Does Prematurity Modulate the Link Between Maternal Mind-Mindedness and Externalizing Behavior? Exploring forms of Mind-Mindedness

Adi Dolinsky[1], Shaked Gabay[1], Talia Schwimer[1], Naama Atzaba-Poria[1,2], Tal Yatziv[1-3]

[1] Department of Psychology and [2] Duet Center, Ben-Gurion University of the Negev

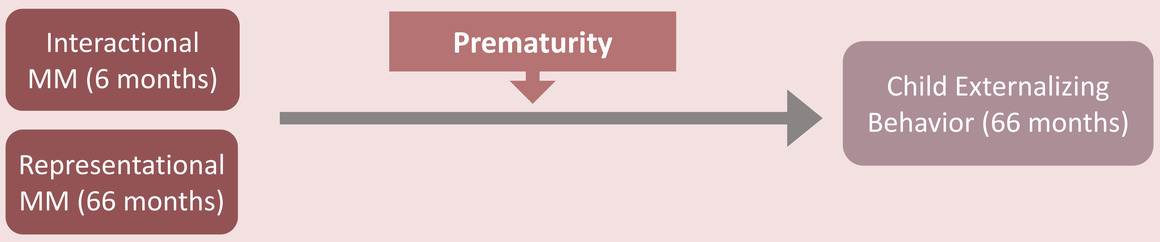
[3] Child Study Center, Yale School of Medicine, Yale University

Introduction

- **Parental mentalization** is the parent's psychological capacity to perceive their child as an independent psychological agent with an inner world and reflect on their child's mental states, such as thoughts and feelings [1].
- A widely used measure of this capacity is **Mind-Mindedness (MM)**, which focuses on the parent's spontaneous tendency to mentalize [2,3]. MM can be measured in two main ways:
  - **Interactional (Online) MM**: The parent's capacity to spontaneously interpret the infant's mental states during real-time interaction, typically measured in interactions with pre-verbal infants [3,4].
  - **Representational (Offline) MM**: The parent's spontaneous tendency to describe their child in terms of mental states, typically among parents of preschool children [3,5].
- Higher parental mentalization has been associated with fewer child **externalizing problems** [6-8].
- According to the **Differential Susceptibility** Theory, perinatal adversities such as **preterm birth** and low birth weight may function as markers of increased sensitivity to environmental influences, intensifying the impact of both negative and supportive caregiving contexts [9,10].
- While MM is linked to externalizing behaviors, it remains unclear if prematurity increases the child's susceptibility to parental MM effects on adjustment and behavior.

Aims & Hypotheses

- The aim of the present study was to examine whether prematurity amplifies the associations between maternal MM (interactional in infancy and representational in preschool) and child externalizing behavior, such that preterm children would be more sensitive to variations in maternal MM.



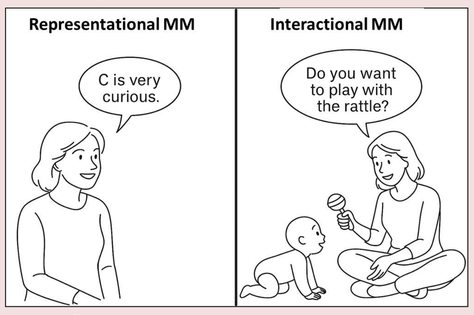
Method

Sample

99 families recruited to the longitudinal Preterm Early Development Study and participated in both the 6- and 66-months assessments: 59 families of preterm infants (28–33 weeks of gestation; age corrected for prematurity) and 40 families of full-term infants (>37 weeks of gestation).

Measures

- **Interactional MM**. Assessed at 6 months based on video-recorded 7-minute mother-infant free-play interactions, coded using the Interactional MM Coding System [3,4]. Maternal speech was transcribed, and mind-related comments (e.g., references to the infant's thoughts, feelings, desires) were identified and classified as appropriate if they plausibly matched the infant's mental state. Appropriate MM was calculated as the proportion of appropriate comments out of total utterances (*ICC* = .96; [4]).



- **Representational MM**. Assessed at 66 months using the Representational MM Coding Manual [3]. Mothers were asked to describe their child for one minute. Mental-state description (e.g., cognitions, emotions, desires) were identified and counted, and their proportion out of the total number of descriptions was used as the Representational MM score (*ICC* = .96; [5]).
- **Child Externalizing Behavior**. At 66 months, mothers completed the externalizing subscale of the Strengths and Difficulties Questionnaire (SDQ [11]), which includes items assessing hyperactivity and conduct problems, rated on a 3-point Likert scale. Higher scores indicate more externalizing difficulties (α = .78) [5].
- **Maternal socioeconomic status (SES).** Included as a covariate in all analyses. SES was indexed using the Israeli Socio-Economic Index [12].
- **Children's self-perception** was also assessed using the Cognitive Perception Scale (CPS [13]); however, this measure was excluded from the analyses due to a ceiling effect.

Results

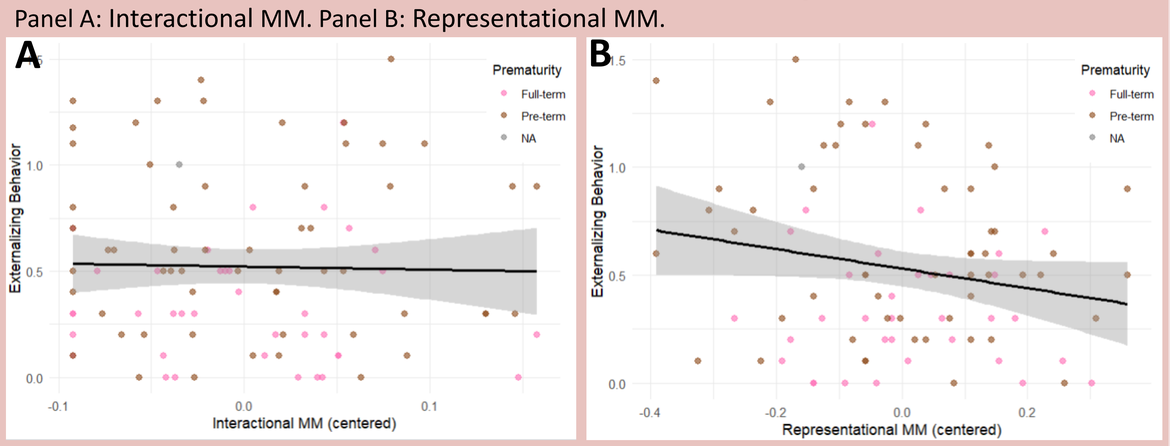
- A positive correlation was found between maternal interactional and representational MM, $r(95) = .32$, $p = .001$

Table 1.
Hierarchical Regression Analyses Predicting Externalizing Behavior (SDQ) from Maternal Mind Mindedness (MM), Prematurity, and Their Interaction.

	SDQ Externalizing					
	Interactional MM (6 months)			Representational MM (66 months)		
Predictors	**β**	**R^2**	**F**	**β**	**R^2**	**F**
Step 1		.14	4.59**		.17	5.71 **
SES	-.02			-.00		
Prematurity	.36 ***			.37***		
Interactional MM	-.01					
Representational MM				-.17		
Step 2		.14	3.40*		.17	4.40**
SES	-.02			-.00		
Prematurity	.36 ***			.37 ***		
Interactional MM	.01					
Representational MM				-.15		
Interactional MM X Prematurity	.00					
Representational MM X Prematurity				-.08		

Note. Prematurity dummy coding: full-term = 0; preterm = 1. $p < .07$. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

Figure 2.
Associations Between Maternal Mind-Mindedness and Child Externalizing Behavior.
Panel A: Interactional MM. Panel B: Representational MM.



Note. Dots represent individual data points, and their colors indicate group belonging (full-term in pink and preterm in brown). Both associations are non-significant.

Discussion

- Contrary to prior studies, no **significant interaction effects emerged**. However, **a main effect of prematurity** was found. Mothers of preterm children reported more externalizing problems. This aligns with previous findings suggesting that preterm birth may impair self-regulation, increasing the risk for externalizing behaviors.
- A potential explanation relates to the characteristics of the data. The distribution of MM, particularly Interactional MM, was negatively skewed and limited in range, which may have reduced the sensitivity of the models to detect associations. In addition, externalizing behavior was positively skewed, with most children scoring low, suggesting a possible floor effect that restricted variance in the outcome.
- Previous research suggests that the protective effect of maternal MM on children's behavioral difficulties is more likely to emerge under conditions of low socio-economic status [8]. In our study, SES was measured but not analyzed as a moderator, and most participants came from relatively high SES backgrounds, and It is possible that if the sample had included more socioeconomic diversity, or if we had tested moderation by SES, effects might have been observed.

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For further information: ✉ schwimet@post.bgu.ac.il , adidol@post.bgu.ac.il , shakga@post.bgu.ac.il