

# MODIFYING PARENT-CHILD INTERACTION: ENHANCING THE DEVELOPMENT OF HANDICAPPED CHILDREN

Gerald Mahoney  
Amy Powell

*University of Connecticut School of Medicine*

This paper describes the Transactional Intervention Program (TRIP), an intervention curriculum designed to modify patterns of interaction between parents and their young handicapped children. Issues that were considered in designing the program are discussed, and evaluation data on a group of 41 handicapped children

and their parents are presented. Data indicate that parent-child interaction is an important and legitimate focus for early intervention. At the same time, the data illustrate the complex nature of parent-child interaction and underscore the difficulty of developing and evaluating interventions designed to modify it.

With the advent of recent federal legislation (P.L. 99-457), early intervention programs will increasingly focus on patterns of interaction between parents and their young handicapped children. Although several model programs and assessment procedures have been developed for this purpose (Bromwich, 1981; Faran, Kasari, & Jay, 1984; MacDonald & Gillette, 1984; McCollum & Stayton, 1985; Rosenberg & Robinson, 1985), the specific impact of these procedures on parent interactive behavior has not been well established. More importantly, there is little evidence that the changes in parent behavior promoted by these programs are systematically related to child outcomes.

A number of investigations have identified characteristics of parent interaction that are associated with children's early cognitive, language, and social development. Global style characteristics such as sensitivity, responsiveness, directiveness, achievement orientation, warmth, and enjoyment have consistently been related to various aspects of children's development (Ainsworth & Bell, 1975; Baumrind, 1971; Bayley & Schaefer, 1964; Clarke-Stewart, 1973; Donovan & Leavitt, 1978; McCall, 1979; Stevenson & Lamb, 1979; Yarrow, Rubenstein, & Pedersen, 1975). Both quantitative and qualitative characteristics of the stimulation that parents provide their children have also been related to developmental outcomes (Bradley & Caldwell, 1976; Brophy 1970; Carew, 1980; Hess & Shipman, 1965; Smith & Hagen, 1984). Early developmental outcomes are related to parents being physically available to their children and to their providing information that elaborates on children's experiences.

Investigations of interactions between parents and handicapped children have focused on how their interactions differ from those of parents and nonhandicapped children. These studies have focused on teaching style (Stoneman, Brody, & Abbott, 1983), play (Eheart, 1982; Henggeler & Cooper, 1983; McCon-

key & Martin, 1983), attachment (Berger & Cunningham, 1981), and language (Buium, Rynders & Turnure, 1974; Cunningham, Reuler, Blackwell, & Deck, 1981; Davis & Barley, 1980; Gutmann & Rondal, 1979; Mahoney & Robenalt, 1986; Marshall, Hegrenes & Goldstein, 1973; Petersen & Sherrod, 1982; Rondal, 1978). Many of these studies indicate that the information parents provide handicapped children is generally matched to their children's communicative and developmental level. However, parent's style of interaction tends to be more directive and less responsive than that of parents of nonhandicapped children, even when comparisons include groups of children who are matched on measures of developmental competence, such as Mean Length of Utterance or mental age (Eheart, 1982; Jones, 1980; Terdal, Jackson, & Garner, 1976).

Many investigators (Brazelton, Koslowski, & Main, 1974; Brooks-Gunn & Lewis, 1984; Mahoney & Robenalt, 1986; Richard, 1986) have suggested that the qualitatively different behavior of parents of handicapped children reflects their adjustment to child characteristics (e.g., behavioral style, communicative or developmental level). There are differing opinions, however, as to whether these unique characteristics of parental style promote or interfere with the development of handicapped children (Crawley & Spiker, 1983; Mahoney & Seely, 1976; Maurer & Sherrod, 1987).

Our own research suggests that a directive, nonresponsive style of interaction may be relatively ineffective at promoting the development of handicapped children. In one study (Mahoney, Finger, & Powell, 1985), three dimensions of maternal behavioral style—child-orientation, quantity of stimulation, and control—were related to the current developmental level of a sample of 60 mentally retarded children. These factors accounted for 23% of the variance in children's Bayley mental development scores. Children with the highest developmental scores had mothers whose interactive style was characterized by a high degree of child orientation and low degrees of control and stimulation.

Mahoney (1988) also analyzed mothers' communicative style with the same sample of children. Children who had the highest expressive language age scores on the Receptive-Expressive Emergent Language Scale (REEL) (Bzoch & League, 1970) and who were most communicative during interaction had mothers who were highly responsive to their children's communicative attempts and conversational topics. Children who were the least communicative and had the lowest expressive language age scores had mothers who tended to be unresponsive to children's communication and focused on directing children to attend to their own topics of conversation.

Our findings replicate the results of several correlational studies on the interactions between parents and nonhandicapped children. To the extent that these findings suggest a causal relationship, they imply that interventions for young handicapped children should promote a responsive, child-oriented style of parent-child interaction. Yet, the value of this style of interaction as either an intervention goal or procedure needs to be demonstrated. Specifically, can intervention practices help parents become more responsive and child oriented in their daily interactions with their children? Will enhanced levels of parent responsiveness and child orientation be associated with higher levels of child functioning?

To examine these questions, we developed the Transactional Intervention Program (TRIP), an intervention curriculum for birth to 3-year-old handicapped children. The goal of this program was to promote a responsive parenting style that would influence parents' approach to playing with, communicating with, teaching, managing, and caring for their children. TRIP was designed on the assumption that modifying specific interactive behavior would affect general behavioral style.

Two instructional strategies were adopted from an intervention program developed by MacDonald and Gillette (1984). Turn taking provides parents with a framework for understanding interaction with their children, improving interactional balance, decreasing the frequency of directives, and increasing the frequency of responses. Turn-taking strategies included waiting for the child to act, imitating the child's behavior, following the child's lead, and occasionally elaborating on the child's activity. Interactive Match helps parents "fine tune" their interactive behavior so that it is compatible with critical child characteristics. Interactive match strategies included adjusting behavioral style so that it is similar to the child's tempo or pace; engaging in activities that are within the child's current, rather than potential, range of development; and following and responding to the child's current interests. TRIP focused on encouraging parents to incorporate these strategies into daily interactions with their children.

Our research studies had indicated that the interactive style fostered by TRIP was the opposite of the didactic style that parents would probably adopt if they attempted to teach specific developmental skills. Accordingly, we also discouraged parents from attempting to instruct their children. Parents were told that they would create an environment optimally suited to promoting children's learning and development by engaging in balanced interactions that focused on children's interests and developmental level.

TRIP was implemented in a home-based public school program for birth to 3-year-old handicapped children. Teacher consultants employed by this program were trained in TRIP philosophy, goals, and strategies. The teachers implemented the program during weekly home visits with families during a 2-year period. Program evaluation focused on how well parents implemented the TRIP strategies, the relationship of TRIP strategy used to global behavioral style, and the relationship of TRIP strategies and global behavioral style to children's developmental gains.

## METHOD

### *Subjects*

Forty-one handicapped children and their parents participated in TRIP for periods ranging from 5 to 24 months ( $\bar{X} = 11.5$  months). At the beginning of intervention, the children ranged in age from 2 to 32 months ( $\bar{X} = 17.6$  months) and had Bayley mental development ages that ranged from 0.5 to 20 months ( $\bar{X} = 9.3$  months). All of the children were functioning at levels substantially below those expected for their chronological ages, in the moderate to severe range of mental retardation. Primary handicapping conditions included Down

syndrome ( $n = 13$ ), cerebral palsy ( $n = 4$ ), spina bifida ( $n = 3$ ), hydrocephalus ( $n = 3$ ), congenital infectious diseases ( $n = 2$ ), and other conditions such as Rett Syndrome, microcephaly, and infantile glaucoma. Five of the 41 children had undiagnosed etiologies.

All children came from white, middle class families. The average age of the mothers was 30.2 years; the average age of the fathers was 32.3 years. Thirty-three percent of the fathers and 31% of the mothers were college graduates. Only four of the mothers and two of the fathers had not completed their high school education. The median annual family income was \$35,000. Forty percent of the fathers were administrators, managers, or professionals, and 38% were employed in factory or service occupations. Approximately 55% of the mothers were homemakers, and the remainder of the mothers were employed in professional, managerial, or service positions. In all but three of the families, both parents were living at home. The average number of children per family was 1.4 and the handicapped child was on the average the second child of the family.

### *Procedures*

TRIP was implemented in an existing public school early intervention program for children birth to 3 years of age. Teacher consultants employed by the program received training in the TRIP model during an initial 3-month period. Training included discussion of program philosophy and goals, observation of videotaped parent-child interaction, modeling of program strategies, and opportunities to practice these strategies with parents and children in a small pilot study. During the next 2 years, project staff met weekly with the teachers to provide additional training in program techniques and to provide support in implementing the program.

TRIP curriculum and materials were developed during the initial training period and were used for the duration of the intervention program. They included the Transactional Intervention Program Teachers' Guide (Mahoney & Powell, 1986), Developmental Profile (Mahoney, Powell, Dichtelmiller, & Wolock 1987), and Suggested Activities (Mahoney, Finnegan, Fors, & Wood, 1985).

Teacher consultants implemented the intervention in weekly home visits with parents and their children during a 28-month period. The average length of participation in TRIP was 11 months. Thirty-eight of the 41 participating parents were mothers. During home visits, teachers modeled turn taking and interactive match and helped parents develop activities and a plan for incorporating turn taking and interactive match into daily routines such as feeding, bathing, and play.

Every 6 to 10 weeks, a 10-minute videotape recording was made of parents and children playing with one another. These tapes were then coded using measures of turn taking, interactive match, and global parental style. This information was used to identify areas of strength and difficulty in interaction and to determine the degree to which parents were implementing TRIP strategies. The tapes were reviewed on a regular basis with the teacher consultants, and information gained from the coding procedures was used as the basis for developing specific inter-

vention plans for each family. Teacher consultants reviewed the videotapes with parents and used them as a source of feedback and instruction.

A pre- postintervention design was used to evaluate the effects of TRIP on parents and children. Three sets of data were collected. Demographic data on socioeconomic status, family structure, child health, etiology, and involvement in intervention were collected at the end of intervention. Pre- and postintervention videotape recordings of parents playing with their children were used to assess parents' implementation of the TRIP strategies and parental style. Children's developmental status was assessed using the Bayley Scales of Infant Development (Bayley, 1969).

The first 5 minutes from each videotape were coded according to three classification systems. Turn taking was assessed via a modified version of the turn-taking classification scheme reported by Kaye and Charney (1980). The first 100 consecutive turns for each dyad were identified according to the person producing them and turn type. Turn types included mands (a turn that requires a response and to which it would be rude not to respond in normal adult discourse); response (a turn that is a response to the other person); response-mands (a turn that is a response to a previous turn and that simultaneously requires a response from the other person); unlinked (a turn that is not directed toward the other person). This procedure yielded total number of turns for the parent and child and the proportion of each person's total turns that were classified in each turn type category.

Interactive match was assessed via a 3-point scale that measured the degree to which the parent matched the child's behavior in each of four areas (behavioral style, developmental level, interest, and complexity). Scores of 1 represented a significant mismatch, scores of 2 represented an average match, and scores of 3 represented a good match.

Parental style was assessed with a modified version of the Maternal Behavior Rating Scale (Mahoney, Powell, & Finger, 1986). Ten items from the original scale included enjoyment, expressiveness, warmth, sensitivity to interest, responsiveness, achievement orientation, inventiveness, effectiveness at gaining the child's cooperation, acceptance, and directiveness. Two new items, pace (tempo or rate of activity) and praise (amount of verbal praise) were added to the scale. On each of the items ratings were based on a 5-point Likert scale, with ratings of 1 being low and 5 being high.

The three classification systems (turn taking, interactive match, behavioral style) were coded by independent raters. Reliability was based upon the percentage of interrater agreement,  $[(\text{number of agreements}/\text{number of agreements} + \text{disagreements}) \times 100]$ . Following reliability training interrater agreement was 95% for numbers of turns; 85% for turn types; and 80% for interactive match and interactional style. Reliability was computed on 20% of the sample. Reliability for number of turns was 91% and was 83% for turn type. Reliability on ratings of interactive match ranged from 81% to 90% with an overall agreement of 87%. Agreement within one point on ratings of behavioral style ranged from 65% to 100% with an overall agreement of 82%.

## RESULTS

### *Intervention Data*

Means and standard deviations for pre- and postintervention turn-taking and interactive match variables are presented in Table 1. Pairwise *t* tests indicate significant changes in parents' implementation of TRIP strategies. Prior to intervention, parents were generally turn dominant and had a high percentage of mands and low percentage of responses. In addition, ratings on interactive match suggest that they had some difficulty matching their children's style, developmental level, and interests. At the end of intervention parents were implementing TRIP strategies as indicated by their lower percentage of turns and mands, higher percentage of response and response-mands, and higher ratings on interactive match.

Means and standard deviations for pre- and postintervention interactional style measures are also presented in Table 1. Preintervention ratings on each of the 12 items clustered around the midpoint of the 5-point scale. There were significant pre-post changes on 4 of the 12 items. As expected, ratings of responsiveness increased ( $p < .05$ ) and directiveness decreased ( $p < .01$ ). The significant decreases in ratings of warmth ( $p < .01$ ) and expressiveness ( $p < .05$ ) were unexpected.

Four factor analyses were performed to reduce the number of variables in the data set for subsequent regression analyses. A principal components procedure was used to extract the factors and a varimax procedure was used to rotate the solution. First, the postintervention turn-taking and interactive match items were factor analyzed to create TRIP factors. Two factors, TRIP Implementation and Interactive Involvement (see Table 2) accounted for 79% of the variance in these items. Second, pre-post changes in turn-taking and interactive match variables were factor analyzed to create TRIP Change factors. Two factors, Change in TRIP Implementation and Change in Interactive Involvement (see Table 2) accounted for 78% of the variance in these items. Third, a factor analysis of the postintervention interactive style items yielded four Style factors (see Table 3) that accounted for 77% of the variance in these items. These factors were Child Orientation, Affect, Quantity of Stimulation, and Performance Orientation. Fourth, pre-post changes in the interactive style items were factor analyzed to create Style Change factors. The three-factor solution (see Table 3) accounted for 71% of the variance in these items. These factors were Child Orientation Change, Affect Change, and Performance Orientation Change.

### *Relationship of TRIP to Parental Style*

Factor scores were computed for all subjects based upon the results of the factor analyses. Regression analyses were then performed to determine the relationship between parents' usage of TRIP strategies and their global behavioral style.

The first set of equations estimated the relationship between TRIP factors and

TABLE 1  
PARENTAL INTERACTIVE BEHAVIOR

Variable	Pre-Intervention		Post-Intervention		Change		T	Sig
	Mean	SD	Mean	SD	Mean	SD		
1. Turn taking								
Total Turns	62.4	6.9	56.4	6.3	-6.1	6.7	5.78	.001
Turn Type (a)								
Mands	46.8	22.6	22.7	15.5	-24.1	24.5	6.31	.001
Response	21.3	14.3	28.8	12.0	7.5	17.6	2.73	.009
Response-Mands	28.9	17.7	47.2	13.5	18.2	20.6	5.67	.001
Unlinked	3.0	3.5	1.4	2.1	-1.7	4.2	2.50	.016
2. Interactive Match (b)								
Behavioral Style	1.60	0.70	2.34	0.70	.73	.90	5.23	.001
Developmental	1.95	0.80	2.40	0.74	.44	1.02	2.74	.009
Interest	1.71	0.78	2.32	0.76	.61	0.92	4.25	.001
Complexity	1.49	0.68	2.37	0.73	.88	0.81	6.92	.001
3. Global Behavioral Style (c)								
Expressiveness	3.27	0.92	2.95	0.97	-.32	0.91	2.24	.031
Enjoyment	3.24	0.83	2.98	0.91	-.27	1.00	1.72	.094
Warmth	3.56	0.90	2.98	0.80	-.58	1.12	3.35	.002
Sensitivity to Interest	3.31	1.27	3.78	1.30	.46	1.73	1.71	.095
Responsiveness	3.09	1.20	3.75	1.24	.66	1.67	2.53	.015
Achievement	2.95	1.10	2.78	1.30	-.17	1.47	.75	.460
Inventiveness	3.26	0.87	3.26	0.95	.00	1.23	.00	.999
Praise	2.48	1.25	2.14	1.26	-.34	1.50	1.50	.142
Effectiveness	2.78	1.10	3.07	0.76	.29	1.17	1.61	.116
Acceptance	3.56	0.95	3.21	0.82	-.34	1.20	1.90	.065
Pace	2.95	0.81	2.87	0.68	-.07	1.03	.45	.653
Directiveness	3.58	1.22	2.80	1.15	-.78	1.53	3.28	.002

Note. (a) Percentage of total turns, (b) Based on a 3-point scale, (c) Based on a 5 point-scale.

TABLE 2  
FACTOR ANALYSIS SOLUTIONS TRIP INTERVENTION MEASURES

Factor Analysis of TRIP Measures Postintervention		
Variable	TRIP Implementation	Factors Interactive Involvement
Mands	-.80	-.00
Complexity Match	.79	.28
Turns	-.78	.23
Behavioral Style Match	.74	.30
Response	.72	.26
Developmental Match	.66	.35
Unlinked	.05	-.81
Interest Match	.42	.73

  

Factor Analysis of changes in TRIP Measures from Pre- to Postintervention		
Variable	Change TRIP Implementation	Factors Change Interactive Involvement
Complexity Change	.85	-.08
Interest Change	.84	-.13
Style Change	.82	.04
Response Change	.77	.24
Developmental Change	.65	.32
Mands Change	.59	.28
Unlinked Change	.15	-.81
Turns Change	.41	.61

Style factors (see Table 4). The results indicated that both TRIP Implementation ( $p < .01$ ) and Interactive Involvement ( $p < .05$ ) were positively related to Child Orientation. There was no significant relationship between TRIP implementation and Affect, but Affect was related positively to Interactive Involvement ( $p < .05$ ). TRIP Implementation related negatively and Interactive Involvement related positively to Quantity of Stimulation ( $p < .05$ ). Neither of the TRIP factors related significantly to Performance Orientation.

The second set of regressions (see Table 4) examined the relationship of TRIP Change factors to Style Change factors. TRIP Implementation Change related positively to Child Orientation Change ( $p < .01$ ) and negatively to Performance Orientation Change ( $p < .05$ ). Interactive Involvement Change related negatively to Affect Change ( $p < .05$ ).

These regression analyses indicate that the parents who were most effective at using the TRIP strategies of Turn taking and Interactive Match were highly responsive and sensitive and relatively nondirective in their interactions with their children. The degree to which parents' style became more responsive and child

TABLE 3  
FACTOR ANALYSIS SOLUTIONS PARENTAL STYLE MEASURES

Factor Analysis of Parental Style Postintervention				
Variable	Child Orientation	Factors		
		Affect	Quantity of Stimulation	Performance Orientation
Sensitivity	.92	.14	.10	-.01
Responsiveness	.92	.16	.13	.08
Directiveness	-.85	-.07	.23	.31
Warmth	.07	.91	-.04	.03
Enjoyment	.18	.77	.37	-.06
Acceptance	.49	.73	-.03	.07
Inventiveness	.30	.51	.47	-.03
Praise	-.26	.50	.25	.35
Pace	-.03	.02	.94	.07
Expressiveness	.05	.49	.59	.34
Achievement Oriented	.19	-.01	.03	.87
Effectiveness	.48	.15	.17	.61

Factor Analysis of Intervention Changes in Parental Style

Variable	Change Child Orientation	Factors	
		Affect Change	Change Performance
Sensitivity Change	.93	.14	-.16
Responsiveness Change	.91	.08	-.14
Effectiveness Change	.82	.21	.16
Directiveness Change	.65	-.14	.62
Warmth Change	.05	.86	-.19
Enjoyment Change	.12	.85	.08
Expressiveness Change	.02	.72	.38
Acceptance Change	.50	.68	-.13
Inventiveness Change	.27	.65	.11
Achievement Change	-.07	-.20	.74
Pace Change	-.15	.14	.71
Praise Change	.08	.23	.68

oriented during the course of intervention was highly related to the degree to which parents incorporated the TRIP strategies into their interactions with their children from pre- to postintervention. The use of the TRIP strategies was also related to parents becoming more deliberate and less stimulating while interacting with their children. Parent ratings on affective items were not related to the degree to which they used TRIP strategies. However, one of the interactive characteristics promoted by TRIP—reduced parental turns—accounted for a small, but significant, portion of the variability of the affective behavioral items.

TABLE 4  
SUMMARY OF REGRESSION ANALYSIS RELATING PARENTAL STYLE TO  
TRIP IMPLEMENTATION

Dependent Variable	TRIP Implementation	Interactive Involvement	R <sup>2</sup>	F
Style Factors				
Child Orientation	.58**	.34*	.45	15.66**
Affect	-.04	.33*	.10	2.35
Quantity of Stimulation	-.34*	.30*	.21	5.00*
Performance Orientation	-.08	.21	.05	0.99
Style Change Factors				
Child Orientation Change	.69**	.12	.49	18.18
Affect Change	.02	-.34*	.12	2.50
Performance Orientation Change	-.33*	-.10	.12	2.57

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

### *Relationship of TRIP to Developmental Gain*

There were several problems in estimating the gains that children made during intervention. First, mental development index (MDI) scores could not be computed for a majority of the sample, either because children's developmental indices were below 50 or the children were older than 30 months of age. As a result, there was no standardized index to compare children's relative developmental status before and after intervention. Second, gains on developmental age measures could not be compared across subjects because the subjects varied on factors that contributed to change in developmental age. These included chronological age and developmental level at the beginning of intervention and months in intervention.

To minimize the effects of these factors, we computed an index of developmental gain, Proportional Change Index ( $PCI = (MDA \text{ Gain}/\text{intervention months})/(\text{preMDA}/\text{preCA})$ ) (Wolery, 1983). PCI is the ratio of the rate of gain during intervention to the rate of gain prior to intervention. The average PCI for the sample was 1.06 with a range of scores from  $-.40$  to  $3.60$ . These data indicate that the children achieved developmental gains during intervention that ranged from  $-40\%$  to  $360\%$  of their rate of gain prior to intervention, and that the overall gain of the sample was equivalent to the average rate of development prior to intervention.

Since there was considerable variability both in children's rate of gain and in the degree to which parents implemented TRIP strategies, three regression equations were computed to determine if PCI was systematically related to TRIP (see Table 5). The results of all three equations were significant ( $p < .05$ ) with two of the six factors, Affect and TRIP Implementation, contributing significantly to the variability in PCI. The four style factors accounted for 24% of the variability in PCI; the two TRIP factors accounted for 16% of the variability in PCI; and the two TRIP and four style factors combined accounted for 33% of the variability in

TABLE 5  
REGRESSION ANALYSIS FOR CHILDREN'S RELATIVE DEVELOPMENTAL GAINS

Independent Variable	Equations Statistics	Style Factors	Equations TRIP Factors	Style + TRIP Factors
<b>Style Factors</b>				
Child Orientation		.22		.06
Affect		.30*		.36*
Quantity of Stimulation		-.27		-.10
Performance Orientation		.18		.18
<b>TRIP Factors</b>				
Implementation			.40**	.35
Interactive Involvement			-.08	.15
	$R^2$	.24	.16	.33
	$F$	2.87	3.68	2.84*

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

PCI. These results indicate that parents' use of Turn taking and Interactive match related positively to their children's developmental gains. This effect was accentuated when TRIP strategies were implemented by parents who were rated high in affective style.

To illustrate these results, we divided the sample into four groups based upon the scores that parents attained on TRIP Implementation and Affect. The means and standard deviations of PCI for these groups are presented in Table 6. When PCI is compared across only those dyads in which parents had affect ratings above the 50th percentile, the developmental gains of the high TRIP Implementation group were 69% greater than those of the low TRIP Implementation group. When PCI is compared across parents whose affect ratings were below the 50th percentile, there was a 28% difference between the high and low TRIP Implementation groups. When the sample is divided only according to TRIP Implementation, there is a 48% difference between the rate of gain that children attained in the high and low TRIP Implementation groups.

A number of correlations were computed to determine if variables other than TRIP and Style contributed to the variability in children's developmental gains. These analyses indicated no significant correlations between children's Proportional Change Indices and a number of variables that are commonly thought to contribute to development. These include child variables such as age, gender, etiology, health, and developmental status prior to intervention; family factors such as socioeconomic status, parental education, age of the parents, number of siblings, and ordinal position of the handicapped child; and intervention factors such as number of months in intervention and reported use of TRIP. Correlational analyses were also run to identify variables that might be related to TRIP Implementation. There was no evidence that TRIP Implementation was related to the previously listed child, family, and intervention variables.

TABLE 6  
PROPORTIONAL CHANGE INDICES FOR HIGH AND LOW TRIP IMPLEMENTATION

Groups	High TRIP <sup>c</sup>		Low TRIP <sup>d</sup>		% Difference
	$\bar{X}$	SD	$\bar{X}$	SD	
High Affect <sup>a</sup>	1.40 (n = 11)	(.92)	.83 (n = 10)	(.58)	69%
Low Affect <sup>b</sup>	1.10 (n = 10)	(.37)	.86 (n = 10)	(.78)	28%
Total Sample	1.26 (n = 21)	(.71)	.85 (n = 20)	(.67)	48%

<sup>a</sup>Above the 50th percentile on Affect; <sup>b</sup>Below the 50th percentile of Affect; <sup>c</sup>Above the 50th percentile of TRIP Implementation; <sup>d</sup>Below the 50th percentile of TRIP Implementation.

## DISCUSSION

This study has three major findings. First, parents were very successful at learning Turn-taking and Interactive Match strategies. Over the course of intervention there were substantial decreases in parents' interactional dominance and frequency of directives and associated increases in their frequency of responses. However, parents demonstrated considerable variability in their implementation of TRIP that we were unable to explain. It is possible that parent attitudes and beliefs about child rearing and intervention that conflicted with the philosophy of TRIP may have affected parents' implementation of the program.

Second, as predicted, parents' implementation of TRIP appeared to influence global ratings of their responsiveness, sensitivity, and directiveness. Increased implementation of TRIP strategies was associated with significantly higher ratings in responsiveness and lower ratings in directiveness. In contrast to our expectations, however, the Turn-taking and Interactive Match strategies did not appear to have any measurable impact on the affective style characteristics of parents, including warmth, enjoyment, and acceptance. There was evidence that a reduction in turns was associated with lower ratings on affective measures for some parents, particularly when the reduction of turns was not also associated with increased responsiveness.

Third, TRIP strategies were significantly related to the relative developmental gains that children made during intervention. The magnitude of this relationship was moderate. However, children of parents who were high in TRIP implementation made relative mental development gains that were 48% greater than those of children of parents who were low in TRIP implementation. The apparent effectiveness of TRIP was mediated by the affective characteristics of parents. Among those subjects who implemented TRIP most effectively, children of high affect parents achieved developmental gains that were 27% greater than children of low affect parents.

While the correlational design of this study precludes definitive causal statements, three factors underscore the likelihood that TRIP directly influenced

the developmental gains made by children in intervention. First, the findings from this study are entirely consistent with the theoretical model upon which the intervention was based. As we had predicted, positive developmental gains in our sample of children were associated with parents becoming more responsive and less directive. Second, the findings replicate the results of previous descriptive studies with nonhandicapped and handicapped children suggesting that a responsive, child-oriented style of parenting is an effective means of promoting children's development. Third, correlational analyses did not identify factors other than TRIP that could explain the differences in development attained by the children during intervention.

The findings of this study have three major implications for home-based early intervention practices. First, they challenge the belief that children must receive instruction or therapy directly from service providers to accomplish the goals of intervention. Rather, the results from this evaluation suggest that service providers can effectively promote the development of handicapped children by focusing their intervention on helping parents become more responsive interactional partners. These findings support a shift in the role of the home service provider from a child educator/therapist to a parent consultant (Mahoney & Weller, 1980).

Second, the findings suggest that some aspects of parental style may not be affected by the services and procedures that early intervention can offer to families. We had hoped that promoting a responsive, child-oriented interactional style would have a positive effect on parent affect as well. While parent affect appeared to play a critical role in children's development, affect was not influenced by this program. As early intervention continues to focus on parent-child interaction, it is important to consider not only whether the goals of intervention are in the best interest of the child and family, but also whether the goals can be realistically attained.

Third, the findings of this study suggest that directive instructional procedures are not necessary to promote the development of young handicapped children. The TRIP model is incompatible with many current early childhood special education practices that emphasize direct instruction or activities that are designed to achieve specific performance objectives. This evaluation suggests that a responsive, child-oriented approach, in which children are encouraged to engage in activities that interest them and that they enjoy, is an effective means for achieving the developmental objectives of early intervention.

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