs) (references to children's cognitive states), CB] (n = 115) [27] • [RF(gs) (references to own mental states), CB] [27] (Total = 4)

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TABLE 3 (Continued)

Functioning outcome	Predictors investigated	Studies	Significant associations
Interaction with people	MM (total) (Total = 1)	0/1 (0%) [13]	
Prosocial behavior	MM (total), Empathy, Certainty about Mental States, Interest and Curiosity, Prementalizing (Total = 5)	2/3 (67%) [11, 39, 59]	• [CMS, PSB] [59] • [IC, PSB][g] [59] • [PM, PSB] [59] (Total = 3) ⟹ ⟹ ⟹ • PA[E → PSB] (n = 200) [39] (Total = 1)
Social functioning	Theory of mind (Total = 1)	0/1 (0%) [63]	
Social skills	RF (global scale), Accuracy of parental mentalization, Parental embodied mentalizing, MM (total), Certainty about Mental States, Interest and Curiosity, Prementalizing (Total = 7)	4/6 (67%) [8, 16, 17, 25, 48, 59]	• [RF(gs), SS][f] [16] • [CMS, SS] [59] • [IC, SS][g] [59] • [PM, SS] [59] • [APM, SS] [17] (Total = 5) ⟹ ⟹ ⟹ • MLR[PEM → SS] [25] (Total = 1)
Social competence	RF (global scale), Parental embodied mentalizing, Appropriate comments, Non-attuned comments (Total = 4)	3/4 (75%) [3, 25, 27, 32]	• [RF(gs) (causal connections with mental states), SC] (n = 122) [27] • [RF(gs) (references to children's perceptual states), SC] (n = 122) [27] • [RF(gs) (references to children's cognitive states), SC] (n = 122) [27] • [MM− (12 m–mother), SC][d] [32] • [MM− (12 m–father), SC] [32] • [MM− (30 m–father), SC] [32] (Total = 6) ⟹ ⟹ ⟹ • MLR[PEM → SC] [25] (Total = 1)
Activity	RF (global scale) (Total = 1)	0/1 (0%) [3]	
Academic skills	Parental embodied mentalizing (Total = 1)	1/1 (100%) [25]	• MLR[PEM → AS] [25] (Total = 1)
School competence	RF (global scale), Certainty about Mental States, Interest and Curiosity, Prementalizing (Total = 4)	0/2 (0%) [3, 34]	
Executive functioning	RF (global scale), Appropriate comments (Total = 2)	1/2 (50%) [52, 67]	• [MM+ (father), EF][d] [67] (Total = 1)
Emotion regulation	Certainty about Mental States, Interest and Curiosity, Prementalizing (Total = 3)	3/3 (100%) [38, 59, 73]	• [CMS, ER] [38] • [CMS, ER][f] [73] • [IC, ER] [38] • [IC, ER][g] [59] • [IC, ER][f] [73] • [PM, ER][e] [38] • [PM, ER][g] [59] • [PM, ER][f] [73] (Total = 8)

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TABLE 3 (Continued)

Functioning outcome	Predictors investigated	Studies	Significant associations
Self-regulation	MM (total), Appropriate comments, Non-attuned comments, RF (global scale), Partner RF, Certainty about Mental States, Interest and Curiosity, Dynamics (Total = 8)	4/6 (67%) [13, 29, 33, 48, 60, 64]	• [CMS (@T2), SR] [64] • [CMS (@T3), SR] [64] • [IC (@T1), SR] [64] • [IC (@T2), SR] [64] • [MM(t) (Mental state words), SR (Effective coping)] [29] • [MM(t) (Mental state words), SR (Effortful control)] [29] • [MM(t) (Mental descriptors), SR (Effective coping)] [29] • [MM(t) (Mental descriptors), SR (Delay of gratification)] (n = 25, 24–29 m) [29] • [MM+ (father), SR (behavioral)][g] [33] • [MM− (mother), SR (effortful control)][g] [33] • [MM− (father), SR (effortful control)][g] [33] (Total = 11) ⟹ ⟹ ⟹ • SEM[MM(t) (Maternal mentalization-related parenting (T1)) → SR (Toddlers' self-regulation (T2))] [29] • SEM[MM+ (father) → SR (effortful control)] [33] • PA[PrRF → SR] [60] (Total = 3)

Symptoms outcome	Predictors investigated	Studies	Significant associations
Behavior(al) problems	Empathy, MM (total), Emotional intelligence, RF (global scale), Certainty about Mental States, Interest and Curiosity, Prementalizing, Appropriateness of reasoning, Appropriate comments, Non-attuned comments (Total = 10)	14/22 (64%) [1, 2, 4, 11, 15, 24, 26, 27, 34, 40, 46, 48, 49, 50, 52, 53, 55, 59, 62, 65, 66, 68]	• [RF(gs) (causal connections with mental states), BP] (n = 122) [27] • [IC (mother), BP] [40] • [IC (3 m), BP] (n = 127, fathers) [50] • [IC (12 m), BP] (n = 429, mothers) [50] • [IC (12 m), BP] (n = 127, fathers) [50] • [IC, BP] [59] • [PM, BP][b] [34] • [PM (father), BP][g] [40] • [PM (mother), BP (mother report)][d] [55] • [PM (mother), BP (father report)][d] [55] • [PM, BP][g] [59] • [AR (3 m), BP] (n = 429, mothers) [50] • [AR (12 m), BP] (n = 429, mothers) [50] • [AR (3 m), BP] (n = 127, fathers) [50] • [AR (12 m), BP] (n = 127, fathers) [50] • [MM(t), BP] (n = 25, community group) [11] • [MM+ (mother), BP (12 m)][c] [62] • [MM+ (father), BP (12 m)] [62] • [MM+ (father), BP (18 m)] (n = 101) [62] • [MM+ (father), BP (18 m)] (n = 101) [62] • [MM+ (T2), BP (T3)] (n = 54, maltreated sample) [68] • [EI (teacher report), BP][c] [53] • [EI (parent report), BP][c] [53] • [E (dispositional–total), BP] [66] • [E (dispositional–cognitive), BP][c] [66] • [E (parental–total), BP][c] [66] • [E (parental–cognitive), BP][c] [66] • [E (parental–affective), BP] [66] (Total = 28) ⟹ ⟹ ⟹ • MLR-m[RF(gs) → BP] [46] • PA[RF(gs) (12 m) → BP] (n = 429, mothers) [50] • PA[RF(gs) (12 m) → BP] (n = 127, fathers) [50] • PA[IC (mother) → BP] [65] • SEM[PM (mother) → BP] [40] • PA[IC (mother), PM (mother), PM (father) → BP] [65] • PA[MM+ (T2) → BP (T3)] (n = 94) [68] • SEM[E → BP] (n = 115, girls) [4] (Total = 8)

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TABLE 3 (Continued)

Symptoms outcome	Predictors investigated	Studies	Significant associations
Internalizing symptoms	RF (global scale), Empathy, Emotional intelligence, Appropriate comments, Parental embodied mentalizing, MM (total), Non-attuned comments, Certainty about Mental States, Interest and Curiosity, Prementalizing, Uncertainty, Certainty, Dynamics (Total = 13)	22/28 (79%) [3, 5, 7, 8, 14, 15, 16, 21, 25, 27, 28, 32, 34, 36, 41, 42, 43, 45, 47, 51, 52, 53, 55, 56, 57, 64, 69, 71]	• [RF(gs), IS][f] [16] • [RF(gs), IS][f] [21] • [RF(gs) (references to children's perceptual states), IS] [27] • [RF(gs), IS] [41] • [RF(gs), IS] (*n* = 33, mothers) [41] • [RF(gs), IS] [42] • [RF(gs), IS] [43] • [RF(gs), IS][g] [52] • [CMS, IS] (*n* = 461, 3–5 y) [47] • [CMS (@T2), IS] [64] • [CMS (@T3), IS] [64] • [IC, IS] (*n* = 224, 6–10 y) [47] • [PM, IS][b] [34] • [PM, IS] (*n* = 461, 3–5 y) [47] • [PM, IS] (*n* = 224, 6–10 y) [47] • [PM (mother), IS (mother report)][d] [55] • [PM (father), IS (father report)][d] [55] • [PM, IS][d] [71] • [UnC, IS][g] [69] • [C, IS] (*n* = 76) [36] • [D (@T1), IS] [64] • [MM(t), IS][f] [28] • [MM+ (30 m–father), IS] [32] • [MM− (12 m–mother), IS][d] [32] • [EI (teacher report), IS] [53] • [EI (parent report), IS] [53] (Total = 26) ⟹ ⟹ ⟹ • PA[MM(t) (Low level) → IS] (3–5 y) [56] • PA[MM(t) (Medium level) → IS] (3–5 y) [56] • PA[MM(t) (High level) → IS] (6–12 y) [56] • PA[MM(t) (Low level) → IS] (3–5 y) [56] • PA[MM+ → IS] (*n* = 60) [14] • MLR-h[MM+ (4 m–mother × father) → IS] [32] • MLR[PEM → IS] [25] • SEM[EI → IS] [7] • SEM[E → IS] [5] (Total = 9)
Somatic complaints	Emotional intelligence (Total = 1)	0/1 (0%) [15]	
Withdrawn/ isolated behavior	Emotional intelligence, RF (global scale) (Total = 2)	1/2 (50%) [15, 27]	• PC[RF(gs) (references to own mental states), WB] (*n* = 116) [27]
Peer relationship problems	MM (total), Certainty about Mental States, Interest and Curiosity, Prementalizing, Appropriate comments, Non-attuned comments (Total = 6)	2/3 (67%) [11, 59, 61]	• [CMS, PRP] [59] • [IC, PRP] [59] • [PM, PRP][g] [59] • [MM+, PRP] [61] (Total = 4)
Anxiety	Empathy, RF (global scale) (Total = 2)	1/3 (33%) [1, 2, 12]	• MLR[RF(gs) (mother) → Anx] [12] (Total = 1)
Generalized anxiety	Emotional intelligence (Total = 1)	1/1 (100%) [10]	• [EI, GA] [10] (Total = 1)
Social anxiety	Emotional intelligence (Total = 1)	0/1 (0%) [10]	
Separation anxiety	Emotional intelligence (Total = 1)	0/1 (0%) [10]	
Physical injury fears	Emotional intelligence (Total = 1)	0/1 (0%) [10]	
Obsessive Compulsive Disorder	Emotional intelligence (Total = 1)	0/1 (0%) [10]	
Anxiety/ Depression	Emotional intelligence (Total = 1)	1/1 (100%) [15]	• [EI, A/D] (*n* = 97, clinical sample) [15] (Total = 1)

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TABLE 3 (Continued)

Symptoms outcome	Predictors investigated	Studies	Significant associations
Depression	Empathy, RF (global scale) (Total = 2)	0/3 (0%) [1, 19, 20]	
Emotional symptoms	Empathy, MM (total), Certainty about Mental States, Interest and Curiosity, Prementalizing, Appropriate comments, Non-attuned comments (Total = 7)	2/4 (50%) [6, 11, 59, 61]	• [CMS, ES] [59] • [IC, ES] [59] • [PM, ES][g] [59] • [MM+, ES][r] [61] (Total = 4)
Distress	RF (global scale), Certainty about Mental States, Interest and Curiosity, Prementalizing (Total = 4)	2/2 (100%) [30, 31]	• [RF(gs), Dist] [30] • [IC, Dist] [31] (Total = 2)
Stress	RF (global scale) (Total = 1)	1/1 (100%) [44]	• [RF(gs), S] [44] (Total = 1)
Posttraumatic stress	RF (global scale) (Total = 1)	0/1 (0%) [16]	
Dissociation	RF (global scale) (Total = 1)	1/1 (100%) [20]	• [RF(gs), Diss] [20] (Total = 1)
Sleep problems	Emotional intelligence (Total = 1)	1/1 (100%) [15]	• [EI, SP] (n = 60, peer sample) [15] (Total = 1)
Externalizing behaviors	RF (global scale), Empathy, Emotional intelligence, Appropriate comments, Parental embodied mentalizing, MM (total), Non-attuned comments, Certainty about Mental States, Interest and Curiosity, Prementalizing, Uncertainty, Certainty, Dynamics (Total = 13)	27/33 (82%) [3, 5, 7, 8, 9, 14, 15, 16, 18, 19, 20, 21, 23, 25, 27, 28, 32, 34, 36, 41, 42, 43, 45, 47, 51, 52, 53, 55, 56, 57, 64, 69, 71]	• [RF(gs) (child-focused), EB] (n = 50, only adopted children) [3] • [RF(gs), EB] [16] • [RF(gs), EB][f] [19] • [RF(gs), EB] [20] • [RF(gs), EB][f] [21] • [RF(gs), EB] [23] • [RF(gs), EB] [41] • [RF(gs), EB] (n = 33, mothers) [41] • [RF(gs), EB][f] [42] • [RF(gs), EB] [43] • [CMS, EB] (n = 461, 3–5 y) [47] • [CMS (@T1), EB] [64] • [CMS (@T2), EB] [64] • [CMS (@T3), EB] [64] • [CMS, EB][d] [71] • [IC (@T2), EB] [64] • [IC, EB] [71] • [PM, EB][b] [34] • [PM, EB] (n = 461, 3–5 y) [47] • [PM, EB] (n = 224, 6–10 y) [47] • [PM (mother), EB (mother report)][d] [55] • [PM, EB][d] [71] • [UnC, EB] (n = 76) [36] • [UnC, EB][g] [69] • [D (@T1), EB] [64] • [MM(t), EB][f] [28] • [MM+ (4 m–father), EB] [32] • [MM− (12 m–mother), EB][d] [32] • [MM− (30 m–father), EB][d] [32] • [EI (teacher report), EB] [53] • [EI (parent report), EB] [53] (Total = 31) ⟹ ⟹ ⟹ • MLR-h[RF(gs) (child-focused) → EB] [3] • SEM[RF(gs) → EB] [52] • MLR-h[CMS → EB] (n = 224, 6–10 y) [47] • PA[MM(t) → EB] [45] • PA[MM(t) (Low level) → EB] (3–5 y) [56] • PA[MM(t) (Medium level) → EB] (3–5 y) [56] • PA[MM(t) (Low level) → EB] (3–5 y) [56] • PA[MM(t) → EB] [57] • PA[MM+ → EB] (n = 60) [14] • MLR-h[MM+ (30 m–mother × father) → EB] [32] • MLR-h[MM− (30 m–mother × father) → EB] [32] • MLR[PEM → EB] [25] • SEM[E → EB] [5] • MLR-s[E → EB] (n = 148, boys) [9] (Total = 14)

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TABLE 3 (Continued)

Symptoms outcome	Predictors investigated	Studies	Significant associations
Conduct problems	Empathy, MM (total), Certainty about Mental States, Interest and Curiosity, Prementalizing, Appropriate comments, Non-attuned comments (Total = 7)	4/4 (100%) [6, 11, 59, 61]	• [IC, CP] [59] • [PM, CP][g] [59] • [MM(t), CP] (n = 25, community group) [11] • [E, CP][e] [6] (Total = 4) ⟹ ⟹ ⟹ • PA[MM+ → CP] [61] (Total = 1)
Callous-unemotional traits	Appropriate comments, Emotional intelligence (Total = 2)	2/2 (100%) [18, 54]	• [MM+, CU][f] [18] (Total = 1) ⟹ ⟹ ⟹ • MLR[EI → CU] (n = 186) [54] • MLR[EI → CU] (n = 172) [54] (Total = 2)
Agressive behavior	Empathy, Emotional intelligence, RF (global scale) (Total = 3)	1/5 (20%) [1, 2, 15, 27, 35]	• [RF(gs), AgB] [35] (Total = 1)
Physical aggression	RF (global scale) (Total = 1)	2/2 (100%) [22, 23]	• [RF(gs), PA (@T2)][h] [22] • [RF(gs), PA (@T3)] [22] • [RF(gs), PA (@T4)][h] [22] • [RF(gs), PA] [23] (Total = 4)
Dysregulation	Emotional intelligence, RF (global scale), Theory of mind (Total = 3)	2/3 (67%) [15, 41, 63]	• [RF(gs), Dys][c] [41] • [RF(gs), Dys] (n = 33, mothers) [41] • [ToM, Dys][d] [63] (Total = 3)
Rule-breaking	RF (global scale) (Total = 1)	0/1 (0%) [35]	
Hyperactivity	Empathy (Total = 1)	0/1 (0%) [1]	
Hyperactivity–Inattention	Empathy, MM (total), Certainty about Mental States, Interest and Curiosity, Prementalizing, Appropriate comments, Non-attuned comments (Total = 7)	2/5 (40%) [2, 6, 11, 59, 61]	• [PM, H-I][g] [59] • [MM(t), H-I] (n = 25, community group) [11] (Total = 2)
Inattention	Empathy, Emotional intelligence (Total = 2)	0/2 (0%) [1, 15]	
Impulsive/Irresponsible traits	Appropriate comments (Total = 1)	1/1 (100%) [18]	• PA[MM+ → IT] [18] (Total = 1)

Note: At least one association was reported by the study. All associations are relevant with p-value not greater than 0.05.

Pearson correlations are indicated by simple brackets []. Confirmation by multivariate analysis indicated by: [a]Partial correlation (PC); [b]Bivariate linear regression (BLR); [c]Multivariate linear regression, standard (single step) (MLR); [d]Multivariate linear regression, hierarchical (MLR-h); [e]Multivariate linear regression, stepwise (MLR-s); [f]Path analysis (PA); [g]Structural equation model (SEM); [h]Multivariate analysis of variance (MANOVA).

Multivariate associations indicated by acronym and brackets [].

Unless otherwise indicated, the associations refer to the whole sample of the study.

Abbreviations: A/D, Anxiety/Depression; Act, Activity; AdB, Adaptive behavior; AF, Adaptive functioning; AgB, Agressive behavior; Anx, Anxiety; AR, Appropriateness of reasoning; APM, Accuracy of parental mentalization; AS, Academic skills; BP, Behavior(al) problems; C, Certainty; CB, Cooperative behavior; CMS, Certainty about mental states; CP, Conduct problems; CU, Callous-unemotional traits; D, Dynamics; Dep, Depression; Diss, Dissociation; Dist, Distress; Dys, Dysregulation; E, Empathy; EB, Externalizing behaviors; EF, Executive functioning; EI, Emotional intelligence; ER, Emotion regulation; ES, Emotional symptoms; GA, Generalized anxiety; GD, Global development; H, Hyperactivity; H–I, Hyperactivity–Inattention; I, Inattention; IC, Interest and Curiosity; IP, Interaction with people; IS, Internalizing symptoms; IT, Impulsive/Irresponsible traits; m, months; MM(t), Mind-mindedness (total score); MM+, Appropriate MM comments; MM−, Non-attuned MM comments; OCD, Obsessive Compulsive Disorder; PA, Physical aggression; PEM, Parental embodied mentalizing; PIF, Physical injury fears; PM, Prementalizing; PRP, Peer relationship problems; PrRF, Partner RF; PSB, Prosocial behavior; PTS, Posttraumatic stress; RB, Rule-breaking; RF(gs), RF (global scale); S, Stress; SA, Social anxiety; SC, Social competence; SomC, Somatic complaints; SchC, School competence; SEA, Socio-emotional adjustment; SEC, Social–emotional competence; SepA, Separation anxiety; SF, Social functioning; SP, Sleep problems; SR, Self-regulation; SS, Social skills; ToM, Theory of mind; UnC, Uncertainty; WB, Withdrawn/isolated behavior; y, years.

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dynamics, accuracy of parental mentalization, parental embodied mentalizing, empathy, and theory of mind). The socio-emotional competence outcome was significantly associated with some of the former predictors in 83% of the studies that analyzed the relationship (five out of six). In the same way, the dimensions socio-emotional adjustment (three out of four, 75%), social skills (five out of six, 67%), and social competence (three out of four, 75%) were associated. The social functioning was assessed in only one study, which reported no significant associations.

All the studies ($n=3$) that examined the emotion regulation dimension found significant associations with the predictors certainty about mental states, interest and curiosity, and pre-mentalizing. In the case of self-regulation, associations were found in 67% of the studies (four out of six) with the predictors reflective functioning (global scale), mind-mindedness (total), appropriate mind-mindedness comments, non-attuned mind-mindedness comments, partner reflective functioning, certainty about mental states, interest and curiosity, and dynamics.

Out of the 20 studies that measured constructs across both domains of the CMH, 75% ($n=15$) reported associations of parents' mentalization with symptoms outcomes, with nine of them (45%) also reporting associations with functioning outcomes.

Potential protection of parent's mentalization for child mental health

The overall results provide evidence that higher levels of parents' mentalization are associated with a better functioning and less psychopathological symptoms in children, which supports the hypothesis that parents' healthy mentalization is a protective factor for CMH. Nonetheless, a few results stray from this main trend.

Nijssens et al. (2020), with a sample of infants, and Khoshroo and Mousavi (2021), with children aged 6–10 years, reported medium-size positive correlations of mothers' interest and curiosity (the non-definite valence of this scale of the PRFQ has been pointed out above) with children's behavioral problems ($\rho=0.29$) and internalizing symptoms ($\rho=0.30$), respectively. A possible explanation to the discrepancy is that high levels of interest can lead to intrusive pseudomentalizing—which may be construed as a form of hypermentalization (Bateman & Fonagy, 2019)—contrary to the growing desire for autonomy in school-aged children, as indicated by the authors.

Gregl et al. (2014) reported a medium-size positive correlation ($\rho=0.31$) between parental emotional intelligence and sleep problems in the peer sample (developmentally neurotypical children), possibly because the mothers who are overly sensitive and attentive to the slightest emotional changes in their children can produce tension that may result in troubled relaxing and sleeping.

Smaling, Huijbregts, van der Heijden, van Goozen, and Swaab (2016) reported a low-size positive correlation ($\rho=0.17$) between the postnatal reflective functioning and the externalizing problems, mainly due to the self-focused component of the reflective functioning, measured with the PDI instrument. The authors explained this discrepancy with the argument that although a certain level of self-reflectiveness is generally considered to be a good quality, there might also be less desirable consequences, citing the self-absorption paradox—the simultaneous association of higher levels of self-awareness with higher levels of both psychological distress and psychological well-being (Trapnell & Campbell, 1999)—as a possible reason, making a mother less patient and therefore more inclined to report her child as being difficult.

A few results are apparently contrary to expectations. Ghanbari et al. (2022) found low-size positive correlations between the certainty about mental states and both emotional symptoms ($\rho=0.15$) and peer relationship problems ($\rho=0.13$), while also reporting similar sized positive correlations with two functioning outcomes (prosocial behavior, $\rho=0.14$; and social skills, $\rho=0.15$), which the authors relate to the special features of the Certainty dimension of the PRFQ and is possible due to the indefinite valence of this scale. Specifically related to fathers,

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Charpentier Mora et al. (2022) found a medium-size negative correlation ($\rho = -0.37$) between the certainty about mental states in fathers and the children's social–emotional competence (reported by mothers), hypothesizing a possible different role of paternal and maternal mentalizing; in the same line, Colonnesi et al. (2019) reported a small positive correlation ($\rho = 0.23$) between fathers' appropriate mind-mindedness comments at 30 months and children's internalizing symptoms at 4.5 years, even though did not find any predictive value of parents' mind-mindedness for internalizing problems through regression analysis.

Potential moderation of the transgenerational transmission of psychopathology

Eleven studies—corresponding to 10 independent samples—reported significant moderating effects of parents' mentalization on the association between parents' and children's psychopathology, out of 12 studies that searched for them. Only Kapeleris (2014) was unsuccessful in this respect. This supports the hypothesis that parents' healthy mentalization may moderate the transgenerational transmission of psychopathology.

Two studies found effects on child behavior problems, composed by internalizing and externalizing behaviors: Walker and Cheng (2007) found a standardized path coefficient of 0.23 for the moderating term parental stress × empathy as a predictor of behavior problems; and Brown et al. (2023) found a medium-size interaction effect ($\beta = -0.42$) between the maltreatment group status and the appropriate mind-related comments on the children's behavioral problems.

Six studies found specific effects on externalizing problems, of which three also found specific effects on internalizing problems: Pitzer et al. (2011) found a moderating interaction between boys' easiness and maternal empathy on externalizing problems, with a small-size effect ($\beta = 0.19$), with no significant interaction found with girls; Dollberg et al. (2021) found a significant interaction effect between parental anxiety and mother's mind-mindedness on the prediction of children's externalizing behaviors; Khoshroo and Mousavi (2021) found an effect ($\beta = 0.60$) of the interaction between the certainty about mental states and maternal depression on the externalizing problems of children aged 6–10 years; Meins et al. (2013) found a medium-size negative interaction effect between the appropriate mind-mindedness comments and maternal depression on internalizing problems ($\beta = -0.37$), and a small size ($\beta = -0.28$) one on externalizing problems; and Dollberg and Hanetz-Gamliel (2022), and Dollberg et al. (2023)—with related samples—found that the interactions of mother's mind-mindedness with adverse childhood experiences and anxiety, respectively, predicted internalizing symptoms and externalizing behaviors.

Hobby et al. (2022) found very small effects of the interaction between appropriate mind-mindedness comments and maternal distress on children's conduct problems ($\beta = -0.01$), and emotional symptoms ($\beta = 0.01$; although the sign of this last result seems contrary to the expectations, the effect size is practically negligible).

Esbjorn et al. (2013) found an interaction of medium-size effect ($\beta = -0.34$) between father's attachment avoidance and the mother's mentalization to predict the child's anxiety, even though the significance did not attain the 95% level ($p < 0.10$).

Goldstein et al. (2023) assessed a particular mentalization predictor—the partner reflective functioning—and found that the interaction of father's partner reflective functioning with maternal prenatal depression affects children's self-regulation, albeit with a very small effect ($\beta = 0.04$).

DISCUSSION

This scoping review synthesized the empirical studies on parents' mentalization and its association with CMH (0–12 years of age). The evidence of a connection of parents' mentalization

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with CMH is high, with almost nine out of every 10 studies reporting at least one significant association.

The evidence suggests a protective effect of parents' mentalization against psychopathological symptoms in childhood and a strengthening of functioning, as well as a possible moderating role in the transgenerational transmission of psychopathology. The results from the 20 studies that assessed both domains of the CMH suggest that parents' mentalization might be more strongly associated with the symptoms than with the functioning. This would indicate that it performs better as a protective factor from psychopathology than as a pure strengthener of the functioning. We wonder if a child's functioning might be boosted by a stronger parents' mentalization in the case of low or absent psychopathology.

While CMH has long and largely been regarded by the scientific community as the absence of symptoms of mental illness, it was a pleasant surprise that 33 studies in this review (45%) were interested in learning about children's functioning, in areas such as socio-emotional functioning, emotional regulation, academic performance, and activities of daily living. The progress seems remarkable, but there is still room for improvement as this amount is still about half of those that studied only symptoms.

On the other hand, no studies addressed specifically children's psychological well-being at the same time than parents' mentalization. Even though a number of them ($n = 20$) refer to that concept to some extent, only three of them (Costa-Cordella et al., 2021; De Palma et al., 2023; Dollberg & Hanetz-Gamliel, 2022) mention it as central, and furthermore, measuring outcomes belonging either to the functioning or symptoms domains; one of those outcomes (distress)—which might be regarded as a negative polarity of the well-being—is measured in two studies. Again, it looks like the negative aspects of CMH are getting much more attention than the positive ones, leaving open a gap in the understanding of the relationship of parents' mentalization with the increase of children's quality of life, as opposed to the decrease of unwellness.

The studies included in this review suggest that the influence of fathers' mentalization on children may differ significantly from mothers'. However, despite these intriguing findings, our understanding of the underlying mechanisms and reasons for these differences remains limited. In this scoping review, we found that only a third of the studies included fathers, always in considerable lesser amounts than mothers, with the only exception of one study (Regueiro et al., 2022) that focused on fathers as study subjects. Further investigation is required to elucidate why and how the effects of fathers' mentalization diverge from mothers'. At least two immediate hypotheses emerge to explain this divergence: brain's sex differences supporting better mentalization in women (Krach et al., 2009), and the differences in daily time of interaction and childcare, mostly assumed by mothers, which is possibly associated with gender role stereotypes. By addressing this research gap, future studies can provide valuable insights into the unique contributions of fathers' mentalizing abilities to the psychological well-being of their children (Mora et al., 2023). Understanding the nuances and possibly distinct impact of fathers' mentalization will not only enhance our knowledge of CMH but also inform the development of more effective interventions and support systems for families.

The associations indicate that parents' healthy mentalization may be a protective factor against CMH problems. Parents with healthy mentalization skills can support their child's well-being and help them cope with stressors more effectively. Overall, the findings agree with previous research which has shown that when a parent is able to be consciously aware and understanding of both their mental state and the mental state of their child, it can act as a protective buffer in regard to their child's mental health development (Katznelson, 2014). Although this has long been an unspoken assumption, these findings may provide further basis for policies of mentalization-based prevention programs targeted at parents for the benefit of their children, as well as for the inclusion of interventions aimed at enhancing parental mentalization in the context of child psychotherapy practice.

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The results also hint at a possible moderating role in the association between parents' and children's psychopathology. The evidence gathered is still scarce to take a definite stance, but it looks promising, as most of the probes into this role (11 out of 12) provided evidence supporting this buffering role. Given the association between mentalization and mental health (Bo et al., 2016; Hayden et al., 2021; Ostler et al., 2010; Sharp & Fonagy, 2008), and therefore, the association between psychopathology and mentalization impairment (Camoirano, 2017; Johnson et al., 2022; Katznelson, 2014; Wagner-Skacel et al., 2022), more complex designs are possibly required to explore the network of relationships between parent's psychopathology, mentalization, and CMH.

Most of the studies were conducted in North America and Europe (71%). The exponential increase in publications on mentalization—and its possible use in treatments—that has been recorded in recent decades has occurred unevenly between the different regions. South America, the Far East, and Oceania combined contributed only with five studies to this review; and Africa is not represented at all. These data highlight the need to continue research on parents' mentalization in different cultures, which should allow us to replicate the validity of our findings and expand the knowledge on the field from a cross-cultural umbrella. As a field, we need to broaden our scope of studies and have more diverse sample groups globally to add to the body of Western-centric knowledge we currently have.

Implications for mental health practice and policy

The positive effects of sensitive parenting on children's development have been extensively observed in the clinical setting. However, the additional empirical evidence distilled in this scoping review for the specific role of parents' mentalizing on CMH provide additional support for evidence-based practice. Mentalization is a universal higher order cognition, connatural to the human brain and therefore present in all people. The evidence for its transdiagnostic and now even transgenerational benefits for CMH opens a door to stopping the growing incidence of mental disorders (70% of which start before age 18, and 50% before age 14) by improving developmental levels of mental health in the general population.

This review supports that by strengthening a skill already present in all people, not only adults' own mental health but also that of the children in their care could be benefited in terms of less symptoms, better social and role functioning, and higher well-being. Thus, children exposed to adults with improved mentalization skills could grow up healthier and more resilient, and achieve adulthood ready to transfer a new level of mental health skills to the next generation, thus perpetuating the transgenerational effect. To make this possible, the current conception of mental health, which still recommends intervention mostly once there is a problem, should evolve to the idea that intervening also in non-clinical ranges of the mental ill-health continuum could be even more cost-efficient. According to The Heckman Equation (Heckman, 2023), which shows that the highest rate of return on the investment in human potential comes from the earliest investment in children, to promote CMH while they grow up and before any clinical problem is structured, so as to prevent its evolution, could be one of the few ways to curb the current pressure on the public health care networks. Parents are present in children's lives throughout all their development. This review supports the idea that by strengthening parents' mentalization, both in clinical and in non-clinical settings, CMH could be robustly benefited.

Limitations

As previously mentioned, the considerable amount of different measures, both predictors and outcomes, makes it difficult to synthesize the results. In several cases, different instruments

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were used to measure the same, similar, or closely related constructs, and although most of them are validated it is unclear the extent to which the assessments may be homogeneous. Besides, some subscales (e.g., certainty of mental states of the PRFQ) are not monotonic or do not correlate well with the overall score, which can generate results that are difficult to interpret. On top of that, some researchers opted for adapting the measures, which may be convenient but makes it difficult to compare the results with certainty as not all of them do the same or in the same manner. Another limitation of the present review is that the search strategy did not include one of the constructs—the Parental Insightfulness—that the literature relates to mentalization, which limits the scope of the search (nonetheless, this construct appears in Charpentier Mora et al., 2022).

CONCLUSION

The evidence gathered in this review supports the hypothesis that parents' mentalization and CMH (0–12 years of age) are associated. This applies to both the domain of psychological functioning and that of psychopathological symptoms. It also supports the hypotheses that parents' mentalization is a protective factor for CMH and a moderator of the transgenerational transmission of psychopathology.

Regardless of the strong evidence of an association, this review underscores the need for continued research on the effects of parent's mentalization on CMH. It seems evident that while notable efforts have been made to investigate the topic, significant room for improvement exists such as in studies outside Europe and North America, those done with fathers as participants, and with an increased focus on the positive aspects of children's functioning and well-being, rather than mainly on symptoms. According to the changes in the definition of mental health—that for a long time has included the dimensions of functioning and well-being—more work is needed to investigate those topics on children as they relate to parents' mentalization. If we manage to understand these capacities better, parents could be proactively educated on the basics of mentalization and a notable value in family-addressed public mental health policies would be added.

As a final note, the heterogeneity of both the conceptualization of the psychological constructs and the tools or procedures for measuring them may be hindering access to some of the evidence regarding the transgenerational association of mentalization with CMH. A clearer and unified framework seems desirable in the future.

FUNDING INFORMATION

This work was supported by grants PID2021-125444OB-I00 and PID2022-141403NB-I00, funded by MCIN/AEI/10.13039/501100011033 and by ERDF A way of making Europe.

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How to cite this article: Moreira, A., Vives, J., & Ballespí, S. (2024). Transgenerational association of mentalization with child mental health: A scoping review. *Family Process*, *00*, 1–38. https://doi.org/10.1111/famp.13085

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