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Attachment in boys with early onset conduct problems

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Abstract
Few studies have examined the association between attachment and psychopathology in samples of clinically diagnosed children or the relation between attachment variables and the continuity of clinical symptoms. Clinic-referred preschool boys ($n = 80$) with early onset conduct problems (as indicated by diagnoses of Oppositional Defiant Disorder) were compared with a case-matched group of 80 nonproblem boys to determine whether observed attachment behaviors could: (a) differentiate the groups, (b) explain concurrent variation in problem severity within the clinic group, and (c) predict the outcomes of clinic boys 1 and 2 years later. Over half of the clinic boys with early onset conduct problems (54%) exhibited an insecure attachment strategy during reunion, as opposed to 18% of comparison group boys. All insecure patterns were overrepresented in the clinic group. Clinic boys were more likely than comparison boys to engage in provocative behavior when separated from their mothers. Contrary to our hypothesis, attachment variables showed little ability to explain concurrent or future variation in the problem severity or diagnostic status of clinic boys. We conclude that observable attachment behaviors exhibited during the preschool years are related to the initial identification of early onset conduct problems but may have little value by themselves in predicting the subsequent course and severity of problems in the 2 years following clinic referral.

The emergence of disturbing behavior in the preschool and early grade school years marks the beginning stages of "life-course persistent" antisocial behavior for many children (Moffitt, 1993). Youngsters identified as having such problems are typically boys who show high rates of noncompliance, tantrums, and provocative behavior, often leading to clinical referral and a diagnosis of Oppositional Defiant Disorder (ODD). This disorder is one of the most common of childhood disorders, with a prevalence rate approaching 6% in school-age children (Nietzel, Speltz, McCauley, & Bernstein, 1998). Comorbidity with Attention Deficit Hyperactivity Disorder (ADHD) is frequent, occurring in 30% to 50% of identified cases (Rey, 1993). When ODD symptoms co-occur with physical aggression and ADHD, the odds of continuing antisocial behavior are greatly increased (Loeber, Green, Keenan, & Lahey, 1996). Eventual diagnoses of Conduct Disorder and Antisocial Personality Disorder are likely in a third to a half of the children presenting with this combination of problems in their early childhood years (Robins, 1991).

The etiology of this pattern is far from clear. Recent theoretical models have proposed multiple, interacting risk factors including child biologic and neuropsychologic vulnerabilities, family and community adversity, and parent–child relationship problems, including poor management and monitoring of

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child behavior and the lack of a positive affective bond between parent and child (e.g., Campbell, 1995; Greenberg, Speltz, & DeKlyen, 1993; Loeber, 1990). This paper focuses on the affective quality of the parent–child relationship, which has received the least empirical attention among these various risk factors.

Several theorists have emphasized the quality of the parent–child relationship in the development of social behavior (e.g., Baumrind, 1971). Recent theory and research has focused on one aspect of this relationship, the child's attachment to caregivers. Attachment refers to the child's regulation of parental care during times of distress and related expectations and emotions regarding the availability and quality of parental care ("felt security"; Bowlby, 1982). Attachment theory has provided a rich developmental context and new empirical tools for the study of conduct problems in early childhood (e.g., Goldberg, 1997; Lyons–Ruth, 1996). Attachment processes are believed to influence the risk of young children's disruptive behaviors in several ways (Greenberg et al., 1993; DeKlyen & Speltz, in press). First, infants and young children who experience an insecure relationship with an insensitive or unpredictable parent are thought to develop internal representations of relationships that bias subsequent social perceptions and cognitions (Sroufe & Fleeson, 1986). These negative biases may underlie the hostile attributions identified in older conduct problem children (Dodge, 1991). Second, attachment quality may promote a generalized motivational set for social interaction, affecting readiness to identify and comply with parents and other caregivers (Maccoby & Martin, 1983; Waters, Kondo–Ikemura, Posada, & Richters, 1990). Third, disruptive or oppositional behaviors may serve important attachment functions for some children, as strategies for regulating parent proximity and availability when caregiving is otherwise unresponsive (Greenberg & Speltz, 1988) or for establishing order and predictability in extremely disorganized parent–child relationships (Main & Hess, 1990). Fourth, some theorists have proposed relations between attachment and later disorder deriving from the impact of early patterns of emotion regulation (especially for fear and trauma) on neural organization and conditioning processes, resulting, for example, in impaired ability to tolerate and manage strong affect (Greenberg & Snell, 1997; Schore, 1996). Finally, the link between child and parent attachment classifications (van Ijzendoorn, 1995) suggests that parents' internal representations of attachment may help to explain the emergence of child conduct problems, as insecure representations may lead to biased perceptions and expectations of the child, lower tolerance of child affect and minor misbehaviors, and diminished personal stability and supports (DeKlyen, 1996).

Increasing attention has been paid to attachment processes in recent formulations of antisocial behavior (Greenberg et al., 1993; Lyons–Ruth, 1996; Shaw & Bell, 1993; Wahler, Castellini, Smith, & Keathley, 1996), but there is as yet little empirical support for the role of attachment in the etiology or stability of clinically significant conduct problems. Although data involving low risk children has typically failed to show associations between attachment and behavior problem ratings (e.g., Bates, Maslin, & Frankel, 1985; Fagot & Kavanagh, 1990; Lewis, Feiring, McGuffog, & Jaskir, 1984), longitudinal studies of infants in high risk social circumstances have shown such links (e.g., Lyons–Ruth, Zoll, Connell, & Grunebaum, 1989; Renken, Egeland, Marvinney, Mangelsdorf, & Sroufe, 1989; Shaw, Owens, Vondra, Keenan, & Winslow, 1997). However, these high risk studies yield few children with diagnosed psychiatric disorders or behavior checklist scores above clinical thresholds.

Attachment in Post-Infancy Children

The recent development of attachment measures for post-infancy children has provided new opportunities to study attachment in clinical samples. Main and Cassidy (1988) first reported a procedure for coding parent–child reunions in 6-year-old children following an hour-long separation. A similar procedure called the Preschool Attachment Assessment System (PAAS; Cassidy & Marvin, 1992)

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was developed for younger children who are separated from their parent for two brief (3 min) intervals. An alternative system has been proposed by Crittenden (1992). Classifications of separation–reunion behavior in these coding systems are based not only on child approach or avoidance behaviors, but also on the content and affectivity of the child's verbal and nonverbal communications to the parent. The PAAS features classifications analogous to Ainsworth's three original categories (secure, avoidant, and ambivalent), as well as "controlling" and "insecure-other" categories. The controlling strategy appears to be most common among children classified disorganized-disoriented ("D") as infants (Main & Cassidy; Wartner, Grossmann, Fremmer–Bombik, & Suess, 1994).

Several studies of children in the 3- to 6-year age range have now examined the relation between reunion strategies and concurrent measures of behavior problems or competencies. With few exceptions, securely attached children have received more favorable parent or teacher ratings of behavioral adjustment than have insecurely attached children (e.g., Cohn, 1990; Easterbrooks, Davidson, & Chazan, 1993; Fagot & Pearls, 1996; Moss, Gosselin, Rousseau, & St. Laurent, 1996; Solomon, George, & deJong, 1995; Turner, 1991; Wartner et al., 1994). The validity of the preschool procedure has also been supported by studies showing associations between children's reunion classifications and (a) internal representations of relationships as measured by story completion tasks (Solomon et al.), (b) parents' attachment classification as assessed by the Adult Attachment Interview (DeKlyen, 1996), and (c) maternal sensitivity during parent–child interactions in nonlaboratory situations (Fagot & Pearls, 1996; Stevenson–Hinde & Shouldice, 1995).

There has been less clarity about associations between specific insecure attachment patterns and different types of behavior problems (e.g., externalizing vs. internalizing). Some theorists have suggested that avoidant attachment should more strongly relate to externalizing behavior and ambivalent–dependent attachment to internalizing behavior (Rubin, Hymel, Mills, & Rose–Krasnor, 1991), but these predictions have not held up in follow-up studies (e.g., Fagot & Kavanagh, 1990). Several studies have demonstrated a linkage between disorganized/controlling attachment and externalizing problems, both prospectively (Hann, Castino, Jarosinski, & Britton, 1991; Lyons–Ruth, Alpern, & Repacholi, 1993), and concurrently (Fagot & Pearls, 1996; Moss et al., 1996; Solomon et al., 1995).

Attachment in Children with Clinical Diagnoses

Two studies have examined the attachment behaviors of clinic-referred, individually diagnosed children with early onset conduct problems (Greenberg, Speltz, DeKlyen, & Endriga, 1991; Speltz, Greenberg, & DeKlyen, 1990). Both compared preschool children with ODD with a matched comparison group, using the PAAS (Cassidy & Marvin, 1992). In the first study (Speltz et al., 1990), 16% of the clinic group versus 72% of the comparison children were classified as secure. Clinic children also showed more separation protest and distress than did comparison children. In support of the thesis that children with controlling reunion patterns carry the highest risk of behavioral dysfunction, 40% of the clinic children were classified controlling (versus 12% in the comparison group). A replication study including only boys (Greenberg et al., 1991) obtained almost identical results: Only 20% of clinic boys (compared with 72% in the comparison group) exhibited secure attachments, and among the insecure classifications, the controlling category best discriminated the two groups, with 32% of clinic boys and only 4% of comparison boys so classified. In further analyses, Speltz, DeKlyen, Greenberg, and Dryden (1995) found that a combination of attachment variables (security ratings and a measure of separation distress) discriminated the clinic and comparison groups better than parent–child interaction variables based on a social learning conceptualization of antisocial behavior (i.e., parent commands and criticism, and child noncom-

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pliance during play and toy clean up). Very low correlations between the attachment and social learning variables suggested that each contributed different information to the prediction of clinical status.

The Speltz et al. (1990) and Greenberg et al. (1991) studies provide support for an association between the early onset of conduct problems and attachment behaviors measured at the time of first clinical diagnosis. However, both studies had limitations. Sample sizes were small (25 subjects each in the clinic and comparison groups), preventing conclusive comparisons between insecure subcategories or analyses of the relations between attachment and different diagnostic patterns (e.g., ODD alone versus ODD with ADHD). Also, both studies were cross-sectional, precluding the examination of outcomes over time.

The Current Study

The current study addressed three questions:

1. Do attachment variables (attachment classifications, attachment ratings, and separation behaviors) distinguish clinic and comparison group boys? We anticipated that boys referred for conduct problems would be more likely to display insecure attachment patterns. Further, we expected the controlling and insecure-other reunion patterns to best differentiate the two groups (e.g., Lyons–Ruth et al., 1993; Moss et al., 1996); previous investigators have often combined controlling and insecure-other classifications to form a single group (cf. Solomon et al., 1995; Wartner et al., 1994).

2. What is the relative contribution of reunion behavior and separation distress to clinic status? The relative importance of preschoolers' separation behaviors and reunion patterns is poorly understood. In infancy, reunion patterns have consistently shown better relations to child adjustment than have separation behaviors (Ainsworth, Waters, Blehar, & Wall, 1978). However, this may not be true for preschool children. Whereas overt distress during separation may be normative for infants, it is less common among preschoolers and may indicate a dyad's failure to build the trust and predictability characteristic of a well-functioning parent–child relationship. We have suggested that, for some young ODD boys, disruptive behavior may be a manifestation of anxiety about the parent's availability (Greenberg & Speltz, 1988). In our first cohort, clinic boys exhibited more "search" behavior during separation (e.g., looking for mother by opening the door, calling out, or peering through the observation window) than did comparison boys (Speltz et al., 1990). Data from our second cohort (Greenberg et al., 1991) revealed an interaction between attachment and clinic status: insecure clinic boys showed very high separation distress, secure clinic boys very low distress, and secure and insecure comparison group boys showed intermediate and indistinguishable levels of distress. However, neither study examined the relative effects of separation behavior and reunion classification.

3. Are attachment variables related to concurrent or future problem severity and diagnosis of clinic children? No previous research has indicated whether the quality of the parent–child relationship predicts problem severity or diagnostic status of clinic cases once identified. Although such prediction is a significant challenge, given the restricted range of outcomes within clinic samples, it is important to determine whether observed parent–child relationship characteristics have prognostic value for children with diagnosed problems.

It is unclear how attachment classification might relate to concurrent diagnoses, for example, the presence of ADHD in clinic boys referred for ODD. Clinic boys with ODD alone might be expected to show lower rates of attachment security than those with both ODD and ADHD, as a diagnosis of ADHD might increase the likelihood that neuropsychological deficits and temperamental factors are contributing to clinic referral (e.g., Aronowitz, Liebowitz, Hollander, Fazzini et al., 1994); parent–child relationship factors might be less influential in these cases. In contrast, cases of ODD alone might be more strongly associated with conflicted parent–child relationships and less influenced by biologic fac-

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tors, an expectation consistent with theoretical and clinical formulations of this disorder (e.g., Patterson, Reid, & Dishion, 1992; Rey, 1993). However, an argument can also be made that ADHD may itself undermine the security of the parent–child relationship, leading to the opposite hypothesis.

With respect to concurrent problem severity, we expected insecure attachment to predict greater internalizing problems among the clinic boys, because greater variability was anticipated in internalizing than externalizing symptoms in these preschoolers referred for externalizing behavior.

Regarding the future functioning of clinic boys, we predicted those with insecure attachment to be more likely than securely attached boys to have continuing problems 1 and 2 years after clinic referral, as indicated by behavior ratings and DSM diagnostic status. Anticipating which form of insecurity would be most strongly related to continuity was more difficult. The classification (controlling) expected to best predict clinic status might also predict continuity. However, factors associated with initial referral for problems may not be related to their continuity (DeKlyen, Biernbaum, Speltz, & Greenberg, 1998).

Method

Participants

Participants in this study were 160 preschool boys and their families, of whom 80 were consecutive eligible referrals to an early childhood behavior problem clinic and 80 were normally developing boys. Only boys were included because the majority of youngsters referred for ODD are male; it is difficult to recruit adequate numbers of girls with early onset conduct problems, and the evidence suggests that the dynamics leading to disorder in girls differ from those for boys (Greenberg et al., 1993). Criteria for clinic group membership included (a) unsolicited referral for disruptive, oppositional, and/or aggressive behavior; (b) age between approximately 4 and 5.5 years; (c) a *T* score of 65 or above on the parent version of the Child Behavior Checklist Aggression[1] scale (CBCL; Achenbach, 1991); and (d) primary clinical diagnosis of ODD, with or without other Axis I disorders. On the basis of a structured diagnostic interview with parents, 34 boys in the clinic group were found to have diagnoses of ODD only, and 46 had ODD with ADHD. Each group contained a small number of boys (7 with ODD, 6 with ODD/ADHD) who had other Axis I disorders as well (e.g., anxiety or encopresis/enuresis).[2]

Comparison boys were case-matched to clinic subjects by age, ethnicity, family structure, and socioeconomic status (SES). All comparison subjects received CBCL Aggression scores below 65 and were characterized by their mothers and teachers as typical preschool boys. None of the comparison boys received clinical diagnoses.

Boys ranged from 47 to 68 months of age at the first visit ($M = 57.3$). One hundred and thirty participants were European American; the remainder were African American (2.5%) or of mixed ethnicity (16.5%). In all but four cases of mixed ethnicity, there was a European American parent paired with a parent who was either African American (6.25%), Asian American (4.4%), Hispanic (1.8%) or Native American (1.25%). In 110 families, boys lived with both biological parents; 50

1. The Aggression scale was chosen as a screening instrument because it includes many behaviors characteristic of ODD youngsters and because it successfully identified most of the boys subsequently diagnosed with ODD in a previous cohort. It is important to recognize that most of the items on this scale do *not* involve specifically aggressive behaviors, but instead a variety of disruptive behaviors, including aggression.
2. Ten of the 80 cases received provisional ODD diagnoses by the clinical team, indicating a presumption that full criteria were met for the diagnosis, but insufficient information was available at the time of the evaluation to make a firm clinical diagnosis (e.g., parents were not certain of the duration of a symptom or did not know if the child's behavior was extreme for his age). One of these 10 met ODD criteria according to the DISC interview; and 5 received an ADHD diagnosis. The remainder had CBCL Aggression *T* scores of 70 or above and were well within one symptom of meeting criteria for diagnosis of ODD and/or CD. Two potential subjects were eliminated from the study after the first clinic interview because they did not meet criteria for diagnosis.

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Table 1. *Sample characteristics by group*

Variable	Group: Clinic ($n = 80$) *M*	Group: Comparison ($n = 80$) *M*
Child age (months)	57.1	57.5
Family composition (%)		
Both bioparents	69	69
Single parents	31	31
SES (1 = *professional*, 5 = *unemployed*)	2.3	2.3
Child ethnicity (% Caucasian)	81	81
No. children in home	1.8	1.9
Maternal age (years)	33.6	34.5
Maternal education (1 = *<8 years education*, 7 = *grad school*)	5.2	5.6
Maternal employment		
Full-time	38	25
Part-time	20	29
Not employed	22	26
CBCL		
Externalizing *T* score	72.1	48.5****
Internalizing *T* score	59.1	45.9****
Conners' Teacher Rating Scale		
Conduct problems *T* score	71.8	46.3****
Anxious-passive *T* score	50.5	45.6***

Note: Clinic and comparison groups were compared, using either *F* tests or χ^2 analyses. Significant differences are indicated by asterisks.
****$p < .0001$. ***$p < .001$.

families were headed by single mothers. Only boys who resided with their mothers (with or without their fathers); attended day care or preschool; had no identified language, cognitive, motor, major health or neurological problems; and had not previously received mental health treatment were included. See Table 1 for additional description of the participants.

Measures

Family information form

This questionnaire asks for information about family demographics, structure and composition; child developmental history; child care arrangements, family medical and psychiatric history; and previous professional contacts.

Preschool Attachment Assessment System (PAAS)

Conceptually similar to Ainsworth's assessment of infant attachment status, the PAAS (Cassidy & Marvin, 1992) is applied to videotaped observations of a separation–reunion sequence. In this adaptation of the Strange Situation, mother and child have 4 min to do whatever they wish in a room equipped with age-appropriate toys, after which mother is signaled to leave the room for 3 min, followed by a 3-min reunion, another 3-min separation, and a final 3-min reunion. Coding results in attachment classification and ratings for security (1 = *highly insecure*, 9 = *highly secure*) and avoidance (1 = *no avoidance*, 7 = *high avoidance*). A child who recognizes his parent's return with relaxed pleasure, displaying little avoidance, ambivalence, or controlling behavior, is placed in the secure group. Others, who behave as if their parents' return had no special meaning, attempting to avoid interaction without calling attention to the relationship, are classified insecure-avoidant. The insecure-ambivalent child emphasizes his dependence on the parent through immature, help-seeking, or coy behaviors, often accompanied by mild anger or resistance. A fourth group (insecure-controlling) includes children who attempt to take control of the relationship in either a punitive or caregiving manner. Children whose behavior does not fit into any of these insecure categories but who do not meet criteria for secure attachment are classified insecure-other (e.g., children showing incoherent reunion strategies or a mix of two or more insecure reunion patterns).

Each tape was classified by two coders who were "blind" to children's clinic status. Four coders were involved in the coding; all were certified as reliable on standard reliability tapes by Cassidy and Marvin. When coders did not agree, final classification was determined through conferencing. Agreement (before conferencing) was 82% for secure versus insecure, and 80% for 5 categories, $\kappa = .63$. Security ratings for coder pairs correlated $r = .71$, $p < .001$; avoidance ratings correlated $r = .71$, $p < .001$.

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Separation Behavior Coding (*SBC*)

Each child's behavior during separation was observed by the same coders. Nineteen behaviors were coded during the twelve 30-s intervals that mother was out of the room, yielding scores of 0 to 12 for each behavior (0 = *the behavior never occurred*, 12 = *the behavior occurred in each of the twelve intervals*). Interrater agreement on specific behaviors ranged from $r = .89$ to .94, $ps < .001$.

Summary scales were constructed by combining conceptually related items, resulting in three categories. *Search* included "touches door," "opens door," "crosses door jamb," "experimenter intervention" (to keep child in the room), and "protests intervention" (standardized $\alpha = .92$). Anxiety was comprised of "language or affect suggests distress," "cries," "huddles," and "other anxiety symptoms" (standardized $\alpha = .78$). A third scale, *Provocative*, included two correlated behaviors, "aggression" (destructive behavior directed at objects in the room) and "risk taking" (e.g., climbing on or overturning furniture, playing with wall sockets, turning off the lights) (standardized $\alpha = .56$). These items were conceptually related in that both pertain to behaviors that might impel caregivers to interrupt or terminate the separation. Interrater agreements for the three categories (calculated conservatively, including only cases in which some behavior occurred, so that scores were greater than 0) were $r = .84$ for Search, $r = .95$ for Anxiety, and $r = .89$ for Provocative, all $ps < .001$. Behaviors not included in these scales did not form meaningful clusters (as indicated by exploratory factor analysis) and were dropped from further consideration.

Diagnostic Interview Schedule for Children (*DISC*)

Diagnoses were determined following a diagnostic interview with parents, review of behavior checklist information from parents and teachers, and direct observations of boys during testing and parent–child interactions. Clinical diagnoses were assigned during team meetings including the interviewing clinician and at least one other Ph.D. level clinician. The diagnostic interview incorporated part of the parent version of the DISC (Fisher, Wicks, Shaffer, Piacentini, & Lapkin, 1992). The Disruptive Behavior Disorder portion of the DISC was modified for this study to better accommodate preschool children (e.g., questions concerning school work were eliminated and parents were prompted to consider whether behaviors such as activity level and short attention span were excessive for the child's age). A random selection of 30 cases at initial evaluation (Year 1), 27 cases at Year 2, and 24 cases at Year 3 were selected for coding by a second clinician, who watched videotapes of the original interviews. Agreement on DISC diagnoses was 96% at Year 1, 99% at Year 2, and 96% at Year 3; on number of criterial symptoms, exact agreement was 75% at Year 1, 78% at Year 2, and 75% at Year 3.

Child Behavior Checklist (*CBCL*)

The CBCL (Achenbach, 1991) includes 118 problem behavior descriptions rated by parents on a 3-point scale (0 = *not true*, 2 = *very true*). It provides standard scores for Total Problems, Internalizing and Externalizing Problems, and several subscales, including Aggression. The CBCL is a well-standardized measure with extensive reliability and validity data.

Conners' Teacher Rating Scale (*CTRS-39*)

The CTRS-39 (Conners, 1989) is a 39-item symptom list which yields six factor scores, including ratings for Conduct Problems and Anxious–Passive behavior. Adequate test–retest stability (.72–.91), internal consistency (α = .61–.95), validity data, and norms have been established in a number of studies (Conners, 1989). The primary teacher or child care provider for each participating boy was asked to complete the CTRS-39.

Procedure

Recruitment

Clinic families. The Preschool Families Clinic was established as part of an outpatient child psychiatry clinic within an urban children's

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medical center. Among the 80 eligible clinic boys, 69% were referred by a medical professional (physician, psychologist, nurse), 22% by an educator (preschool teacher or day care staff), and 9% were parent referrals. This group differed from boys seeking services from similar clinics in that families were screened to determine eligibility when they first called, they agreed to be available for follow-up assessments 1 and 2 years later, and they received $50 reimbursement for completion of the assessment.

Comparison families. Comparison families were recruited through posters placed in pediatricians' offices, day-care centers, libraries, and other social service facilities. After telephone screening, parents completed behavior checklists and family information forms to confirm eligibility (e.g., absence of significant problems) and to permit case-matching to enrolled clinic families. We then called each case-matched comparison family to schedule a visit.[3]

Year 1

After identification of eligible participants, questionnaire packets were sent home and two clinic visits were scheduled. The separation–reunion sequence took place at the beginning of the first clinic visit. Following this procedure, parents participated in the DISC interview. Other observations and measures were subsequently collected but will not be reported here. Parents gave teachers and day-care providers the CTRS-39 to complete. After the assessment was complete, parents were given diagnostic feedback, recommendations for treatment, and referrals to other providers. Treatment services were not provided by the Preschool Families Clinic; however, subsequent treatment participation was monitored (see below).

Years 2 and 3

Clinic visits were scheduled 1 and 2 years later, at which time parents, teachers, and child-care providers again completed behavior checklists and the DISC was re-administered to parents. Of the 80 clinic group families, 73 returned for the Year 2 visit (91%) and 69 (86%) returned at Year 3. *T* test comparisons of returning families versus dropouts at Years 2 and 3 were conducted on seven Year 1 variables (mothers' CBCL Externalizing and Internalizing scores, teacher Conners scores for Conduct Problems and Anxious–Passive, attachment security and avoidance ratings; and family SES); no significant differences between groups were found. Teacher behavior checklists were not available for 10 of the 73 returning subjects at Year 2 and 6 of the returning 69 for Year 3, due to teacher nonresponse or boys not attending school or day care. *T* tests comparing returning subjects with and without teacher data on the same seven variables showed no significant differences.

Participation in mental health treatments and educational services for behavior problems after the Year 1 visit was assessed during telephone interviews just prior to the Year 2 and Year 3 visits. Among returning clinic families, 55% ($n = 44$) participated in one or more interventions in the year following initial evaluation and 45% ($n = 36$) families did so in the year following the Year 2 evaluation. Analyses of treatment participation by attachment classification found no significant relations. Because this finding indicated that treatment participation could not have mediated the relations between attachment and other variables, participation in treatment was not considered further in this study.

Results

Preliminary analyses of age effects

As there was a 21-month range in subjects' ages at Year 1, we examined possible age ef-

3. In the course of identifying eligible, case-matched comparison families, we conducted approximately 820 screening calls. About 250 boys did not meet the inclusion criteria (i.e., were not between 4 and 5.5 years old, attending day care or preschool, living with biological mother, or without identified cognitive, language, health, motor, or neurological problems), 101 exhibited significant behavior problems according to either parent or teacher report, 140 voluntarily withdrew (primarily because of unwillingness to make the required time commitment), and about 250 were not included because we were unable to case-match them with an enrolled clinic group participant.

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Table 2. *Year 1 attachment classifications by group*

Attachment Classification	Clinic		Comparison	
	n	Percent	*n*	Percent
Secure	37	46.3	66	82.5
Avoidant	8	10.0	3	3.8
Ambivalent	8	10.0	3	3.8
Controlling	19	23.7	6	7.5
Insecure-other	8	10.0	2	2.5

Note: $\chi^2(4, N = 160) = 23.1$, $p < .001$.

fects on behavior during the separation–reunion (classification, security ratings, avoidance ratings, and separation behaviors). Analysis of age by five-way attachment classification found no significant effect, $F(4, 159) = 1.0$, $p = .40$. Only the correlation between age and the Provocative scale was significant, $r = -.18$, $p < .05$; younger age was associated with more provocative behavior during separation.

Do attachment variables distinguish clinic and comparison boys?

Attachment (reunion) classification and ratings. Table 2 shows attachment classifications for the clinic and comparison groups. In the clinic group 46% of boys were classified as secure versus 82% in the comparison group, χ^2 $(1, n = 160) = 22.9$, $p < .00001$. The distribution of the five attachment classifications within the clinic group also differed from that of comparison boys, χ^2 $(4, n = 160) = 23.1$, $p < .001$). The Goodman and Kruskal Lambda statistic indicated that a 36% reduction in error in prediction of clinic group status occurred if attachment status was known. Nearly half of the insecure clinic boys were in the controlling category (all were controlling-punitive); however, all insecure categories were over-represented in the clinic group relative to the comparison group.

Consistent with the classification findings, clinic boys had lower security ratings than comparison boys, $F(1, 158) = 32.52$, $p < .0001$ (clinic $M = 4.7$, comparison $M = 6.2$). They were also more likely to be rated avoidant, $F(1, 158) = 5.16$, $p < .05$ (clinic $M = 2.3$, comparison $M = 1.9$).

Separation behaviors. As distributions of the separation scales (Search, Anxiety, and Provocative) were skewed, inverse transformations were performed to normalize them prior to analyses. A MANOVA revealed a significant effect for group, $F(3, 156) = 4.75$, $p < .01$. Univariate analyses indicated that only the Provocative scale significantly distinguished the groups. Clinic boys were more likely than comparison boys to display risk-taking and aggressive behaviors during separation, $F(1, 158) = 14.31$, $p < .001$ (clinic $M = .74$, comparison $M = .05$); such behavior was exhibited by 25% of the clinic boys and by 5% of the comparison boys.

What is the relative contribution of separation and reunion behaviors to clinic status?

Logistic regression analyses were used to examine how attachment classification and separation behaviors predicted clinic status at Year 1. Four indicator codes represented the five attachment classifications, allowing each insecure category to be compared against the secure classification. The two groups of variables were entered hierarchically, with attachment first and separation behavior second in the initial analysis; the process was then reversed to determine which set of variables accounted for the greatest variance. Results of these analyses are presented in Table 3.

Both attachment classification and separation behavior accounted for significant amounts of variance in the regression equation, whether entered first or second, indicating that each contributed independently to the prediction of Year 1 clinic status. Attachment classification alone resulted in a somewhat higher rate of correct prediction (68% for the entire sample, 54% within the clinic group) than did knowledge of separation behavior alone (61% for the combined sample, 33% within the clinic group). Knowing both attachment and separation behavior improved prediction to 70% correct across the entire sample and 61% correct for the clinic group

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Table 3. *Predicting Year 1 clinic status from attachment and separation behavior*

Predictor	Category	Partial Correlation	Odds Ratio
Attachment classification	Avoidant	.12*	5.2
	Ambivalent	.09	4.5
	Controlling	.17**	5.4
	Insecure-other	.11*	6.1
Separation behavior	Provocative	.13*	3.5
	Search	.00	1.0
	Anxiety	.00	1.0

Note: When attachment alone was entered into the logistic regression equation, it predicted clinic status (model χ^2 [4, $n = 160$] = 23.8, $p < .001$). When entered second, after separation behavior, attachment significantly improved the model (χ^2 improvement [4, $n = 160$] = 20.9, $p < .001$). When only the block of separation behaviors were entered into a logistic regression equation, it also predicted clinic status (model χ^2 [3, $n = 160$] = 15.1, $p < .005$). When entered second, after attachment, separation behavior significantly improved the model (χ^2 [3, $n = 160$] = 12.2, $p < .01$). Each insecure category was compared with the secure classification to yield odds ratios.
*$p < .05$. **$p < .01$.

alone. Risk for clinic status was increased by avoidant, controlling, and insecure-other classifications and by the occurrence of provocative behavior during separation, as indicated by significant regression weights and relatively high partial correlations for these variables. Odds ratios indicated that clinic status was 5 times more likely for avoidant and controlling boys and 6 times more likely for boys classified insecure-other than for secure boys. Each provocative episode during separation (or more precisely, each 30-s interval during which such behavior was observed) increased the likelihood of clinic status more than threefold.

Are attachment variables related to concurrent problem severity and diagnosis within the clinic group?

Hierarchical regression analyses were conducted using attachment classification and separation variables to predict concurrent (Year 1) parent and teacher ratings of problem behaviors among clinic children. Mothers' and fathers' CBCL Externalizing and Internalizing ratings and teachers' Conners Conduct Problem and Anxious–Passive scores were the dependent variables. Four "dummy" variables, created to represent the five attachment classifications, were entered as a block, followed by the three separation scales (Anxiety, Provocative, Search); the procedure was next reversed.

Neither attachment nor separation variables predicted mothers' or teachers' ratings of problem behavior within the clinic group. Separation behavior accounted for significant variance in fathers' Internalizing ratings (entered first, $R^2 = .16$, $p < .05$; entered second, $R^2_{ch} = .16$, $p < .05$), with both Anxiety and Search contributing uniquely. Higher rates of Anxiety, $F(1, 53) = 8.4$, $p < .01$, semipartial correlation = –.35 and Search, $F(1, 53) = 5.1$, $p < .01$, semipartial correlation = –.28 were associated with more internalizing behavior.[4]

A comparison of boys with diagnoses of ODD without ADHD ($n = 34$) versus those with ODD and ADHD ($n = 46$) revealed no significant differences in either attachment security or separation variables. As differences were in the expected direction (only 38% of those with ODD alone were secure, compared with 52% of those with ODD and ADHD), an exploratory analysis was conducted to see

4. These semipartial correlations involve inverse transformations of the separation behavior codes. Thus, lower *inverse* scores for Anxiety and Provocative indicate higher levels of these behaviors.

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whether the presence of other Axis I diagnoses made a difference. Rates of attachment security were lowest for ODD alone (32%), followed by ODD with a disorder other than ADHD (42%), ODD and ADHD alone (45%), and ODD and ADHD with another disorder (100%), χ^2 (3, $n = 80$) = 8.0, $p < .05$.

Do attachment variables predict clinic children's future problem severity and diagnosis?

Hierarchical regression analyses examined how well attachment classification and separation variables predicted Year 2 parent and teacher ratings of problem behaviors among clinic children. Dependent variables and their order of entry into the regression model were identical to those used in the analyses of concurrent (Year 1) data.

Significant models were obtained for the prediction of teacher ratings of classroom behavior but not for parent CBCL reports. Separation behavior predicted teachers' Conduct Problem scores at Year 2 when entered first (but not second) in the model, $R^2 = .15$, $p < .05$. Only the Anxiety score contributed uniquely, $F(1, 54) = 5.2$, $p < .05$, semipartial correlation = .28. Attachment classification accounted for significant variance in Year 2 teachers' Anxious–Passive ratings whether entered first, $R^2 = .16$, $p < .05$, or second, $R^2_{ch} = .15$, $p < .05$. When both attachment and separation behavior were in the equation, $R^2 = .18$. Post hoc analysis indicated that clinic boys in the insecure-other and secure classification groups had higher Anxious-Passive ratings than those in the controlling group, $p < .05$; see Table 4.

Attachment variables were also examined in relation to the presence of any DSM-III-R Axis I diagnosis at Year 2. Of the 73 clinic boys assessed at Year 2, 52 (71%) had one or more diagnoses (for further detail, see Speltz, McClellan, DeKlyen, & Jones, in press). There were no associations between Year 1 attachment classification or separation behavior and the presence of a Year 2 diagnosis; the different attachment subgroups had nearly equivalent proportions of diagnosed boys (between 71% and 78%), except for the ambivalent-dependent group, in which only 37% of the boys received a Year 2 diagnosis.

Table 4. *Year 2 teachers' anxious/passive ratings of clinic boys by attachment classification*

Attachment Classification	Teacher Rating		
	n	*M*	*SD*
Secure	28	49.6	8.3
Avoidant	7	49.6	6.8
Ambivalent	6	45.7	2.2
Controlling	15	43.1	3.9
Insecure-other	6	51.5	10.1

Of the 69 clinic boys available for assessment at Year 3, 51 (74%) had one or more diagnoses. No significant relations were found between any of the attachment variables and the Year 3 measures of problem severity or presence/absence of disorder.

Discussion

Group differences in attachment variables

Clinic and comparison group boys differed significantly according to both attachment classifications and ratings. Over half of the boys with early onset conduct problems exhibited an insecure attachment strategy during reunion, as opposed to 18% of case-matched comparison boys without significant behavior problems. Odds ratios indicated that children classified insecure-other (i.e., with incoherent or mixed reunion behaviors) carried the highest risk for clinic referral, followed by controlling and avoidant children. The present findings do not support an exclusive association between any one form of insecure reunion pattern and clinic status. This includes the controlling-disorganized category, which has in other research been associated with externalizing problems (e.g., Lyons–Ruth, 1996; Moss et al., 1996).

The difference in classification rates across groups was markedly less than that obtained in two previous cohorts (Greenberg et al., 1991; Speltz et al., 1990). In the earlier studies, rates of insecure attachment in the clinic group were about 80%, (compared to the 54%

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obtained here). The previous cohorts were similar to the present group in many respects, including family composition and SES. A CBCL Aggression scale cutoff score of $T = 65$ was used in the present study, as compared to $T = 70$ in the two earlier studies; however, in a post hoc analysis we found approximately the same rates of classification among the 59 boys with scores of 70 or above. Greater community awareness of the current study may have affected sample composition (e.g., the current study contained a higher proportion of referrals by parents and teachers versus mental health and medical professionals than did the previous studies). Moreover, cases were excluded from this study if they had been involved in mental health treatment, perhaps resulting in a less impaired sample than the previous investigations, which included children with mixed treatment histories.

In interpreting these rates of security, it is important to note that expected classification rates in the preschool system are uncertain. To our knowledge, only three published studies other than our own have used the PAAS in high-risk samples, all of which were defined by parental, as opposed to child, risk factors (see also Goldberg, 1997). Easterbrooks et al. (1993) found a 46% rate of insecurity in a low-income group, DeMulder and Radke–Yarrow (1991) found 67% of children with bipolar depressed mothers to be insecure, and Bensley, Spieker, and McMahon (1994) reported only a 20% rate of insecurity among children of adolescent mothers raised by an alcoholic parent. Meta-analyses of Strange Situation data suggest that higher insecurity rates are likely in samples defined by parental risk than in those with child risk or pathology (van Ijzendoorn, Goldberg, Kroonenberg, & Frenkel, 1992). In the context of these findings, a 54% insecurity rate for clinic boys may not be unreasonably low. Perhaps these mostly middle-class, clinic-using families were better functioning than those represented in other research. In a parallel finding, the mean IQ score in this sample was also above average ($M = 108$), yet the clinic and comparison groups showed the expected two-thirds of a standard deviation difference on this measure (Speltz, DeKlyen, Calderon, Fisher, & Greenberg, in press). Comparison boys, who were case-matched to clinic youngsters by SES, family structure, ethnicity, and age, also had lower rates of insecurity than might be expected, but note that they had been screened to exclude those with significant problems and so are not comparable to unselected community samples.

Clinic boys were more likely than comparison boys to exhibit provocative behavior—for example, stepping on toys, kicking the door, or knocking over chairs—when their mothers left the room. Such disruptive behavior, even in young children, is rarely seen in conventional laboratory observations of clinic-referred children and may be motivated by the child's desire to regain contact with the departed mother by provoking her into action, a strategy that may successfully regulate the behavior of otherwise inaccessible or unresponsive parents. Actual or anticipated separations from parents or other caregivers may be an important antecedent for disruptive behaviors among young conduct problem youngsters, a possibility that deserves further study.

Prediction of concurrent and continuing problems

Prediction of concurrent variation in problem severity within the clinic group was poor. Examination of six measures of caregivers' concurrent impressions of problems (externalizing and internalizing ratings by mother, father, and teacher) revealed only one significant relation: clinic boys with greater anxiety during separation received higher father ratings of internalizing behaviors. Reunion classification varied by diagnostic pattern: security rates were lowest for cases of ODD alone and highest for cases with multiple diagnoses (ODD and ADHD with a third disorder), with other diagnostic combinations (e.g., ODD and ADHD) intermediate in their levels of insecure classification. This finding may indicate that multiple diagnoses at this age are more likely in cases having greater biologic vulnerability and relatively less risk in the parent–

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child relationship domain; this possibility warrants further investigation.

Attachment variables were somewhat more effective in predicting behavior ratings a year after clinic referral. Insecure-other and secure reunion patterns were associated with elevated Year 2 anxious–passive behavior ratings in the classroom; however, effect sizes were small. Anxious behavior during separation was the strongest predictor of problem severity; clinic boys exhibiting less anxiety received higher conduct problem ratings from teachers a year later, a finding consistent with studies showing lower autonomic nervous system activity and conditionability in some boys with conduct problems (Raine, Venables, & Williams, 1990).

Even these modest relations between attachment variables and outcomes were not evidenced at Year 3. Preschool attachment did not predict diagnostic status or problem severity of clinic boys 2 years later. This finding runs counter to the clinical assumption that quality of the mother–child relationship and associated positive parenting processes (warmth, responsiveness) are related to the prognosis of problem children. What might account for this discrepancy? First, as noted earlier, the restricted range of problem severity within any clinic sample poses a strong challenge for predictor variables. Indeed, few studies have attempted or succeeded in predicting stability or continuity of psychopathology in groups with clinically significant problems using any predictor other than the child's initial level of problem severity. In our sample, the variation in behavior checklist data and diagnostic status was more restricted than anticipated. Clinic group variances in behavior checklist scores changed little from Year 1 to Year 3 and 74% of the sample had one or more diagnoses 2 years after initial referral, as opposed to the expected 50% based on other studies of disruptive preschoolers (Campbell, 1995; Richman, Stevenson, & Graham, 1982). Our somewhat higher rate of continuing psychopathology may reflect the fact that, unlike many other studies, these were clinic referrals, initiated by parents or service providers, and therefore more likely associated with impairments in adaptive behavior. There was also little change in diagnostic *pattern* over the 2-year follow-up; few subjects developed new diagnoses (e.g., conduct or anxiety disorders). This is likely due to the relatively short period of follow-up and the young age of our subjects. In two previous studies that found significant predictors of future diagnosis within a clinical sample (Campbell, Pierce, Moore, Marakovitz, & Newby, 1996; Loeber et al., 1996), subjects were older at follow-up (ages 9 to 13) and were followed for longer time periods (up to 6 years). A similar follow-up period may be necessary to adequately test the predictive significance of attachment in our sample.

The lack of predictive findings might indicate that preschool attachment behaviors are not as revealing of individual differences in behavioral adjustment as are infancy assessments of attachment (e.g., Lyons–Ruth, Alpern, & Repacholi, 1993). To our knowledge, no study has yet examined the predictive significance of infant attachment for clinic-referral, most likely because even high-risk infant samples lack sufficient numbers of individuals who develop diagnosable psychiatric disorders. The stability of attachment patterns from infancy to preschool is yet unclear, and validity studies supporting the concurrent association of preschool separation–reunion behavior and other qualitative aspects of the mother–child relationship are just emerging (e.g., Stevenson–Hinde & Shouldice, 1995). Perhaps our observations of the separation–reunion did not adequately capture the quality of the mother–child relationship. However, mother–child security ratings were positively related to maternal self-reports of positive involvement and inversely related to mothers' reports of harsh parenting practices, as would be expected (DeKlyen, Speltz, & Greenberg, 1998). Nevertheless, measures of clinic childrens' *internal models* of attachment, such as the Separation Anxiety Test (Slough & Greenberg, 1990) or story completion tasks (e.g., Solomon et al., 1995), may yield better predictive information at this age.

Another possible explanation for the lack of prediction to follow-up is that some boys'

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attachment status changed over the 2-year follow-up period. In the future we will have Year 3 attachment data available with which to assess the 2-year stability of attachment and test this possibility.

Finally, it may be that the quality of the parent–child relationship and other aspects of parenting are primarily useful in discriminating children with early problems from those without, but once such problems have met criteria for diagnosis, there is little additional prediction afforded by this domain. Loeber et al. (1996) found that initial measures of child problem severity and family SES predicted the onset of conduct disorder in a mixed ODD/ADHD sample, but the one measure of parenting examined (supervision) did not. However, Campbell et al. (1996) reported that maternal control during toy put-away discriminated problem 4-year-olds with and without disruptive behavior disorders at age 9 years, as did family stress and earlier measures of child problems. More investigations of the relative contribution of the parent–child relationship and other variables to the prognosis of clinic children are needed, as such information is critical to the formulation of treatment plans.

Limitations of the study

Our concurrent data cannot of course establish a causal link between attachment and the behavior problems that led to clinic referral. As noted by Goldberg (1997), high rates of insecurity in clinic samples could reflect the effects of disorder on attachment rather than the other way around, or perhaps both result from some third factor (e.g., harsh discipline or child temperament). The design of this study also cannot demonstrate a unique association between attachment and conduct problems, as opposed to internalizing problems such as inhibition, withdrawal, and dysthymia. Efforts to do so will be complicated by the fact that clinic referral for internalizing problems without externalizing problems is very rare in boys of this age, making it difficult to acquire an adequate sample; nevertheless, in the future it will be essential to include internalizing clinic comparison groups.

As noted earlier, this was not a high social risk sample, but a largely middle-class group of concerned, help-seeking families, who possessed the motivation and resources to participate in outpatient services. Hence, some of the risks associated with conduct problems in other samples (child abuse, incarcerated fathers, extreme poverty) were present only to a limited extent in this study. These findings are best generalized to other urban groups of clinic-using families with disruptive boys.

Conclusion

This study replicated findings from two earlier cohorts supporting the ability of attachment variables to distinguish clinic-referred from nonclinic preschool children. Separation and reunion behaviors can thus be added to the list of parent–child interaction variables that have consistently distinguished young disruptive children from their nonproblem peers, a list that includes maternal controlling behavior and child noncompliance (Campbell, 1995; Cunningham & Barkley, 1979; Robinson & Eyberg, 1981). As a solitary construct, however, attachment had little value in predicting the course and severity of problems within the clinic group over a 2-year period. Work is currently underway to determine whether preschool attachment measures will gain in prognostic value as these boys approach their middle school years, and to what extent attachment may function as a mediator or moderator of other predictors, such as child neuropsychological status and family ecology.

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