
DEEP DIVE INTO THE CONSTRUCTIVE MIND: RELATING INTERPRETIVE DIVERSITY UNDERSTANDING TO ANXIETY SYMPTOMS AND PARENTAL PRACTICES IN MIDDLE CHILDHOOD

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Abstract

The relation between the understanding of the mind as being constructive, anxiety, and parental factors is not fully elucidated. *Interpretive diversity understanding* represents an understanding that people can have a different interpretation of the same situation due to differences in beliefs, attitudes, and knowledge. We aim to bring together two approaches to this concept: the *interpretive theory of mind (ToMi)*, and the *constructivist theory of mind (ToMc)* and relate them to *anxiety* symptoms and *parental practices* during *middle childhood* (8-12 years). In two studies, we used a restricted view paradigm to assess ToMi, a questionnaire to assess ToMc (the Constructivist Theory of Mind Interview, short written version in Study 1, and extended interview in Study 2) and parental and child reports of parental practices, as well as children's anxiety symptoms. Results revealed that the two interpretive diversity understanding tasks were positively associated (Study 2). Overall, warm parental practices were positively associated with ToM tasks and a significant predictor for the ToMc interview answers. On the other hand, parental rejection and overprotection were negatively associated with performance on the ToMi task, with the ToMc score and positively with anxiety symptoms. Understanding the relationship between ToM, anxiety, and parental practices is essential for preventing early social and emotional difficulties during middle childhood.

Keywords: interpretive diversity understanding, interpretive theory of mind, constructivist theory of mind, anxiety, parental practices, middle childhood.

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Deep Dive into the Constructive Mind: Relating Interpretive Diversity Understanding to Anxiety Symptoms and Parental Practices in Middle Childhood

More than 30 years of research have revealed that early on, children come to an understanding that people have various mental states: beliefs, desires, intentions, which drive their behavior, this insight into the minds of others being termed Theory of Mind (ToM; Wellman et al., 2001). The 1st and 2nd order ToM emerge at around 3-4, and 7 years of age respectively, when children become aware that another person can form a false belief about reality or somebody else's belief, and act upon it (e.g., if the mother mistakenly thinks the ball is in the yard, she will look for it there; Wellman et al., 2001).

When it comes to middle childhood and adolescence, 1st and 2nd order ToM have been deemed insufficient to fully account for children's understanding of the mind (Lalonde & Chandler, 2002). These two forms of ToM encompass how children understand various beliefs in the context of different existing knowledge (e.g., the mother knows the ball is in another yard, the child does not; hence their beliefs are different). However, this does not reflect the complex understanding of the mind as being in and of itself constructive (Lalonde & Chandler, 2002; Miller, 2000). Pillow (1995) proposed the *active-passive hypothesis* stating that initially, children consider knowledge as being passively constructed, a result of perceptual information being received, without interacting with the other mental states or cognitive process of the individual. This approach changes into an active one over the years, as children become more capable of appreciating the importance of psychological processes in mediating the received information (Pillow, 1995). At around 7-8 years of age, they realize that people exposed to the same situation can construct diverse interpretations due to their previous beliefs, attitudes, and knowledge (Carpendale & Chandler, 1996; Pillow & Mash, 1998). This understanding of interpretive diversity has been termed *constructive* or *interpretive ToM (ToMi)*; Carpendale & Chandler, 1996).

To measure this ability, the *restricted pictures paradigm* was developed, in which ambiguous pictures and two puppets looking at them are introduced to the child. Researchers have observed that children younger than 7 have difficulties understanding that more than one interpretation can be assigned to a picture by the two puppets (Lalonde & Chandler, 2002). Subsequent studies investigated if children's own past experience with the ambiguous picture would influence their reasoning about another's interpretation. Firstly, children presented with an ambiguous covert picture were asked to infer what the complete picture could be so that their expectations (e.g., to see a shark) were not met when the image was uncovered (revealing a witch hat). Despite this experience of an expectation-reality gap, they could not reason that another person would form a similar expectation to their initial one in the same situation (Lalonde & Chandler, 2002; Ross et al., 2005).

Moreover, in one study, children were introduced to a puppet that was serially exposed to two identical covert pictures that, once uncovered, revealed two similar full images. When they were asked what the puppet would expect of a third covert picture, similar to the first two, the younger ones could not use the past experience in inferring the puppet's interpretation, failing to understand *biased interpretation* (Pillow & Henrichon, 1996).

Approaching another dimension of interpretive diversity understanding, Schwanenflugel and colleagues (1996, p. 228) defined it as an understanding that “knowledge can be more or less certain, that feelings of uncertainty are important in evaluating information, that things can have multiple meanings, and that these meanings can arise solely from differences in interpretive mental processes”. They describe a developmental change around the age of 11 years favoring mental processes compared to external aspects when the child evaluates how a person is making sense of a situation. This developmental change allows the child to understand that two or more people can have different representations of the same information (Weimer et al., 2017), an ability termed *constructivist ToM (ToMc)*. The authors developed a distinct measure of the understanding of interpretive diversity, *The Constructivist Theory of Mind Interview* questionnaire, in both short and long versions (Weimer et al., 2017), adequate for middle childhood and adolescence. The potential convergence between these two dimensions of understanding interpretive diversity (ToMi and ToMc) remains unexplored.

ToM deficits have been long associated with various forms of psychopathologies, such as anxiety and depression disorders (Plana et al., 2014), autism (Tahazadeh et al., 2020), as well as body dysmorphic disorders (Buhlmann et al., 2015) and schizophrenia (Andrzejewska et al., 2017), in children (Hazel & McNally, 2014), as well as adults (Reid, 2017). However, much less is known about ToM deficits in anxiety during middle childhood (Authors, 2021; Tafreshi & Rachine, 2016). We will discuss next how emotional difficulties (anxiety) shape ToM understanding in general and extract preliminary evidence regarding their interplay with interpretive diversity understanding.

ToM and Anxiety

Researchers have documented either a deficit or a hyperactive ToM in people suffering from clinical or subclinical anxiety (Plana et al., 2014; Tibi-Elhanany & Shamay-Tsoory, 2011). More specifically, hyperactive ToM or overmentalization refers to the tendency to attribute “more intense emotions and greater meaning to what the characters in the movie were thinking, feeling and intending” (Hazel & McNally, 2014, p. 530). For example, participants with social anxiety disorder tend to read too much into other people's feelings, incorrectly attributing beliefs, and intentions to others, which is detrimental to their understanding of the

social situation (Hazel & McNally, 2014; Washburn et al., 2016). On the other hand, there is also significant evidence of poor performance on ToM tasks for those suffering from anxiety disorders (Reid, 2017).

The preliminary findings in children illustrate an anxiety-related ToM deficit. In one study, after anxious preschoolers were regularly excluded from a computerized game, they attended less to other's mental states compared to non-anxious preschoolers (White et al., 2016). Primary school children with social anxiety had difficulties in understanding the links between emotions, intentions, and beliefs in social situations, and were rated as having lower social skills that require insight into others' mental states (Banerjee & Henderson, 2001). Social anxiety in school predicted mentalizing deficits in adolescence (Ballespí et al., 2018). Others, however, found that both low and high levels of mind reading are related to social anxiety symptoms as a function of the individual's clinical anxiety level. More specifically, low mindreading was related to clinical levels of social anxiety, while high mindreading was related to subclinical levels of social anxiety through blushing (Nikolić et al., 2019). To summarize, the literature indicates that the relationship between ToM and anxiety is far more complex than the straightforward deficit ToM hypothesis (Nikolić et al., 2019). However, to the best of our knowledge, only one study looked at ToMi in relation to anxiety. Results have shown that in a group of 9- to 11-years old children, as their anxiety symptoms and number of threatening interpretations of an ambiguous situation increased, their ability to understand that two people can form two different interpretations on the same ambiguous action was reduced (Moldovan & Visu-Petra, 2022).

ToM and Parental Practices

As Weimer and colleagues (2021) have discussed, in order to fully understand the developmental path of ToM through middle childhood, we need to investigate the interrelations between ToM and contextual factors such as parental practices. Parental rearing practices refer to specific behaviors employed by caregivers to socialize their children (Darling & Steinberg, 1993) and are linked to numerous outcomes throughout development, such as socioemotional adjustment (Rapee, 1997). The quality of the parent-child emotional bond before adolescence has a long-lasting impact on mental health (Perris et al., 1980), with the absence of a nurturing relationship being associated with internalizing problems (e.g., depression, anxiety disorders) later in life (Perris et al., 1986). Other studies have found negative associations between ToM performance and parental authoritarianism (emphasizing obedience and strict adherence to rules) and a positive association between ToM and authoritative parenting (emphasizing discipline and warmth; O'Reilly & Peterson, 2014).

To our knowledge, only one study investigated interpretive diversity in relation to parental practices rather than parenting styles. Tafreshi and Racine (2016) have found that the frequency of mother-child talks, and mother's conceptions of

knowledge were positively correlated with children's performance on the Dooddle Task (ToMi), reinforcing the idea that rich conversations about psychological processes are important for children's understanding of the mind.

Parental Practices and Anxiety

The current study focused only on three parental practices – Emotional Warmth, Rejection, and Overprotection (Aluja et al., 2006; Arrindell et al., 1999; Gerlsma et al., 1991) which can impact both the development of ToM and of the internalizing symptoms that a child might manifest. *Emotional warmth* includes direct indicators of parents' care, affection, and acceptance towards their children (Rohner, 2004). Maternal warmth, for example, is a relevant predictor for children's social and emotional development (Davidov & Grusec, 2006). Moreover, warm and nurturing parental practices are negatively associated with internalizing symptoms (Rose et al., 2018). Lack of warmth, negative affect behavior, and *rejection*, on the other hand, have been associated with an increase in internalizing and externalizing symptoms (Conger et al., 2002; Grüner et al., 1999). So far, most of the parent-child research has focused on the role of mothers in relation to their children and minimalized the contribution of the fathers in this dynamic (Cabrera et al., 2000; Rinaldi & Howe, 2021). However, one study suggested that maternal rejection was linked to higher levels of depression and aggression in girls. In contrast, paternal rejection was a negative predictor of depression and aggression in boys (Roelofs et al., 2006). *Parental overprotection* is described as the tendency towards controlling every aspect of a child's life and discouraging attempts of autonomy. Overprotective parents put pressure on their children to behave, "think or feel in desired ways" (Van Der Bruggen et al., 2008, p. 1257), which might increase the risk for developing both internalizing and externalizing problems (Muris et al., 2003).

Current Studies

The main aim of our two studies was to broaden the limited knowledge on the understanding of interpretive diversity by bringing together, for the first time in literature, two approaches to it: the understanding of the multiple interpretations on ambiguity (ToMi; Lalonde & Chandler, 2002) and the understanding of cognitive activities as part of interpretation construction (ToMc; Weimer et al., 2017). We focused on middle childhood and early adolescence, as ToMi and ToMc understanding is thought to emerge during this developmental stage (Lalonde & Chandler, 2002; Weimer et al., 2017). Our current studies significantly contribute to the existing literature by expanding the developmental window from primary school (Lalonde & Chandler, 2002) to middle childhood (8 to 12 years old). Another extension was to use – besides the Dooddle Task (designed to measure ToMi) – another measure of interpretive diversity, the Constructivist Theory of Mind

Interview (in both a short and an extended version). Considering the fact that this ability does not develop in a socioemotional vacuum, we were also interested in exploring how parental practices and emotional symptoms relate to this advanced form of ToM. Therefore, we measured individual differences in emotional (anxiety/internalizing symptoms), and contextual factors (parental practices and socio-economic status), adding baseline cognitive assessments (IQ, Comprehension, and Vocabulary) as control variables.

Firstly, we anticipated a positive relation between ToMi and ToMc, as two facets of the understanding of *interpretive diversity*. A second hypothesis was that *warm parental practices* would positively predict children's performance on the ToMc and ToMi tasks, while overprotection and rejection parental practices would be negative predictors. Thirdly, we hypothesized that children's *anxiety symptoms* would be negatively related with their ToMi and ToMc performance. Last, but not least, warm parental practices were also expected to be negatively related with anxiety symptoms, as opposed to overprotective and rejection practices.

Study 1

Method

Participants and Procedure

We recruited 136 primary school children with ages between 8-12 years ($M = 120$ months, $SD = 12.85$) from a public school in a northwestern part of Romania. 90% of the families declared Romanian as the primary language, and their household earnings were reported as the minimum (36%) or above minimum wage (36.8%; National Institute of Statistics, 2021). Parent's education varied, most of them having completed a bachelor's degree (35.3% of mothers and 29.4 % of fathers; the national average of people with bachelor's degrees was of approximately 26.3% in 2017; European Commission Romania, 2021). Children with chronic diseases (as reported by parents) were not included in the study.

We included children from schools with the help of the teachers. We initially approached parents from 12 classes, of which approximately 35% agreed to participate. Caregivers' written consent and children's verbal assent were necessary for inclusion, and children were free to withdraw from the study or decline to complete any task at any point.

In the first step, parents completed the demographic questionnaire and the parent version of the anxiety and parental practices questionnaires. Afterwards, children were administered the child version of the two questionnaires and the short version of the Constructivist Theory of Mind Interview, all in one session. In the last step, children were tested individually, by an experimenter, in the school counselor's office, with the Doodle task and the IQ tasks. The three phases were approximately 1 week apart from each other. An initial a priori analysis for the upcoming

correlational analysis was conducted with G*power (Faul et al., 2007) and revealed that with $\alpha = .05$ and a power $1-\beta = .80$, we needed 64 participants in order to find effects of 0.25.

Materials

The Constructivist Theory of Mind Interview-Short Version. We used the paper-pencil short version of the interview developed by Weimer and colleagues (2017), which contains 6 scenarios from the original 10. In these scenarios one or two persons are faced with visual, auditory, or verbal stimuli and children were asked about the person(s)/s'(s) mental processes (Comprehension, Attention, Memory, Comparison, Planning, and Inference) regarding those stimuli. The questions explored children's understanding of interpretive diversity and whether they considered this to be a consequence of the constructive nature of mental processes or other stimulus-related factors. Children were instructed to circle "Yes" or "No" for each question and to provide further explanations if they answered "Yes". Their answers were subsequently coded as follows: "No", "Yes, with Non-Active Mental Process Explanation", or "Yes, with Active Mental Process Explanation". The response was coded as "Non-Active Mental Process Explanation" if children made references to stimuli properties or knowledge differences between individuals, such as poor quality of perceptual information (e.g., the response "Talking too fast" to the question, "Could somebody hear everything that someone said to them but not understand it?"), but also if they failed to give explanations (e.g., "I don't know how."). However, if children's response referred to the inherent differences of mental processes across individuals (e.g., the answer "Could get a different meaning" for the aforementioned question), it was scored as an "Active Mental Process Explanation". Based on 25 % of the responses, the interrater reliability was very high (Cohen's kappa = .90).

The Restricted Picture Paradigm (Droodle Task). ToMi was assessed using the 'Droodle' task, displaying various drawings (e.g., an elephant and an orange; Lalonde & Chandler, 2002). The child was introduced to two dolls (naïve observers). Then, the child was shown the complete picture of the first drawing and was asked to describe it. The drawing was then fitted within an envelope that had a small viewing window. In this way, the envelope masked most of the drawing, leaving only an ambiguous part to be seen (e.g., the trunk of an elephant and a part of an orange). The participants were asked to infer how each doll would interpret the identity of the full drawing based on the visible, ambiguous part of it. A second trial with the next drawing immediately followed.

The participants' responses to each drawing were coded according to the following criteria: a) the connection of children's response with the full original picture (1 = *no connection*, 0 = *obvious connection* to the picture) and b) the similarity between the two puppets interpretations (1 = *no similarity*, 0 = *similar*). Only if both a) and b) were 1, the score for the droodle was 1. As such, children could have a score of 0 – no ToMi, 1 – partial ToMi, and a score of 2 – total ToMi.

Based on 25 % of the responses, the interrater reliability was very high (Cohen's kappa = .84).

Parental Rearing Behaviors-Egna, Minnen, Beträffande, Uppfostran (EMBU). Parental rearing behaviors were assessed with adolescents' version of the EMBU questionnaire (My memories of upbringing; Perris et al., 1980) – EMBU – A (Paloş & Drobot, 2010) and parents' version of the same instrument – EMBU – P. The 49 items used from the EMBU-A questionnaire evaluate children's perception regarding their parents' rearing practices according to three different factors: Emotional Warmth, which involved parental acceptance and emotional/ verbal/ physical expressed affection as perceived by the child (e.g., “Do you feel that your father/mother minds helping you if you have to do something difficult?”), Rejection as an expression of punishment, hostility and lack of affection towards the child (e.g., “Does your father/mother say unpleasant things about you to other people, for example, that you are lazy or difficult?”), and Overprotection or the tendency to over-nurture or control the child's actions (e.g., “Do you have to tell your father/mother what you've been doing when you get home?”). Children first completed the assessment for parental practices of their mother and then for their father. EMBU – P has an identical structure as the one described for EMBU–A, the items being formulated from the parents' perspective (e.g., “Have you respected your child's opinions?”). Only Emotional Warmth and Overprotection subscales were used for the present investigation.

The Revised Child Anxiety and Depression Scale – Parent and Child Versions (RCADS). RCADS (Visu-Petra et al., 2011; Chorpita et al., 2000) is a 47-item questionnaire used to measure the frequency of the most relevant anxiety symptoms (the Anxiety Subscales are: Generalized Anxiety Disorder Subscale, Social Phobia Subscale, Separation Anxiety Subscale, Panic Disorder Subscale, Obsessive-Compulsive Disorder Subscale, 37 items) and Depression (10 items for Depression Subscale), as indicated by DSM-IV. Responses range from 0 to 3 (0 = *never*, 1 = *sometimes*, 2 = *often*, 3 = *always*). Both caregiver's and children's versions were administered. The RCADS for parents has high internal consistency, $\alpha = .85$, as well as RCADS for children, $\alpha = .88$.

IQ – Vocabulary, Comprehension, and Coding. Children's verbal and non-verbal IQ was evaluated using several subtests (Comprehension, Coding, and Symbol Search) from the Romanian adaptation of the WISC-IV (Dobrea, 2012; Wechsler, 2004). The WISC-IV is widely used and has excellent internal consistency, test-retest reliability, criterion validity, and construct validity (Wechsler, 2004).

SES. We evaluated socioeconomic status (SES) in two ways. Firstly, parents were asked to complete a demographic survey that included their education level and income. Secondly, we adapted the scale from the one used in Bocquier and colleagues (2013) to evaluate children's perspectives regarding their familial SES. It included 6 questions measuring the number of objects a family owns and activities (e.g., “How many cars does your family own?”). Its internal consistency was poor, $\alpha = .52$.

Design and Analytical Strategy

This study has a correlational and observational design, and all analyses were conducted using SPSS Statistics Software 21. Firstly, the descriptive statistics of each outcome were examined. The missing data were analyzed and resolved with multiple imputation analysis. The normality of each distribution was examined in order to choose between the parametrical or non-parametrical tests. Secondly, we conducted a correlation analysis to test our first hypothesis regarding the relation between the two interpretive diversity understanding tasks. Regression analyses were used to test for our second, third, and fourth hypothesis regarding the relation between parental practices and ToM, anxiety symptoms and ToM, and parental practices and anxiety symptoms, respectively. Thirdly, based on identifying a correlation with child age in the previous analysis, we conducted a post-hoc analysis of variance to investigate differences between younger and older children in terms of the proportions of the ToMc response categories to the interview. The reason behind this choice was that the previous study (Weimer et al., 2017), which constructed the interview tested for similar effects. The Greenhouse – Geisser method (Field, 2009) was used for the ANCOVA test statistics as the sphericity assumption was violated.

Results

Descriptive Statistics

Descriptive data for the Doodle task (interpretive diversity understanding), anxiety and internalizing symptoms, parental practices, IQ tests, and SES questionnaires are provided in Table 1. The mean proportions and standard deviations of each response category of the ToMc interview in the younger group (8- to 10-year-olds) and older group (11- to 12-year-olds) are shown in Table 2. For the questionnaires, we used the multiple imputation method to generate estimates for missing values (Penn, 2007). Next, we dealt with the outliers using Field's (2009) method of transforming each outlier score into the sum of the measurement's mean plus 2 *SDs*.

Table 1. Descriptive Statistics for the Main Variables

Variable	<i>N</i>	<i>Range</i>	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>SD</i>
<i>Interpretive Diversity Understanding tasks</i>						
Doodle Task	136	2	0	2	1.19	.84
<i>Parental Practices</i>						
Warmth Mother	136	25	56	81	69.86	5.6
Rejection Mother	136	17	19	36	24.81	4.87
Overprotection Mother	136	23	16	39	27.91	5.43
Warmth Father	136	31.77	51	82.77	68.17	7.17
Rejection Father	136	17.83	15.95	33.79	23.81	4.56

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Variable	<i>N</i>	<i>Range</i>	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>SD</i>
Overprotection Father	136	25	14	39	25.83	5.56
Warmth Parents	136	15.3	55	70.3	63.29	3.47
Control Parents	136	27.64	32	59.64	45.61	6.58
<i>Anxiety and Depression symptoms</i>						
Anxiety Child	136	77	3	80	30.18	15.83
Internalizing Child	136	74.74	4	78.74	36.1	18.56
Anxiety Parent	136	36.65	1	37.65	17.09	8.92
Internalizing Parent	136	43.97	1	44.97	20.75	10.49
<i>IQ tests</i>						
Comprehension	136	22	14	36	25.95	5.67
Coding	136	43	23	66	45.27	10.53
Symbol Searching	136	22	13	35	24.37	5.59
SES	136	12	1	13	6.96	2.37

Note: Anxiety and Internalizing Scores are outcomes of the Revised Child Anxiety and Depression questionnaire completed by children and their parents. Coding and Symbol Searching are two subscales from the Processing Speed Index.

Table 2. Mean Proportions (and Standard Deviations) of Response Categories of ToMc Interview by Age Group

Age group	<i>N</i>	Yes, with Active Mental Process Explanation	Yes, with Non-Active Mental Process Explanation	No explanation
8-10 years	59	.01 (.05)	.23 (.22)	.74 (.24)
11-12 years	77	.09 (.12)	.37 (.21)	.52 (.26)

We further conducted a mixed ANCOVA in order to find differences between children in terms of proportions of the response categories. We introduced the three ToM Interview responses as a within factor variable (Active Mental Process Explanation, Non-Active Mental Process Explanation, No Explanation), age as a between factor variable (that was coded as a dummy variable with two categories, 1 for 8- to 10-year-olds, and 2 for 11- to 12-year-olds) and Comprehension as a covariate. Since the sphericity assumption was violated, ANCOVA test statistics were estimated using the Greenhouse – Geisser method. Our results indicated that there was a significant difference between the ToM responses, $F(1.259, 16.258) = 16.590, p < .001, \eta_p^2 = .11$ and a significant interaction between ToM responses and age, $F(1.536, 16.258), p < .001, \eta_p^2 = .086$. Considering the pairwise contrasts, children in both categories of age tended to give significantly higher proportion of responses with no explanation than with non-active and active mental process explanations. The contrasts showed that 8- to 10-year-old children had significantly

higher proportion of responses with no explanation and significantly lower proportions of active mental process explanations than 11- to 12-year-olds.

The ToMi (Doodle task) did not correlate with any anxiety or parental practices variables, except with Warmth (Parent), $r_s(136) = .17, p = .04$. That means that as their parents reported more parental practices based on affection and support, children tended to give more valid interpretations to the same ambiguous drawings.

Parental Rearing Practices and Anxiety Symptoms

We have obtained positive correlations between total scores on Anxiety Child and Rejection Mother, $r_s(136) = .35, p < .001$, Overprotection Mother, $r_s(136) = .32, p < .001$, Rejection Father, $r_s(136) = .25, p = .003$, as well as with Overprotection Father, $r_s(136) = .32, p < .001$ (see Table 3). Similar correlations were obtained with parent’s reports of child anxiety, as we have obtained significant positive correlations between Overprotection Parents and Anxiety Parent, $r_s(136) = .31, p < .001$, as well as with Internalizing Parent, $r_s(136) = .33, p < .001$. This means that as children reported more parental practices based on the expression of hostility, punishment, and tendency to over-nurture the child, children’s anxiety and internalizing symptoms were higher, as reported by themselves and by their parents. This partly supports our third hypothesis.

Table 3. Correlations between EMBU and RCADS, Both with Parent and Child Version, as well as Coding, Symbol Search and Comprehension

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Warmth Mother															
2. Rejection Mother	-.31**														
3. Overprotection Mother	.08	.31**													
4. Warmth Father	.43**	-.31**	-.08												
5. Rejection Father	-.16	.64**	.20*	-.32**											
6. Overprotection Father	.05	.22**	.69**	.02	.26**										
7. Warmth Parent	.08	.00	.10	-.01	-.11	.01									
8. Overprotection Parent	.05	.20*	.29**	-.07	.15	.23**	.18*								
9. Anxiety Child	.00	.35**	.32**	-.06	.25**	.32**	.01	.18*							
10. Internalizing Child	-.02	.40**	.30**	-.11	.29**	.30**	.00	.18*	.98**						
11. Anxiety Parent	-.00	.02	.14	-.04	.01	.12	-.01	.31**	.25**	.24**					
12. Internalizing Parent	-.02	.05	.12	-.06	.04	.14	-.04	.33**	.26**	.25*	.98**				
13. Coding	.01	-.30**	-.15	.13	-.26**	-.10	-.08	-.05	-.08	-.10	-.03	-.06			
14. Symbol Search	.03	-.09	-.01	.14	-.13	.01	-.13	-.10	-.07	-.09	-.07	-.09	.59**		
15. Comprehension	.17*	-.24**	-.19*	.28**	-.22**	-.63	-.07	-.04	-.03	-.04	.03	.04	.31**	.27**	

Note: RCADS = Revised Child Anxiety and Depression Subscale for anxiety symptoms. EMBU = Egna, Minnen, Beträffande, Uppfostran-My memories of upbringing for parental practices. Significance level: * $p < .05$. ** $p < .01$.

In order to determine the specific effect of parental practices on anxiety while controlling for children's IQ, we ran a series of robust hierarchical regressions using the bootstrap method, which is recommended when the dependent variables violate the assumption of normality. In the first regression, we included as the dependent variable the level of depression symptoms as reported by children. The control variables were age, Comprehension, Coding, and Symbol Searching. In the second step, we included two composite scores reflecting the means of both parent's levels of Rejection and Overprotection. The results showed that the overall regression model predicted 26% of the variance, $R^2 = .26$, $F(6, 129) = 7.544$, $p < .001$. Depressive symptoms were positively predicted only by the Rejection of both parents, $\beta = .495$, $p = .001$, CI [.319; .658].

In the second regression, we included general anxiety disorder as the dependent variable, and the predictors remained the same as those described above. The overall model explained 16.8% of the variance, $R^2 = .168$, $F(6, 129) = 4.327$, $p < .001$. The control variables were not significant. The results showed that the Rejection outcomes of both parents positively affects the level of general anxiety symptoms, $\beta = .21$, $p = .005$, CI [.057; .376]. At the same time, the Overprotection result of both parents was a positive predictor of the level of general anxiety symptoms, $\beta = .175$, $p = .004$, CI [.056; .287].

Discussion

In the current study, we found significant relations between parental practices, anxiety symptoms, and IQ tests. We also found that parental practices were significant predictors of various anxiety symptoms. Firstly, the younger children tend to give more No responses and fewer active mental process explanations than the older children. Secondly, it seems that rejection and overprotection of both parents are important predictors of various anxiety symptoms.

However, the hypothesis according to which the two measurements of interpretive diversity understanding would be positively associated was not fully supported. Therefore, also taking into account the fact that the written responses of the children were not particularly detailed, we conducted a second study in which we used the extended version of the Constructivist Theory of Mind Interview that implies an individual discussion between the researcher and each participant, without a time limit. Hence, we tried to increase the chances of the children carefully considering the questions and giving a proper response. We further used the same tasks and questionnaires and added a Vocabulary test. Coding and Symbol Searching didn't seem relevant in relation to ToM; therefore, in the second study we focused on the verbal predictors.

Study 2

Method

Participants and Procedure

We included 200 children with ages between 8 and 12 years ($M = 124$ months, $SD = 9.8$) from nine public schools from northwestern and northeastern parts of Romania. Parental education varied, with most of them having a bachelor's degree (41% of mothers and 47 % of fathers, which is high compared with the national average of approximately 26.3% in 2017; European Commission Romania 2021). The primary language was declared as Romanian by 91 % of the families, and their household earnings were reported as under minimum wage for 39 % of them (National Institute of Statistics, 2021). Children with chronic disease (as reported by parents) were not included in the study. The process of inclusion was the same, and from selected 28 classes, approximately 24% of children agreed to participate. Caregivers' written consent and children's verbal assent were necessary for inclusion, and children were free to withdraw from the study or decline to complete any task at any point. The three phases of the study were the same as in the previous one, except that the ToMc interview was administered by an experimenter, in the school counselor's office, along with the Droodle and verbal tasks.

The same questionnaires from Study 1 were used, more specifically the RCADS-Parent and Child versions (Visu-Petra et al., 2011; Chorpita et al., 2000), and EMBU – Mother, Father, the children versions, and the EMBU Parent, the parent version. The internal consistency was low for EMBU Mother, $\alpha = .64$, moderate for EMBU father, $\alpha = .74$, and high for EMBU Parent, $\alpha = .80$. As for RCADS Children, the internal consistency was high, $\alpha = .87$, as well as for RCADS Parent, $\alpha = .87$. The ToMi task, Droodle task, had high interrater reliability, based on 10% of the responses, Cohen's kappa = .85. Although the internal consistency was low for the EMBU Mother subscale, we didn't eliminate it for reasons explained in the first study regarding the same subscale.

Materials

The Constructivist Theory of Mind Interview – Long Version. We used the extended version of the Constructivist Theory of Mind interview to allow for a more ample child-interviewer interaction without any time pressure. The long and the short version are identical in terms of the targeted mental processes (Comprehension, Attention, Memory, Comparison, Planning, and Inference), but it contains 10 scenarios instead of 6. Also, the interview is conducted face to face, individually, with an experimenter. The responses are coded the same way as in the short version, with the following difference. If the initial response given by the child was judged to be a “Non-Active/Non-Mental Process explanation the experimenter gave the child a second chance to construct an “Active Mental Process explanation”. For example, the experimenter emphasized that knowledge deficiencies or

perceptual difficulties were not a problem, highlighting the question’s purpose, and prompting the child to consider everyday situations. Based on 10% of the responses, interrater reliability was very high (Cohen’s kappa = .86).

Vocabulary Test. We used the Expressive Vocabulary from the WISC-IV Verbal Comprehension Index to evaluate children’s word knowledge (Wechsler, 2014). The Expressive Vocabulary subtest includes 36 items for which children were asked to define the words provided by the experimenter. The total score could vary between 0 and 72 points.

Design and Analytical Strategy

The analytical strategy was the same as for the previous study, except for an additional analysis, a comparison between children with different Droodle Task scores (0, 1, or 2 of correct responses) in terms of parental practices and anxiety symptoms scores. The reason behind this choice was that the previous studies (Pillow & Weed, 1995), which used this type of vignettes, tested for individual differences between groups of children with different numbers of correct responses. Since the normality assumption was violated, the Kruskal-Wallis test was considered suitable (Field, 2009).

Results

Descriptive Statistics

Descriptive data for the Droodle task (interpretive diversity understanding), anxiety and internalizing symptoms, parental practices, IQ tests, and SSE questionnaires are provided in Table 4. The mean proportion and standard deviation of each response category of the Constructivist Theory of Mind Interview in the younger group (8- to 10-year-olds) and older group (11- to 12-year-olds) are shown in Table 5. Again, for the questionnaires, we used the multiple imputation method to generate estimates for missing values (Penn, 2007) and applied the transformation method for the outliers (Field, 2009).

Table 4. Descriptive Statistics for the Main Variables

Variable	<i>N</i>	<i>Range</i>	<i>Min</i>	<i>Max</i>	<i>M</i>	<i>SD</i>
<i>Interpretive Diversity Understanding</i>						
Droodle Task	200	2	0	2	1.35	.82
<i>Parental Practices</i>						
Warmth Mother	200	21.78	58	79.78	69.59	4.81
Rejection Mother	200	20.56	17	37.56	25.21	5.5
Overprotection Mother	200	19.19	18	37.19	27.34	4.83
Warmth Father	200	32.65	50	82.65	68.65	6.81
Rejection Father	200	22.4	17	39.4	24.63	5.99
Overprotection Father	200	22.1	14	36.1	25.21	5.34
Warmth Parents	200	15.44	54	69.44	62.67	3.38
Control Parents	200	28.21	30	58.21	45.16	6.46

Variable	<i>N</i>	Range	Min	Max	<i>M</i>	<i>SD</i>
<i>Anxiety and Depression symptoms</i>						
Anxiety Child	200	57.68	0	57.68	28.62	13.33
Internalizing Child	200	69.67	0	69.67	34.44	16.1
Anxiety Parent	200	39.52	0	39.52	18.55	9.34
Internalizing Parent	200	47.95	0	47.95	22.37	11.39
<i>IQ tests</i>						
Comprehension	200	23	15	38	29.79	6.52
Vocabulary	199	45	18	63	47.5	12.66
SSE	200	13	0	13	8.1	2.72

Note: Anxiety and Internalizing Scores are outcomes of the Revised Child Anxiety and Depression questionnaire completed by children and their parents, as well. Coding and Symbol Searching are two subscales from the Processing Speed Index.

Table 5. Mean Proportions (and Standard Deviations) of Response Categories of the Interview by Age Group

Age group	<i>N</i>	Yes, with Active Mental Process Explanation	Yes, with Non-Active Mental Process Explanation	No Explanation
8-10 years	59	.22 (.16)	.45 (.19)	.32 (.18)
11-12 years	77	.29 (.15)	.43 (.17)	.27 (.17)

Interpretive Diversity Understanding: ToMc and ToMi

We have found a positive correlation between Active Mental Process Explanations and Doodle task, $r_s(200) = .16$, $p = .018$, supporting our first hypothesis. As children reported more active mental process explanations, they were also more likely to offer two different interpretations on the ambiguous pictures. When we split the data into two groups, according to age, their correlation, however, was not significant for the younger group (8- to 10-years old) but remained significant for the older one (10- to 12-years old), $r_s(200) = .44$, $p < .001$. Also, both ToM measurements were positively correlated with age; for Active Mental Process Explanation, $r_s(200) = .31$, $p < .001$, and for Doodle task, $r_s(200) = .15$, $p < .001$. This indicates that as children's age increased, they performed better at the ToM tasks, giving more active mental process explanations and inferring more than one interpretation on the ambiguous drawings. The relation between Active Mental Process Explanations and Doodle Task remained marginally significant when controlling for age, $r_s(200) = .13$, $p = .065$, which means that age does explain a part of their significant relationship. Moreover, the Non-Active Mental Process Explanations were negatively correlated with performance on the Doodle task, $r_s(200) = -.14$, $p = .047$, meaning that as children gave fewer explanations with no reference to mental processes, their understanding of the interpretive nature of an ambiguous situation increased.

A first look over the two sets of ToM interview data showed an increase in the proportions of Active Mental Process Explanations in the second study, more closely resembling the results obtained by Weimer and colleagues (2017) who

worked with older children (9-11 years). In order to analyse the differences between the proportion of Active Mental Process Explanations, No-Active Mental Process Explanations and No responses, we conducted a mixed ANOVA. As a between factor variable, we introduced age (coded as a dummy variable with two categories, 1 was 8- to 10-year-olds, and 2 was 11- to 12-year-olds). The results showed no difference between age groups, but there was a significant difference within individuals regarding ToM. According to the post-hoc tests (using the Bonferroni correction), children of both ages tended to show a higher response proportion with non-Active Mental Process Explanations than with Active Mental Process and No explanations, $p < .001$.

Interpretive Diversity, Parental Practices and Anxiety Symptoms

Using the Spearman's correlation test, we obtained several significant correlations between ToM measurements and parental practices measurements. More specifically, a positive correlation between Active Mental Process explanations and Warmth Mother, $r_s(200) = .23, p = .001$, as well as with, Warmth Father $r_s(200) = .19, p = .005$, respectively. This means that as children answered with more active mental process explanations, they also reported more parental practices based on acceptance and expressed affection. Moreover, the Active Mental Process and Droodle task seemed to be negatively correlated with Rejection Mother (see Table 6), which means that as children reported less parental practices based on punishment, hostility, and lack of affection, they also offered more active mental process explanations and showed a higher understanding that two different interpretations are valid upon the same ambiguous pictures.

In order to test our second hypothesis, we conducted a hierarchical regression using the bootstrap method. We introduced active mental process explanations as the dependent variable. In the first step, we included as a control variable, age, and mother's education. In the second step, we introduced warmth from both parents (composite score). In the third step, we added internalizing symptoms. The overall model predicted 21.7% of variance ($R^2 = .217, p < .001$). All, except internalizing symptoms, were significant predictors, age $\beta = .005, p = .001, CI [.004; .007]$, mother's education $\beta = .017, p = .022, CI [.005; .030]$, Warmth Mother and Father, $\beta = .008, p = .004, CI [.003; .012]$. The effects are significant albeit very small.

In order to test the second and third hypotheses, we analysed if there were differences between the three groups of the Droodle task (no ToMi, partial ToMi, and total ToMi) regarding the level of separation anxiety, panic attack, depression, and parental behaviours. We have calculated the mean of Rejection of both parents, and the mean of Overprotection of both parents and we used these composite scores as parental behaviours. We have run a series of nonparametric ANOVA's. However, we did not run a parametric MANOVA because the assumption of multivariate normality was violated.

First, we tested for significant differences between the three groups of Doodle Task regarding the level of separation anxiety. The results showed that there were significant differences between groups, $X^2 = 10.179, p = .006$. Mann-Whitney tests were used to follow up this finding. A Bonferroni correction was applied so that all effects are reported at a .0167 level of significance. It appeared the only significant difference is between the group with no ToMi and the group with total ToMi. The group with total ToMi has a significantly lower level of separation anxiety than the group with no ToMi, $U = 1781.500, p = .002$.

Secondly, we used the Kruskal-Wallis to see if there were significant differences between groups regarding the level of Panic Attack, $H(2) = 8.971, p = .011$. A Bonferroni correction was applied so that all effects are reported at a .0167 level of significance. The only significant difference was obtained between the group with no ToMi and the group with total ToMi. The group with total ToMi had a significantly lower level of Panic Attack compared to the group with no ToMi, $U = 1856.500, p = .006$. There were no differences between groups regarding the levels of depression.

Thirdly, the following Kruskal-Wallis showed significant differences between groups with respect to the levels of rejection of both parents, $H(2) = 9.892, p = .007$. Children with no ToMi had significantly higher levels of rejection from both parents compared to children with total ToMi, $U = 1754.500, p = .002$. There were no differences between groups regarding the level of overprotection of both parents.

We obtained negative correlations between both interpretive diversity understanding tasks and Anxiety and Internalizing Score Child (see Table 6). This means that as children reported fewer anxiety symptoms, they gave more active mental process explanations. They were also more likely to offer two different interpretations on the ambiguous pictures. Hence, we confirmed our third hypothesis. Again, there was only one variable, Comprehension, that significantly correlated with anxiety, $r_s(200) = -.20, p = .004$, and internalizing, $r_s(200) = -.20, p = .003$) symptoms reported by parents.

Parental Practices and Anxiety Symptoms

In order to test our fourth hypothesis, we conducted a hierarchical regression using the bootstrap method. As the dependent variable, we added internalizing symptoms. We introduced age as a control variable, and then in the second step, we introduced rejection and overprotection scales of both parents. In the third step, we added Active Mental Process Explanations and Doodle task. The overall model predicted 25.4% of variance ($R^2 = .254, F(5, 194) = 13.204, p < .001$). Results showed that only rejection of both parents was a positive and significant predictor of internalizing symptoms, $\beta = 1.152, p < .001, CI [.642; 1.623]$.

Table 6. Correlation Between ToM Tasks, EMBU, RCADS; Income and Vocabulary and Comprehension

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Warmth Mother													
2. Rejection Mother	-.46**												
3. Overprotection Mother	-.07	.36**											
4. Warmth Father	.39**	-.32**	-.04										
5. Rejection Father	-.30**	.73**	.31**	-.35**									
6. Overprotection Father	.00	.32**	.65**	.05	.29**								
7. Active Mental Process	.23**	-.22**	-.08	.19**	-.11	-.09							
8. Doodle task	.12	-.22**	-.04	.07	-.18*	-.03	.16**						
9. Anxiety Child	-.12	.38**	.32**	-.09	.35**	.24**	-.15*	-.18*					
10. Internalizing Child	-.14*	.45**	.34**	-.03	.41**	.24**	-.16*	-.17*	.98**				
11. Vocabulary	-.06	-.04	-.15*	-.07	-.01	-.20**	-.05	-.09	-.05	-.04			
12. Comprehension	.04	-.04	-.08	.09	-.09	-.10	-.02	-.09	-.01	-.04	.39**		
13. SSE	-.05	-.05	-.06	.09	-.01	-.18**	.00	-.05	-.09	.06	.28*	.23**	

Note: RCADS= Revised Child Anxiety and Depression Subscale. EMBU= Egna, Minnen, Beträffande, Uppfostran-My memories of upbringing. Significance level: * $p < .05$. ** $p < .0$.

General Discussion

The ability to reason about the mind continues to develop beyond preschool years (Dumontheil et al., 2010; Vetter et al., 2013) and represents a milestone in children’s social behavior (Wyman et al., 2018), and success (Banerjee & Henderson, 2001), contributing to the narrative self-organization and self-understanding in late childhood (Bialecka-Pikul et al., 2020; Kober et al., 2019). ToM is essential to a healthy development throughout the lifespan; hence, understanding how ToM develops beyond primary school years into middle childhood and preadolescence is of paramount importance. Interpretive diversity understanding is an understudied advanced ToM that pertains to the understanding of the constructivist nature of the mind (Lalonde & Chandler, 2002). This concept, however, has been approached differently across literature, being either defined as the ability to understand that an ambiguous stimulus can be interpreted differently by different people (ToMi; Lalonde & Chandler, 2002) or as the ability to understand that knowledge can be uncertain, that things can have multiple meanings on account of differences in interpretive mental processes (ToMc; Schwanenflugel et al., 1996; Weimer et al., 2017). Both approaches refer to the understanding of the subjective processes implied in mental states constructions. For the first time in the literature, we intended to integrate them in one research design and relate them to individual differences in anxiety and internalizing symptoms, IQ and verbal ability, and contextual factors, such as parental practices and socio-economic status.

ToMc and ToMi

In the first study of the present paper, we investigated interpretive diversity understanding using the Doodle Task (Lalonde & Chandler, 2002) and the paper and pencil short version of the Constructivist Theory of Mind Interview (Weimer et al., 2017). The results showed that the ToMc performance wasn't associated with any of the other measurements. In order to understand this, some notable differences between our study and Weimer and colleagues' (2017) study, with respect to administration method are worth mentioning. First, the short paper and pencil version of the interview used in Study 1 was validated and applied by Weimer and colleagues (2017) only on freshmen high-schoolers. Hence, our meager proportions of Active Mental Process Explanation can be explained by the fact that we administered it to a much younger population. Second, in Weimer and colleagues (2017), the questionnaires were completed in groups, as part of an English class, similar to our procedure. However, their participants completed two surveys, while our children had to complete 4 questionnaires in one hour, which may have induced fatigue for some youngsters. The Constructivist Theory of Mind Interview was last, and given the difficulty of the questions, we inferred that the children didn't have the necessary cognitive resources to go through it properly and take sufficient time to write down the answers (the mean length of response was between 3-5 words). On the other hand, from a theoretical standpoint, Weimer and colleagues (2017) revealed that only around 10 and 12 years of age children significantly change their responses in the sense that they consider the differences in mental activities as required when reaching different cognitive outcomes in the same situation, more than external factors (over 50% of our participants in both studies were below this age). Hence, it wasn't easy for our younger children to offer constructive, active mental process explanations. In line with Weimer and colleagues' (2017) findings, we found notable age differences between children's responses to the interview, with younger children giving more No explanation responses and fewer Active Mental Process Explanations than older children. Following these considerations, in the second study, we used the extended version of the Constructivist Theory of Mind Interview, which was applied by an experimenter with each child individually, without any time-limit. The experimenter wrote down the answer; hence the child was not constrained by their own writing skills. These new conditions improved children's performance on the second study (Active explanations, $M = .26$) compared to children from the first study ($M = .06$). Future research with children from the 8-12 years interval should consider these aspects when choosing between the short and extended versions of this task.

The most notable improvement in the second study was the positive correlation between the two tasks of interpretive diversity understanding, which

remained marginally significant after we accounted for the age variance. This indicates that the two measurements are tapping the same ability of interpretive diversity understanding, yet are independent enough to address different aspects of it. The weak correlation is in line with the theoretical account that ToM may not be a single construct and should be tackled as a variety of component processes (Schaafsma et al., 2015). Indeed, there seems to be minimal correlations among ToM measures across development, including middle childhood (Warnell & Redcay, 2019). Taking this into account, we view interpretive diversity understanding as a multidimensional process, with the two tasks reflecting different components: interpretive and constructivist ToM.

The Droodle Task has been constructed for younger children, and it appeals more to the child's imagination, and creative processes ("What does Ana think the full picture is, based on these two visible triangles?"). ToMi emerges at around 6 years of age (Lalonde & Chandler, 2002), and continues to develop into middle childhood, with considerable improvements up to 9 years (Malti et al., 2010), as well as 11 years (Harari & Weinstock, 2021). In a modified Droodle task, Lagattuta and colleagues (2010) have showed that children aged 4-7 years, compared with older children (7-9 year-olds) would mistakenly overuse past irrelevant experience with the ambiguous drawings in predicting a character's interpretation on a subsequent ambiguous drawing, while older ones would mistakenly attribute the same interpretation to two naïve characters (Lagattuta et al., 2010). In our sample of 8- to 12-year-olds, we didn't find any age differences in terms of correct responses (Droodle task), but almost half of the children in both studies answered on both trials with two different valid interpretations of the same ambiguous picture (total ToMi; 47% in Study 1 and 57% in Study 2), in contrast with Lagattuta and colleagues' (2010) findings.

On the other hand, the interview includes complex questions about mental processes and has been used on adolescents (Weimer et al., 2017). Even though the research context we provided in the first study did not support children's performance on the short version of the interview, we have found that the younger children (8- to 10-years old) gave a significantly higher proportion of responses with No Explanation, and had fewer responses with Active Mental Process Explanations as well, compared to the older group (11- to 12-years old). In the second study, using the long version of the interview, we found that children of both ages showed a higher response proportion with Non-Active Mental Process Explanations than with Active Mental Process and No explanations. Indeed, Weimer and colleagues (2017) stated that only at around 10 years of age is there a change in how children evaluate the importance of differences in mental processes when knowledge is constructed. In line with our study, they found that children between 8 and 11 years tended to give more responses with non-active mental process explanations than adults. Hence, in our age frame, it's expected of children to try to find an explanation to differentiate between people's reaction/approach to a situation, by mainly focusing on external factors and not on the constructivist nature of mental activities.

ToM and Anxiety Symptoms

The relation between these constructs followed a similar pattern across both studies. Children with higher understanding of interpretive diversity had lower anxiety and internalizing symptoms. This supports our third hypothesis, as well as the deficit ToM hypothesis in anxiety (Reid, 2017). The ability to understand the constructivist nature of the mind by acknowledging the inherent differences in mental activities and the fact that two interpretations of a stimulus can be both valid has been found in children with lower anxiety levels in both of our studies. Children with the ability to comprehend that there could be more interpretations to a situation may have access to a more neutral or benign explanation to a possible anxiogenic situation, such as a temporary departure from the attachment figure (separation anxiety) or an ambiguous physical pain (panic disorder).

Previous studies demonstrated that in middle childhood and early adolescence, higher mentalizing capacities were significantly associated with lower depressive, panic disorder, and separation anxiety symptoms (Caputi et al., 2018), as well as with low levels of separation and social anxiety (Scaini et al., 2020). Indeed, in a group of 9- to 11 year-olds, ToMi was negatively correlated with anxiety symptoms and interpretive bias (Moldovan & Visu-Petra, 2022). Furthermore, in another study, ToM at 11 years predicted lower levels of social anxiety later in time, which, in turn, predicted higher levels of peer acceptance as well as lower levels of peer rejection one year later (Ronchi et al., 2020). Other studies found lower ToM performance for socially anxious children (but only when they tended to express shyness in a non-adaptive way; Colonnese et al., 2017). This underlines the importance of ToM – anxiety studies in middle childhood in order to better understand the social and emotional consequences of ToM difficulties. A similar pattern was identified later in development, as researchers found that a group of adolescents with social anxiety disorder had difficulties correctly identifying emotions in faces and eyes expressions shown in pictures, which is an indicator of social cognition and ToM abilities (Öztürk et al., 2020). Disturbances in socio-cognitive abilities were deemed responsible for the dysregulated social emotions that contribute to the development of social anxiety disorder in childhood (Nikolić et al., 2019).

These results have clinical implications, as training and treatment programs could include this socio-cognitive ability in order to improve anxious children's social functioning. Researchers have previously raised the issue of improving ToM in various other disorders, such as bipolar and major depressive disorders (Inoue et al., 2004; Epa & Dudek, 2015), as well as autism (Feng et al., 2008). This is relevant as Cognitive-Behavioral Therapy strategies make use of ToM abilities, more specifically the awareness of someone's thoughts and behavior (Chalfant et al.,

2007). Practitioners could target ToM in their interventions in order to reduce anxiety symptoms, by helping children in being more mindful of their reasoning and flexible regarding their interpretations of a situation (Ooi et al., 2008). Interventions on children's rational evaluations have already been proved efficient (Wilde, 2008).

ToM and Parental Practices

In both studies, we only found partial support for our hypothesis regarding the association between ToM and parental practices. In the second study, as children reported more parental practices based on affection, support, and emotional warmth, their ability to understand the constructivist nature of the mind (i.e., answering with more active mental process explanations) increased. This relation indicates that maybe in a parent-child relationship marked by support and affection, the child might feel more encouraged to explore different ideas about people's intentions. When children are confronted with different reactions to a situation, the parent may take more time to explain them. These discussions about the diversity of reactions to a situation may include explanations about differences between different mental activities. When this security and support are lacking, the opposite is expected. We found that children with the highest score on parental practices based on rejection were the ones who couldn't understand that an ambiguous picture can be interpreted in two different and valid ways. This could also indicate that the children had, in fact, the ability, but they didn't express it by fear of punishment or rejection from the adult.

These results are in line with literature on younger children, where harsh and negative parental practices were predictors of ToM failure (Hughes & Devine, 2016), while acceptance of the child, rich conversations about affect and thoughts were predictors of ToM success (Tafreshi & Racine, 2016). In adolescent groups a similar link was found between attachment-related anxiety with the mother and low mentalizing capacities (Hünefeldt et al., 2013). However, our studies covered the gap regarding the more advanced forms of ToM and strengthen the idea that parents influence the child's socio-cognitive development, well after school age. However, a longitudinal study is recommended in order to determine if early parental practices are a more critical predictor than current parental practices of this advanced ToM.

Parental Practices and Anxiety Symptoms

In both studies, we found partial support for our fourth hypothesis. We found that parental practices based on rejection and overprotection (as reported by children) are positive predictors for anxiety and internalizing symptoms. These results add to the existing ones that found rejection parenting to be positively associated with child

depression (Johnco et al., 2021). Even adolescents and young adults who perceive their parents as rejecting, controlling and coercive, reported higher emotional dysregulation, and suppression of sadness and worry, and more social withdrawal, which are related to anxiety symptoms (Gardner & Zimmer-Gembeck, 2018). In our group of children, rejection may follow a similar pattern, hindering children's development of emotional managing skills, consequently influencing their vulnerability to anxiety (Niditch & Varela, 2012; Wood et al., 2003). Similarly, children raised in a household where they are confronted with controlling behaviors that hinder autonomy and identity development will probably feel insecure in a new context, such as novel social interactions, and will probably be prone to infer adverse outcomes for their actions (Johnco et al., 2021). This is in line with other studies (Conger et al., 2002), and it requires special attention from practitioners, as the literature indicates that anxiety and depression disorders have detrimental effects on children's cognitive development, as well as on their academic achievements and social relations (Buta et al., 2015; Owens et al., 2012; Verboom et al., 2014).

Limitations

We had several limitations pertaining to one or both studies that should be noted. Firstly, in Study 1 we used the paper and pencil version on a very young group that still struggled at the writing tasks in a time-limited setting. Future studies should strongly consider the face-to-face interview version in these situations. Secondly, we infer that social desirability played a role in the weak results obtained with the parental reports, on both parental practices and children's emotional dimensions. Thirdly, the EMBU questionnaire has been used with children as young as 11 years old (Lindhout et al., 2006). This version for adolescents is similar to the one for primary children, EMBU-C (Castro et al., 1993; Muris et al., 2003) in terms of factors and items, with minor differences (1 item for Emotional Warmth, 5 for Rejection and 4 for Overprotection subscale). However, we made sure that the translation is appropriate for children, and, during the testing phase, we gave explanations if necessary. Markus and colleagues (2003) discuss that over the years, children change their view on some of their parents' behavior, perceiving them more as intrusive, rather than being involved or engaged. However, in our study/studies, we have obtained good results with the Rejection and Overprotection scale/scales.

Conclusions

Our studies investigated, for the first time in the literature, the interpretive diversity understanding using two distinct approaches for it. Moreover, this ability was put in relation to emotional, cognitive, and contextual factors shaping it,

investigating it for a sample of children with the ages between 8 and 12. Our results suggest that there are other forms of advanced ToM ability, less studied, in this age frame, that seem to be positively associated with fewer emotional difficulties, as well as with reported parental practices based on support and emotional warmth, and negatively with rejection and controlling parental behaviors. Our study is among the first ones to look at the relationship between these constructs and are in line with other studies that focused on earlier forms of ToM (e.g., Hughes & Devine, 2016). The lack of research on advanced ToM in the context of psychopathology is concerning, as ToM has been shown to exert a significant influence upon social behavior, as well as in academic achievement (Weimer et al., 2021). Given the already supported positive relationship between ToMi and empathic prosocial moral reasoning (Harari & Weinstock, 2020), as well as the negative one with anxiety symptoms and interpretive bias (Moldovan & Visu-Petra, 2022), the understanding of ToM development during middle childhood seems imperative. Future longitudinal studies could identify the causal links between these constructs, in order to develop programs that could prevent emotional difficulties for those at risk. Previous training studies showed incremental benefits to ToM performance in a couple of weeks (Bianco et al., 2015; Lecce et al., 2014), and future ones can include discussions on the interpretive nature of the mind, as part of a conversational based training.

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