



Mother-Child Interactions: Observed Triggers, Reinforcers, and Reciprocity of Behaviors and Affective Expression

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Importance of parent-child interactions on early childhood development

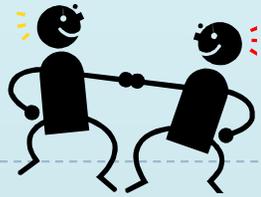
- ▶ Parents' responsive interactions with their child facilitate social and cognitive skills and positive relationships (Kochanska, G., 1997; Landry, S. H., Smith, K. E., & Swank, P. R., 2006).

- ▶ Richly reinforcing prosocial behavior
- ▶ Stimulating exchanges
- ▶ Warmth
- ▶ Giving clear, calm instructions

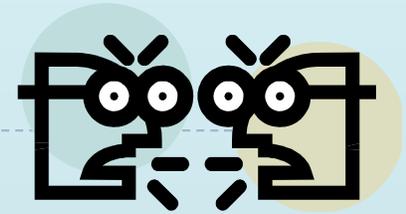


- ▶ These types of interactions nurture children's self-regulatory skills that enable children to inhibit impulsive behavior and cooperate with others (Chang et al., 2012; Rothbart, Ellis, & Posner, 2004).





Interaction Patterns



- ▶ **Triggers = Antecedents**
 - ▶ What occurs before a particular behavior of interest
 - ▶ What occurs before a pattern of behaviors
- ▶ **Reinforcers = Consequence**
 - ▶ What occurs directly after a particular behavior of interest
 - ▶ May be positively or negatively reinforcing
- ▶ **Reciprocity = a mutual interchange between people**
 - ▶ A behavior or emotional expression displayed by a person is followed by a similar behavior or affect of another.
 - ▶ This may occur in “bursts” of interchanges with varying durations.





Microsocial observations of interactions in real time

Pros

- ▶ Provide objective measures of behavior and affect.
- ▶ Can identify triggers and reinforcers of behaviors and reciprocal influences between child and parent.
- ▶ Tend to be more sensitive to change than questionnaire data.
- ▶ Have been predictive of future behavior problems, social skills, and academic functioning.

Cons

- ▶ May not be practical (time to train, cost of coding technology)
- ▶ Large amounts of data to summarize
- ▶ Lots of variability in the data- it may take a number of observations or lengthy observation to obtain a representative sample of behaviors.
 - ▶ Can set up standardized situations (e.g. play tasks) to reduce this variability.





Example 1

- ▶ **The Coercion Process: escape conditioning sequence** (Patterson, Reid, & Dishion, 1992).
 - ▶ 1- Mother tells child to pick up and put away the toys (Directive)
 - ▶ 2- Child does not start to clean up toys (Noncompliance)
 - ▶ 3- Mother scolds child (Negative verbal, negative affect)
 - ▶ 4- Child argues with mother (Refusal, negative affect; punishing to mother, mother less likely to scold)
 - ▶ 5- Mother stops scolding (negative reinforcement: child more likely to argue with mother in the future)
 - ▶ 6- Child stops arguing (negative reinforcement: mother likely to give in to child)
 - ▶ Outcome: child does not pick up toys.
 - ▶ Long term outcome: Child learns to argue to get out of doing things.



Example 2



- ▶ **Reciprocity of positive interactions: *Joint Play***
(Gardner, Ward, Burton, & Wilson, 2003)
 - ▶ Home observations for 1 hour
 - ▶ Mother asked to do what typically do, but limited television watching and visitors. Sample = young children with conduct problems.
 - ▶ Joint Play = mother and child actively engaged in the same friendly play or work together
 - ▶ Puzzles, drawing, reading, pretend games
 - ▶ Baking, gardening, housework
 - ▶ Excluded routine caretaking (grooming, bathing, dressing).
 - ▶ Time spent in Joint Play when child 3 years old predicted fewer conduct problems at age 4, even when controlling for age 3 conduct problems and hyperactivity, maternal depression, and frequency of mother-child negative interactions.
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The Triple P Parenting Media Study

(NIDA Grant # R01 DA021307)

- ▶ Goal: to test the efficacy of two versions of a 10-episode media series on parenting against a wait-list control group.
 - ▶ Sample = 321 families
 - ▶ Children ages 3-6 who exhibit behavior problems (e.g. oppositional, aggression)
 - ▶ Research sites = Eugene & Portland, Oregon, U.S.A.
 - ▶ 15% African-American, 9% Hispanic
 - ▶ 31% are single mothers
 - ▶ 302 families participated in the mother-child play-tasks
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Mother-Child Play Task

ACTIVITY	TIME	MATERIALS	GOAL
1) Questionnaire	20 min	One "Where's Waldo" book	Child's activity when mother is occupied. How mom deals with child interruptions when she is busy.
2) Free play with phone interruption	10 min	Colorful small blocks 4 small people figures Plastic farm animals and fencing. 4 small vehicles. 3 colored bins for toys Telephone	Warm up activity. Spontaneous interactions. Interactions when there are competing demands for mother's attention during phone call (4 min).
3) Clean up with wait time	Max is 15 min	Same as above Instruction card	Mother directions. Child compliance. Mother-child interactions when waiting with nothing to do.
4) Adult-led teaching time	5-10 min	12-48 piece puzzle (depending on age)	Mother teaching. Child response to teaching and to difficult task.
5) Preparation for transition & interruption	13 min	Instruction card Play dough & toys Crayons & paper	How mother prepares child for transitions and for activity that takes parent attention. Interactions during transition. Interactions when parent is busy (8 min).

Observation System

- ▶ Play tasks are video taped, then coded on computer in real-time.
- ▶ 4 digit code: initiator, content (2 digits), affect.

Mother codes:

- ▶ Approval/praise; Guide; Converse; Social Attention; Aversive Verbal; Directives (Clear Start; Clear Stop; Vague; Aversive); Physical (Positive; Neutral; Aversive); Affect (Positive; Neutral; Aversive).

Child codes:

- ▶ Approval/Praise; Converse; Social Interact; Aversive Verbal; Complaining; Demanding; Interrupting; Inappropriate (rule breaking); Compliance; Noncompliance; Physical (Positive; Neutral; Aversive); Affect (Positive; Neutral; Aversive).
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Odds Ratios: Triggers to and Reinforcers of Children's Problem Behavior

Mother's Behavior Before and After Child Inappropriate Behavior				
<i>Mother Code</i>	<i>Odds Ratio Antecedent</i>	<i>95% Confidence Interval</i>	<i>Odds Ratio Consequence</i>	<i>95% Confidence Interval</i>
Approval	0.04	0.04-0.05	0.06	0.05-0.07
Guide	0.23	0.22-0.25	0.23	0.21-0.24
Social Attention	0.28	0.25-0.32	0.22	0.19-0.26
Aversive Verbal	1.31	1.01-1.69	0.78	0.56-1.08
Start Directive	0.81	0.74-0.89	0.27	0.23-0.31
Stop Directive	4.67	4.27-5.12	0.53	0.42-0.68
Vague Directive	2.58	2.39-2.79	0.69	0.60-0.79
Aversive Directive	3.06	1.23-7.65	0	---
Positive Physical	0.33	0.28-0.38	0.31	0.27-0.37
Neutral Physical	0.33	0.29-0.38	0.10	0.27-0.35
Aversive Physical	2.85	2.22-3.65	1.92	1.43-2.57
Positive Affect	0.15	0.13-0.19	0.15	0.13-0.19
Neutral Affect	0.28	0.27-0.29	0.17	0.17-0.18
Negative Affect	3.06	2.70-3.47	1.06	0.87-1.30

“I don’t want to go to school”

Video example of “nattering”

- ▶ Mom: “Come here so I can do your hair so you can go to school.”
 - ▶ Child (4 year old): “I don’t want to go to school.”
 - ▶ Mom: “Right now. Get over here”.
 - ▶ Child: “I don’t want to go to school.”
 - ▶ Mom: “I don’t care what you want. You are going. Now come here.”
 - ▶ Child: “No!” said with anger.
 - ▶ Mom: “Jane, why don’t you want to go to school.”
 - ▶ Child: “Because I don’t like going to school.”
 - ▶ Mom: “You can’t go to big school if you don’t go to this school. Do you want to ride the bus with Charlie to go to school?”
 - ▶ Child: “No.”
 - ▶ Mom: “Yes you do!” said in angry tone.
 - ▶ Child: “No!” said in angry tone.
 - ▶ Mom: “Do you want to stay home all your life and be a dummy? Is that what you want?”
 - ▶ Child: “No.” said in a sad tone.
 - ▶ Mom: “Well you gotta go to school so let’s do it!” said in angry tone.
 - ▶ Child: “No. I don’t want to go to school!” said in angry tone.
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“I don’t want to take a bath”

Video example: Is this a true choice with mother showing empathy or a coercive process with child using sadness and whining to get out of doing something?

- ▶ Mom: “what is Sean [the baby] doing”
- ▶ Child (3 year old): “Sean is taking a bath.”
- ▶ Mom: “Do you need a bath?”
- ▶ Child: “Um, no thanks.”
- ▶ Mom: “No thanks? I think your hair is dirty and you need a shower”.
- ▶ Child: “I don’t want to take a shower.” said in whiney voice and child hides behind the bathroom door.
- ▶ Mom: “You don’t want to take a shower? Why not?”
- ▶ Child: “Because, I look so pretty.” said in a sad tone.
- ▶ Mom: “what?”
- ▶ Child: “I want to stay here.” said in a whiney tone, still hiding behind door.
- ▶ Mom: “You want to stay there?” said in an empathetic tone.
- ▶ Child: “I don’t want to take a bath.”
- ▶ Mom: “Why not.”
- ▶ Child: “Because it is like a baby. I don’t want to take a bath all day because I do not want to wash my hair.”
- ▶ Mom: “Okay.” said in empathetic tone. “Okay!” said in happy tone.

Odds Ratios: Reciprocity of Emotional Expression

Mother's Affect Before and After Child Positive Affect				
<i>Mother Code</i>	<i>Odds Ratio Antecedent</i>	<i>95% Confidence Interval</i>	<i>Odds Ratio Consequence</i>	<i>95% Confidence Interval</i>
Positive Affect	7.93	7.50-8.39	8.41	7.96-8.89
Neutral Affect	1.33	1.29-1.38	1.3	1.25-1.35
Negative Affect	1.5	1.14-1.97	1.01	0.73-1.41
Mother's Affect Before and After Child Negative Affect				
Positive Affect	0.59	0.51-0.67	0.48	0.41-0.55
Neutral Affect	1.00	0.97-1.02	0.91	0.89-0.94
Negative Affect	6.63	5.94-7.40	7.13	6.41-7.94

Behavior bursts: Non-compliance sequence

Task	Clean Up												Puzzle	
Minutes	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Child Behaviors and Affect														
Converse				1	1	3	2	2		1			5	1
Comply	2		1			7	4	2						
NonComply		3	1	3	4	2	3	3						
Complaint		4	2	1	2		1							
Innappropriate		5	1	3	3	3	5	5			7	4	4	1
Pos Affect	2		2					2		2			3	
Neut Affect		5		2	1		2	4	10	8	5		3	2 3
Neg Affect		6	4	5	4	7	8	3			10	10	6	
Mother Behaviors and Affect														
Converse				4	4	6		2	1				2	
Approval	6		2					8	8	4			2	
Guide	4							4	4				3	1
Clear Start	2	8	4	8	6	6	6	6	14	8	20	8	6	2
Neg Verbal				2							1*			
Neut Phys				2										
Pos Affect	6		2					10	4	4				
Neut Affect	7	6	10	10	6	6	10	20	20	18	20	14	6	6 4
Neg Affect				2							2			
*“I like the way you are helping, but you are putting them in the wrong bin.”														

Observing Pre-Post Behavior Changes in Randomized Control Trials

- ▶ Changes in intervention group compared to control
- ▶ *Combining specific behavior codes*
 - ▶ Significant increase in mothers' use of *Positive Interaction* (Approval, Guide, Positive Physical), $p = .01$, $d = .34$, six months following the intervention.
- ▶ **Task specific behaviors**
 - ▶ Significant increases in mothers' use of Guide during the teaching task in the intervention group compared to control, $p = .03$, $d = .26$, six months following the intervention.
- ▶ **Contingent behaviors**
 - ▶ Found significant use of mothers' Redirection (Guide, Clear Start Directive) following their child's misbehavior (Inappropriate, Noncompliance), $p = .04$, $d = .28$ immediately post intervention; effect faded at 6 month follow-up.



Measuring behavioral contingencies in clinical practice

- ▶ Can identify the patterns of parent behavior and emotional expression that trigger and reinforce child problem behavior.
- ▶ Monitor progress to identify changes in triggers and reinforcement patterns.
- ▶ Monitor progress to identify the child response to those changes.
- ▶ Evaluate the extent to which the clinical intervention was successful.



