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ABSTRACT

This study examined the dynamic organization of interactions specific to attachment groups in a learning situation. Participating were 62 mothers and their 12- to 16-month-olds, observed in the laboratory during three 3-minute learning tasks. After the laboratory session was completed, the Strange Situation procedure was conducted. Findings indicated that the proportions of attachment classifications were: A (avoidant), 31 percent; B (secure), 40 percent; and C (ambivalent), 29 percent. For the learning/teaching tasks, videotapes of interactions were coded on a real-time basis with the INTERACT coding system. Eleven clusters of behaviors were devised. Twenty-seven percent of the observations were coded independently, with percent agreement ranging from .88 to .99 and kappas from .61 to .79. Conditional probabilities (within 3 seconds) of occurrence of cluster combinations were used to measure the two dimensions of contingencies. Findings revealed some similarities in the contingencies experience among the three groups and also some differences in their dyadic functioning. Group B (secure) exchanges were characterized by reciprocity and cooperation; most of the behaviors were organized in relation with the partner's behaviors. Group A (avoidant) showed parallel participation whereas there was a sporadic and selective collaboration in the C (ambivalent) group. (Author/EV)

MOTHERS' AND INFANTS' CONTINGENT BEHAVIORS IN LEARNING TASKS: LINKS WITH ATTACHMENT RELATIONSHIP

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ABSTRACT

Dunham & Dunham (1995) suggest that episodes of contingent and reciprocal responses between an infant and his/her mother are optimal structures for many aspects of infant development. Moreover, attachment theory proposes that the quality of mother-infant relationship is the outcome of interactive experience during the first year of life. Consequently individual differences in behavioral patterns observed in the Strange Situation should be related to different patterns of contingencies experience. Isabella's studies on synchrony suggest the importance of more clearly defining the sequential relations between mother and infant behaviors. Watson (1979) describes synchrony as a type of contingency. According to Symons & Moran (1994), a combination of responsiveness and dependency characterizes the link between the actions of two persons and describes meaningfully their interactive dynamics. The purpose of this study was to describe the dynamic organization of interactions specific to each attachment group in a learning situation. Sixty-two dyads (infant's age: 12 to 16 months) were observed in the laboratory during three tasks (3 minutes each). After the session was completed, the Strange Situation was conducted. Proportions of attachment classifications were: A: 31%; B: 40% and C: 29%. Inter-lab reliability, obtained for 15 dyads, was 100% for the main category and 86,7% for subclassifications. For learning/teaching tasks, videotapes of interactions were coded on a real-time basis with the INTERACT coding system (Dumas, 1988). Eleven clusters of behaviors were devised. Twenty-seven % of observations were coded independently: percentage agreements ranged from 0.88 to 0.99 and kappas from 0.61 to 0.79. Conditional probabilities (within 3 sec) of occurrence of cluster combinations were used to measure the two dimensions of contingencies. Results show some similarities in the contingencies experience between the three groups. But there are also some differences in their dyadic functioning. Group B (secure) exchanges are characterized by reciprocity and cooperation: most of behaviors are organized in relation with the partner's ones. Group A (avoidant) rather shows parallel participation whereas there seems to be a sporadic and selective collaboration in C (ambivalent) group.

INTRODUCTION

Many studies demonstrate that early in life, there is a sequential dependency and a similarity between infants' behaviors and mothers' ones (Cohn & Tronick, 1988; Symons & Moran, 1987). This contingency gives a certain structure to the early mother-infant interactions. As time goes on, each dyad finds its onwn way of functioning. Dunham & Dunham (1995) suggest that many of those episodes of contingent responses are optimal structures for many aspects of infant development. Attachment theorists propose that the quality of mother-infant relationship is the outcome of interactive experiences during the very first years of life. Thus contingency is theoretically linked to the quality of the relationship. Empirically, contingency has been used as a dimension of maternal sensitivity related to the attachment category. However infants' contingent behaviors have rarely been associated with attachment. Moreover, Isabella and colleagues (1989, 1991) found more synchronous and reciprocal exchanges in secure relationships while asynchronous interactions fostered insecure ones. Synchrony is conceived as a type of contingency (Watson, 1979). Isabella's studies suggest the importance of defining more clearly the sequential relations between mother and infant behaviors. Individuals manifest some coherency across contexts and some stability in time. If contingency contributes to the elaboration of the attachment relationship, it might express the quality of this relationship afterwards.

AIMS OF THE STUDY:

1- Description of the contingencies (temporal and sequential relationships between mothers' and infants' behaviors) specific to each attachment category in a learning situation for one year infants.
   -- Dimensions of contingencies:
      -- The responsiveness answers to the question:
         Which behavior is sufficient to give rise to an answer from the partner?
      -- The dependency answers to the question:
         Which behavior is necessary to give rise to an answer from the partner?
   -- Operationnalization of responsiveness and dependency:
      Conditional probabilities of the occurrence of an answer, given the partner's prior behavior

2- Identification of short sequences of contingent responses: the starting point is the infant's behavior; the second step is the mother's behavior; the last step is the infant's following answer.

METHOD

SUBJECTS

N = 62 mother-infant dyads recruited through advertisements in day care and community centers and newspapers in the Quebec area

MOTHERS:
Age: Average 31 years old (range: 18-41)
Education: Average 15.7 years (range: 12-21 years)
Status: 59% married, 41% cohabiting
Mean family income : > 45,000 (canadian dollars): 48.4%

INFANTS:
Age: 12 to 16 months old (M = 13.3 months)
Gender: 36 (58%) boys, 26 (42%) girls
Parity: 39 firstborn, 14 second, 9 third child

PROCEDURE

Interested mothers called the university and were given information concerning the study. When they wished to participate in the study, two appointments were fixed. The first one involved a home visit in which the procedures of the project were explained, and the mothers completed the background questionnaires. The second meeting took place within a two weeks' delay at the university, where mothers and infants experimented the learning situation and the strange situation.

MEASURES

ATTACHMENT RELATIONSHIP: Strange Situation (Ainsworth & Wittig, 1969).
Training in the A, B, C classification scheme: David R. Pederson, at the University of Western Ontario

INTERRATER RELIABILITY on 15 dyads: -- 100% for the main categories; -- 86.7% for the subcategories

ATTACHMENT CLASSIFICATION: -- B (secure): 40.3%; -- A (avoidant): 30.7%; -- C (resistant): 29%

LEARNING TASKS: -- three of increasing difficulty, three minutes each

CODIFICATION OF INTERACTIONS:

-- In real-time, with INTERACT, microcomputer coding program (Dumas, 1987)

-- Clusters of behaviors (adapted from Dumas & Lafrenière, 1993)

Mother: support (SUP), help (HLP), negativeness (NEG), interference (INT), positive affect (+AF), negative affect (-AF)

Infant: task orientation (TOR), help-seeking (HSE), negativeness (NEG), positive affect (+AF), negative affect (-AF)

-- Interrater agreement (5 sec.): 17 dyads, % agreement: 0,88 to 0,99; KAPPA: 0,61 to 0,79

FOR ANALYSIS: CONTINGENCY SCORE FOR EACH GROUP:

1) For each task, conditional probabilities of the occurrence of infant/mother behaviors, given the previous occurrence of the partner (mother/infant behaviors) within 3 seconds

2) Comparaison of conditional probabilities to expected probabilities >>>> "z" statistic

3) Group profiles: sum Z test (sum across subjects / square root N)

4) Evaluation of Z for significance ($p < 0.01$)

RESULTS

INTERPRETATION OF THE Z SCORES:

-- FOR RESPONSIVENESS:

Z + = FACILITATIVE EFFECT OF THE BEHAVIOR UPON THE ANSWER

Z - = INHIBITORY EFFECT OF THE BEHAVIOR UPON THE ANSWER

-- FOR DEPENDENCY:

Z + = THE ANSWER OCCURS SYSTEMATICALLY IN THE PRESENCE OF THE BEHAVIOR

Z - = THE ANSWER OCCURS SYSTEMATICALLY IN THE ABSENCE OF THE BEHAVIOR

TABLE 1. SYNTHESIS OF MATERNAL CONTINGENT BEHAVIORS ACCORDING TO THE ATTACHMENT CATEGORY

Mother / Infant	Group A	Group B	Group C
	Respons. / Depend.	Respons. / Depend.	Respons. / Depend.
Support / Task or.	3,9 / 5,4	7,3 / 9,3	4,7 / 6,2
Help / Task or.	1,8 / 1,8	4,3 / 4,3	3,5 / 3,3
Negativ. / Task or.	-2,2 / -1,8	-2,2 / -1,6	-2,8 / -2,4
Interf. / Task or.	2,8 / 4,0	2,6 / 4,1	2,5 / 3,6
Neg. aff./ Task or.	-2,4 / -1,9	-2,4 / -2,2	-1,5 / -1,1
Supp. / Help-seek.	8,5 / 8,4	6,3 / 6,2	6,9 / 6,7
Help / Help-seek.	0,8 / -0,1	2,4 / 1,2	1,8 / 0,8
Negat. / Help-seek.	6,8 / 6,8	6,9 / 6,9	6,0 / 6,0
Support / Negat.	-1,4 / -1,3	-3,1 / -3,1	-2,2 / -2,1
Help / Negat.	1,6 / 0,6	3,1 / 1,4	2,0 / 0,7
Negat. / Negat.	0,8 / 1,1	5,6 / 5,8	3,0 / 3,3
Pos. affect / Negat.	1,9 / 2,0	3,7 / 3,8	2,7 / 2,8
Neg. affect / Negat.	4,3 / 4,4	1,7 / 2,0	1,4 / 1,4
Pos. aff. / Pos. aff.	11,7 / 11,5	13,3 / 13,1	10,7 / 10,5
Help / Neg. affect	3,7 / 2,6	3,9 / 2,3	3,3 / 2,0
Pos. aff. / Neg. aff.	2,4 / 2,4	2,2 / 2,2	1,0 / 1,0
Neg. aff. / Neg. aff.	0,5 / 0,5	3,1 / 3,2	0,8 / 0,9

* Underlined numbers indicate significant Z scores for responsiveness and dependency.

TABLE 2. SYNTHESIS OF INFANTS' CONTINGENT BEHAVIORS ACCORDING TO THE ATTACHMENT CATEGORY

Infant / Mother	Group A	Group B	Group C
	Respons. / Depend.	Respons. / Depend.	Respons. / Depend.
Task orientation / Support	2,4 / 1,1	2,9 / 1,2	1,9 / 0,8
Task orientation / Help	8,3 / 8,3	11,4 / 11,4	9,7 / 10,0
Negativeness / Help	3,0 / 4,2	3,8 / 5,7	3,4 / 4,8
Negative Affect / Help	0,3 / 1,3	0,9 / 2,4	0,6 / 1,7
Task orientation / Interference	2,9 / 1,9	2,9 / 1,4	2,6 / 1,6
Task orientation / Positive affect	1,5 / 0,4	1,0 / -0,5	3,4 / 2,2
Help-seeking / Negativeness	2,7 / 2,7	0,1 / 0,0	-0,6 / -0,6

* Underlined numbers indicate significant Z scores for responsiveness and dependency.

TABLE 3. SEQUENCES OF RESPONSES ACCORDING TO THE ATTACHMENT GROUP

I	>>	M	>>	I	I	>>	M	>>	I	I	>>	M	>>	I
TOR	>>	SUP	>>	TOR	TOR	>>	SUP	>>	TOR	TOR	>>	SUP		
	>>	INT	>>	TOR		>>	INT	>>	TOR		>>	INT	>>	TOR
						>>	HLP	>>	TOR		>>	HLP	>>	TOR
								>>	NEG				>>	NEG
HSE	>>	SUP	>>	TOR	HSE	>>	SUP	>>	TOR	HSE	>>	SUP		
	>>	NEG	>>	HSE		>>	NEG				>>	NEG		
						>>	HLP	>>	TOR					
								>>	NEG					
NEG	>>	-AF			NEG	>>	NEG			NEG	>>	NEG		
						>>	+AF				>>	+AF	>>	TOR
						>>	HLP	>>	TOR					
								>>	NEG					
+AF	>>	+AF			+AF	>>	+AF			+AF	>>	+AF	>>	TOR
-AF	>>	HLP	>>	TOR	-AF	>>	HLP	>>	TOR	-AF	>>	HLP	>>	TOR
			>>	NEG				>>	NEG				>>	NEG
	>>	+AF				>>	-AF							

Legend: TOR: task orientation HSE: help-seeking SUP: support
INT: interference NEG: negativeness HLP: help
+AF: positive affect -AF: negative affect

CONCLUSIONS

1- IN SPITE OF SOME SIMILARITIES, CONTINGENCIES STRUCTURE IN THIS LEARNING SITUATION SHOWS SOME SPECIFICITIES ACCORDING TO THE QUALITY OF THE RELATIONSHIP.

2- GROUP B FUNCTIONING IS CHARACTERIZED BY HARMONY, COOPERATION AND BEHAVIORS ORGANIZED OBVIOUSLY IN FUNCTION OF THE PARTNER. INTERACTIVE SEQUENCES ARE LONGER AND MORE DIVERSIFIED.

3- INSECURE GROUPS SHOW THE SAME PROPORTIONS OF BEHAVIORS; NEVERTHELESS, THERE ARE LESS BEHAVIORS IN RESPONSE TO THE PREVIOUS BEHAVIOR OF THE PARTNER.

4- IN GROUP A, INTERACTIONS ARE MARKED BY SOME NEGATIVENESS. MOTHER AND CHILD SEEM TO WORK IN A PARALLEL WAY RATHER TO REALLY COLLABORATE.

5- IN GROUP C, PARTICIPATION SEEMS SELECTIVE. THE MOTHERS' RESPONSES ARE LESS COHERENT WHEN THE INFANTS HAVE SOME DIFFICULTIES THAN WHEN THEY ARE ORIENTED ON THE TASK. INFANTS REACT PARTICULARLY TO MATERNAL POSITIVE AFFECT AND TO HER CONCRETE PARTICIPATION TO THE TASK.

6- IN TAKING INTO ACCOUNT THE SEQUENTIAL RELATION BETWEEN THE BEHAVIORS AND IN USING THE DIMENSIONS OF RESPONSIVENESS AND DEPENDENCY, THIS STUDY SPECIFIES THE CONTINGENCY ENVIRONMENT WHICH IS OFFERED TO THE INFANTS AND INTO WHICH HE/SHE TAKES AN ACTIVE PART. IF CONTINGENCY IS ASSOCIATED TO A BETTER ADAPTATION, GROUP B INFANTS MIGHT BE BETTER EQUIPPED TO COPE WITH LIFE DIFFICULTIES WHILE THE BEGINNINGS OF THE DEVELOPMENTAL PATH OF INSECURE INFANTS SEEM MORE PRECARIOUS.

IN CONCLUSION, THE ANALYSIS OF THE DYNAMIC ORGANIZATION OF INTERACTIONS IN THIS LEARNING SITUATION AT ONE YEAR OF AGE ATTESTS THE QUALITY OF THE AFFECTIVE RELATIONSHIPS OF THE DYADS.

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