Child and mother mental-state talk in shared pretense as predictors of children's social symbolic play abilities at age 3

Ana Osório[1], Elizabeth Meins[2], Carla Martins[1], Eva Costa Martins[3], Isabel Soares[1]

[1] *School of Psychology, University of Minho, Braga, Portugal*

[2] *Department of Psychology, Durham University, Durham, United Kingdom*

[3] *Department of Psychology and Communication, Instituto Superior da Maia, Maia, Portugal*

Requests for reprints should be addressed to:

Carla Martins

School of Psychology - University of Minho, Campus de Gualtar

4710-057 Braga – Portugal.

E-mail: cmartins@psi.uminho.pt

Tel: +351 253 604241/0 / Fax: +351 253 604224

Abstract

This study investigated relations between mother and child ($N = 49$) mental-state talk during shared pretense and children's social symbolic play at age 3. Social symbolic play was not related to mothers' mental-state talk. In contrast, children's own use of desire-state talk in shared pretense was a better predictor of social symbolic play than their general use of mental-state talk, even after accounting for general verbal ability as well as mothers' use of desires terms. **Conclusion:** These results highlight for the first time a link between children's references to desires and their performance on social symbolic play at age 3 years – a social cognitive ability thought to precede theory of mind.

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The ability to engage in pretense is a major developmental milestone of the second year of life, and is conceived as an important step towards a mature understanding of the mind (Bretherton & Beeghly, 1982; Leslie, 1987; Rakoczy, 2008). Because children's symbolic play involves the conscious and simultaneous representation of reality and its fantasy alternatives (Lillard, 1993) – for instance, a blue napkin can also be a swimming pool or a blanket for a doll – it requires dual representation (real world and fantasy), thus promoting children's metarepresentational abilities and laying the foundations for acquiring a representational theory of mind (Leslie, 1987; Lillard, 2001; Rakokzy, 2008).

Children's solitary symbolic play indexes their symbolic representational abilities, but social symbolic play – that shared with a partner – is also a measure of children's tendency to take on other people's perspectives. Social symbolic play is thus considered more sophisticated than solitary symbolic play (Dunn & Dale, 1984; Youngblade & Dunn, 1995) as it involves two distinct levels of social cognition (Bretherton, 1989; Lillard, 1998). The first level occurs before the symbolic activity takes place, and consists of the negotiation and assignment of roles and behaviors between play partners. The second level takes place during pretense, and involves children simultaneously considering different symbolic perspectives. For example, the child may alter the content of their symbolic play in response to a suggestion or symbolic act from the other person. In this social context, symbolic play provides children with opportunities to contrast their own perspectives with those of others in co-constructing a representational context (Leslie, 1987; Meins & Russell, 1997; Youngblade & Dunn, 1995). Empirical support for this claim comes from studies showing positive associations between children's social symbolic play (with peers or adults) and their performance on false belief

tasks (Astington & Jenkins, 1995; Meins, Fernyhough, Russell, & Clark-Carter, 1998; Nielsen & Dissanayake, 2000; Youngblade & Dunn, 1995). Astington and Jenkins (1995) highlighted the specificity of the association between theory of mind and children's social symbolic play. It was only symbolic proposals and role assignments that were jointly agreed, as opposed to the overall amount of symbolic play, that were related to their theory of mind performance.

Considering the unquestionable importance of social experience to the development of the understanding of the mind (for a review, see Carpendale & Lewis, 2004), references to mental states with a social partner may be strongly associated with the development of social symbolic play. Such an influence may operate in two distinct ways: through mothers' and/or children's mental-state talk. From a Vygotskian (1978) perspective, mothers' use of mind-related terms may be pivotal to the development of children's social understanding. As they label their own and their children's mental-states, mothers may contribute to the child's internalization of the notion of self and others as distinct mental agents (Fernyhough, 2008; Symons, 2004), which may in turn aid to their ability to represent distinct perspectives. Recent studies provided support for this hypothesis by reporting concurrent and longitudinal associations between maternal mental-state talk and children's theory of mind performance (e.g., Meins et al., 2002; Symons, Fossum, & Collins, 2006). Despite these findings, it remains unclear whether similar associations will emerge between maternal mental-state talk and an earlier milestone of social cognition – social symbolic play. As a result, our first goal was to test whether the use of mental-state talk by the mother would be concurrently associated with children's ability to take on the symbolic perspective of an experimenter. We expected that mothers' use of mental-state terms would be positively related to children's social symbolic play.

Children's own mental-state talk can also be hypothesized to play an important role in the development of social symbolic play. In his theoretical account, Leslie (1987) posits an

isomorphism between pretend play and the use of mental-state terms, as both depend on the ability to form mental representations. Youngblade and Dunn (1995) take it a step further by suggesting that children's mental-state talk (regarding one's own as well as others' mental-states) provides them with the necessary representations that facilitate social symbolic play. Indeed, empirical studies have shown children's mental-state talk to be related to later theory of mind abilities (e.g., Dunn, Brown, Slomkowski, Tesla, & Youngblade, 1991; Symons, Peterson, Slaughter, Roche, & Doyle, 2005). These findings, together with the observed links between social symbolic play and theory of mind (Astington & Jenkins, 1995; Meins et al., 1998; Nielsen & Dissanayake, 2000; Youngblade & Dunn, 1995), suggest that children's mental-state talk may be positively related to their social symbolic play.

To date, only two studies have attempted to address this issue. Hughes and Dunn (1997) reported a positive association between preschoolers' use of mental-state talk and their symbolic play with a peer. In the second study, Nielsen and Dissanayake (2000) found that preschoolers' use of mental-state terms during free play with their parents was concurrently associated with the emergence of symbolic play within that context. However, these studies assessed both variables in a single play session with the same interlocutor, making it difficult to disentangle the child's actual level of social symbolic play. Additionally, Nielsen and Dissanayake did not control for the children's verbal ability or the parents' own use of mental-state terms. By assessing social symbolic play with an experimenter, we aimed to provide a clearer picture of the children's current social symbolic play abilities.

However, it can also be argued that not all types of mental-state talk are relevant to the development of social symbolic play at age 3. In fact, it is around this age that children begin to understand how desires affect the way we feel and behave, in contrast with the understanding of beliefs which emerges later in the preschool years (Wellman & Liu, 2004). Recognizing other people's wants and preferences may be an important first step for children

to integrate the symbolic perspectives of a social partner. Therefore, we may posit a more important role of children's talk about desires, rather than their overall use of mental-state talk, as a training ground for social cognition at age 3.

Finally, given that symbolic play is known to be positively associated with children's verbal ability (Bates, Benigni, Bretherton, Camaioni, & Volterra, 1979; McCune-Nicolich, 1981), and that mothers' and children's mental-state talk covary (Symons et al., 2006), the conclusions on the precise nature of the relation between children's mental-state talk and their social symbolic play remain tentative. Our study aimed to clarify previous findings by assessing pretend play and mental-state talk in separate tasks, considering the role of both children's and caregivers' mental-state language, and taking children's verbal ability into account as an important control variable.

In summary, this study had two major goals: to investigate whether (a) mothers' mental-state talk predicted children's concurrent social symbolic play; and (b) children's mental-state talk – either general use of mental-state talk or the specific use of desire terms - were predictors of more sophisticated social symbolic play, even after controlling for children's verbal ability and mothers' own use of desire references. Additionally, a secondary goal was to explore the relations between mothers' and children's use of mental state language.

Method

Participants

Participants were 49 families recruited from child-care centers from a large city in the north of Portugal. Children (28 boys, 57.1%) were assessed at 3 years (M = 37.78 months, SD = .99, 36 – 40). Twenty-four children (49%) were singletons or had younger siblings and the remainder had one or two older siblings. Concerning maternal education, the majority

(67.3%; *n* = 33) had higher education qualifications, while 32.7% (*n* = 16) had completed between 5 and 12 years of formal education. All participants were White and had Portuguese as their first language.

Procedure

Each mother–child dyad attended a session at the University's developmental laboratory, which lasted approximately 1½ hours, including a 15-minute break. During this visit, a predefined sequence of mother–child and experimenter–child interactions was video recorded. Within two weeks of the first visit, the children returned for a second session during which their general cognitive development was assessed.

Measures

Children's social symbolic play.

The structured play task was based on procedures used by Lewis and Boucher (1988) and Meins and Russell (1997). This task called upon the child's ability to incorporate the suggestions of an unfamiliar adult into their own symbolic actions. As a result, it was intended to mirror the extent to which the child was capable of attending to and understanding other people's perspectives in a play context. For this purpose, each child was presented with two sets of objects – two representational toys (doll and toy car) and nine objects with no obvious representational features, such as a toilet roll inner tube or a piece of aluminum foil. A 5-minute *introductory play session*, starting as soon as the child had made the first intentional contact with the objects, served the purpose of familiarizing the child with the materials. The introductory session was immediately followed by the *structured play session*, which involved two conditions – *elicited* and *instructed play*. At that moment, only two objects were left on the table (usually according to the child's preferences): one representational toy and one "junk object". In the elicited condition, no specific instructions were given to the child. The experimenter simply asked "What can you do with these?". After

the child had carried out some action or given a verbal response (or in the clear absence of either), the experimenter asked the child to perform a specific action (e.g., doll and water bottle lid – "Make the doll eat the dinner off her plate") – this was the instructed condition. The child was then presented with each of the remaining pairs of objects in randomized order.

The coding for this task was based on Meins and Russell's (1997) adaptation of the criteria outlined by Belsky, Garduque, and Hrncir (1984). Symbolic actions in the elicited and instructed conditions were rated on a 5-point *Likert* scale (from 0 to 4), with higher scores corresponding to greater symbolic sophistication. In the example presented above, the child could receive a score of 0 if he/she only played with the doll or the lid, separately; a score of 2 if he/she prepared the meal for the doll (using the lid) but did not actually feed the doll; and a maximum score of 4 if he/she fed the doll from the lid, with both objects held in an upright position. In addition to receiving a score for the elicited and instructed conditions, the potential number of stages through which the child could advance to reach the maximum score in each elicited condition was also recorded. For instance, if a child had received a score of 2 in the elicited condition, the number of stages the child could advance would be 2 (4-2). These scores allowed for the calculation of a summary score which reflected the child's ability to understand and subsequently integrate the experimenter's symbolic suggestions (Meins & Russell, 1997). In this study, we used this summary score as an indicator of children's social symbolic play abilities. The score was expressed by the following equation:

$$\frac{\text{Average score instructed play} - \text{Average score elicited play}}{\text{Average number of levels remaining above elicited play levels}}$$

The higher the summary score, the more the child was able to benefit from the experimenter's play suggestions by integrating them into his/her symbolic play. This ratio

was intended to prevent floor effects, as it controlled for the number of levels above the child's elicited play performance. However, ceiling effects were also possible. In order to control for this possibility, we replicated the precaution measure taken by Belsky et al. (1984) and correlated the overall score with the score resulting from the absolute difference between instructed play and elicited play. The high positive correlation coefficient, $r = .98$, $p = .000$, ensured us that neither ceiling nor floor effects affected the summary scores for this sample.

All play sessions were coded by an experimenter who, at time of coding, was blind to all other measures, and a second blind rater additionally scored approximately 30% of the tapes. Inter-rater agreement (Intraclass Correlation Coefficient, two-way mixed) was considered to be excellent (Mean $r_i = .93$; min = .92; max = .96).

Mental-state talk.

Mothers and children were invited to pretend to spend an afternoon at the beach – a common leisure activity for Portuguese families. A set of toys and props (e.g., toy food and drinks, empty sunscreen bottle, beach towels) were strategically placed along the floor of the room, and mothers were given a script with general guidelines. The task had no time limit, ending with a signal from the mother. This semi-structured shared pretense task was designed to elicit mental-state talk from both mothers and children. All the interactions were videotaped and transcribed for subsequent coding.

Following previous studies (Brown & Dunn, 1992; Jenkins, Turrell, Kogushi, Lollis, & Ross, 2003) both children's and mothers' references to mental-states were coded into one of the following mutually exclusive categories: a) *Desires and interests*: e.g., like/dislike; love/hate; want; prefer (e.g., "Where would you *like* to go next?"; "This is my *favorite* color!"); b) *Feelings*: e.g., bored; amused; excited; happy (e.g., We're having so much *fun*!"; "Are you *bored*?"); and c) *Cognitions*: e.g., think; decide; know; recognize; remember;

realize; expect; understand/solve (e.g., "*Remember* the last time we went to the beach?"; "Do you *know* what this is?").

Each participant received two scores for mental-state talk: *mental words* in proportion to the total number of words uttered in the shared pretense interaction; *desire references* in proportion to the total number of mental-state words. It could be argued that desire references should be a proportion of the total number of words in the interaction. However, due to the high number of words in the sessions (M = 1217.02, SD = 403.62 for mothers; M = 295.67, SD = 167.78 for children), these proportions were extremely low. Nevertheless, analyses using this alternative index produced the same pattern of results as the ones reported here. All pretend play sessions were coded by the first author. A random set of 30% of the tapes was coded by a second trained researcher blind to all other measures. Inter-rater agreement was excellent (κ = .95 and κ = .95 for mothers' and children's use of mental-state terms, respectively).

Cognitive development.

In the course of their second visit to the lab (which took place within a maximum of two weeks following the first visit), children's cognitive development was assessed using the *Wechsler Preschool and Primary Scale of Intelligence – Revised* (*WPPSI-R*; Wechsler, 2003). This scale yields three scores (Performance IQ, Verbal IQ, and Full Scale IQ), and has been shown to have excellent reliability (.93 for the Performance subscale; .94 for the Verbal subscale and .97 for the Full Scale). The Performance and Verbal IQ scores were used in the analyses.

Results

Descriptive Statistics and Preliminary Analyses

With respect to social symbolic play, two of the nine toy–object pairs were excluded from the summary score because the majority of children obtained the maximum score in both elicited and instructed conditions. The social symbolic play summary scores are shown in Table 1.

In the mother–child shared pretense task, only 4 children (8.2%) did not use any mental-state terms (desires, feelings, or cognitions). Forty-five children (91.8%) made one or more references to desires. In what concerns maternal mental-state talk, all 49 mothers used one or more mental-state term regardless of type, whereas 47 mothers (95.9%) made at least one reference to desires.

=== Table 1 about here ===

Relations between children's social symbolic play and control variables.

Table 2 shows the correlations between children's social symbolic play scores and children's sex, presence of older siblings, verbal IQ, performance IQ, and maternal education. All associations were non-significant apart from the positive correlation between social symbolic play and verbal IQ.

=== Table 2 about here ===

Relations between children's and mothers' mental-state talk.

Mothers' and children's use of mind-related terms were positively associated using Pearson's r correlations. Mothers who made more references to mental-states were more likely to have children who employed mental-state terms in their speech ($r = .28$, $p = .048$). In addition, more maternal references to desires were associated with more child references to

desires (r = .36, p = .010). In contrast, children's general use of mental-state talk was unrelated with mothers' desire comments (r = .25, p = .088), and children's specific desire comments were also unrelated to mothers' general mental-state references (r = -.14, p = .330).

Regression Analyses

We performed two hierarchical regression analyses (Models A an B) in order to examine which variables were significant predictors of children's ability to incorporate the experimenter's symbolic play suggestions.

In Model A we investigated whether general mental-state references – by the mothers as well as the children - predicted children's social symbolic play. As children's verbal IQ significantly correlated with their social symbolic play, it was thus included in the regression model (step 1). Mothers' and children's percentages of references to mental-states were entered at step 2 (Table 3).

=== Table 3 about here ===

The regression model was significant at step 1, F (1,48) = 7.47, p = .009, explaining 14% of variance. In addition, Model A was significant at step 2, F (3,48) = 5.03, p = .004, explaining 25% of variance. Mothers' mental-state talk was not a significant predictor of children's social symbolic play. In contrast, children's overall mental-state talk predicted their social symbolic play: children who made more mental references in shared pretense with their mothers tended to perform better on the social symbolic play task with an experimenter.

In Model B we sought to determine whether children's specific references to desires (rather than general references to mental states) were a stronger predictor of their social symbolic play. Once again, children's verbal IQ scores were entered at step 1. Maternal

references to desires were also entered at this initial step as a control variable, as they were shown to correlate with children's desire references. This ensured us that any significant results would not be better explained by the influence of mothers' desire references on children's talk. Finally, children's proportion of desire talk was entered at step 2.

The regression model was significant at step 1, F (2,48) = 4.21, p = .021, explaining 16% of variance. As shown in Table 3, maternal references to desires did not predict children's performance on social symbolic play, only their verbal IQ scores did. Furthermore, the regression model was significant at step 2, F (3,48) = 5.59, p = .002, explaining 27% of variance. Children's references to desires in shared pretense with the mother made a significant and unique contribution to the prediction of their ability to integrate the experimenter's play suggestions: more references to desires with the mother were associated with better social symbolic play with the experimenter. This association was independent of the children's verbal IQ as well as mothers' own desire comments in the pretense interaction.

Discussion

Our first prediction regarded the possible influence of maternal mental-state talk on children's concurrent social symbolic play abilities at age 3. Contrary to our expectations, no measure of maternal mental-state talk, either general (total proportion of mental terms) or specific (references to desires), predicted children's concurrent willingness and ability to incorporate the experimenter's play suggestions into their symbolic play. These results can be interpreted in various ways. Firstly, we can conjecture that maternal mental-state talk may have exerted its role in the development of children's social symbolic play at an earlier stage, and that concurrent mental-state talk may in turn influence later milestones of social cognition. Another possible explanation for the apparent lack of associations may have stemmed from the level of elaboration that mothers invested in their mental-state talk.

Previous studies on the impact of maternal talk about feelings have shown that causal and elaborate explanations accompanying such mental terms, rather than their simple use, were linked to better emotion understanding (Denham, Zoller, & Couchoud, 1994; Garner, Jones, Gaddy, & Rennie, 1997). We cannot rule out a similar effect in our sample, as we did not assess the level of elaboration of maternal mental-state terms.

This leads us to the argument that accuracy of mind-related comments might have also played an important role. In their study on maternal mind-mindedness, Meins et al. (2003) found that mothers' use of mind-related terms that appropriately commented on their infants' mental-states at age 6 months independently predicted theory of mind in the preschool years. Although this approach could have been conducted in our study, we opted not to do so. Making appropriate comments regarding an infant's supposed mental-states at 6 months involves a great deal of interpretation from the mother. On the contrary, at age 3, children are generally verbally fluent and increasingly able to communicate their mental-states (Bretherton & Beeghly, 1982). Therefore, we believe it is necessary to develop a measure of appropriateness that is not based solely on children's affirmative responses to maternal suggestions and comments, as it would likely reflect other factors such as children's temperament or maternal sensitivity. It is also conceivable that mothers' proclivity to use mental-state terms is not a stable trait, but rather a dimension of maternal verbal behavior that can be influenced by individual, relational, and contextual aspects of mothers' own lives. Accordingly, studies have found aspects such as maternal psychopathology (e.g., Murray, Kempton, Woolgar, & Hooper, 1993; Pawlby et al., 2010; Wan et al., 2007) or perceived marital conflict (e.g., Pancsofar, Vernon-Feagans, Odom, & Roe, 2008; Pratt, Kerig, Cowan, & Cowan, 1992) to interfere with mothers' verbalizations towards their children. Finally, it must be noted that incorporating an experimenter's suggestions into pretend play may draw

upon different mentalizing abilities than those involved in classic theory of mind tasks. Future studies may address how closely social symbolic play and theory of mind are related.

Another set of results that also deserves discussion concerns the associations between mothers' and children's references to mental-states. When mothers used more mental-state talk, their children were also more likely to use mental terms in general. In addition, we found a link between mothers' and children's references to desires – the more desire words used by the mother, the more the child tended to employ desire references. Such results are consistent with previous data (Symons et al., 2006). It may also be argued that by using mental-state language that the child can readily understand, the mother is providing the "appropriate framework for mental activity within a conversation" (Symons et al., 2006, p. 687).

Regarding our second prediction, we found support for the hypothesis that children's talk about desires (rather than their overall use of mind-related terms) plays a more important role in their social symbolic play abilities. In our study, we found that children's use of desire terms was a better predictor of their social symbolic play abilities than children's total proportion of mental-states. Indeed, the model that included children's desire references explained almost a third of variance (in contrast with the model including general mental references, which explained only a quarter). This result, coupled with the fact that desire terms were the most common mental-state references made by the children in our sample, suggests that children's desires references were the best predictor of their social symbolic play abilities, above and beyond the influences of verbal ability, as well as mother's own desire references. These results bring further weight to the developmental progression in children's understanding of mind proposed by Perner (1991) and Wellman and colleagues (Wellman, 1990; Wellman & Liu, 2004). Before children have acquired a representational theory of mind, they are 'situation theorists' (Perner, 1991) who understand how events in the world can lead to desires and emotions. According to Wellman (1990), understanding desires

provides young children with a crucial into comprehending more complex internal states such as beliefs, and how internal states guide people's behavior. As children in our sample were still too young to possess a mature knowledge about beliefs, their explanations of human behavior rely mostly on their attributions of desires. In fact, empirical studies have confirmed that children develop their understanding of desires before they understand beliefs and that the former assist them in the development of a mature theory of mind (Wellman & Liu, 2004). Our study therefore expands on such accounts, by showing a similar pattern of results between children's desire talk and their concurrent performance on social symbolic play – a milestone of social cognition in the early preschool years.

Nevertheless, we must acknowledge that the cross-sectional nature of our data does not allow us to make strong inferences of causality. However, research confirms that this may be an appropriate interpretation. Similar to our study, others have provided links between children's mental-state talk and both concurrent and longitudinal social cognitive outcomes (e.g., Dunn et al., 1991; Hughes & Dunn, 1997; Nielsen & Dissanayake, 2000; Symons et al., 2005). Specifically, a study by Hughes and Dunn (1998), focusing on the impact of discourse among preschool aged children and their peers, found that mental-state talk at 3 years of age predicted theory of mind a year later, but the opposite causal relation did not hold. These results support the notion of a true causal link between children's mental-state talk and their social cognitive development. Talk about desires may therefore have promoted the understanding of subjective stances, an ability required for social symbolic play. This particular set of results highlights the need to consider different types of mental-state talk, and not just mind-related references in general, when investigating the role of children's talk about the mind on development.

The findings reported expand previous research by focusing on a less well-studied milestone of social cognition – social symbolic play. We have explored the associations (or

the lack thereof) between mothers' and children's mental-state talk, and children's social symbolic play abilities. Our results highlight, for the first time, a link between early preschool children's references to desires in shared pretense with the mother and their social cognitive competence in a social symbolic play task with an adult experimenter. This result has particular implications for subsequent research as it suggests the need to consider the role of different types of mental-state talk, namely children's references to desires, when studying the development of social cognition in young preschoolers.

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Table 1

Mean (SD) and Range Scores for all Variables

	Mean (SD)	Range
Social symbolic play	.05 (.04)	-.07 - .11
Children's mental-state talk (raw/percentage)		
Total	8.02 (7.47)	0 – 35
Desires	7.00 (6.93)/ 80.12 (30.62)	0 – 35/ 0 – 100
Mother's mental-state talk (raw/percentage)		
Total	27.59 (16.63)	4 – 81
Desires	18.41 (12.85)/ 65.77 (21.96)	0 – 55/ 0 – 100
Cognitive Development		
Verbal IQ	111.24 (16.55)	71 – 153
Performance IQ	110.65 (13.17)	85 – 143

Table 2

Correlations Between Children's Social Symbolic Play and Control Variables at 3 Years

	Social symbolic play
Sex (M/F)[a]	-.02
Older siblings (N/Y)[a]	-.17
Verbal IQ[b]	.37**
Performance IQ[b]	.16
Maternal education (without/with college education)[a]	.02

** $p < .01$

[a] r_{pb}; [b] r

Table 3
Regression Models for Children's Social Symbolic Play

	Steps and variables	R^2	(Adjusted R^2)	β	*F* change
Model A					
	Step 1 (df 1,48)	.14	(.12)		7.47**
	Verbal IQ			.37**	
	Step 2 (df 3,48)	.25	(.20)		5.03**
	Verbal IQ			.40**	
	Total maternal mental-state talk			-.26	
	Total child mental-state talk			.31*	
Model B					
	Step 1 (df 2,48)	.16	(.12)		4.21*
	Verbal IQ			.40**	
	Maternal desire references			.14	
	Step 2 (df 3,48)	.27	(.22)		5.59***
	Verbal IQ			.41**	
	Maternal desire references			.004	
	Child desire references			.37**	

* $p < .05$; ** $p < .01$; *** $p < .001$