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Transmission of Attachment at Preschool-Age: The Mediating Role of Mother-Child Conversation Styles

Chantal Cyr[1*], **Karine Dubois-Comtois**[2], **Katherine Pascuzzo**[3], **Marie-Julie Béliveau**[4], **and Moss Ellen**[1]

[1]*Université du Québec à Montréal, CP 8888, Succ, Centre-ville, Montréal, H3C 3P8, Canada*

[2]*Université du Québec à Trois-Rivières, Canada*

[3]*McGill University, Canada*

[4]*Rivière-des-Prairies Hospital, Canada*

[*]**Corresponding author:** Chantal Cyr, Université du Québec à Montréal, CP 8888, Succ, Centre-ville, Montréal, H3C 3P8, Canada, Tel: 1-514-987-3000-3265, E-mail: cyr.chantal@uqam.ca

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Abstract

Objective: Parents initiate conversations with their preschoolers about everyday experiences in which they share thoughts, feelings, and intentions. The ability to efficiently treat attachment relevant-information and organize attachment behavior beyond infancy is likely to be scaffolded by the parent in the context of parent-child discourse. The objective of this study was to examine mother-child conversation styles as a function of child attachment and test the the role of mother-child conversation as a mediator in the transmission of attachment from mother to child.

Methods: The sample included 111 dyads of mothers and their preschool children (3-5 years of age). Child attachment was assessed using the Preschool Attachment Coding System. Mothers' attachment state of mind was coded using the Adult Attachment Projective. Mother-child conversation styles were assessed during a 10-minute snack time.

Results: Analyses indicated a significant correspondence between maternal and child attachment classifications. Moreover, autonomous mothers and secure children were more inclined to integrate affective information during verbal exchanges, while dyads involved in insecure avoidant, ambivalent, or disorganized relationships were more inclined to minimize, exaggerate, or be overwhelmed with affective information. Finally, children's ability to integrate affective information mediated the link between mother and child attachment security.

Conclusion: Overall, results emphasize the importance of the quality of mother-child conversation for the development of internal working models of child attachment during the preschool period. In addition, results are also informative for the development of attachment-based intervention for parents and their preschoolers.

Keywords: Child attachment; Adult attachment; Preschool age, Mother-child conversation; Mother-child interaction; Mother-child discourse; Representation; Internal working models

Introduction

Secure and insecure internal working models of attachment are influential cognitive structures that organize child attachment behavior and guide processing of affective information and emotion regulation across the life span [1,2]. During the preschool period, children's cognitive capacities undergo significant changes as they acquire new ways of understanding and representing prior and ongoing experiences. Internal working models of attachment may then be more prone to revision than they were in infancy [3,4]. As suggested by several theorists, the first representational transition occurs during the preschool years with the emergence of language and perspective taking [5,6]. However, relatively few studies have examined child attachment at the preschool period [7-11], an age when mother-child interactions increasingly rely on verbal communication, with children becoming capable of self-reflection [12] and increasingly responsible for the attachment relationship they develop toward their caregiver [13].

Attachment theorists [3,13] have suggested that at preschool age, parents' contribution to the ongoing development of attachment internal working models goes beyond early sensitive caregiving. Parents initiate conversations with their preschoolers about everyday experiences in which they share thoughts, feelings, and intentions [6]. The ability to efficiently treat affective information beyond infancy is likely to be scaffolded by the parent in the context of parent-child discourse, as supported by Nelson's et al. [12] and Vygotsky's et al. [14] work. The main objective of this study was to examine mother-child conversation styles as a function of child attachment at the preschool period .A second objective was to examine whether mother-child conversation is related to maternal attachment state of mind and test if conversation styles are a mediator in the transmission of attachment during the preschool period.

Mother-child conversation and attachment security during the preschool age

According to Bowlby et al. [13], parents who engage in free-flowing conversation in which they express feelings and allow discussion of emotional experiences, foster the development and continuity of

attachment security. In allowing free access to the variety of emotions and thoughts the child is experiencing, the parent serves as a secure base from which the child can explore feelings and thoughts [4]. Not only does this communication style encourage child sharing of emotional experiences and self-reflection, but it also helps develop more sophisticated means of organizing information. As a result, in times of stress, secure children are more likely to coherently organize attachment information and use the caregiver as a way to reduce distress.

To date, few studies have examined the link between parent-child conversation and child attachment. Studies have shown that children involved in more open, balanced, and fluid conversations or emotionally matched dialogues with their mothers during preschool and early school age [2,15,16] were classified as securely attached in infancy. Other studies found that mothers and their secure children used a more elaborative narrative style, more mental state language, and showed greater emotion understanding when discussing emotional and conflictual experiences [17-23].

According to Bowlbyet al. [24], when maternal verbal communication is incoherent with the child's experience, whether because mothers contradict, distort, or ignore the child's real experience, the child is left to agree with the parental version and defensively exclude personal information in order to remain coherent with the caregiver and preserve their relationship. Parents who pressure their child to exclude information relevant to the attachment relationship fail to provide the appropriate emotional support or scaffolding that is needed to learn how to process and integrate emotional experience [24,25]. These miscommunication patterns, characterized by feelings of distrust, rejection, anger, or confusion, affect children's capacity to coherently organize attachment information and can lead to the development of insecurity.

Infancy research has found that intrusive, rejecting, or unavailable caregivers are more likely to have children with an insecure-avoidant attachment [26]. Mothers who are unavailable to child distress and emotional signals tend to diminish the importance of the attachment relationship, which may lead to child minimization of affective information [27]. It was found that mothers and children classified as avoidant in infancy had the most restricted and impersonal verbal exchanges of all attachment groups [2]. Studies, examining attachment-related interviews (i.e. Caregiving Interview, Adult Attachment Interview, Attachment Doll Play Assessment [28-30]) found avoidant children and their mothers deactivated affective information either by normalizing emotional states, using dismissing language, or devaluating self or child. Mothers of avoidant children were also found to be less emotionally involved in their relationship with their child and often organized interaction around stereotyped conduct rules (e.g., boys don't cry).

In contrast, it was suggested that inconsistent and unpredictable caregiving behavior encourages child exaggeration of affective information [27]. In infancy, this strategy, which maximizes the expression of distress and the likelihood of reassurance by the caregiver, has been found to be associated with insecure-ambivalent children [31,32]. Inconsistencies in the form of contradiction and uncertainty have also been observed in the discourse of mothers with a preoccupied attachment state of mind as well as insecure-ambivalent children [28, 29]. Exaggeration of emotional experiences, whether negative or positive, has also been found to characterize story narratives of ambivalent children [30].

As for children showing insecure-disorganized attachment behavior, studies show that they are more likely to have been exposed to fearful maternal behaviors, such as hostile, withdrawn, and dissociative behaviors [33]. Maternal frightening behaviors are the result of non-integrated memories and emotions associated with experiences of attachment-related trauma (e.g., loss, abuse) [34]. Maternal conversation about past or ongoing experiences with the child may trigger the reminiscence of past unintegrated emotional experiences, which may lead the parent to share inappropriate content (e.g. discussing marital sexual difficulties or fearful emotional experiences). Such chaotic and uncontained affective information impedes on the parent's capacity to regulate emotion and give meaning to emotional experiences. Studies have found disorganized children to depict chaotic stories with out-of-control and hostile figures or, at the opposite end, to show persistent refusal to play [30, 35]. Mothers of disorganized children also described themselves as helpless and lacking appropriate resources to regulate their child's behavior [30]. Also dyads with a disorganized child in infancy had the least fluid and coherent conversations of all attachment groups [2].

On a methodological level, past studies have assessed verbal exchanges in contexts that elicit specific topics of conversation, for example, discussion of the child's past misbehavior or discussion of thoughts and feelings in the context of a separation-reunion procedure. Because day-to-day parent-child interaction is at the basis of individual differences found in child attachment, it is important to determine whether mother-child discourse in an unstructured task, which would elicit day-to-day conversation, is also associated with child attachment.

Mother-child conversation as a mechanism for the transmission of attachment

A second objective of this article was to examine whether mother-child conversation is related to maternal attachment state of mind and examine whether conversation styles act as a mediator in the transmission of attachment for a preschool normative sample. Substantial research has demonstrated that a mother's capacity to regulate and organize her own thoughts and feelings about past relationships with attachment figures is related to her child's emotion regulation capacities and attachment behavior [2, 29,36]. Inversely, mothers whose attachment-based narratives demonstrate incoherence, lack of integration, and lapses in metacognitive monitoring are more likely to have insecure children. In his meta-analytic work, Van IJzendoorn et al. [36] reported an average correlation of .48 between maternal autonomous (or secure) attachment state of mind and infant attachment security. Expected significant correlations were also found between the different mother and child insecure attachment classifications: dismissing mothers and avoidant children (0.42), unresolved mothers and disorganized children (0.31), but somewhat weaker between preoccupied mothers and ambivalent children (0.19). To date, the mechanisms underlying this intergenerational transmission remain less clear. Studies have shown maternal sensitivity to be an important variable in the development of child attachment, but only a small proportion of child attachment is explained by sensitivity [26,36-38].

Attempts to identify mechanisms of transmission have led researchers to look beyond the concept of maternal sensitivity. Studies of maternal mind-mindedness and insightfulness have demonstrated that mothers of secure children are more inclined to describe their child with appropriate mental characteristics and consider their

infant's perspective and underlying motives [39,40]. Maternal mind-mindedness during mother-child interaction explained the transmission of attachment security for a small sample of 25 infants [41]. Although extensive research has helped bridge the "transmission gap" in infancy [36, 42-44], less attention has been given to other developmental stages and no studies have looked at mental processes of both mothers and children during conversations to test the transmission hypothesis.

Dyads included in this sample are part of an ongoing longitudinal study that began a when children were 3.5 years old. Although it is theoretically expected, when testing for the intergenerational attachment transmission, that the assessment of adult attachment representations be conducted prior to or at the least concurrent to the child attachment measure, this is unfortunately not the case for this longitudinal design in which adult attachment was administered two years after the preschool child attachment measure. However, because so few studies on the transmission of attachment were conducted at the preschool period [45,46], we value the importance of exploring these links. In addition, these studies were conducted solely with clinically-referred mothers (anxiety disorders) or children (conduct behavior disorder), and none have tested for potential mediating variables. Clearly, the field of mother-child attachment transmission at the preschool period is lacking empirical results. Investigation of parent-child transmission models with an independent variable measured several years after the assessment of the mediator has been done in prior family studies [47] with longitudinal data sets.

Hypotheses

Based on infancy studies, we first expected a correspondence between mother and child attachment patterns: 1) maternal autonomous state of mind and child secure attachment; 2) maternal dismissing state of mind and child avoidant attachment; 3) maternal preoccupied state of mind and child ambivalent attachment; and 4) maternal unresolved state of mind and child disorganized attachment. We also hypothesized that secure children and autonomous mothers would make more coherent and integrative statements than others. In contrast, insecure disorganized children and mothers with an unresolved attachment state of mind would be involved in conversations showing the least coherency. In addition, we hypothesized that avoidant children and dismissing mothers would make more statements that minimized affective information than other dyads, while ambivalent children and preoccupied mothers would make more statements that exaggerated affective information. As for disorganized children and unresolved mothers, we expected them to make more uncontained verbal statements, including acting out behaviors. Finally, we expected that mother-child integration during conversation to mediate the potential correspondence between maternal and attachment security.

Method

Participants

Participants in this study included 114 mother-child dyads (53 girls and 61 boys). These dyads were part of a larger sample of 157 3.5-year-olds recruited through preschools of diverse socioeconomic backgrounds. Data was collected during a lab visit occurring at initial recruitment (Time 1; child mean age = 44 months, SD = 4.3 months, range 34 to 56 months), with the exception of the Adult Attachment Projective (AAP: mothers' attachment state of mind) which was administered two years later (Time 2; child mean age = 67 months, SD = 4.2 months, range 59 to 77 months). All mother-child dyads with AAP and mother-child interaction data were included in this study. Attrition between Time 1 and 2 occurred because: 1) mothers could not be reached (n = 20); 2) refused to participate (n = 6); 3) did not show up to the visit (n = 11); and 4) mother-child interaction could not be coded due to technical problems (n = 6).

Procedure and Instruments

The laboratory protocol at Time 1 was as follows: a) greeting of the dyad followed by mother-child free play session (10 min.); b) separation-reunion procedure (20 min.); c) child completes the Peabody Picture Vocabulary (approximately 30 min.) while mother completes questionnaires in another room; d) snacktime (10 min.). During the snacktime, juice, coffee and cookies were served to the dyad, and toys and magazines were available in the room. At Time 2, dyads were invited for a lab visit during which mothers completed the AAP (30 min.).

Attachment protocol and classification

The well-validated separation-reunion procedure described by Cassidy and Marvin et al. [48] for preschool-aged children was used in this study. It consists of five episodes lasting 5 minutes each: 1) mother and child together; 2) mother leaves: separation between mother and child; 3) reunion: mother comes back in the room; 4) second separation; 5) second reunion. During both separations, the child was left alone. Following the separations, mothers were told to rejoin the child but received no specific instructions concerning the reunions. The separation-reunion sequence took place in a room in which age-appropriate toys were available for the child. The preschool separation-reunion procedure used in this study has been validated in numerous studies [7-10,49].

Coders classified reunion behavior using criteria from the Cassidy and Marvin classification system [48] for 3-5 year-old children. The child's attachment classification was based on behavior observed during both reunions. Ratings were based on observer evaluations of child's capacity to resolve distress from separation and use the caregiver as a secure base. The secure (B) pattern is characterized by the child's capacity to resolve distress from separation and use the caregiver as a secure base to facilitate exploration. The insecure avoidant (A) pattern is characterized by the child's physical avoidance of the parent in an affectively neutral manner. In the insecure ambivalent/dependent (C) attachment pattern, the child alternatively shows resistance or excessive immaturity evidenced by passivity or dependent behavior. Children classified insecure behaviorally-disorganized (D) do not display a structured pattern of behavior but show anomalous behaviors such as disordered, incomplete or undirected sequencing of movements, or demonstrate confusion or apprehension. The child classified insecure disorganized-controlling (D-cont.) attempts to control the parent's behavior in a caregiving or punitive manner. Children classified insecure other (IO) are unable to use the caregiver as a secure base for exploration but do not clearly show or combine the A or C patterns. Videotaped reunions were coded by two coders, each of whom independently classified approximately half the tapes. Thirty percent of the tapes were used for intercoder reliability. This reliability set included children from the four major attachment classifications (A, B, C, D: inclucling Dcont. and IO). Intercoder agreement reached 89% (k=.84). Coders were trained by

recognized experts (E. Moss and R. Marvin) and achieved reliability with them on a separate sample of tapes. Difficult cases in our sample were resolved by reviewing the tapes until consensus was reached. Coders were blind to participants' scores on other study variables.

Because the distribution of the six attachment classification groups revealed that only 3 children were classified as insecure-controlling, these children were excluded from statistical analyses. Although some studies have combined insecure-controlling and insecure-disorganized children into one group, recent studies show different profiles for these children as well as for their mothers [11,50]. Therefore, analyses were performed on a total of 111 mother-child dyads.

Adult attachment projective

The AAP [51-53] assesses attachment in adults based on the analysis of their responses to a set of attachment-related drawings. During the procedure, the individual is presented with eight pictures and asked to make up a story for each one. The AAP begins with a neutral, warm-up picture of children playing ball, followed by seven attachment scenes depicting potential attachment dyads (e.g., a child and a woman sit facing each other at opposite ends of the child's bed) or individuals alone (e.g., a man stands by a gravesite).

Four attachment classifications, paralleling those of the AAI (Adult Attachment Interview), are assigned on the basis of content, discourse and defensive processing codes. Autononous or secure (F) individuals use few defensive processes and have moderate-to-high coherency. Their story themes reveal the desire to be connected to others, agency of self, and mutually satisfying dyadic interactions. Dismissing (Ds) individuals rely on the deactivation form of defensive exclusion. Their narratives range from moderately coherent to incoherent; they often avoid attachment content and sensitive interactions are absent. Characters are typically depicted as able to take action. Preoccupied (E) individuals use the cognitive disconnection form of defensive exclusion. Story lines are contradictory and much uncertainty prevails, resulting in marked incoherence. Their stories are also marked by non-connectedness, an absence of agency of self and synchrony, and personal references. Unresolved (U) individuals fail to contain or 'resolve' indications of segregated systems in the stories (e.g., fear, harm, helplessness). Characters are unable to implement agency of self, i.e. they failed to show any form of protection by others, signs of an internalized secure base or the capacity to take meaningful action.

A high AAP-AAI [54] convergence for secure vs. insecure classifications, k=.75; and for the four-group classification, k=.84 [53]. Convergent validity of the AAP has also been established in studies showing predictable associations between maternal insecure attachment state of mind and parenting stress, negative evaluation of infant, and stressful life events [55]. The AAP has established excellent test-retest stability for a period of 3 months, k=.77 [53]. This result is similar to results obtained for 3-month (k between .63 et .79; and 18-month test-retest stability of the AAI (k=.73) [56-57].

Stories were coded by two coders whom independently classified approximately half the transcripts. Coders were trained by C. George and M. West, and achieved reliability with them on a separate sample of transcripts. Difficult cases were resolved through personal communication with C. George or until a consensus was reached. Coders were blind to participants' scores on other study variables. Intercoder agreement was 81% (κ=.72).

Mother-child conversations

Mother and child conversation styles were coded from a 10-minute unstructured snacktime interaction. This procedure has been shown to activate everyday conversations between mothers and children, which involve discussion of each other's affects, thoughts, and behaviors [58]. Conversation content of each snacktime was transcribed and coded for coherence of shared discourse and discursive style. A score of dyadic coherence is assigned to each dyad according to a 0 (low) to 2 (high) scale: 0=incoherent conversation (confusion, contradiction), 2=coherent conversation (logical, constructive). Scores on four discursive style scales, based on the way individual process affective information, were assigned for mothers and children separately: Integration, Minimization, Exaggeration, and Chaotic expression of affective information. Each style was rated on a 5-point scale (0 = low to 4=high) depending on whether expressed statements were highly characteristic of the speaker's discursive style throughout the interactive session. Both quality and quantity of expressed statements were therefore taken into consideration. For example, description of scores for the integration scale was as follow: 0=lack of verbal statements reflective of integration; 1=rare use of integration; 2=moderate use of integration; 3=frequent use of integration with some statements not fully qualifying for integration; 4=frequent use of integration with most or all statements qualifying for integration.

Integration of affective information refers to the dyad's capacity to explore each other's feelings and thoughts through verbal statements that promote introspection, self-reflection, and relational exchanges (e.g., child relates to personal feelings and thoughts while discussing a previous event; mother suggests that they share with the father the experience they just had together). Dyads characterized by minimization of affective information avoid and devalue affects and interpersonal exchanges (e.g., child changes topic when asked about personal feelings or thoughts; mother pays attention to a magazine instead of interacting with her child). References to conduct rules, as a way to normalize interaction and redirect attention on the task rather than on potential interpersonal issues, were also coded as a form of minimization. Exaggeration of affective information is seen in verbal statements that maximize negative emotion, embellish situations, or contradict the self and other (e.g., child presents himself as unable to do simple tasks; mother overly congratulates her child). Chaotic expression of affective information is coded when a member of the dyad displays sudden hostile or withdrawn behaviors unrelated to the context, when the child verbally controls the parent, and/or when the mother displays helplessness (e.g., mother laughs at the child, asks for affection in a needy way or shares inappropriate or frightening content; child tells mother how to behave). Description and examples for each of the four types of discursive styles are provided in Table 1.

Discursive style	Indicators	Exemples
Integration of affective information	Introspection	M: When I was young, I used to play this game. C: A snack is like having a small diner! C: When I got here I was shy, but I'm not shy anymore.

		M: Maybe you were shy because it is the first time you come here.
	Promoting self-reflection in the other partner	M: (the child is playing with dolls and mother asks) What's going on with this little girl…Is she going to the park, is she having fun? M: Do you remember what daddy did when you hurt your knee in the woods?
	Statements promoting interpersonal exchanges	M: When we get back home, you'll be able to tell your friend what you did today. C: Would you like to do the puzzles with me?
Minimization of affective information	Avoidance of verbal exchanges	M: What do you like the most here? The Child doesn't respond. C : Mom look, look what I did? The mother doesn't respond.
	Negative evaluation of the other/ Invalidation	M: You can't find your toy, well you're not looking carefully! M : No, you are not going to cry here! C: I don't like it here. M: Yes you do!
	References to conduct rules	M: If you don't eat all of your cookies, I'll be obliged to eat them all ! M: You are not allowed to write on the black board. M: Boys don't cry!
Exaggeration of affective information	Maximize negative or positive affect or situation	M: Wow! This is great! You ate everything, yeahhhhhhhh ! M: I am not able to play this game (pouting and speaking in a baby's voice) C: It's just a joke mother (laughing loudly and exaggerated), I'm not angry!
	Contradiction	M: Don't eat the sugar. C: Yes. M: No. E: Yes, M: Where are you going? C: I'm going to see the lady. M: No you are not. C: Yes I am. M: No. C: Yes.
Chaotic expression of affective information	Helplessness (sharing inappropriate or frightening content)	M: Mommy is claustrophobic, can you open the door for her? M: Here children are being analyzed! M: Come and hug me baby, I really need you close to me!
	Hostile verbalization (ridiculing the child, threats)	M: (while singing) Elliot the ediot! M : Don't do this or you'll stay in your room the whole evening C: Mother you are so stupid! C : I'm sitting far away because I don't love you (pulling faces)
	Sudden aggressive or withdrawn behavior that compromises verbal communication	M: Don't do this (while hitting the child on her hand). C : (Suddenly the child leaves the room without clear reason). C: Child hits table with his feet.
Note. M = Mother; C = Child.		

Table 1: Types and examples for each discursive style

Three coders, blind to participants' scores on other study variables, coded half the sample transcripts. Interrater reliability was calculated on 20% of the cases. High intraclass correlations were found for all four types of discursive styles for both mother and child (rs between .80 and .94), with the exception of child minimization scores (r=.49).

Demographic questionnaire

This questionnaire, containing items regarding demographic information and family context, was completed by mothers prior to the first lab visit. Information related to family income, single-parent status, parental education, and occupation were included.

Child IQ. Children's verbal intelligence was evaluated with the well known Peabody Picture Vocabulary Test-Revised [59]. Content, construct, and convergent validity as well as test-retest reliability have been well established in prior studies [59,60].

Results

Description of the sample

Examination of background variables indicated that the sample is representative of middle-class families: a) 26% of children were living in a single mother-headed family; b) 21% of families earned under $20,000, 39% between $20,000 and $50,000, and 40% earned $50,000 or more; c) Average maternal education was 15 years (SD = 3.0). ANOVAs and chi-square analyses on maternal background variables and child age and gender, comparing dyads who participated at both

ages from those who did not come back, did not reveal any significant differences.

Preliminary analyses

Analyses were undertaken to identify potential covariates to include in analyses predicting child attachment security. Chi-square analyses revealed that child gender was not associated with child attachment security, χ^2 (3, N = 111) = .59, ns. One-way ANOVA analyses showed that attachment groups did not significantly differ with respect to child age, child IQ, maternal education, or family income, Fs between .19 and 2.21. Results of one-way ANOVAs also showed that child gender was not significantly associated with mother or child discursive style and dyadic coherence, Fs between .06 and 3.06. Neither child age or family income was significantly correlated with mother or child discursive style or dyadic coherence, rs between .01 and .18. Child IQ and maternal education were significantly correlated with child or mother discursive style respectively and dyadic coherence, rs between . 23 and .31. Subsequently, child IQ was used as a covariate in analyses involving child discursive style and maternal education was used as a covariate in analyses involving maternal discursive style.

Significant correlations were found between mother and child discursive styles (see Table 2). Children's discursive style were moderately correlated to their mother's discursive style, with rs ranging from .28 to .50. Also, significant correlations were found between dyadic coherence and mother-child discursive styles, with rs ranging from .38 to -.54. Given that scales were only moderately correlated, they were kept separate in subsequent analyses.

Variables	1	2	3	4	5	6	7	8
1. Child integration	---							
2. Mother integration	.34**	---						
3. Child minimization	-.18†	-.04	---					
4. Mother minimization	-.12	-.10	.28**	---				
5. Child exaggeration	-.06	-.17†	.18†	.30**	---			
6. Mother exaggeration	-.12	-.13	.08	.22*	.50**	---		
7. Child chaotic expression	-.10	-.16†	.23*	.21*	.35**	.27**	---	
8. Mother chaotic expression	-.12	-.14	.24*	.17†	.17†	.11	.45**	---
9. Dyadic coherence	.38**	.36**	-.45**	-.31**	-.50**	-.39**	-.54**	-.41**
Note: N = 111; †p ≤.10; *p ≤.05; **p ≤.01.								

Table 2: Correlation Matrix for Mother-Child Discursive Styles and Dyadic Coherence

Mother and child attachment correspondence

Correspondence between mother and child attachment classifications was examined using Cohen's kappa, which controls for chance agreement across all categories in the distribution. The distributions for mother and child attachment classifications are presented in Table 3. Results revealed a correspondence of 63% with a modest kappa of .36, p<.01. Post-hoc analyses using standardized residual scores revealed significant predicted associations between 1) autonomous mothers (F) and secure children (B): 68%, z = 5.1, r = .48; 2) dismissing mothers (Ds) and avoidant children (A): 40%, z = 3.4, r = .33; 3) preoccupied mothers (E) and ambivalent children (C): 55%, z = 4.2, r = .17; and 4) unresolved mothers (U) and disorganized children (D): 50%, z = 2.2, r = .21. Using a 2-way classification scheme (secure/insecure), results indicated a higher correspondence of 73% with a moderate kappa of .45, p<.01.

	Maternal Attachment Classifications				
Child Attachment Classifications	Dismissing (Ds)	Autonomous (F)	Preoccupied (E)	Unresolved (U)	Total
Avoidant (A)	6	4	2	3	15
Secure (B)	6	51	4	14	75
Ambivalent (C)	1	1	6	3	11
Disorganized (D)	1	1	3	5	10
Kappa = .36, p < .01					

Table 3: Mother and Child Attachment Classification Correspondence

Attachment and mother-child discursive style

Four one-way ANCOVA analyses were performed to examine differences in child or maternal discursive style as a function of attachment classification. A series of contrasts in line with our a-priori hypotheses were included in each analyses: 1) Dyadic coherence and Integration: secure group (B) or autonomous group (F) versus others; disorganized (D) group or Unresolved group (U) versus others; 2) Minimization: insecure-avoidant (A) or Dismissing group (Ds) versus others; 3) Exaggeration: insecure-ambivalent (C) or Preoccupied group versus others; 4) Chaotic expression: insecure-disorganized (D) or Unresolved (U) group versus others. In addition to contrasts, posthoc analyses (Tuckey simple comparisons) were conducted to examine other possible group differences not based on a-priori hypotheses.

Child attachment and mother-child discursive style

All of the ANCOVAs performed on dyadic coherence as well as on child and mother discursive styles, except for child minimization of affective information, revealed significant attachment group differences. Means, standard deviations, and statistical values are presented in Table 4.

In accordance with our a-priori hypotheses, analyses of planned contrasts demonstrated that secure children and their mothers showed the most coherent conversations, t=4.75, p<.01, while dyads with a disorganized child showed the least coherent conversations, t=2.80, p<.01. In addition, secure children and their mothers showed greater integration of affective information than dyads with an insecure child (mothers: t=2.79, p<.01; children: t=4.25, p<.01). Ambivalent children and their mothers made more exaggerated statements than did other dyads (mothers: t = 1.87, p<.05, one-tailed; children: t = 2.95, p<.01). Finally, disorganized children and their mothers showed the most chaotic conversations (mothers: t=4.01, p<.01; children: t=2.80, p<.01). Only one contrast did not reach level of significance: insecure-avoidant children were not more likely to use minimization than other children, t=0.42, ns. Posthoc analyses revealed that disorganized children were more likely to exaggerate affective information than secure children (t=3.46, p<.05). No other post-hoc comparisons, reached level of significance.

	Child Attachment Classifications						
Mother-child conversation	Avoidant (A) n = 15 M (SD)	Secure (B) n = 75 M (SD)	Ambivalent (C) n = 11 M (SD)	Disorganized (D) n = 10 M (SD)	F (3, 110)	Planned contrastsa	Post-hoc Tuckey comparisons
Dyadic coherence	1.19 (0.22)	1.76 (0.10)	1.07 (0.25)	.52 (0.27)	8.13**	B > others** D < others**	---
Child discursive style							
Integration	0.52 (0.33)	1.66 (0.15)	0.79 (0.39)	0.31 (0.41)	6.37**	B > others**	---
Minimization	1.85 (36)	1.43 (0.16)	1.52 (0.42)	2.11 (0.44)	0.93	---	---
Exaggeration	1.97 (0.38)	1.31 (0.17)	3.51 (0.44)	2.99 (0.46)	10.29**	C > others**	D > B**
Chaotic expression	0.87 (0.37)	0.84 (0.16)	1.37 (0.43)	2.40 (0.45)	3.84*	D > others*	---
Maternal discursive style							
Integration	1.61 (0.34)	1.94 (0.15)	0.82 (0.39)	1.14 (0.42)	3.15*	B > others**	---
Minimization	2.69 (0.38)	1.20 (0.17)	1.91 (0.44)	2.38 (0.47)	5.61**	A > others**	---
Exaggeration	2.34 (0.39)	1.59 (0.18)	2.82 (0.46)	1.68 (0.46)	2.73*	C > others*b	---
Chaotic expression	0.14 (0.18)	0.24 (0.08)	0.36 (0.21)	1.23 (0.22)	6.39**	D > others	---

Note. Means for Child discursive style are adjusted for covariates: Means for child discursive style are adjusted for child IQ; Means for maternal discursive style are adjusted maternal education; Means for dyadic coherence are adjusted for both child IQ and maternal education. a1) For dyadic coherence and Integration: B vs. others (A, C, D combined); D vs. others; 2) For Minimization: A vs. others; 3) For Exaggeration: C vs. others; 4) For Chaotic expression: D vs. others. bOne tailed.

*p ≤.05; **p ≤.01.

Table 4: Means, (Standard Deviations), and Statistical Values for Dyadic coherence and Discursive Styles as a Function of Child Attachment classifications

Maternal attachment and mother-child discursive style

Results of ANCOVAs revealed significant mother attachment group differences on dyadic coherence, mother and child integration, and child minimization of affective information. ANCOVAs on other dependant variables (maternal minimization, exaggeration, and chaotic expression) were not significant. Means, standard deviations, and statistical values are presented in Table 5.

More specifically, in accordance with our a-priori hypotheses, analyses of planned contrasts showed that autonomous mothers and their children showed the most coherent conversations, t=2.50, p<.01,

and made more integrative statements (mothers: t = 3.54, p < .01; children: t=4.21, p<.01) than insecure mothers and their children. Analyses of planned contrasts also showed that dismissing mothers were more likely to minimize affective information than other mothers, t=2.67, p<.01. Contrary to our hypothesis, unresolved mothers and their children did not show the least coherent conversations of all groups, t =0.43, n.s. No other planned contrasts reached significance (t between 0.01= and 0.93). Moreover, posthoc comparisons did not reveal any other significant group differences.

	Maternal Attachment Classifications						
Mother-child conversation	Dismissing (Ds) N = 14 M (SD)	Autonomous (F) n = 57 M (SD)	Preoccupied (E) n = 15 M (SD)	Unresolved (U) n = 25 M (SD)	F (3, 110)	Planned contrastsa	Post-hoc Tuckey comparisons
Dyadic coherence	1.17 (0.25)	1.72 (0.12)	1.33 (0.23)	1.31 (0.18)	2.18†	F > others**	---
Child discursive style							---
Integration	0.38 (0.34)	1.80 (0.17)	1.26 (0.33)	0.68 (0.25)	7.36**	F > others**	---
Minimization	1.79 (0.38)	1.46 (0.19)	1.97 (0.36)	1.40 (0.28)	0.74	---	---
Exaggeration	2.48 (0.42)	1.28 (0.21)	2.37 (0.40)	2.12 (0.31)	4.05**	---	---
Chaotic expression	1.06 (0.40)	0.91 (0.20)	1.01 (0.38)	1.32 (0.30)	0.44	---	---
Maternal discursive style							
Integration	0.86 (0.34)	2.14 (0.17)	1.67 (0.33)	1.25 (0.26)	5.26**	F > others**	---
Minimization	2.71 (0.39)	1.30 (0.19)	2.34 (0.38)	1.12 (0.29)	5.01**	Ds > others**	---
Exaggeration	2.71 (0.41)	1.57 (0.21)	1.73 (0.40)	1.95 (0.31)	2.18	---	---
Chaotic expression	0.29 (0.20)	0.26 (0.10)	0.53 (0.19)	0.36 (0.15)	0.55	---	---

Note: Means for Child discursive style are adjusted for covariates: Means for child discursive style are adjusted for child IQ; Means for maternal discursive style are adjusted maternal education; Means for dyadic coherence are adjusted for both child IQ and maternal education. a1) For dyadic coherence and Integration: F vs. others (Ds, E, U combined); U vs. others; 2) For Minimization: Ds vs. others; 3) For Exaggeration: E vs. others; 4) For Chaotic expression: U vs. others.

†p ≤.10; *p ≤.05; **p ≤.01.

Table 5: Means, (Standard Deviations), and Statistical Values for Dyadic coherence and Discursive Styles as a Function of Maternal Attachment classifications

Mediation model

According to Baron and Kenny et al. [61], specific conditions must be met to establish mediation: 1) the independent variable (maternal attachment) must be associated with the dependent variable (child attachment); 2) the independent variable must be associated with the mediator (mother and child discursive style); 3) the mediator must be associated with the dependent variable, after the effect of the independent variable on the dependent variable is taken into account; 4) if all conditions hold in predicted directions, the effect of the independent variable on the dependent variable must be significantly less than when the mediator was not included in the model. As revealed in the previous ANCOVAs, only the discursive style Integration was found to be significantly associated with both child and mother attachment patterns. Therefore, mediation analyses were conducted only on this discursive style.

We performed a hierarchical logistic regression analysis, with maternal autonomous/non autonomous classification as the independent variable, mother and child integration of affective information as the two mediators, and child secure/insecure classification as the dependant variable. Maternal education and child IQ were entered in the first step as covariables. The logistic regression was chosen because it allows one to predict a discrete outcome such as secure/insecure group membership from a set of continuous and dichotomous variables [62].

Results of the first regression showed that maternal attachment is a significant predictor of child attachment, B = 2.36 (SE = .51), Wald's χ^2, = 21.38, p < .01. The second regression showed that maternal attachment is significantly related to maternal, B = 0.42 (SE = 0.18), Wald's χ^2, = 5.52, p < .05, and child, B = 0.55 (SE = 0.18), Wald's χ^2, = 9.35, p < .01, integration. Results of the third regression revealed that once maternal attachment is included in the model, maternal integrative statements is no longer a significant predictor of child attachment, B = 0.18 (SE = 0.23), Wald's χ^2, = 0.66, n.s. Child integrative statements remained a significant predictor of child attachment, B = 0.55 (SE = 0.24), Wald's χ^2, = 5.26, p < .05.

In order to have a clearer picture of the results, the second and third regressions were reran using only child integrative statements as a mediator. Results showed that maternal attachment is significantly related to child integration, B = 0.65 (SE = 0.18), Wald's χ^2, = 13.74, p < .01. The final regression, showed that maternal attachment is still a significant predictor of child attachment, B = 0.61 (SE = 0.24), Wald's χ^2, = 6.28, p < .01, even after taking into account the variance explained by child integrative statements, which also remained a significant predictor, B = 2.02 (SE = 0.54), Wald's χ^2, = 13.88, p < .01.

We tested with the Goodman (I) test [63] if the effect of maternal attachment state of mind had significantly decreased from the first to the third regression. This test is used with logistic regressions when the mediator is continuous [63]. Results showed a significant decrease in the B weights for maternal attachment from the first regression to the third, $z = 2.20$, $p < .05$, supporting the mediation model (Figure 1). Because maternal attachment remained a significant predictor, we conclude that child integration statements are a partial mediator (see Figure 1 for the mediated path.

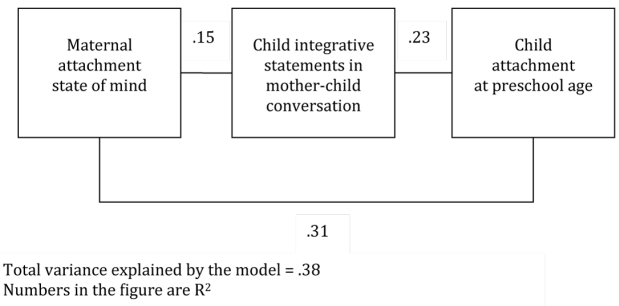

Figure 1: The mediational path: Transmission of attachment from maternal state of mind to child behavioral pattern through child use of integrative statements in mother-child conversation

Discussion

Mother-child conversation offers a unique window into children's organization of emotions and thoughts, thereby providing a valuable area to further understanding of attachment relationships during childhood. Following Main et al. [2] ground breaking work on attachment at the level of representation, we examined mother-child processing of affective information at the conversational level and found that each child attachment group could be characterized by a distinct mother-child discursive style. Although results were not fully conclusive for dyads with an avoidant child, this study is one of the first to provide information on how mothers and children involved in insecure relationships process affective information during verbal exchanges. In addition, this is the first study to examine and find that transmission of attachment at the preschool period can be explained by mother-child discursive styles.

As predicted, the results of this study clearly highlight the association between integration of affective information and attachment security. Securely attached children and their mothers, as well as autonomous mothers and their children, were more likely to have coherent conversations and use verbal statements that promoted the integration of affective experiences than did dyads involved in insecure relationships. By relying on a non-defensive reflective thought process when responding to their children, mothers of secure children and those with an autonomous state of mind were able to self-reflect on past experiences and elicit child's own exploration of thoughts and emotions. They promoted child's expression of thoughts, supported imaginary play, and encouraged sharing of personal experiences with others (Table 1 for examples). It is not surprising to find that secure children and those of autonomous mothers demonstrated self-reflection and were more inclined to seek interpersonal exchanges with their mother than did other children. At first sight, examples of maternal statements indicative of integration may appear simple and common, however, such statements give meaning to child experiences, link past events with current ones, and encourage interpersonal communication. A representation of the mother as supportive, caring, and valuing exploration of the inner world certainly allowed children to explore with confidence and develop appropriate strategies to cope with anxiety-provoking situations, and maintain, at a behavioral level, a secure relationship with the caregiver.

These results support research conducted on reflective functioning, which has shown that mothers with an autonomous state of mind are more likely to reflect on their children's mental state than mothers with insecure representational models of attachment [64,65]. According to Slade et al. [66], a mother's capacity to access and describe her own experiences, to verbally represent her child's experiences in the context of their ongoing dialogue, and to coherently relate the child's past experiences to present ones promotes a sense of security in the child. In the course of these activities, the mother attributes coherent meaning to the child's experiences, which helps organize the child's emotions and the development of a secure attachment pattern. As reported in previous studies [39,67], mothers of secure children are more insightful and inclined to make appropriate comments regarding their infant's mental states and processes. The current study is also consistent with those showing that secure dyads are more likely to elaborate emotional experiences than insecure dyads [17,18,21]. Previous studies have also found that secure children are more competent in tasks that require cognitive and metacognitive exploration, false belief, planning, symbolic play, and problem solving [40,68,69].

Not only were mothers and children involved in insecure relationships using fewer integrative statements and having less coherent conversations than did secure dyads, but they were also relying on defensive processes to communicate with one another. This is the first study to empirically demonstrate that specific mother-child defensive discursive styles are associated with each insecure attachment classification.

More specifically, results show that insecure-ambivalent children and their mothers were more likely to exaggerate affective information. As expected, they embellished events or characteristics of the self (e.g., you are such a cutie; isn't this the most delicious snack), but then again they also emphasized negative emotions, which often polarized the speakers into good/bad or wrong/right positions. This opposing quality of discourse led mothers and children to contradict themselves and argue over small details, leaving conversations unfinished and speakers angry or irritated and even more ready to amplify negative emotional states. Attachment theory suggests that ambivalent children intensify distress to increase the likelihood of reassurance because they lack confidence in the responsiveness of their caregiver [70]. Most striking from the conversations of mothers with an ambivalent child is that they clearly verbally explained to their child that they expected a focus on negative emotions and thereby child distress. For example, when one child entered the room with her mother and asked her why there was tissue paper in the room, the mother responded that the child would need to wipe her nose with it when she would be crying later on. We believe that by creating a context for emotional exaggeration, mothers are prescribing distress to their children in order to fulfil their own desire to be needed. In other words, we propose that exaggeration is associated with mothers and their ambivalent child in that both need to amplify emotions to engage with one another. Because it insures the other's responsiveness, exaggeration becomes the key to maintaining a relationship.

We also found that mothers with an avoidant child and those with a dismissing attachment state of mind were more likely to minimize affective information. As expected, these mothers tented to negatively evaluate their child and ignored their verbal advances. Most noteworthy was mother's focus on conduct rules, such as constantly managing child's behavior (e.g., don't touch that, you are not allowed to run here). We believe that this verbal strategy allowed mothers to interact with the child without having to share personal experiences and handle emerging feelings. These results are directly in line with those of Main et al. [2] who have described conversations of avoidant children and their mothers as impersonal and neutral. Contrary to our hypotheses however, avoidant children and those of dismissing mothers did not minimize affective information more than other children. This non-significant finding can be explained by the low interrater reliability obtain for child minimization. Alternatively, it may be that maternal efforts to monitor child behavior were so successful in keeping the child's emotions at a distance that the child did not need to minimize affective information. Child minimization could have been more apparent in an emotionally-charged context (e.g., discussion of a conflict). Future studies are needed to test this hypothesis.

The most unusual conversations came from disorganized children and their mothers. Not only were their conversations the least coherent of all, but these dyads were also more likely to share uncontained or chaotic expression of affective information. Maternal chaotic expressions consisted of inappropriate, frightening or hostile verbal content. For example, one mother discussed with her child the marital difficulties she was having with her husband. Another mother warned her child to behave during the laboratory visit, otherwise he would be going home without her. While singing and playing with her child, a third mother suddenly laughed repeatedly at her child saying "why don't you just focus, this is an easy puzzle to do". These types of conversational exchanges put children at risk of feeling overwhelmed and unprotected. We believe this may lead children to view their attachment figure as a potential source of fear and therefore show disorganized attachment behaviors in the strange situation. These results are directly in line with infancy data that has found mothers of disorganized children to show more fearful and hostile/helpless behaviors [33,34].

Attachment disorganization is best understood when considering parents' emotion regulation strategies in the face of potential frightening events or traumas [33]. Whereas mothers of secure children tend to buffer their child's physiological and emotional experience of fright, those of disorganized children not only fail to terminate their child's fear and attachment systems, but they also contribute to their activation. Therefore, our proposal is that when mothers are unable to regulate their own emotions, much less those of their child, they leave children without a clear explanation of what is going on. Unable to rely on their caregiver to give meaning to their affective experiences, children act out and develop disorganized attachment behaviors. For example, during verbal exchanges, children were more likely to leave the room without notice, hide behind curtains, suddenly throw toys or kick the table, etc. Acting out behavior was also observed in mothers (e.g., suddenly lying on the floor, intense tickling and caressing of the child while he is saying "stop"). This study also shows that disorganized children in comparison to secure children were more likely to exaggerate affective information. The parent's activation and maintenance of the attachment system might explain this result.

This is the first study to demonstrate attachment transmission at the preschool period for a normative sample. Our results show moderate correspondence between mothers' and children's attachment classifications. While a high proportion of autonomous (secure) mothers have a child with a secure attachment pattern, a low correspondence, no better than chance, was found for each of the insecure subtypes, with no more than half of the dismissing, preoccupied or unresolved mothers being more likely to have an avoidant, ambivalent or disorganized child, respectively. Although comparable to those found for infancy and preschool age samples in which the AAI was used [45, 36], correspondence rates found in this study are somewhat lower than those of school age samples (four-way κ=.71 [28]; two-way, r=.62 [2]). The AAP has demonstrated stability over a 3-month period, and like the AAI, should be stable over the two-year period separating the assessment of child and maternal attachment in this study. It is possible that this interval contributed to the lower concordance. This might also explain why there were no significant associations between discursive styles and both the preoccupied and unresolved attachment state of mind groups. Nevertheless, the four-way match correspondence rate obtained in another study with a preschool age sample, κ=.54 [45], is also lower than those found at school age. Results of this study may therefore be suggesting that the preschool period is a time of greater instability of child attachment in comparison with the early school-age period. This is consistent with results of Moss et al. [11] who have shown that child attachment strategies go through a major reorganization between the preschool and school age periods (e.g., disorganized to controlling), and that changes in family life are associated with changes in attachment strategies.

Considering the scarcity of transmission studies conducted with postinfancy samples, results of this study underscore the need for additional research on the attachment system during the preschool period and more specifically on the processes involved in its' reorganization. Family changes, roles of other significant attachment figures, and child's increasing developmental cognitive skills are just some of the factors that can contribute to the reorganization of the attachment system. How do all of the child's attachment figures interplay to influence the development of his or her internal working model of attachment during the preschool age, a period most likely to be characterized by changes in the family structure (e.g., the birth of a sibling, increased paternal interactions) and by a progressive openness to the social world? Should the attachment system at the preschool age still be considered as a mother-child dyadic concept, as it is in infancy? Researchers have suggested that child attachment at school-age is more strongly influenced by ongoing family experiences than by the history of dyadic experiences with the primary caregiver [71]. As children grow older, their felt security reflects both the relationship they have with their primary caregiver as well as their experiences with other attachment figures. It can be hypothesized that attachment at the preschool period be a reflection of the child's representations of experiences with all significant attachment figures (e.g., mother, father). As suggested by Bowlby [13], with age, children become increasingly more responsible for the attachment relationship they have with their caregiver.

Conclusion

Results of this study adds to the existing attachment literature by showing that child integrative statements, and not maternal integrative statements, is a partial mediator of the association found between

mother and child attachment security. These results support the idea that mother-child day-to-day conversations are an important context for processing attachment related-information, and thereby influencing children's development or maintenance of secure attachment behavior [3]. Mother-child conversational exchanges contribute to the development of an internalized secure base enabling children to extend their primary exploration of the physical environment to a more abstract exploration of their own thoughts and emotions, as well as those of others.

Clinical implications

Implications of this study results are considerable for intervention. In identifying parental and child behaviors that are associated with child security and insecurity, results of this study bring forth potential intervention strategies that may enhance children's secure attachment behaviors and social adaptation. Interventions with a focus on mother-child conversations, reinforcing maternal use of integrative statements, such as supporting the child's exploration of thoughts and emotions, may foster child integration of affective information and orient him or her on a pathway of security. This adds to the recent studies claiming a focus on the reinforcement of maternal sensitive behavior for the development of secure attachment relationships [72]. Considering the results of this study, intervention efforts that would solely focus on the attachment figure (e.g., traditional individual therapy with mother or social support services provided to the mother) or that would only consider the child's personal input, would be insufficient to enhance attachment security. Child attachment at the preschool age is the result of a goal-corrected partnership, in which both the mother's and child's plans, actions, and intentions need to be taken into consideration to promote an open communication pattern in which the needs of both partners can be met [1].

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