

# Exploring paternal mentalization and its impact on early child development: A multimethod approach

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## Abstract

Paternal mentalization, which refers to fathers' understanding and interpretation of their children's mental states, influences personal-social development outcomes in children as young as eighteen months. The main objective of this study was to explore the potential relationship between paternal reflective functioning and several key areas of child development, including communication, gross motor, fine motor, problem-solving, and personal-social. Thirty-four father-child dyads were assessed by administering the Parental Reflective Functioning Questionnaire (PRFQ) and the Ages & Stages Questionnaire (ASQ-3). The findings indicated significant associations between the child's personal-social domain and two dimensions of paternal mentalization: pre-mentalization (low engagement in mentalization) ( $r = -.58$ ;  $p < .001$ ), and interest and curiosity ( $r = .35$ ;  $p < .05$ ). Multiple linear regression analysis also suggested that increased paternal pre-mentalization is associated with decreased child personal-social development ( $\beta = -5.56$ ;  $p < .01$ ). Due to a low participation rate of fathers (71.9%), an additional qualitative study was conducted. It aimed to enhance the quantitative findings by delving into contextual factors affecting mentalization through in-depth interviews. An Inductive Thematic Analysis identified factors promoting, inhibiting, or remaining neutral toward paternal mentalization. Both studies indicated the significant preventive potential of reflective fatherhood for families.

*Keywords: perinatal mental health; fathers; paternal reflectiveness; father-child relationship; identity.*

## Resumen

*Explorando la mentalización paterna y su impacto en el desarrollo infantil temprano: Un enfoque multimétodo.* La mentalización paterna, que se refiere a la comprensión e interpretación de los estados mentales de los hijos, influye en el desarrollo socio-individual de niños de tan solo dieciocho meses. El objetivo principal de este estudio fue explorar la relación potencial entre la mentalización paterna y varias áreas clave del desarrollo infantil, incluida la comunicación, la motricidad gruesa, la motricidad fina, la resolución de problemas y lo socio-individual. Se evaluaron 34 diadas padre-hijo mediante la administración del Cuestionario de funcionamiento reflexivo paterno (PRFQ) y el Cuestionario de edades y etapas (ASQ-3). Los hallazgos indicaron asociaciones significativas entre el dominio socio-individual del niño y dos dimensiones de la mentalización paterna: pre-mentalización (baja mentalización) ( $r = -.58$ ;  $p < .001$ ), e interés y curiosidad ( $r = .35$ ;  $p < .05$ ). El análisis de regresión lineal múltiple también sugirió que una mayor pre-mentalización paterna se asocia con un menor desarrollo socio-individual del niño ( $\beta = -5.56$ ;  $p < .01$ ). Debido a una baja tasa de participación de padres (71,9%), se realizó un estudio cualitativo adicional. Su objetivo fue profundizar en los hallazgos cuantitativos mediante los factores contextuales que afectan la mentalización a través de entrevistas en profundidad. Un Análisis Temático Inductivo identificó factores que promueven, inhiben o permanecen neutrales hacia la mentalización paterna. Ambos estudios indicaron el importante potencial preventivo de la paternidad reflexiva para las familias.

*Palabras clave: salud mental perinatal; padres; reflexividad paterna; relación padre-hijo; identidad.*

Paternal “reflective functioning” or “mentalization”, the ability to comprehend and interpret mental states such as thoughts, beliefs, desires, affections, and intentions (Fonagy et al.,

2018; Law et al., 2021; Yakeley, 2018), is crucial for nurturing a meaningful relationship with children (Cooke et al., 2017; Fonagy & Allison, 2014; Slade, 2005). It is expressed through

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curiosity about mental states, certainty of mental states, and pre-mentalization (Luyten et al., 2017a). Interest and curiosity in mental states reflect the father's intentional capacity to engage with his child's internal world. Certainty of mental states indicates the father's confidence in understanding his child's mental states. Excessive certainty can result in hypermentalization, where individuals make unjustified assumptions about others' mental states, potentially hindering effective parenting and raising the likelihood of emotional and behavioral issues in children (Bianco et al., 2021; Sharp et al., 2013). Pre-mentalization signifies a mode of thinking where the father does not engage in mentalization, resulting in distorted interpretations and, at times, malevolent attributions about the mental states and behavior of his child (Luyten et al., 2017a). Effective mentalizing requires flexibility in reflecting on others and one's self, switching between feelings and thoughts, using both internal and external information, and engaging both quick, intuitive thinking and slower, deliberate thinking (Taubner, 2020).

In general, fathers with greater reflective functioning can reflect on their own mental states and experience emotionally intense situations without being overwhelmed by their emotions or losing tune with their children (Rothschild-Yakar, 2019; Slade, 2005). This capacity helps fathers be present relationally, protecting families, especially from pregnancy onwards (Cooke et al., 2017; Gere et al., 2013; Gomà et al., 2020).

Though mother-child dynamics are well researched, studies on father-child relationships are limited. Recent research highlights the importance of investigating fathers' mentalizing abilities regarding children's outcomes (Charpentier-Mora et al., 2023). This aligns with using screening questionnaires in pediatric well-child visits, enhancing clinical judgment by providing a consistent and effective method to assess a child's development across various domains (Sheldrick et al., 2020).

Around the age of 18 months, children enter a critical developmental stage in which self-awareness and symbolic thinking emerge, facilitating language development (Abelin, 1980; Lewis & Minar, 2022; Rotheram-Fuller, 2013). This period entails recognizing emotions and using symbols such as words and images to interpret the world (Albamonte et al., 1991; Amodia-Bidakowska et al., 2020). Cognitive development is tightly linked to the development of self-reflection and social interaction abilities, which are dependent on understanding from parents (Carlson & Zelazo, 2009). Children recognize their basic needs and aim to communicate with both maternal and paternal figures for fulfillment (Abelin, 1980; Lemche & Stöckler, 2002).

Recent research indicates fathers' significant role in their child's language development, self-representation, and psychomotor skills (Olhaberry et al., 2019). Their interactive playstyle, marked by physical stimulation and affection, fosters psychomotor development (Parfitt et al., 2014).

This paper investigates paternal reflective functioning's impact on child development across communication, motor skills, problem solving, and personal-social development. Quantitatively, it examines how paternal pre-mentalization, certainty about mental states, and interest and curiosity affect child development, hypothesizing that higher pre-mentalization scores might lead to developmental delays, while higher scores in interest and curiosity as well as certainty about mental states could improve outcomes in young children. Qualita-

tively, it delves into factors influencing paternal reflective functioning in men's lives, aiming for a nuanced understanding of its effects on fathers and children. By merging quantitative and qualitative approaches, the study aims to comprehensively examine reflective fathering in early childhood development, considering variable interactions and contextual factors.

## Method

### Study design

We employed a multimethod design (Anguera et al., 2018), combining a quantitative method (objective 1) with a qualitative method (objective 2). Qualitative data were utilized to enhance and deepen the findings derived from the quantitative data (Taylor, 2005).

### Quantitative Data

We conducted a quasi-experimental cross-sectional study to explore the relationship between paternal reflective functioning and child development at 18 months of age. The study took place at Roquetes-Canteres Primary Health Care Center (PHCC), in an area with a high socioeconomic vulnerability index, in Barcelona (Spain) during 2022. This study received approval from the Research and Ethics Committee of FPCEE Blanquerna Universitat Ramon Llull (code: 2122019D) and is part of a larger research project approved by the IDIAP Jordi Gol i Gurina Research Ethics Committee (code: P715).

### Participants

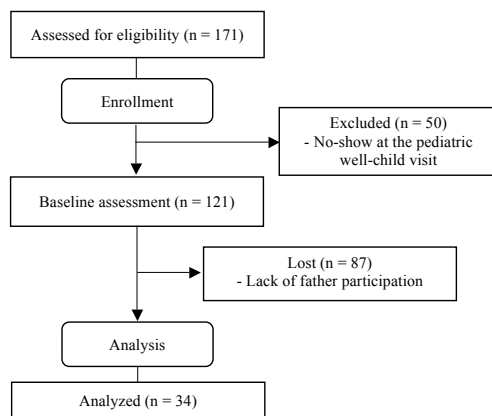
Table 1. Sociodemographic characteristics of the fathers' sample

Variable	Fathers N = 34
<b>Age</b>	
M (SD; Range)	35.72 (7.57; 23–55)
<b>Ethnicity</b>	
European, N (%)	17 (50%)
Non-European, N (%)	17 (50%)
<b>Country of origin</b>	
Spain, N (%)	17 (50%)
South America, N (%)	15 (44.12%)
Africa, N (%)	1 (2.94%)
Pakistan, N (%)	1 (2.94%)
<b>Level of education</b>	
Elementary School, N (%)	4 (11.76%)
Middle School, N (%)	12 (35.29%)
Professional training, N (%)	5 (14.71%)
High School, N (%)	9 (26.47%)
University, N (%)	4 (11.76%)

Note. N = Sample Size; M = Mean; SD = Standard Deviation.

The study involved 34 fathers (Table 1) and 34 children, indicating that fathers participated in the research in only 28.1% of the cases. We excluded families where fathers were unwilling or unable to participate (N = 87; 71.9%). Fathers averaged 35.72 years old (SD = 7.57, range 23–55), while children averaged 18.94 months (22 boys, 12 girls, SD = 1.43, range 18–23 months). Half of the

Figure 1. CONSORT Flowchart of Participants (modified for non-randomized trial design)



fathers ( $N = 17$ ) identified as non-European, with 88.23% ( $N = 15$ ) from South America, and the rest from Africa and Pakistan. Additionally, 52.94% ( $N = 18$ ) had post-compulsory education.

Non-probability sampling was adopted due to practical restrictions in recruiting participants from families with absent or unwilling fathers, limiting the overall scope (Figure 1). While 171 families were assessed for eligibility, only 34 families were ultimately included in the study. These families comprised Spanish-speaking fathers with 18-month-old children who attended the pediatric well-child visit at the PHCC.

## Measures

The Parental Reflective Functioning Questionnaire (PRFQ) assesses parental mentalization regarding children aged 0 to 5 years (Luyten et al., 2017a). It comprises 18 statements representing three dimensions (Gordo et al., 2020a; Luyten et al., 2017b), with responses on a Likert scale from 1 to 7. Optimal scores involve low pre-mentalization and high certainty, interest and curiosity about mental states (Luyten et al., 2017b). Reliability indices for the Spanish version were PM:  $\alpha = .60$ ,  $\omega = .66$ ; CM:  $\alpha = .77$ ,  $\omega = .78$ ; IC:  $\alpha = .66$ ,  $\omega = .60$  (Gordo et al., 2020a). In this study, internal consistency was PM:  $\alpha = .60$ ,  $\omega = .63$ ; CM:  $\alpha = .57$ ,  $\omega = .62$ ; IC:  $\alpha = .75$ ,  $\omega = .78$ . The PRFQ was chosen as a more efficient alternative to other assessment instruments in primary care settings (Golanó-Fornells et al., 2018; Aber et al., 1985; Slade et al., 2007; George et al., 1985; Zeanah et al., 1986).

The Ages & Stages Questionnaire in Spanish (ASQ-3) covers children aged 1 to 66 months with 21 age-specific questionnaires (Pomés et al., 2016). Each includes six scored items in five developmental areas (Squires & Bricker, 2009), with scores ranging from 0 to 60 and defined cut-off points for each age. Psychometric evaluation of the Spanish ASQ-3 showed moderate to strong internal consistency (Pomés et al., 2016). In this study, reliability indexes ranged from  $\alpha = .61$  to  $.86$ , and  $\omega = .67$  to  $.90$ . Widely used in pediatrics and primary care, ASQ-3 is supported by ample evidence of its efficacy (Sheldrick et al., 2020).

## Procedure and Data Collection

PHCC regularly schedules pediatric well-child visits for 18-month-olds, which include the option of receiving a psychological assessment as part of a research project. During this

visit, the examiner explores all aspects of the Ages & Stages Questionnaire with both parents, if possible, and administers the Parental Reflective Functioning Questionnaire to the father. Assessment results are later shared with families in collaboration with the pediatric unit.

## Data Analysis

Data were analyzed with IBM SPSS Statistics 25 software. Significant findings were evaluated using G\*Power to determine effect magnitude and contrast intensity. The goal was to determine the predictive capacity of independent variables (IVs) (PRFQ questionnaire) on dependent variables (DVs) (ASQ-3 questionnaire). This included correlational and predictive analysis using Multiple Linear Regression, evaluating correlations (by Student's *t*-test), model validity (via ANOVA test), IV effects on DVs (via Student's *t*-test), and deriving predicted scores based on explanatory factors. For the validation of the model, the following conditions were evaluated: linearity, normality (Shapiro-Wilks test for  $N < 50$ ), variance homogeneity (Levene's *F* test), error independence (Durbin-Watson statistic 1.5–2.5), and low multicollinearity (tolerance  $> 0.4$  or  $FIV < 5$ ) (Baños et al., 2019).

## Qualitative Data

Qualitative data were studied following the model of Braun & Clarke (2006) to explore the factors that promote paternal reflective functioning in early child development.

## Interviewed Participants

An intentional sample of four senior health professionals and researchers, varying in age, sex, profession (including a psychiatrist, a pediatric nurse, a pediatrician, and a full professor), years of experience (ranging from 10 to over 40 years, with three having over 40 years), and areas of specialization (such as mental health in prematurity, pediatric primary care, and couple and family research), were recruited. Additionally, we recruited two parents from separate households, one reflective father and a mother who now has a second child with an involved partner, after having her first child with an uninvolved husband. These participants were not included in the quantitative sample and each had children around 18 months old.

## Data Collection

Qualitative data were collected through in-depth interviews. Interviews were conducted face-to-face or online via video calls and were recorded on video and audio.

## Data Analysis

The interviews were transcribed verbatim and analyzed using inductive thematic analysis (Braun & Clarke, 2006). During and after the analysis, the 15-item Criteria for Good Thematic Analysis Checklist was conducted (Braun & Clarke, 2006). Theoretical saturation was achieved when dense categories emerged and no new codes could be derived. We systematically categorized codes into themes by segmenting interviews into textual units

Table 2. Scores from Ages and Stages Questionnaire (ASQ-3 Spanish)

Variable	Cutoff scores (near-below)	M	SD
Communication	30-15	39.41	14.02
Gross motor skills	45-35	56.03	6.13
Fine motor skills	40-30	53.68	8.38
Problem solving	35-25	48.24	11.99
Personal-social	35-25	52.79	11.36

Note. M = Mean; SD = Standard Deviation.

Table 3. Scores from Parental Reflective Functioning Questionnaire (PRFQ)

Variable	M	SD
Pre-mentalization	2.18	0.94
Certainty of Mental States	4.60	0.73
Interest and Curiosity	4.88	1.05

Note. M = Mean; SD = Standard Deviation.

and generating codes. These codes were then organized into three dimensions using a bottom-up approach, relying on the interview material rather than predefined hypotheses.

Table 4. Associations between Paternal Reflective Functioning and Child Development

Variable	Pre-mentalization	Certainty of Mental States	Interest and Curiosity
Communication	-.31	-.23	.08
Gross motor skills	-.32	-.13	.003
Fine motor skills	-.32	-.08	.07
Problem solving	-.2	-.08	.07
Personal-social	-.58***	-.13	.35*

\*\*\*p < .001, \*p < .05

Results

Table 5. Summary of the Regression Models

Model	R	R2	R2 adjusted	Standard Error	Durbin-Watson
1	.47	.22	.05	13.66	1.53
2	.39	.15	-.04	6.24	2.38
3	.47	.22	.05	8.17	1.96
4	.34	.11	-.08	12.48	1.79
5	.65	.43	.30	9.49	2.23

Note. R = Association Coefficient; Mean; R2 = Coefficient of Determination; R2 adjusted = Adjusted Coefficient of Determination.

Quantitative Analysis

Table 2 shows that scores in all five developmental assessment areas are higher than the cutoff scores (Squires & Bricker, 2009), indicating no significant delays.

Table 3 displays the average scores of the sample of 34 fathers distributed among the three dimensions of parental reflective functioning. The low average score in pre-mentalization together with intermediate scores, but with an upward trend in certainty of mental states and interest and curiosity, indicated a good average score in parental reflective functioning. We observed scores in the sample that indicated the

absence of hypermentalization.

Table 4 demonstrates a significant association between the father's pre-mentalization score ( $r = -.58; p < .001$ ), the father's interest and curiosity ( $r = .35; p < .05$ ) and the child's personal-social domain.

Table 5 displays the summary of the five regression models examined.

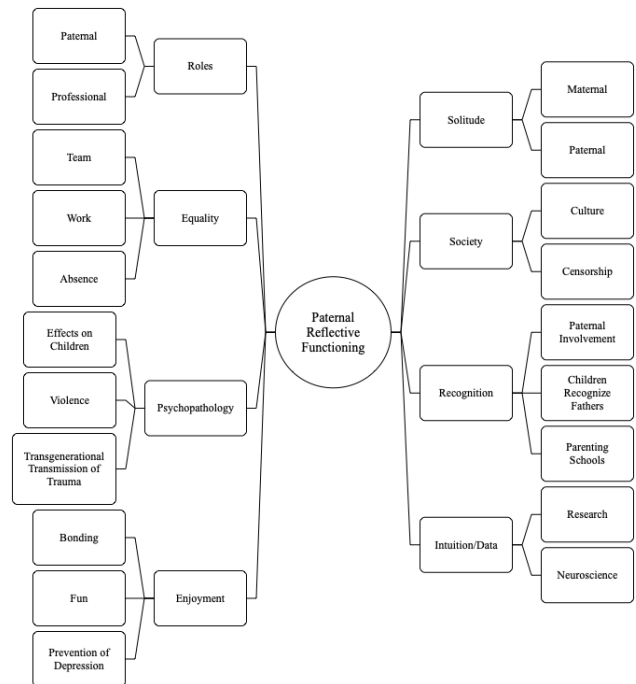
Linearity was found between the predictor and criterion

Table 7. Analysis of Regression Models using ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	1447.58	6	241.26	1.29	.29
	Residual	5040.65	27	186.69		
	Total	6488.23	33			
2	Regression	187.12	6	31.19	.8	.58
	Residual	1051.85	27	38.96		
	Total	1238.97	33			
3	Regression	511.86	6	85.31	1.28	.3
	Residual	1803.58	27	66.8		
	Total	2315.44	33			
4	Regression	537.85	6	89.64	.57	.75
	Residual	4206.26	27	155.8		
	Total	4744.12	33			
5	Regression	1829.45	6	304.91	3.39	.01
	Residual	2430.11	27	90		
	Total	4259.56	33			

Note. df = Degrees of Freedom; F = F-Statistic.

Figure 2. Mind Map Depicting the initial Thematic Analysis of in-depth Interviews



variables in Model 1, although the scatter plot trends were rather ambiguous. Normality, variance homogeneity, error independence, and minimal multicollinearity enabled the regression analysis to proceed. Models 2-5 showed similar linearity, as well as some linear trends in scatter plots. Howe-

Table 6. Multiple Linear Regression Coefficients

Model	Unstandardized Coefficients		Standard Coeff. Beta	t	Sig.	95% Confidence Interval for $\beta$		Correlations			Collinearity Statistics		
	$\beta$	Dev. Error				Lower	Upper	Zero order	Partial	Part	Tolerance	VIF	
1	(Constant)	86.3	23.43		3.68	.00	38.24	134.4					
	PM	-4.47	2.91	-.299	-1.53	.136	-10.449	1.504	-.305	-.283	-.260	.757	1.32
	CM	-4.215	3.954	-.218	-1.066	.296	-12.328	3.897	-.227	-.201	-.181	.687	1.45
	IC	1.093	2.708	.082	.404	.690	-4.463	6.649	.082	.077	.068	.703	1.42
2	(Constant)	60.72	10.70		5.672	.000	38.754	82.68					
	PM	-1.660	1.331	-.254	-1.248	.223	-4.390	1.070	-.323	-.233	-.221	.757	1.3
	CM	-.975	1.806	-.116	-.540	.594	-4.681	2.730	-.130	-.103	-.096	.687	1.4
	IC	-.098	1.237	-.017	-.079	.938	-2.635	2.440	.003	-.015	-.014	.703	1.4
3	(Constant)	64.61	14.01		4.610	.000	35.857	93.38					
	PM	-2.673	1.742	-.299	-1.534	.137	-6.248	.902	-.317	-.283	-.261	.757	1.32
	CM	-1.696	2.365	-.147	-.717	.480	-6.548	3.157	-.081	-.137	-.122	.687	1.45
	IC	-.233	1.620	-.029	-.144	.887	-3.556	3.090	.065	-.028	-.024	.703	1.42
4	(Constant)	39.83	21.40		1.861	.074	-4.089	83.76					
	PM	-2.044	2.661	-.160	-.768	.449	-7.503	3.416	-.196	-.146	-.139	.757	1.32
	CM	-1.360	3.612	-.082	-.377	.709	-8.771	6.051	-.081	-.072	-.068	.687	1.45
	IC	.942	2.474	.082	.381	.706	-4.133	6.018	.065	.073	.069	.703	1.42
5	(Constant)	54.67	16.27		3.360	.002	21.283	88.05					
	PM	-5.556	2.022	-.459	-2.747	.011	-9.706	-1.406	-.583	-.467	-.399	.757	1.32
	CM	-2.661	2.745	-.170	-.969	.341	-8.294	2.971	-.132	-.183	-.141	.687	1.45
	IC	3.804	1.880	.351	2.023	.053	-.054	7.662	.349	.363	.294	.703	1.42

Note.  $\beta$  = Beta Coefficient;  $t$  = T-Statistic; VIF = Variance Inflation Factor; PM = Pre-Mentalization; CM = Certainty of Mental States; IC = Interest and Curiosity.

Table 8. Thematic Analysis

<b>Factors that promote paternal reflective functioning</b>	
<ul style="list-style-type: none"> <li>. Be present from the first moment</li> <li>. Be the first to make skin-to-skin contact with the premature child</li> <li>. Do not usurp space from the mother</li> <li>. Supporting the child through the mother</li> <li>. Cut umbilical cords and give autonomy</li> <li>. Provide different rhythms and forms of stimulation</li> <li>. From the role of friend to the role of father</li> <li>. Monitor and observe progress</li> <li>. Reassure and encourage the couple</li> <li>. Welcome and include the fathering role</li> <li>. That professionals act as parents of parents</li> <li>. Work to elaborate grieving and guilt</li> <li>. Have a space for attentive observation and discovery of the children</li> <li>. Helping the couple function better</li> <li>. Contain each other, mother and father</li> <li>. Share parental mental space</li> <li>. The man's ability and desire to team up with the woman</li> <li>. Go to care visits together</li> <li>. Differentiating the roles in the couple</li> <li>. Facilitate variety of stimuli</li> <li>. When the woman works, the man takes on other roles, such as taking care of the household</li> <li>. Be aware that good paternal reflective functioning decreases child psychopathology</li> <li>. Punctual interventions can slow the transgenerational transmission of psychopathology</li> <li>. Getting implicated as a father involves having more open, sociable and calm children</li> <li>. That the father shows security and openness to other people, helps his children to be less fearful</li> <li>. That the father does not get anxious, helps his partner to be calmer</li> <li>. Paternal involvement as quality time and not as an obligation</li> </ul>	<ul style="list-style-type: none"> <li>. Have the child recognize Dad's voice as a familiar voice</li> <li>. Recognize that it is very important for fathers to discover their child</li> <li>. Meet other parents who speak the same language</li> <li>. Bonding from love and freedom</li> <li>. Enjoy from the paternal sensitivity</li> <li>. Have fun playing</li> <li>. Feel safe from the smile of the children</li> <li>. When children feel safe and important it is more difficult for the father to get depressed</li> </ul> <p style="text-align: center;"><b>Factors that do not promote paternal reflective functioning</b></p> <ul style="list-style-type: none"> <li>. When you both can't quit your job</li> <li>. The absence of both from healthcare visits</li> <li>. The absence of both from school tutoring</li> <li>. Not knowing what to do and getting stuck</li> <li>. Not asking for help</li> <li>. Feel the need to convey security and self-sufficiency</li> <li>. That the man feels alone when he is surrounded by his wife together with female professionals</li> <li>. That the woman boycotts the paternal presence</li> <li>. Feeling displaced by the child's predilection for the female voice</li> <li>. The predominance of paternal absence in Latin American families</li> <li>. Paternal elopement in the face of prematurity</li> <li>. That the woman sacrifices herself and always carries the weight with everything in the family</li> <li>. That women are given more facilities at work to take care of children</li> <li>. The obstacles a man finds to stop working</li> <li>. Sexism in society</li> <li>. Censorship in society</li> <li>. That fathers feel that society leaves them behind in the background irrelevant</li> <li>. That professionals focus on children and not on the parents' own psychopathology</li> <li>. That the work schedules do not fit with the schedules of the children</li> </ul>



- . Repeat violence-based functioning
  - . Relativize the magnitude of violence
  - . The unresolved problems of childhood itself and their consequences
  - . The lack of a paternal referent makes it difficult to know how to be a father
- Neutral factors**
- . Change is progressive
  - . Fathers must dare to be fathers
  - . Being able to support intuitions with scientific data gives a lot of clarity
  - . Neuroscience reinforces results with biological data

ver, normality was not obtained in these models, but variance homogeneity, error independence, and minimal multicollinearity allowed the regression analysis to proceed.

Table 6 represents the results from the multiple linear regression analysis. Paternal pre-mentalization variable was shown to be a significant predictor of children's personal-social development (Model 5), with a 5.56-point decline in this domain's development for every one-point increase in pre-mentalization ( $\beta = -5.56$ ;  $p < .01$ ). The effect size was substantial ( $\rho = .65$ ), and the test power was highly adequate ( $1 - \beta = 0.9995$ ) (Castro & Martini, 2014). This was the only regression model that could be validated, explaining up to 42.9% of the variability in respondents' assessments of their children's personal-social development (Table 7).

### Qualitative Analysis

In the initial thematic analysis, numerous codes were identified and grouped into 8 themes and 20 categories (Figure 2). Paternal involvement is vital, with the reflective father finding joy in creative activities with his children: "I love inventing new things with them." Collaborative parenting, highlighted by a full professor, relies on mutual support: "Capable fathers lead to more collaborative couples." A mother emphasized her partner's role in calming her fears during pregnancy, underlining marital support: "He comforted me when I was worried..." Societal expectations affect parental equality; a nurse notes fathers' hesitation due to cultural norms: "Some see these difficulties as the mother's responsibility." A pediatrician stressed fathers' involvement for children's well-being: "Involved fathers lead to more sociable and calm children." The mother valued her husband's contribution to her peace of mind: "He has been really helpful in giving me peace." The father's focus on joyful interaction with his children highlights bonding activities' importance: "I enjoy playing with them." Expert opinions underscore fathers' role in fostering child autonomy: "Fathers promote independence for a healthy upbringing."

To further enrich our understanding, all resulting codes were grouped into three broad themes (see Table 8): 1) Factors that promote paternal reflective functioning, 2) Factors that do not promote paternal reflective functioning, 3) Factors that are neutral for the promotion of paternal reflective functioning.

### Discussion

This study analyzed how paternal pre-mentalization (low engagement in mentalization) relates to child development, exploring father-child interaction dynamics. The findings shown in Table 4 demonstrated a strong inverse relationship

between the father's pre-mentalization score and the child's personal-social domain ( $r = -.58$ ;  $p < .001$ ), suggesting an association between higher levels of paternal pre-mentalization and lower personal-social outcomes in children. Additionally, there is a positive relationship between the paternal interest and curiosity and the child's personal-social domain ( $r = .35$ ;  $p < .05$ ), suggesting that reflective fathers contribute to children's personal-social development. Table 5 displays the results of the multiple linear regression analysis that provides additional evidence for this association. The coefficient ( $\beta = -5.56$ ;  $p < .01$ ) emphasizes the negative impact of paternal pre-mentalization on the personal-social development of children. These results enhance our knowledge of the complex interactions between the mental processes of fathers and the outcomes of their children. Notably, paternal pre-mentalization, marked by a disengagement from mentalizing processes and a propensity for distorted interpretations of the child's mental states and behaviors (Luyten et al., 2017a), emerges as a significant variable associated to child personal-social development. This finding is consistent with well-established theoretical frameworks, such as attachment theory, which emphasize the fundamental role of paternal sensitivity and attunement in nurturing secure attachments and fostering positive developmental trajectories in children (Deneault et al., 2021; Zeegers et al., 2017).

The quantitative findings were aligned with the qualitative findings, which provided several factors that promote reflective functioning in fathers. It is crucial that men are present early on, supporting their spouses and allowing for progressive separation from the mother-child bond, which fosters autonomy and openness in young children. Paternal engagement, often known as quality time, entails careful observation, affection, freedom, and sensitivity, which strengthens the father-child bond. This journey from friend to father allows for a variety of stimulus, bringing the entire family together in joy. Within this triad, parents assist one another, making a strong team dedicated to family development. Integrating quantitative and qualitative data sheds light on the complex function of paternal mentalization and its relationship with child development.

Previous research has related paternal reflective functioning to better emotional regulation and perceived competency in fathers, as well as greater socioemotional adjustment in young children (Álvarez et al., 2022; Gordo et al., 2022; Gordo et al., 2020b). Balancing paternal presence and absence while properly managing the child's demands helps the child develop an integrated self-concept and interpersonal skills (Carlson and Zelazo, 2009; von Klitzing, 2019). Furthermore, strong reflective functioning in fathers reduces psychopathology in children (Slade, 2005; Meltzer & Harris, 2013; Gordo et al., 2020b) and promotes cognitive development (Sethna et al., 2017).

However, only 28.1% of fathers participated in this study, highlighting the challenge of inclusive family interventions. Flexible scheduling and actively seeking father participation are advised strategies (Parent et al., 2017; Davison et al., 2017). Researchers should actively engage fathers, considering their distinct needs (Tully et al., 2018). Training clinicians to successfully engage fathers and promoting their participation in family visits and research could prove beneficial.

### Limitations

While our study provides useful insights, it is necessary to recognize its limitations. Working with a low-income population may have resulted in reduced paternal engagement. Furthermore, non-probability sampling may have induced bias, and the small sample size may have reduced result dependability, limiting generalizability. Furthermore, the cross-sectional nature of our study prevents us from establishing causal relationships between paternal mentalization and child development. Longitudinal studies are needed to have a better understanding of father-child relationships over time. This study could be defined as a pilot due to its unique center and demographic features, which resulted in omitting various factors, including the effect of conjugal relationships on infant development. Capturing the complex interaction of socio-cultural elements and father participation in research presents difficulties. Additional research on contextual elements is required for a better understanding of inclusive family interventions.

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## Conflict of interest

The authors of this study declare that there is no conflict of interest.

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