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Clinic Referral for Oppositional Defiant Disorder: Relative Significance of Attachment and Behavioral Variables

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Attachment classifications have been found to distinguish clinic-referred, oppositional preschool boys from controls, but there has been no previous effort to examine the relative contribution of attachment when behaviors from a social learning perspective are also considered. The present study examined the contribution of attachment and behavioral variables to the prediction of clinic referral for oppositional defiant disorder in a sample of preschool boys. We hypothesized that the attachment measures would offer better discrimination of clinic and control group boys at this age. This hypothesis was confirmed when the attachment measures were compared with the parent–child behaviors most strongly associated with social learning conceptualizations of disruptive problems (maternal commands and criticism, and child noncompliance), but rejected in a more stringent test in which the attachment measures were compared with the behavioral variables distinguishing the groups in this particular sample.

The diagnosis of oppositional defiant disorder (ODD) in early childhood represents for many children the beginning stages of a "life course-persistent" pattern of antisocial behavior (Moffitt, 1993). This has led to

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increasing interest in the assessment and followup of preschool children referred to clinics for oppositional and aggressive behaviors (e.g., Campbell, 1990, 1991). Although the etiology of these early problems is far from clear, recent theories have focused on multiple domains of interacting factors including child biologic and neuropsychologic variables, the parent–child relationship, and the family and community environment (e.g., Greenberg, Speltz, & DeKlyen, 1993). The present paper will focus on one of these factors, the parent–child relationship, with the understanding that no single domain of variables is likely to produce persistent psychopathology in the absence of other risk factors.

For the past two decades the study of parental relationships with disruptive children has emphasized the direct observation of parent–child interactions during standardized situations in the clinic or home. The different observational procedures used traditionally in this research have shared several characteristics, including (1) association with operant or social learning conceptualizations of behavior problems, for example, the idea that child behavior is explained in large part by its immediate antecedents and consequences (e.g., Griest, Forehand, Wells, & McMahon, 1980; Patterson, 1982); (2) a microanalytic and quantitative level of analysis with emphasis on frequencies of specific, discrete behaviors (e.g., parental praise or critical comments); and (3) a situation typically consisting of parent–child play and/or a task assessing the child's compliance with parental commands. Studies using this behavioral approach to parent–child observation have found that clinic-referred children are more disruptive and noncompliant during interactions with their parents than nonproblem peers (e.g., Campbell, Breaux, Ewing, Szumowski, & Pierce, 1986; Cunningham & Barkley, 1979; Robinson & Eyberg, 1981; Webster-Stratton, 1985) and less likely to show certain types of prosocial behaviors (e.g., positive comments or questions during play; Forster, Eyberg, & Burns, 1990). The same studies have found that the parents of these children tend to issue more commands or other controlling behaviors and to make more frequent critical comments than the parents of well-behaved children.

More recently, parental relationships with high-risk children have been studied from a developmental perspective (Cicchetti, 1984) in which ratings or classifications are used to capture *patterns* of parent–child interactions that are organizationally more complex than discrete behaviors. For example, security of attachment to the parent has been operationalized by classification of an infant's organization of multiple responses to brief separations from the parent in a standardized clinic assessment (the Strange Situation; Ainsworth, Blehar, Waters, & Wall, 1978). Longitudinal research with infants assessed in the Strange Situation has found that attachment

quality in the first 12 to 18 months of life is predictive of the child's later emotional and social functioning, at least in samples in which other risk factors such as difficult temperament or family adversity are also present (Greenberg *et al.*, 1993). Specifically, high-risk infants showing an "insecure" attachment pattern (e.g., avoiding or resisting contact with their caregivers during reunion) are more likely when they are older to exhibit poor peer relations, depression, and aggression than "secure" infants who approach and readily use parents to ease their distress (Erickson, Sroufe, & Egeland, 1985; Sroufe, Egeland & Kreutzer, 1990; Urban, Carlson, Egeland, & Sroufe, 1991). This suggests that higher-than-expected rates of insecure attachments are likely to be found in clinical samples of young children. Three recent studies have examined this possibility by assessing separation/reunion behaviors of preschool children referred for oppositional behavior.

Crowell, Feldman, and Ginsberg (1988) examined the responses of clinic-referred problem children (aged 24 to 54 months) and their mothers to a 2- min separation in a clinic playroom. Ratings of mother and child behavior prior to, during, and after the separation were developed in accordance with attachment theory. In comparison with matched nonproblem dyads, mothers of clinic children were rated as less sensitive, affectionate, and physically close to their children. Clinic children were found to be more avoidant of their mothers during reunion.

Speltz, Greenberg, and DeKlyen (1990) used a separation/reunion task to compare a group of clinic-referred preschool children meeting criteria for ODD with a matched group of nonproblem children. This study used attachment classifications developed for preschool children (Cassidy & Marvin, 1989). "Secure" patterns of behavior (i.e., a positive relaxed verbal or nonverbal interaction with the mother during reunion) were distinguished from several types of "insecure" patterns (e.g., avoidance or control of the mother during reunion). Speltz *et al.* (1990) found a much higher frequency of insecure patterns in the clinic group (84% vs. 28% in the nonproblem group), primarily of the controlling type. A replication effort with a different sample of disruptive clinic children containing only boys (Greenberg, Speltz, DeKlyen, & Endriga, 1991) closely matched the earlier classification results (80% and 28% insecure in the clinic and nonproblem groups, respectively). The predominant patterns of insecure behavior were ones in which the child attempted either to control the mother's behavior (32% of the clinic group) or to avoid interaction with her during reunion (24% of the clinic group). A measure of separation distress revealed an interaction between clinic status and attachment security: In the nonproblem group, secure and insecure boys had nearly equivalent distress scores, but insecure clinic boys had distress scores nearly twice as high as secure clinic boys.

Attachment studies of clinic-referred dyads have used a different observational context (separation/reunion), level of analysis (categorization of patterns of behavior and affect), and theoretical base than the behavioral studies reviewed earlier. What can these different approaches contribute, separately and together, to the prediction of disruptive behavior? The answer to this question is unknown. Although there has been theoretical discussion about the relative contribution of attachment and behavioral variables to the study and treatment of disruptive behavior disorders (Greenberg & Speltz, 1988; Patterson, Reid, & Dishion, 1992; Shaw & Bell, 1993), empirical studies have not provided an integrated examination of these models, as investigators likely to use one approach are unlikely to use the other.

The present investigation was designed to address this issue by assessing the contemporaneous relations of attachment and behavioral variables to the prediction of clinic status in preschool boys with and without ODD. This study also extended the exploration of clinic and nonclinic differences by assessing microsocial behaviors that have received little attention in previous studies (e.g., physical contact and pretend play). Clinic-referred and nonproblem ("control" group) preschool boys whose attachment status was reported by Greenberg *et al.* (1991) were observed in a parent–child play situation that included a toy put-away task. We used a standardized observational coding system and set of instructions for parent–child interaction (Dyadic Parent-Child Interaction Coding System, DPICS; Eyeberg & Robinson, 1981) that has been frequently used by behaviorally oriented investigators of problem and nonproblem dyads (Forster *et al.*, 1990; Robinson & Eyberg, 1981; Webster-Stratton, 1985; Webster-Stratton & Fjone, 1989).

Our strategy in assessing the relative predictive value of the attachment and behavioral variables was twofold: First, a set of four behavioral interaction (DPICS) variables was selected on the basis of the previous research and theory noted above (maternal commands and critical comments, and child compliance and disruptive behavior) and tested in relation to a set of attachment measures (ratings of reunion security and separation distress). Because of the aforementioned longitudinal associations between infancy attachment and later adjustment (e.g., Sroufe *et al.*, 1990) and the differentiation of clinic and control children in the three studies already discussed, we hypothesized that the attachment measures would contribute significantly to the prediction of clinic status (membership in the control or clinic group) after the entry of the behavioral measures, but that the behavioral measures would not contribute after controlling for attachment status. Second, a stronger challenge of the attachment model was undertaken by using an opportunistic method (backward stepwise regression) to identify those DPICS variables most strongly associated with clinic status *in this particular sample* and testing attachment in relation to these. Again, the attachment set was hypothesized to show the stronger relationship with group membership.

METHOD

Participants

The subjects in this study are the same as those described by Greenberg *et al.* (1991). This sample consisted of 25 consecutive referrals to a university-affiliated child psychiatry outpatient clinic in a children's hospital and 25 case-matched normal comparisons.[4] All participants were boys between the ages of 3.5 and 5.5 years and their mothers. The clinic subjects were not specially recruited, although the clinic continued its regular practice of informing area physicians and other health practitioners of its services to young children. Clinic children were given a *Diagnostical and Statistical Manual of Mental Disorders* (3rd ed., rev.) (DSM-III-R; American Psychiatric Association, 1987) diagnosis using the Diagnostic Interview for Children and Adolescents (DICA; Welner, Reich, Herjanic, Jung, & Amado, 1987), a structured interview procedure involving both parent and child. Clinic children were retained in the study if oppositional defiant disorder was their primary diagnosis (based on presenting problems as described by parents), although the presence of secondary diagnoses was permitted (the most common was attention deficit hyperactivity disorder, or ADHD, which occurred in 11 cases). Children with previously identified developmental delays or disabilities were excluded. Clinic children also met the criterion of having a score at or above the 98th percentile on the Aggression subscale of the Child Behavior Checklist (CBCL; Achenbach & Edelbrock, 1983).

The 25 nonreferred comparison boys were recruited through newsletters and posters at the children's hospital and other community service agencies (e.g., libraries, daycare centers, etc.). Interested parents were contacted by telephone to discuss the study and determine eligibility. Those who wished to participate were sent consent forms, family information forms, and the CBCL. If CBCL scores were all below 70 (i.e., the 98th percentile) and the family could be case-matched with a clinic family, mothers were administered DICA questions by telephone. Boys for the comparison group were selected from respondents who did not meet criteria for ODD or ADHD and whose parents reported no major concerns about their sons' development, including no indications of sensory, neurological, intellectual, or language impairment. The

[4]During the period in which this research was being conducted, a total of 36 boys referred to the Outpatient Clinic met criteria for diagnosis of oppositional defiant disorder. Of these, five were not included in this analysis because equipment failure prevented complete collection of the data. One child was ineligible because his Child Behavior Checklist scores were too low, one family moved out of the area, one child moved into an adoptive family, two families decided not to pursue any further contact with the clinic after the initial interview, and one family declined participation because the parents wanted to pursue drug treatment without further assessment.

two groups were case-matched for age (within 6 months), socioeconomic status (SES), and family structure (two-parent/always-married, two-parent/remarried, or single parent).

Table I shows the characteristics of each group. There were no significant differences between clinic and comparison groups on any of the demographic variables; on certain variables, this was assured by case-matching. Despite case-matching for family SES, there was a nonsignificant trend in mothers' education, with clinic mothers having completed somewhat less education ($p = .07$).

As expected, because the groups were constrained by behavioral criteria, Greenberg *et al.* (1991) found that the clinic sample had significantly higher CBCL externalizing scores than the comparison group, $F(1, 49) = 180.1$, $p < .0001$. The clinic group also displayed higher internalizing scores, $F(1, 49) = 43.7$, $p < .0001$. Similar differences were reported between groups on teacher reports of the Conners Rating Scale Factors (Trites, Blouin, & Laprade, 1982) of conduct disorder, $F(1, 29) = 33.2$, $p < .001$, and hyperactivity, $F(1, 29) = 35.0$, $p < .001$. There were no group differences on either the Peabody Picture Vocabulary Test — Revised or Visual-Motor Integration Test.

Procedure

Eligible clinic families were informed of this study at the conclusion of a routine intake in which their children's diagnostic status was determined. Comparison group families were informed of their eligibility over the telephone and each was scheduled for an appointment. All families were given questionnaire measures of family and personal functioning prior to their appointment. These measures, as well as maternal interviews of attachment history given after the observational measures described above, will not be discussed in this report (see DeKlyen, 1992, and Greenberg *et al.*, 1991, for further information about these measures).

The mother–child observation was videotaped through a one-way mirror. Upon arrival, mother and child were ushered into a playroom containing age-appropriate toys and given a 4-min warmup period. Next, the attachment data were collected: The mother was signaled to leave the room for 3 min, followed by a 3-min reunion, another 3-min separation, and a final 3-min reunion. Each mother was told she was free to say whatever she wished before departing for each separation. The dyad was next observed in the DPICS play conditions described below. Families were debriefed after the completion of the assessments. Clinic families were given treatment recommendations and offered appropriate services or referral.

Table I. Sample Characteristics

Variable[a]	Clinic group (n = 25)	Comparison group (n = 25)
Mean age (months)	51.7	51.8
Family composition (%)		
Two-parent/always married	64.0	64.0
Single-parent	24.0	24.0
Two-parent/remarried	12.0	12.0
Maternal age (years)	33.9	35.0
Maternal education[b]	5.2	5.7
Maternal employment (%)		
Part time	44.0	36.0
Full time	24.0	20.0
Not employed	32.0	44.0
Four-factor Hollingshead SES	2.2	2.3
Ethnicity (% Caucasian)	88.0	88.0
Number of children in home	2.1	1.9
Firstborn (%)	60.0	68.0
PPVT-R age equivalent	56.4	59.2
VMI age equivalent	51.6	54.6
CBCL		
Externalizing score	76.1[d]	49.7
Internalizing score	65.1[d]	50.3
Conner's teacher rating[c]		
Conduct disorder	139.7[d]	34.2
Hyperactivity	150.3[d]	45.6

[a] SES = socioeconomic status; PPVT-R = Peabody Picture Vocabulary Test — Revised; VMI = Visual-Motor Integration Test; CBCL = Child Behavior Checklist

[b] Maternal education was assessed on a scale of 1 to 7, 1 = less than 7 years of education, 7 = graduate degree.

[c] Based on 30 children who were in preschool and/or daycare settings.

[d] $p < .001$.

Dyadic Parent–Child Interaction Coding System. The DPICS involves a standardized observation of three situations, each preceded by a different set of instructions to the parent (Eyberg & Robinson, 1981). These instructions request an increasing level of parent control over the child. The first condition is Child-Directed Play (CDP, 5 min) in which the parent is asked to "follow the child's lead," followed by Parent-Directed Play (PDP, 5 min), in which the parent is instructed to choose the game and have the child play by her rules, and finally Toy Put-Away (TPA) which varied in duration. Thirty-six (36) categories of parent and child verbal and nonverbal behaviors are coded *continuously* throughout each condition. Parent categories include reflective and/or descriptive statements, questions, acknowledgments, playtalk (talking "in role" during pretend play with puppets or toy animals), irrelevant talk (i.e., not relevant to the child's play), praising (labeled or unlabeled), physical contact (negative or neutral/positive), and commands (direct or indirect). The same verbal and physical contact behaviors are coded for the child, as well as specific "deviant" behaviors (e.g., crying, yelling, whining, destruction of materials). The child's response to each command is also coded (comply, noncomply, or no opportunity). Finally, the parent's response to each child deviant behavior is coded (ignores or responds to deviant).

We reduced the number of DPICS variables for analysis by combining some into larger categories (e.g., combining labeled and unlabeled praise into one category and all child deviant behaviors into another) and eliminating those occurring at very low frequency (e.g., physical negative, irrelevant verbalization). This resulted in the seven parent and five child categories shown in Table II. Coders were blind to clinic and attachment status of all subjects. Mean interrater reliability (percent agreement on occurrences only) for all categories across the three conditions was 81.2%. The range was 61% to 95%; the percent agreement for each category is shown in Table II.

Attachment Measures. The quality of parent–child attachment was coded utilizing videotaped interactions between mother and child during two 3-min separation and 3-min reunion periods. Classifications and ratings based on the child's behavior during reunion with his mother (including physical orientation and proximity and the quality of verbal exchanges) were made in accordance with age-specific definitions and criteria developed by Cassidy and Marvin (1989) and Main and Cassidy (1985) based on Ainsworth's conceptualization. In the present study, a rating of overall security was used, as its continuous nature allowed for more powerful statistical analyses (see Greenberg *et al.*, 1991, for results of clinic/control group comparisons of attachment categories). The security rating (ATSECUR) was based upon a 9-point scale ranging from

very insecure (1) to *very secure* (9). Scores on this scale reflected the extent to which the child (a) showed "relaxed pleasure" when first seeing the parent after separation, (b) responded positively to initiations by the parent, and (c) initiated positive interaction (verbal or nonverbal) with the parent. All tapes were coded by the third author, who was blind to all information about families (including the child's clinic status) and did not participate in data collection. He attained a reliability of .81 (Cohen's kappa) for the security rating using standardized training tapes from the MacArthur Attachment Working Group (Cassidy & Marvin, 1989).

Separation Behavior. A second measure taken from the separation/reunion situation assessed the child's separation distress. This was a 25-item checklist developed by the authors with items pertaining to continuous versus interrupted play, crying, active search for mother, room departure, language content, and affect. The items were developed on the basis of informal observations of specific separation behaviors shown by subjects in an earlier study (Speltz *et al.*, 1990). Coders who were blind to clinic and attachment status responded to each item by indicating the presence or absence of the described behavior (e.g., "child engages in sustained play," "child huddles in corner," "child specifically refers to mother's departure/absence/return"). Total scores reflected the number of behaviors observed during both of the two separations combined (SEPTOT). A second coder observed a randomly selected 20% of the sample. Interrater reliability determined by the percent agreement method for occurrences only was .91.

DPICS Data

An examination of frequency distributions for DPICS variables within each group indicated that only two were normally distributed (mothers' child-directed talk and child descriptive talk). Several variables showed significant differences in variance between the clinic and comparison groups as well. As a result, independent *t*-tests were conducted (which are less affected by differences in variance than *F*-tests), using separate variance estimates for variables with dissimilar distributions. In these analyses, DPICS scores were converted to *number of occurrences per minute* so that data from the 5-min CDP and PDP conditions could be compared with data from the TPA condition, which varied in length of time.

Table II. Major DPICS Variables[a]

Variable	Label	% Agreement	Definition
Mother			
Child-directed talk	MCDTALK	.85	Descriptions of child's play or other situation-relevant activities, reflective questions or comments, acknowledgments
Critical statements	MCS	.61	Statements that find fault with child or child's activities or products
Total praise	MTOTP	.76	Sum of labeled and unlabeled praise
Total commands	MTOTC	.70	Sum of direct and indirect (vague) commands
Responds to deviant behavior	MRDEV	.73	Percentage of deviant child behaviors that mother does not ignore
Playtalk	MPLAT	.87	Verbal participation in role-play (e.g., puppet, toy telephone talk)
Positive/neutral physical contact	MPHYP	.93	Any physical contact that does not hurt or restrain or is not accompanied by a critical comment
Child			
Descriptive comments	CDES	.90	Child's descriptions of his play or other situation-relevant activities of self or mother
Playtalk	CPLAT	.95	Same as above
Positive/neutral physical contact	CPHYP	.86	Same as above
Deviant behavior	CDEV	.70	Sum of cry, yell, whine, smart talk, and destructive behavior
Compliance	PERCOMP	.78	Percentage of maternal directions the child obeys

[a] DPICS = Dyadic Parent-Child Interaction Coding System.

Durations of the Toy Put-Away condition ranged from .55 to 4 min. Mean TPA durations in the clinic and control groups did not differ significantly (means of 2.32 min and 2.22 min, respectively), $t(48) = .45$, $p > .10$.

Comparisons of Clinic and Control Groups. As indicated by Tables III and IV, group differences were evident on 8 of 12 DPICS variables; in each case differences were significant for only one of the three play conditions (i.e., 8 of 36 possible contrasts were significant at $p < 0.05$). During Child-Directed Play clinic mothers engaged in more playtalk [$t(29) = 2.79$, $p < 0.01$]; there was also a trend for them to initiate more positive or neutral physical contact with their sons [$t(29) = 1.93$, $p = .06$]. In Parent-Directed Play, clinic mothers made twice as many critical comments as did control mothers, $t(33) = 2.33$, $p < .05$, and were more likely to respond to child deviant behavior, $t(15) = 2.86$, $p < .05$. There was a trend for clinic mothers to praise less than control group mothers during Toy Put-Away [$t(46) = 1.93$, $p < .07$].

During CDP, clinic boys engaged in more playtalk than control group boys [$t(33) = 2.94$, $p < .01$] and made fewer descriptive comments [$t(48) = 2.65$, $p < .05$]. They also initiated significantly more physical contact with their mothers than control boys in this situation [$t(27) = 2.85$, $p < .01$]. No group differences in child behavior were apparent during PDP. During TPA clinic boys were more likely to exhibit deviant behavior [$t(36) = 2.18$, $p < .05$], and they obeyed a smaller percentage of maternal directions [48% vs. 65%; $t(48) = 2.04$, $p < .05$].

Differences Among Play Conditions. Paired *t*-tests were used to compare the frequencies of maternal and child behaviors in both the clinic and control groups during CDP versus PDP and PDP versus TPA. These analyses revealed several significant differences as a function of play condition (reported in Table V). Mothers displayed more critical statements, commands, and praise (i.e., more controlling behavior) during PDP than CDP (although the difference did not reach significance for praise in the control group). Commands and praise escalated still more during TPA. Clinic and control group boys used significantly more descriptive statements and showed less deviance during CDP than PDP. However, unlike the control group boys, the clinic boys had significantly higher levels of physical contact with their mothers and more frequent playtalk during CDP than PDP.

Table III. DPICS Scores for Mothers by Play Condition[a]

	CDP		PDP		TPA	
	Clinic	Control	Clinic	Control	Clinic	Control
MCDTALK						
M[b,c]	7.0	7.4	6.7	6.8	7.0	6.7
SD[d]	2.4	2.1	2.1	2.5	2.9	2.8
MCS						
M	0.1	0.1	0.6[f]	0.2[f]	0.5	0.1
SD	0.2	0.3	0.6	0.3	1.5	0.3
MTOTP						
M	<0.1	0.2	0.2	0.3	0.6	1.1
SD	0.1	0.4	0.3	0.4	1.0	1.0
MTOTC						
M	0.7	0.5	3.0	2.3	5.7	4.6
SD	0.7	0.5	1.8	1.3	3.0	2.4
MRDEV						
M	89	70	94[f]	67[f]	96	91
SD	33	28	11	35	9	21
MPHYP						
M	0.4	0.1	0.3	0.1	0.3	0.1
SD	0.7	0.2	0.8	0.3	0.8	0.2
MPLAT						
M	1.5	0.4[g]	1.0	0.6	—[e]	—
SD	1.9	0.6	1.6	1.8	—	—

[a] DPICS = Dyadic Parent-Child Interaction Coding System; CDP = Child-Directed Play; PDP = Parent-Directed Play; TPA = Toy Put-Away; MCDTALK = Child-directed talk; MCS = Critical Statements; MTOTP = total praise; MTOTC = total commands; MRDEV = responds to deviant behavior; MPHYP = positive/neutral physical contact; MPLAT = playtalk.

[b] Mean.

[c] All scores represent occurrences per minute, with the exception of MRDEV, which is the proportion of child deviant behaviors to which mother responded.

[d] Standard deviation.

[e] Indicates no occurrences of this behavior during this condition.

[f] Significant difference ($p < .05$) between clinic and control groups in this play condition.

[g] Significant difference ($p < .01$) between clinic and control groups in this play condition.

Table IV. DPICS Scores for Children by Play Condition[a]

	CDP		PDP		TPA	
	Clinic	Control	Clinic	Control	Clinic	Control
CDES						
M[b,c]	3.7[f]	5.0[f]	2.8	3.4	2.9	3.0
SD[d]	1.7	1.7	1.7	1.2	1.8	1.9
CPLAT						
M	1.8[g]	0.7[g]	0.7	0.4	0.3	0.5
SD	1.7	0.7	1.1	1.0	0.6	1.2
CPHYP						
M	0.4[g]	<0.1[g]	<0.1	<0.1	<0.1	—[e]
SD	0.6	0.1	0.1	0.1	0.2	—
CDEV						
M	0.1	0.1	0.7	0.4	2.1[f]	0.9[f]
SD	0.2	0.4	0.6	0.5	2.3	1.4
PERCOMP						
M	70	74	56	67	48[f]	65[f]
SD	39	35	28	28	27	30

[a] DPICS = Dyadic Parent-Child Interaction Coding System; CDP = Child-Directed Play; PDP = Parent-Directed Play; TPA = Toy Put-Away; CDED = descriptive comments; CPLAT = playtalk; CPHYP = positive/neutral physical contact; CDEV = deviant behavior; PERCOMP = percentage of compliance with maternal directions.

[b] Mean.

[c] All scores represent occurrences per minute, with the exception of PERCOMP, which is the proportion of child deviant behaviors to which mother responded.

[d] Standard deviation.

[e] Indicates no occurrences of this behavior during this condition.

[f] Significant difference ($p < .05$) between clinic and control groups in this play condition.

[g] Significant difference ($p < .01$) between clinic and control groups in this play condition.

Correlations Between Attachment and DPICS Variables

The bivariate relationships between separation/reunion variables (security ratings and separation distress) and DPICS variables from each play condition were examined. Among the 72 resulting correlations, only three were significant at the $p < .01$ level, indicating that DPICS variables do not simply replicate information available from the attachment variables (and vice versa) and that these two domains may be independently useful in predicting clinic status. Among the few significant relationships found, child security was inversely correlated with maternal critical comments ($r = -.35$) and child deviant behavior ($r = -.34$) during Toy Put-Away. Child separation distress also correlated positively with maternal critical comments during Toy Put-Away ($r = .34$).

Table V. Significance of Results for Play Condition Analyses of Clinic and Control Groups[a]

	Clinic		Control	
	CDP vs. PDP	PDP vs. TPA	CDP vs. PDP	PDP vs. TPA
Mother				
MCDTALK				
MCS	<.01		.03	
MTOTP	.04	.03		<.01
MTOTC	<.001	<.01	<.001	<.001
MRDEV				
MPHYP				
MPLAT		<.01		
Child				
CDES	.01		<.001	
CPLAT	.01			
CPHYP	<.01			
CDEV	<.001	<.01	<.01	
PERCOMP				

[a] Based on paired *t*-tests. CDP = Child-Directed Play; PDP = Parent-Directed Play; TPA = Toy Put-Away; MCDTALK = child-directed talk; MCS = critical statements; MTOTP = total praise; MTOTC = total commands; MRDEV = responds to deviant behavior; MPHYP = positive/neutral physical contact; MPLAT = playtalk; CDES = descriptive comments; CPLAT = playtalk; CPHYP = positive/neutral physical contact; CDEV = deviant behavior; PERCOMP = percentage of compliance with maternal directions.

Prediction of Clinic Status

Overview. Two logistic regression models were developed to estimate the probability of a subject's membership in the nonproblem comparison group. The first, called the "predicted" model, compared the attachment measures with a set of four selected DPICS variables predicted by previous research and social learning theory to discriminate between clinic and nonclinic children.

In the second regression, called the "strongest alternative" model, a backward stepwise procedure was used in which the eight DPICS variables showing significant group differences in the preceding analyses were first entered as a set and then evaluated individually to identify what variables could be removed without a significant reduction in prediction; this set of "surviving" DPICS variables was then compared with the attachment variables. Because this second analysis was highly opportunistic (capitalizing on chance relations with the DPICS variables in this sample), it provided the strongest possible challenge to the set of attachment variables.

Table VI. Logistic Regression Analyses of Predicted and Alternative Models[a]

Step variables	Improvement χ^2	Goodness of fit χ^2	Percent correctly classified
Predicted model			
Behavior variables entered first			
1. Entered: MCS, MTOTC, CDEV, PERCOMP3	10.15[b]	40.73	70%
2. Entered: ATSECUR, SEPTOT	9.51[c]	43.44	76%
Attachment variables entered first			
1. Entered: ATSECUR, SEPTOT	15.47[d]	48.94	74%
2. Entered: MCS, MTOTC, CDEV, PERCOMP3	4.20	43.44	76%
Alternative model			
Behavioral variables entered first			
1. Entered: CPLAT1, CPHYP1, CDES1, MCS2, PERCOMP3	30.96[d]	58.55	86%
2. Entered: ATSECUR, SEPTOT	4.74	62.65[b]	86%
Attachment variables entered first			
1. Entered: ATSECUR, SEPTOT	15.47[d]	48.94	74%
2. Entered: CPLAT1, CPHYP1, CDES1, MCS2, PERCOMP3	20.23[c]	62.65[b]	86%

[a] MCS = maternal critical comments; MTOTC = total number of maternal commands; CDEV = Child deviant behavior; PERCOMP = percentage of maternal commands with which child complied; ATSECUR and SEPTOT = attachment variables; CPLAT = child playtalk; CPHYT = child positive/neutral physical contact; CDES = child descriptive talk. Numbers at ends of abbreviations indicate play condition during which the variables were measured: 1 = Child-Directed Play; 2 = Parent-Directed Play; 3 = Toy Put-Away.

[b] $p < .05$.

[c] $p < .01$.

[d] $p < .001$.

Finally, exploratory regressions were performed as a concluding step in the testing of each model to determine what combination of attachment and DPICS variables was most closely associated with the probability of group membership.

Predicted Model. The four selected DPICS variables in the predicted model included (1) total number of maternal commands (MTOTC); (2) maternal critical comments (MCS); (3) child deviant behavior (CDEV); and (4) percentage of maternal commands with which the child complied during Toy Put-Away, or play condition 3 (PERCOMP3). With the exception of PERCOMP3, all variables represented the mean scores of the three play conditions. Attachment was represented by two variables, ATSECUR and SEPTOT.

As hypothesized, the attachment variables accounted for significant improvement in prediction of group membership after controlling for the contribution of the DPICS variables [improvement χ^2 (2) = 9.5, $p < .01$], but the predicted model DPICS variables did not improve the equation when entered after the attachment variables. These results are shown in the top portion of Table VI. A backward stepwise analysis was also conducted, indicating that ATSECUR and MTOTC were the strongest variables among all of those included in this equation, with correct classification of 76% of cases.

Strongest Alternative Model. A backward stepwise regression indicated that five of the eight DPICS variables initially entered contributed significantly to the overall prediction of group membership [improvement χ^2 (8) = 32.35, $p < .001$]. These variables were as follows (numbers at the end of variable labels refer to the play condition in which the variable was measured: 1 = CDP; 2 = PDP; 3 = TPA): child CDP playtalk (CPLAT1), child CDP positive/neutral physical contact (CPHYP1), child CDP descriptive talk (CDES1), mother's PDP critical statements (MCS2), and percentage of TPA child compliance (PERCOMP3). Contrary to our hypothesis, the attachment variables did not significantly contribute to the prediction of group membership after the entry of the five strongest DPICS variables but the DPICS did contribute significantly after entry of the attachment set [improvement χ^2 (5) = 20.23, $p < .01$]. These results are shown in the lower portion of Table IV. A final backward stepwise analysis of all variables indicated that ATSECUR, CPLATI, and CPHYP1 were the strongest variables among those included in this equation, with correct classification of 86% of cases.

DISCUSSION

The primary objective of this study was to examine the unique and combined contribution of measures drawn from two different approaches

to the conceptualization of disruptive behavior disorders: social learning theory with its emphasis on the assessment of discrete behaviors (typically measured during play and compliance situations) and attachment theory with its focus on organized patterns of behavior (usually assessed in a separation/reunion context). The hypothesis — that attachment measures would offer better concurrent discrimination of clinic-referred and control group children than would microbehavioral variables — was supported when these measures were compared with behaviors found in previous social learning research to distinguish between disruptive and well-functioning children (parental directiveness and criticism, and child deviance and noncompliance). The hypothesis was not confirmed in a more stringent test, when attachment measures were compared with the discrete behaviors that best discriminated between the groups in this particular sample. This analysis revealed two variables not previously associated with behavior problems in young children (child playtalk and physical contact with the parent). The final, model-building regression indicated that these unexpected variables were more strongly related to clinic status than any of the other discrete behaviors measured by the DPICS.

It should be noted that, like earlier research, the present study did find mothers of clinic-referred boys with disruptive behavior more likely than control mothers to be critical, and clinic boys less compliant and more deviant than control group boys. However, these behaviors were less effective in identifying clinic children than was attachment security. Also, these differences occurred only during situations which called for parent directiveness. When children were permitted to lead the interactions, these negative behaviors were not so apparent in mothers or boys, indicating that contextual factors (manipulated by instructions to the parent) are important determinants of the behaviors observed.

Attachment security provided the single best indicator of clinic status. The discriminative value of the attachment measures may be attributable to two factors.

First, the context of the attachment measures (the child's unanticipated separation from the parent in an unfamiliar environment) probably generates more stress for many preschool children than the play and toy cleanup situations. Group differences in the organization and functioning of the parent-child relationship may be most clearly evident under conditions of moderate to high stress.

Second, attachment measures are more closely attuned to the *affective* characteristics of the child than are the microbehavioral variables, and these may be especially relevant to the child's identification as a clinic "case." Security ratings reflect, in part, the child's feelings about the parent's return, the child's degree of comfort with the parent, and the emotional tone

of his verbal and nonverbal communication with the parent. The measure of separation distress also provides information about the child's level of anxiousness in a stressful situation; however, it did not in the present study independently contribute to the predictive strength of the attachment measures (i.e., the security rating had a significant regression coefficient but separation distress did not). The DPICS and similar observational coding systems prioritize the frequency of child oppositional behaviors and incompatible prosocial alternatives but not the affective quality with which these are displayed. This lack of information about the affective components of interaction may weaken the power of microbehavioral variables to discriminate clinic and control groups, at an age when the frequency of opposition to the parent's authority is relatively high in all children (Campbell, 1990). This idea is supported by the finding that, while the frequency of noncompliance changes little over the 2- to 5-year-old period, the quality of its display becomes markedly more sophisticated with age (e.g., from angry defiance to negotiation; Kuczynski & Kochanska, 1990).

A third explanation for the strength of the attachment measures must also be considered: that the selection of clinic and control groups in this sample somehow favored the attachment measures' ability to differentiate. Perhaps the voluntary nature of control group participation resulted in a group of more securely attached but less compliant children than might be expected in a normative sample. However, the proportion of secure attachment classifications in this control group (reported by Greenberg *et al.*, 1991) approximated the average found in normative samples (about 70%) and the average compliance rate (proportion of maternal commands obeyed) was 69% in the control group, a level close to that reported by Forehand and colleagues in a normative sample of 3- to 6-year-olds (78%; Forehand, Gardner & Roberts, 1978). Nevertheless, it is possible that the better differentiation of groups by the attachment measures is unique to our sample. This, and the relatively small size and middle class status of the sample, all indicate the need for replication with a larger and more representative group of disruptive young boys.

The contribution of child playtalk and physical contact with mothers to the final model-building regression was unexpected, as was the direction of group differences on these variables: Clinic boys engaged in *more* playtalk and initiated *more* positive/neutral physical contact with their mothers than control group boys. Playtalk often occurred during puppet play, with the parent and/or child speaking "in role" rather than conversing directly with one another. This points to a possible group difference in how mothers and their sons respond to the discomfort of being observed so closely. Whereas control group dyads in this situation may be more inclined to "use each other" as a strategy for minimizing discomfort, clinic mothers

and sons may be more likely to use a more structured and less personal form of interaction.

The finding of more frequent initiations of physical contact among clinic boys may be related in part to the ordering of our procedures. Since Child-Directed Play followed the separation/reunion episode, clinic boys (who exhibited less secure attachment behavior) may have remained unsettled and anxious after the reunion and therefore desired more physical contact with their mothers during the subsequent play task. This finding requires replication with a more detailed examination of quality or type of physical contact (e.g., affectionate, dependent, or controlling) than was afforded by the DPICS.

In conclusion, our data suggest that ratings of attachment quality, based on observations of mother–child interactions during separation and reunion, are as valuable to the assessment of early disruptive behavior as the measurement of discrete behaviors during play interactions and a child compliance task. The assessment of attachment in the preschool years is a relatively new procedure, yet it provided somewhat better discrimination of clinic and control groups than did behavioral measures long in use. More importantly, our findings indicate that each measurement approach (and by inference, their underlying theories) contributes unique information to the understanding of how disruptive and well-functioning children and their parents differ. Our model of the development of disruptive behavior problems suggests that there are several potential pathways to clinic referral (Greenberg *et al.*, 1993); insecure attachment and poor behavior management strategies may each contribute independently.

Further study is needed to delineate how attachment and behavioral variables might best complement each other in illuminating the origins and development of disruptive behavior problems. Inadequate attention has thus far been given to the changing developmental context within which conduct problems occur and are defined. This challenge is currently being addressed by longitudinal research in several laboratories, including our own.

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