

## Research Reports

### Predicting Parent-Child Interactions From Children's Activity Level

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Recent formulations of socialization emphasize a previously neglected facet of parent-child interaction—the effects of child attributes on parent behavior. Empirically, however, little has been done to clarify which attributes of children systematically affect parental behavior and how they affect them. This study examines the relationship between children's activity level and independently assessed parent-child interactions in a group of 117 preschool children and their parents. Four parent-child combinations (mother-daughter, father-daughter, mother-son, and father-son) were studied. Using Bell's conceptualization of upper and lower limit parental control behavior, it was predicted that parent-child interactions involving active children would be marked by more strife and conflict than parent-child interactions involving more quiescent, less active children. Results indicate that parents of highly active children tend to intrude physically and are described as getting into power struggles and competition with their children. Impatience or hostility toward active children was observed in parents of all parent-child pairings with the notable exception of the father-son combination. In contrast, interactions involving less active children were generally peaceful and harmonious. Implications for parent-child interactions are discussed.

Theories and research on socialization have long focused on the myriad ways in which parental behavior affects children. Recently, however, the ways in which attributes of children may affect the behavior of parents have come increasingly under scrutiny (Bell, 1968, 1971, 1974; Bell & Harper, 1977; Grusec & Kuczynski, 1980; Harper, 1971, 1975; Rheingold, 1969; Yarrow, Waxler, & Scott, 1971). The potential range of offspring effects, from impact on parental physiology to alterations in values, is only

beginning to be recognized (Harper, 1975). Because this focus has recently shifted, little empirical progress yet has been made toward specifying the attributes of the child most likely to systematically influence parental behavior.

A major problem in investigating parent-child interactions involves isolating causal variables: Ethical and practical considerations usually preclude research that attempts to manipulate childhood dispositions. Therefore, efforts to relate attributes to characteristics of parent-child interaction must be correlational. A second major problem in studying child effects on parent-child interaction concerns the genetic and environmental overlap between parents and children. Consider the disposition of excitability, a disposition that some studies indicate may be partly genetically based (e.g., A. Buss & Plomin, 1975; Freedman & Freedman, 1969). Highly excitable children can be ex-

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pected to evoke more expressions of annoyance from parents than would children who are less excitable. But since excitability may have a genetic component, the *parents* of excitable children may themselves be more excitable than average. Hence, expressions of parental annoyance may be a function of the lower threshold for annoyance in the parent as well as a reaction to the greater excitability exhibited by the child.

A similar confound exists with respect to environmentally determined behavior patterns. For example, the children of parents who smile a lot may, through social learning, come to smile a lot themselves. This acquired disposition of smiling may subsequently elicit more social contact from the parents. The parents, however, possessing a socially responsive demeanor, might be especially responsive to the smiles exhibited by the child. Thus, an empirical finding of a relationship between childhood smiling and parental responsiveness may reflect a prolonged, helical interactional effect involving both child and parent.

In spite of these inherent confounds, dispositions that emerge early in life and are relatively enduring across time should affect parental behavior more than attributes that are transient or easily altered by environmental press. This expectation should apply to childhood dispositions that are environmentally determined as well as to those influenced by genetic factors. Transient childhood behaviors may affect parental behavior temporarily, but they would not be expected to exert a systematic influence on the parent-child interaction across time.

Reasoning along similar lines, Bell (1968) has proposed two types of parental control behavior, contingent on the child's behavior. The first, called *upper limit control*, refers to parental behavior designed to reduce or redirect behavior of the child that exceeds parental standards of intensity and frequency. Upper limit control may be invoked when the child behaves in a noisy, intense, or uncontrollable manner. In contrast, *lower limit control* refers to parental behavior designed to stimulate the child to action. Children who behave in an unusually quiescent manner may evoke lower limit control behavior from parents.

Using Bell's conceptualization, it was reasoned that a high activity level in children would elicit parental upper limit control. Considerable evidence has accrued that individual differences in activity level emerge early in life, are relatively enduring across time (A. Buss & Plomin, 1975; Halverson & Waldrop, 1973, 1976; Owen & Sines, 1970; Schoenfeldt, 1968), and may have a genetic basis (A. Buss & Plomin, 1975; Scarr, 1966; Willerman, 1973). D. Buss, Block, and Block (1980) examined the longitudinal consistency of activity level using both mechanical and observer measurement procedures. Cross-time correlations indicated that individual differences in activity level remain fairly consistent, both within the preschool years and across a 4-year time span. Activity level also correlated substantially within and across ages with observer evaluations of interpersonal relations: Active children were seen as less compliant, less obedient, and more competitive than their less active peers. Other studies corroborate the general tone of the interactions of active children (e.g., Battle & Lacey, 1972; Halverson & Waldrop, 1973, 1976).

As a disposition emerging early in life and enduring across time, the activity level of children may affect the manner in which they interact with their parents. The active child, full of energy and frequently in motion, may exceed parental toleration thresholds for intensity more often than would the less active child. Consequently, controls designed to dampen such vigorousness would be invoked. It was hypothesized, therefore, that parent-child interactions involving highly active children would be marked by more strife and conflict than parent-child interactions involving more quiescent, less active children.

## Method

### *Subjects*

The subjects were 117 children, 58 girls and 59 boys, participating in an ongoing longitudinal study of ego and cognitive development being conducted at the University of California, Berkeley. The children were 3 years old at the time of initial testing. Subsequent data collections occurred when the children were 4, 5, and 7 years old. The children mostly live in urban set-

tings and are heterogeneous with respect to the socioeconomic and educational levels achieved by their parents.

### Activity Measure

When the children were at age 3, and again at age 4, activity level was measured by the actometer, a device originally developed by Schulman and Reisman (1959). The actometer is essentially a modified self-winding watch that is strapped to the child's limb(s) or back. Movement activates the winding mechanism, registering motoric activity on the hands of the dial. Previous studies (e.g., Johnson, 1971; Loo & Wenar, 1971; Maccoby, Dowley, Hagen, & Degerman, 1965) have found only moderate reliabilities using the actometer. Day-to-day and even hour-to-hour fluctuations in mood, physiology, and context limit the reliability of any single sample of activity level. However, if several samples of activity level are taken on different days, adequately reliable composite indices can be generated (see Block, 1976a, 1976b).

In the present research, the subjects wore an actometer on the wrist of the nonfavored hand for approximately 2 hours. The dial of the actometer was taped so that the child would not be able to ascertain the relationship between movement and change in the dial readings. If the tape was removed or the watch was taken off by the child, the actometer data for that session were rejected. Similarly rejected were actometer data taken when the child was observed to be ill or when inclement weather interfered with outdoor play and limited the range within which active behavior could be expressed. During the data-gathering period, the actometers were returned periodically to a watchmaker for recalibration. Three independent actometer measures of activity level were taken at age 3, and four independent measures were obtained at age 4. The average interval between these independent actometer samples was approximately 1 week. At each age, these measures were converted to a common time frame, standardized across the sample to a mean of 50 and a standard deviation of 10, and then composited to form, for each subject, a single activity index. For greater stability and generalizability, the actometer indices at ages 3 and 4 were combined using unit weighting to form a single preschool actometer index.

### Parent-Child Interactions

Data on parent-child interactions were obtained when the children averaged 5 years and 1 month in age. Ratings of these interactions were assessed in a standardized experimental situation in which each parent taught a battery of four cognitive tasks to his or her child. Two parallel test batteries were constructed for use by the parents, and a counterbalanced design controlling for ordering of teaching and the test battery was used. In all cases, a minimum of 5 weeks separated the experimental teaching situation of the two parents. The parents were always seen by different examiners.

The teaching strategies battery consisted of four tasks:

*Construction of squares or posts.* In this task the

child was presented a standard square or post and two dimensional plastic pieces or three wooden blocks of varying shapes that can be combined in many ways to make squares or posts matching the standard. The child was asked by the parent to make as many squares (posts) as possible.

*The instances tests.* In this situation, the child is asked to name as many instances of objects having wings or, for the second battery, wheels, as possible.

*Matrix test (geometric shapes or "people pieces").* This task required the correct placement of stimulus pieces in a  $2 \times 2 \times 3$  matrix—color, size, and shape. For one battery, geometric figures were used, and for the second battery, tiles with sticktype figures painted on them varying on the three dimensions.

*Maze-completion tasks.* The child was asked to negotiate a maze in which the horizontal and vertical movements were controlled by two knobs. In one task, the most difficult Wechsler Preschool and Primary Scale of Intelligence maze was painted on the glass of an Etch-A-Sketch, and in the second battery, a modified grid was constructed on a tilting box (labyrinth game) to make the maze. In each case, the child's task was to negotiate the maze using the control knobs.

The tasks were designed with several criteria in mind: to be interesting to parents and child alike, to be readily understandable to all parents while still being of sufficient difficulty that the child would require help for successful completion, and to minimize the required explanation of the tasks by the examiner to avoid the possibility that the parent would simply model or parrot the examiner's instructions as he or she explained the tasks to the child. The parents were instructed in the procedure in a standard way while the child was out of the room. Parents were encouraged to provide whatever help they felt their child required to complete the assigned tasks. After structuring the situation with the parent and explaining the presence of a wall-mounted, prefocused videotape camera in the room, the examiner left the room and the child was brought in. The sessions were videotaped, and the examiner observed the sessions through a one-way mirror, recording information (e.g., time, number or accuracy of solutions) that might not be clear from the videotapes. At the end of the session, the examiner completed a 49-item Q sort to describe the parent-child interaction, with particular emphasis on the teaching strategies used by the parents.

### Results

The results to be reported relate the child's preschool activity level to the independently measured parent-child interactions. Since both mothers and fathers were included in this study, four combinations of parent and child by sex are possible: mother-daughter, father-daughter, mother-son, and father-son. These four combinations were examined separately. The significant correlations between the preschool actometer composite and the 49-item Q sort describing parent-child interactions are presented in Table 1.

Table 1  
*Relations Between Preschool Activity Level and Parent-Child Interaction Variables*

Variable	<i>r</i>	
Mothers and daughters		
Uses physical means to communicate with child	.34***	(.44)
Gets into power struggles with child; adult/child compete	.33**	(.42)
Is hostile	.31**	(.40)
Adult is talkative in situation	.30**	(.38)
Adult and child engage in conversation with each other	.22*	(.28)
Is resourceful in helping child accomplish tasks	-.31**	(-.40)
Is responsive to child's needs from moment to moment	-.28**	(-.36)
Adult emphasizes principles/strategies in completing tasks	-.27**	(-.35)
Has a clear and coherent teaching style	-.26**	(-.33)
Fathers and daughters		
Gets into power struggles with child; adult/child compete	.41***	(.52)
Appears frustrated in inability to find adequate start	.38***	(.49)
Pressures child to work at tasks	.32**	(.41)
Adult is anxious about imposing authority in situation	.31**	(.40)
Is impatient with child	.29*	(.37)
Is able to establish good working relationship with child	-.36***	(-.46)
Values child's originality	-.34**	(-.44)
Adult seems easy and relaxed in situation	-.29*	(-.37)
Mothers and sons		
Conducts session in unusual or atypical ways	.40***	(.51)
Seems confused about what is expected in the situation	.40***	(.51)
Adult is talkative in situation	.32**	(.41)
Is hostile	.30**	(.38)
Pressures child to work at task	.24*	(.31)
Gets into power struggles with child; adult/child compete	.22*	(.28)
Adult derives pleasure from being with child	-.36***	(-.46)
Is supportive and encouraging of child in situation	-.35***	(-.45)
Is able to establish good working relationship with child	-.29**	(-.37)
Has a clear and coherent teaching style	-.26**	(-.33)
Is responsive to child's needs from moment to moment	-.22*	(-.28)
Fathers and sons		
Dramatizes teaching	.39***	(.50)
Makes situation fun (vs. grim or distasteful)	.35**	(.45)
Adult is talkative in situation	.28*	(.36)
Gets into power struggles with child; adult/child compete	.27*	(.35)
Adult intrudes physically in tasks	.26*	(.33)
Is hostile	-.27*	(-.35)
Has high standards for child	-.25*	(-.32)

*Note.* The figures in parentheses reflect a partial correction for attenuation, adjusting only for the influence of the unreliability of the actometer measure.

\*  $p < .10$ . \*\*  $p < .05$ . \*\*\*  $p < .01$ . All two-tailed.

Also presented in Table 1, in parentheses, are the values of these correlations after adjustment for attenuation introduced by the unreliability (.61) of the actometer composite. For the Q-sort items used in the present

analyses, no reliability estimates are available, since only one observer was employed. Although studies using two or more observers in analogous contexts with the Q-sort method report item reliabilities in the .60s

and .70s (Block, 1971; Block & Block, 1979), it was decided not to extrapolate from these figures to the present context and to correct only for the unreliability of the actometer composite. It follows, therefore, that the adjusted values still underestimate the magnitude of the underlying relationships between activity level and the parent-child interaction variables.

The strongest correlates of activity level in the mother-daughter interactions are the tendency of mothers of active girls to use physical means to communicate with their daughters and the tendency to get into power struggles with them. In addition, such mothers are described as showing hostility toward their daughters and generally seem confused by the demands of teaching their active daughters. In contrast, mothers of less active girls are described as being resourceful and responsive, successfully aiding the child in the task demands.

A similar pattern of relationships emerged in the father-daughter interactions. The strongest correlates of activity level in the father-daughter combination are the tendency to get into power struggles and the failure to establish a good working relationship with the child. Fathers of active girls appear frustrated and impatient with their child and were described as generally uncomfortable in this teaching situation. In contrast, fathers of less active girls are seen as more patient, more able to establish a good working relationship, and as valuing their daughter's originality.

The relationships emerging from the mother-son combination appear similar to the father-daughter and mother-daughter combinations. Mothers of active boys are seen as conducting the session in unusual or atypical ways and seem confused about teaching expectations. They show hostility toward their active sons, appear to have difficulty establishing a good working relationship with them, and tend to get into power struggles. In contrast, mothers of less active boys seem to derive pleasure from the interaction, showing support and encouragement in the teaching task.

The father-son interactions involving active children show both similarities and dif-

ferences when compared with the above three combinations. Like the previous interactions, fathers are described as getting into power struggles with their active sons and as intruding physically into the tasks. In contrast to the previously described interactions involving active children, fathers tend to dramatize the teaching of the task and tend to make the situation fun for their active sons. In addition, activity level was *negatively* correlated with parental hostility in this combination, in contrast to the positive correlations found in the other pairings. Thus, although some conflict is indicated by physical intrusion and the presence of power struggles, it seems to be attenuated by an infusion of camaraderie.

### Discussion

A fairly consistent theme characterizes the interactions of the various parent-child combinations. Parents of active children tend to get into power struggles with their children, to intrude physically into the tasks, and to have difficulty establishing good working relationships with their children. With the notable exception of the father-son combination, a sense of frustration and impatience permeates these interactions. In contrast to the hostility seen in the other pairings involving active children, the fathers of active sons make the teaching tasks more pleasant by dramatizing the teaching and by providing merriment. Interactions involving less active children were generally more peaceful, harmonious, and quiescent—relationships manifested in slightly different forms depending on the particular parent-child pairing.

These results are congruent with Bell's (1968) theorizing about upper and lower limit parental control:

It seems likely that parents of hyperactive, erratic, and overly assertive children would be likely to respond, in rough order, with distraction, quick tangible reinforcement or nonreinforcement, holding, prohibiting verbalizations, and physical punishment. . . . (Bell & Harper, 1977, p. 67)

The present study found that parents of active children tend to intrude physically into tasks and tend to get into power struggles

with their children: indications of parental impatience and even hostility were also seen in these interactions. On the other hand,

where congenital contributors exert a direction toward low activity . . . parental lower-limit control would be released. In rough order, behaviors such as drawing attention to stimuli, positively reinforcing increases in activity, urging, prompting . . . would be more likely to emerge from the parent repertoire. (Bell & Harper, 1977, p. 67)

In the present study, parents of less active children generally provide more support and encouragement and establish a good working relationship more easily with their child. Thus, the general structure of Bell's conceptualization can be observed in four independent parent-child combinations.

Although the present results are limited, they are provocative and in keeping with convergent evidence from a variety of sources. For example, the present study found that interactions involving active children resulted in competition and power struggles during the experimental tasks. Several other studies have also found that active children are more competitive with other adults (e.g., Battle & Lacey, 1972) as well as with their peers (D. Buss et al., 1980; Halverson & Waldrop, 1973, 1976). Such convergent evidence strengthens the interpretation of the present findings within a conceptual framework of child effects.

A limitation of this study concerns possible differences among parents of active children. It might be expected, for example, that parents of active children might themselves be more active on the average than parents of less active children, particularly in view of the evidence for a genetic component to activity level (A. Buss & Plomin, 1975; Scarr, 1966; Willerman, 1973). If this were the case, the lines of causality might be bidirectional: Perhaps active parents and active children are both somewhat competitive, the conjoint effects of which result in power struggles. The present study did not assess these parental dispositions. Future research can respond to this question by including independent assessments of both parent and child dispositions.

A finding of potentially profound implications is the strikingly different tone of the father-son interactions involving active boys.

In contrast to the impatience and hostility seen in the other three pairings, fathers of active boys responded to the teaching situation with an infusion of fun and dramatization. In addition, these fathers were not hostile toward their active sons, in contrast to the hostility toward active children found in the other pairings. Interpretation of this interesting finding should await replication.

Meehl (1973) has recently observed that it is dangerous to be the relative or spouse of a disturbed person because you will almost surely get blamed for it. Analogously, if one adopts a unidirectional model of socialization, it may be dangerous to be the parent of a highly active child, for you may not only be blamed for the unharmonious interactions but may invoke self-blame as well. The present study suggests that children differing in activity level may pose different socialization requirements for parents. Recognition of these differences, by psychologists and by parents, should help ease the noisy struggle of upbringing with which some families are faced.

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### Manuscripts Accepted for Publication

- Development of Comprehension Monitoring as a Function of Context. Charlotte J. Patterson (Department of Psychology, Gilmer Hall, University of Virginia, Charlottesville, Virginia 22901), Carolyn O'Brien, Mary C. Kister, D. Bruce Carter, and Miriam E. Kotsonis.
- Learned Helplessness in Black and White Children Identified by Their Schools as Retarded and Non-retarded: Performance Deterioration in Response to Failure. John R. Weisz (Department of Psychology, University of North Carolina, Davie Hall 013 A, Chapel Hill, North Carolina 27514).
- Individual Differences in Language. Katherine Nelson (Department of Psychology, City University of New York Graduate Center, 33 West 42nd Street, New York, New York 10036).
- A Self-Report Scale of Intrinsic Versus Extrinsic Orientation in the Classroom: Motivational and Informational Components. Susan Harter (Department of Psychology, University of Denver, University Park, Denver, Colorado 80208).
- Memory Predictions for Recall and Recognition in First, Third, and Fifth Grade Children. Steve R. Yussen (Department of Educational Psychology, Educational Sciences Building, 1025 West Johnson Street, Madison, Wisconsin 53706) and Linda Berman.
- Sex Differences in Children's Altruistic Behavior and Reputations for Helpfulness. Carol C. Shigetomi (Department of Psychology, University of Utah, Salt Lake City, Utah 84112) and Donald P. Hartman.
- Longitudinal Relations in Repeated Observations of Mother-Child Interaction From 1 to 2½ Years. K. Alison Clarke-Stewart (Department of Education, University of Chicago, 5835 Kimbark Avenue, Chicago, Illinois 60637) and Constance M. Filling.
- Behavioral and Sociometric Methods of Identifying Cooperators, Competitors, and Individualists: Support for the Convergent Validity of the Social Orientation Construct. George P. Knight (Department of Psychology, University of California, Riverside, California 92521).
- Reactivation of a Visual Discrimination in Early Infancy. Jeffrey W. Fagen (Department of Psychology, Douglass College, Rutgers-The State University, New Brunswick, New Jersey 08903), Laurie A. Yengo, Carolyn K. Rovee-Collier, and Mary K. Enright.
- Sequential Analysis of Mother-Child Interaction at 18 Months: A Comparison of Microanalytic Methods. John A. Martin (Department of Psychology, Stanford University, Stanford, California 94305) and Eleanor E. Maccoby.
- Effects of Peer Presence on Preschool Children's Television Viewing Behavior. Daniel R. Anderson (Department of Psychology, University of Massachusetts, Amherst, Massachusetts 01003), Elizabeth Puzgles Lorck, Robin Smity, Rex Bradford, and Stephen R. Levin.

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