Attachment theory has asserted that the quality of children's caregiving experiences is predictive of the kind of attachment that develops between them and their caregivers. Most of the evidence in support of this assertion has come from studies of infant attachment as assessed by the Strange Situation Procedure (Ainsworth et al., 1978).

Specific styles of interaction between mothers and infants during the first year of life, particularly with regard to maternal sensitivity, have been related to secure or to various types of insecure attachment in the Strange Situation Procedure (DeWolff and van IJzendoorn, 1997), although the magnitude of the association between style of interaction and later security/insecurity has been modest overall.

One of the assumptions of the Strange Situation Procedure is that the infants being assessed are attached to their caregivers and that the quality of the attachment is revealed by an examination of the organization of infants' attachment and exploratory behaviors in the procedure. In some extreme caregiving environments, however, the assumption that infants have developed focused attachments to their caregivers may not be warranted.

Infants raised in institutions have far more limited opportunities to develop selective attachments than infants raised in more normative environments because the caregivers in these institutions perform shift-work and because they usually are responsible for the care of many young children (Johnson, 2000; Muhamedrahimov, 2000). Several factors may limit caregivers' emotional investment in the children in their care, including being responsible for large numbers of children, having scant resources, and working on rotating shifts, further reducing the probability that the young children will develop selective attachments.

Attachment Disturbances in Young Children. I: The Continuum of Caretaking Casualty

ANNA T. SMYKE, PH.D., ALINA DUMITRESCU, B.A., AND CHARLES H. ZEANAH, M.D.

ABSTRACT

Objective: To determine whether signs of disordered attachment were greater in young children being reared in more socially depriving caregiving environments. Method: Three groups of children were studied by means of structured interviews with caregivers that were administered over several months in Bucharest, Romania, in 1999: (1) 32 toddlers living in a typical unit (standard care) in a large institution in Bucharest; (2) 29 toddlers living in the same institution on a “pilot unit” designed to reduce the number of adults caring for each child; and (3) 33 toddlers living at home who had never been institutionalized. The presence of attachment disorders and other behavioral problems was assessed by caregiver/parent report. Results: Children on the typical unit (standard care) had significantly more signs of disordered attachment than children in the other two groups. Both the emotionally withdrawn and the indiscriminately social pattern of attachment disorder were apparent in these children, but cluster analysis suggested that mixed patterns are more typical. Conclusions: The continuum of caretaking casualty is reflected by increasing signs of disordered attachment in toddlers living in more socially depriving environments. J. Am. Acad. Child Adolesc. Psychiatry, 2002, 41(8):972–982. Key Words: reactive attachment disorder, inhibited attachment disorder, children in institutions, deprivation, neglect.
Longitudinal studies of young children adopted out of Romanian institutions have provided support for the premise that institutional care is associated with serious disturbances of attachment (Zeanah, 2000). These studies have demonstrated an increase in insecure attachments through parent report and/or through observational measures, compared with established norms (Chisholm, 1998; Chisholm et al., 1995; Marcovitch et al., 1997) and compared with domestically adopted infants (O’Connor et al., 1999). In addition, young children adopted out of Romanian institutions have demonstrated signs of clinical disorders of attachment (Chisholm, 1998; Chisholm et al., 1995; O’Connor et al., 1999, 2000).

*DSM-IV* (American Psychiatric Association, 1994) and *ICD-10* (World Health Organization, 1992) have defined disorders of attachment as the onset of socially aberrant behaviors in the first 5 years of life in response to serious deficiencies in caregiving. Two patterns have been described: an emotionally withdrawn pattern and an indiscriminately social pattern. In the first, the child exhibits lack of social reciprocity, failure to seek or respond to comfort, and disturbances of emotion regulation. In the second, the child is relatively nonselective in seeking comfort from adult caregivers, fails to check back with familiar caregivers, and lacks reticence about approaching relative strangers. These two types of attachment disorder were derived in part from observations made by Tizard and Rees (1975) in their study of 4-year-old children raised in residential nurseries in London in the 1970s. Since then, these attachment disorders have been described in children with histories of institutionalization and of maltreatment (Zeanah and Emde, 1994).

Each of these patterns also has been described in contemporary studies of children adopted out of Romanian institutions, but the pattern of indiscriminate sociability appears to be far more common and more persistent than the emotionally withdrawn pattern (see Zeanah, 2000, for review). In a longitudinal study of young children adopted into the United Kingdom from Romanian institutions conducted by O’Connor, Rutter, and colleagues (O’Connor et al., 1999, 2000), indiscriminate sociability at ages 4 and 6 years appeared to be linearly related to length of time institutionalized.

Nevertheless, there are several problems with attempting to understand the effects of institutional care on attachment from studies of adopted children. First, various biases in the children selected for adoption are likely. Second, because the follow-up studies occurred months to years after the children had been adopted, there is no way of knowing about signs of attachment disorder in the institutionalized children prior to adoption. Finally, because neither of the longitudinal studies conducted to date included a Romanian comparison group of children who were not institutionalized, concerns have been raised about how specific the findings were to institutionalized children.

To address these limitations in prior research, we studied caregiver reports of children’s attachment in a large institution for young children in Bucharest, Romania. This study assessed attachment of young children who were receiving care at three different levels within the “continuum of caretaking casualty.” Sameroff and Chandler (1975) introduced this term to explain individual differences in caregiving environments thought to contribute to developmental differences across a number of domains. In this study we operationalized the continuum by examining children in three different contexts.

First, we examined children receiving standard care in an institution. This involves over 20 different staff working rotating shifts and responsible for large numbers of children (often 3 caregivers for 30 children on each shift). Second, we considered children receiving care on a “pilot unit” in the same institution in which there was a reduced number of caregivers assigned to an individual group of 10–12 children. Although the caregivers still worked rotating shifts, the children’s opportunities to develop selective attachments were increased when the pool of prospective attachment figures was reduced from 20 inconsistent caregivers to 4 consistent caregivers. Finally, we included a group of never-institutionalized Romanian children who attended child care for extended periods of time. No previous studies of attachment in children in Romanian institutions have included a noninstitutionalized comparison group, although one study of cortisol levels comparing institutionalized and never-institutionalized children has been reported (Carlson et al., 1997).

We examined the following hypotheses: (1) both the emotionally withdrawn and the indiscriminately social patterns of attachment disorder symptoms will be evident in the institutionalized groups, (2) being a caregiver’s “favorite” will be associated with absence of signs of attachment disorder because this special status will facilitate the child’s becoming attached, (3) institutionalized children receiving standard care will exhibit the most and noninstitutionalized children the fewest signs of attachment disorder, and (4) disturbances of attachment will be dis-
tistinguishable from other common problems in institutionalized children, including aggression, stereotypes, and language delays, as these all have been documented in previous research to be problems associated with institutional rearing (Zeanah, 2000).

METHOD

After obtaining institutional review board approval for the project, we interviewed caregivers regarding three groups of young children who resided in Bucharest, Romania, and who ranged in age from 11 to 70 months. Two groups of children resided in an institution for young children (a “leagan,” meaning “cradle”), and one group resided with their parents. This third group consisted of children who had never been institutionalized and whose primary caregivers were their mothers. Information about the institutionalized children was obtained from caregivers at the leagan, which consisted of several buildings, each floor of which comprised a separate unit in which children were housed.

Most of the children residing in the leagan had been placed there by their parents for “social” reasons (e.g., mother had remarried, child was born to an unmarried mother) or for economic reasons (e.g., parents were homeless and/or unemployed). In the Romanian system, although children may be cared for by the state, parents retain some decision-making power unless they have abandoned their children (usually defined as 6 months with no contact) and the children have been freed for adoption. The process of freeing a child for adoption may be a long, arduous one, often complicated by lack of information regarding the biological parents’ location.

Participants

Caregivers were asked to provide information only about children with whom they worked regularly and knew well. Caregivers were interviewed about children from two different units at the leagan.

The first group of institutionalized children included in the study was cared for in a standard unit (ST; \( n = 32 \)) at the leagan. This unit was chosen by the leagan director as a “typical” unit. Overall, children living in this setting ranged in age from 4 months to 68 months. However, for each group studied, we interviewed caregivers regarding only children who had achieved a developmental level of at least 10 months, determined by clinical estimation, to ensure that a focused assessment could be conducted. Caregivers in this unit were selected for work in three shifts: day, evening, and night. Caregivers appeared to be assigned to the shifts randomly and could be asked to work any of the three shifts. Typically, children spent their time during the day in one large playroom inside or on a playground outside, often for several hours at a time. The toddlers and preschool children were tended in a group of 30 to 35 children by two to three caregivers who were responsible for the group. They slept in cribs or beds in one large room, and meals were eaten in this same room. Younger children who were not yet walking spent most of their day in glassed-in enclosures where they played, ate, and toileted with only 10 other children and most of the time with one of their four consistent caregivers.

The comparison group consisted of never-institutionalized children (NI) who resided with their biological parents (\( n = 33 \)) and who attended the same child care facility (\( n = 28 \)) or were friends of the children attending the facility (\( n = 5 \)). This group ranged in age from 12 to 47 months (mean = 32.39, SD = 10.16). Some of these children were cared for at home full-time (\( n = 5 \)), some attended daily child care (\( n = 11 \)), and a large subset of these children (\( n = 17 \)) were enrolled in “weekly nursery” at the same facility. These children went to the nursery on Monday morning and returned to their families on Friday afternoon. While at the weekly nursery, same-age children were cared for in groups of 20 by two caregivers at a time. The caregivers worked one of three possible shifts: morning, afternoon, or night. Their schedules varied, but caregivers for a given group were drawn solely from a pool of six caregivers assigned to just one group. The system of weekly nurseries was a common means of child care in Romania during the Communist era, when it was provided at no cost. Although less widespread today, weekly nurseries continue to be used by some working families (personal communication, C. Tabacaru, December 2000). No differences were noted between the weekly nursery group and the other home-reared children on any dependent variables, and these two groups were combined for purposes of analysis.

Procedure

Caregivers were interviewed in the leagan (ST and PI groups) or in the home (NI group) regarding child behaviors, including those thought to be associated with attachment disturbance and disorder. For the institutional groups, contact was first made with the director of the institution and the physician who directed each section. Institutional records were reviewed to determine the number of children on the unit, their ages, and the presence of any handicapping conditions (e.g., Down syndrome, microcephaly). Caregivers were then approached on the playground or on the unit and asked which children they worked with regularly enough to answer questions about the child’s typical behavior. A total of 14 caregivers on the standard unit were interviewed about one to six children in their care. In the standard care group, 3 of the 32 children were not known well by any of the caregivers during the period of data collection. Two were relatively new to the unit and the other child had lived on the unit for 2 years. Caregivers were able to respond to questions regarding these children’s behaviors. We interviewed 11 different caregivers regarding 1 to 4 of the 29 children on the pilot unit. Most interviews were conducted in Romanian through an interpreter, although approximately 20% were conducted in English and were interpreter-assisted.

All interviews with mothers of the never-institutionalized children were conducted in Romanian, using the same interpreter as in the leagan interviews. Each biological mother who participated was paid $10 for her time.

Measures

Unless noted otherwise, all data were collected with semistructured interviews by experienced interviewers trained to probe sufficiently until items of interest could be coded.
RESULTS

Preliminary Analyses

Preliminary analyses of the sample revealed differences in age among the ST, PI, and NI groups (F_{2,91} = 4.217, p = .02), with the children in the pilot program older than those in the other two groups. Subsequent analyses were performed with age as a covariate. Age was unrelated to the dependent variables, and results were unchanged when age was used as a covariate. The proportion of females in the three groups (ST: 46.9%; PI: 37.9%; NI: 30.3%) was not different (χ^2_4 = 1.89, p = .389).

Indices of Reactive Attachment Disorder

Reliability of Scales. Reliability of the scales was assessed with internal consistency assessment. Internal consistency of the emotionally withdrawn pattern of RAD and the indiscriminate pattern of RAD were adequate, with Cronbach α values of .80 and .83, respectively. Interrater reliability of interview ratings was assessed on a subset of 20% of the rated items and was more than acceptable (κ = 0.88).

Signs of Attachment Disorder. Scores for the signs of attachment disorder for the three groups of children are presented in Table 1. Results suggested overall mean differences between the three groups on the RAD Inhibited/Withdrawn scale (DAI items 1–5) (F_{2,91} = 20.68, p = .000). Post hoc Tukey tests revealed that children in the ST group had higher scores than those in the PI and NI groups. We found no differences between the PI and NI groups.

We also found overall mean differences on the Indiscriminate RAD scale (DAI items 1 [having no preferred caregiver], 6–8) (F_{2,91} = 21.70, p = .000). Post hoc Tukey tests revealed that children in the ST group had higher scores than those in the PI groups, and children in the PI group had higher scores than those in the NI group. Using

<table>
<thead>
<tr>
<th>Caregiving Environment</th>
<th>Standard</th>
<th>Pilot</th>
<th>Home-Reared</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAD Inhibited (DAI 1–5)</td>
<td>3.50 (2.74)</td>
<td>1.44 (2.22)</td>
<td>0.27 (0.45)</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>Indiscriminate RAD (DAI 1, 6–8)</td>
<td>3.90 (2.79)</td>
<td>1.89 (2.33)</td>
<td>0.42 (0.79)</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>Indiscriminate Behavior (DAI 6–8)</td>
<td>3.12 (2.39)</td>
<td>1.68 (2.18)</td>
<td>0.42 (0.79)</td>
<td>p &lt; .001</td>
</tr>
</tbody>
</table>

Note: DAI = Disturbances of Attachment Interview; RAD = Reactive Attachment Disorder.
a measure of Indiscriminate Behavior (DAI items 6–8), without regard to whether or not the child had a preferred attachment figure, we once again noted overall differences \( F_{2,91} = 16.26, p = .000 \). For this measure, children in the ST group had higher overall scores than those in the PI program as well as higher overall scores than children in the NI group. We found no differences, however, between the PI and NI group on this measure.

Trend analysis was used to test for the presence of a linear relationship among the levels of the independent variable, that is, the caregiving environment. Results revealed the presence of a linear relationship among the caregiving environments. Higher scores were consistently noted for the standard caregiving environment, followed by the pilot unit and then by the never-institutionalized environment for RAD Inhibited/Withdrawn \( F_{1,91} = 40.55, p = .000 \), Indiscriminate RAD \( F_{1,91} = 43.13, p = .000 \), and Indiscriminate Behavior \( F_{1,91} = 32.50, p = .000 \) (Fig. 1).

To examine hypothesis 2 regarding the effect for institutionalized children of being the favorite of a specific caregiver, scores for RAD Inhibited/Withdrawn, Indiscriminate RAD, and Indiscriminate Behavior were compared for children who were identified as favorites \( n = 37 \) and non-favorites \( n = 22 \). Children identified as favorites had lower overall scores on the RAD Inhibited/Withdrawn scale \( F_{1,57} = 68.88, p = .000 \), Indiscriminate RAD \( F_{1,56} = 20.25, p = .000 \), and Indiscriminate Behavior scales \( F_{1,56} = 6.010, p = .017 \) (Table 2).

Cluster Analysis

In an effort to describe more fully the patterns of attachment disorders, data from the DAI were further analyzed

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**Table 2**

Mean Scores (SD) for RAD Inhibited/Withdrawn, RAD Indiscriminate, and Indiscriminate Behavior by Child's Status as a Favorite

<table>
<thead>
<tr>
<th></th>
<th>Favorite ((n = 37))</th>
<th>Not a Favorite ((n = 22))</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAD Inhibited (DAI 1–5)</td>
<td>1.11 (1.39)</td>
<td>5.32 (2.51)</td>
<td>( p &lt; .001 )</td>
</tr>
<tr>
<td>Indiscriminate RAD (DAI 6–8)</td>
<td>2.00 (2.37)</td>
<td>4.95 (2.46)</td>
<td>( p &lt; .001 )</td>
</tr>
<tr>
<td>Indiscriminate Behavior (DAI 6–8)</td>
<td>1.97 (2.32)</td>
<td>3.52 (2.32)</td>
<td>( p &lt; .02 )</td>
</tr>
</tbody>
</table>

*Note: DAI = Disturbances of Attachment Interview; RAD = Reactive Attachment Disorder.*

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Fig. 1 Linear relationship among levels of caregiving environment for Reactive Attachment Disorder (RAD) Inhibited/Withdrawn, Indiscriminate RAD, and Indiscriminate Behavior scores.
with cluster analysis (Ward’s method of agglomeration using squared Euclidean distance). The purpose of this analysis was to sort results by individual children rather than by variables. Clinically, this is quite appealing because it provides a way to determine which groups of children may be defined by the patterns of signs of attachment disorder that they manifest.

A four-cluster solution was selected as most appropriately describing the sample, which consisted of all 94 children from the ST, PI, and NI groups (Fig. 2). Cluster 1 (No Attachment Disorder) was the largest cluster \( (n = 70) \) and comprised children with no signs of attachment disorder. Cluster 2 (Unattached, Inhibited/Withdrawn) comprised children \( (n = 6) \) who appeared not to be attached and who were inhibited and emotionally withdrawn but who remained somewhat emotionally responsive. These children also exhibited moderately high levels of indiscriminate behavior. Cluster 3 (Attached/Highly Indiscriminate) comprised children \( (n = 9) \) who had a preferred caregiver, but who failed to seek comfort when distressed, and who had very high levels of indiscriminate behavior. Cluster 4 (Unattached, Inhibited/Withdrawn, and Indiscriminate) comprised children \( (n = 9) \) with no identified attachment figure and moderately high levels of both inhibited/withdrawn and indiscriminate behaviors. Clusters 2 and 4 differ in that the children in cluster 2 appeared capable of some reciprocal responding and emotional regulation whereas this was not characteristic of the children in cluster 4.

Cluster Membership and Caregiving Environment. As might be expected, cluster membership was related to caregiving environment \( (\chi^2 = 24.59, p = .000) \). All 33 NI children fell in the No Attachment Disorder cluster, suggesting no evidence of attachment disorders in this home-reared group (Fig. 3). Of the children in the PI group, approximately three quarters were classified as belonging to the first cluster. In contrast, only about half of the children in the ST group fell within cluster 1 (No Attachment Disorder). Cluster 2 (Unattached, Inhibited/Withdrawn) consisted of 13% of the children from the ST environment and 7% of those from the PI group. Cluster 3 (Attached/Highly Indiscriminate) comprised 19% of the children in the ST group and 10% of those from the PI group. Cluster 4, the Unattached, Inhibited/Withdrawn, and Indiscriminate cluster, comprised 24% of the children from the ST group and 7% of the children from the PI group.

Associated Problems: Aggression, Motor Stereotypies, and Language Problems

Aggression. Marked differences were noted among the three groups (Table 3) with regard to levels of aggressive
behavior ($\chi^2 = 31.461, p = .000$). Approximately 25% of the institutionalized children were reported to have levels of aggressive behavior rated as severe. Approximately 60% of both groups of institutionalized children were described as showing no evidence of aggression. In contrast, mothers of never-institutionalized children reported that 27% of their children showed no evidence of aggressive behavior and that 73% showed moderate levels of

![Figure 3](image.jpg)

**Fig. 3** Distribution of cluster members by caregiving environment. Cluster 1 (No Attachment Disorder): standard care, 44%; pilot program, 76%; home-reared, 100%; cluster 2 (Unattached, Inhibited/Withdrawn): standard care, 13%; pilot program, 7%; cluster 3 (Attached/Highly Indiscriminate): standard care, 19%; pilot program, 10%; cluster 4 (Unattached, Inhibited/Withdrawn, and Indiscriminate): standard care, 24%; pilot program, 7%.

**TABLE 3**

Levels of Aggressive, Stereotypical, and Language Behaviors Displayed by Children Exposed to Differing Caregiving Environments

<table>
<thead>
<tr>
<th>Caregiving Environment</th>
<th>Standard</th>
<th>Pilot</th>
<th>Home-Reared</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aggression</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>20 (62.5)</td>
<td>15 (60)</td>
<td>9 (27.3)</td>
<td>44 (48.9)</td>
</tr>
<tr>
<td>Some/moderate</td>
<td>4 (12.5)</td>
<td>5 (20)</td>
<td>24 (72.7)</td>
<td>33 (36.7)</td>
</tr>
<tr>
<td>Much/severe</td>
<td>8 (25)</td>
<td>5 (20)</td>
<td>0 (0)</td>
<td>13 (14.4)</td>
</tr>
<tr>
<td>Total</td>
<td>32</td>
<td>25</td>
<td>33</td>
<td>90 (100)</td>
</tr>
<tr>
<td>$\chi^2 = 31.46; p = .000$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Stereotypies</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>15 (48.4)</td>
<td>21 (75)</td>
<td>24 (72.7)</td>
<td>60 (65.2)</td>
</tr>
<tr>
<td>Some/moderate</td>
<td>12 (38.7)</td>
<td>3 (10.7)</td>
<td>9 (27.3)</td>
<td>24 (26.1)</td>
</tr>
<tr>
<td>Many/severe</td>
<td>4 (12.3)</td>
<td>4 (14.3)</td>
<td>0 (0)</td>
<td>8 (8.7)</td>
</tr>
<tr>
<td>Total</td>
<td>31</td>
<td>28</td>
<td>33</td>
<td>92 (100)</td>
</tr>
<tr>
<td>$\chi^2 = 10.99; p = .027$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Language</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None/poor</td>
<td>5 (15.6)</td>
<td>2 (6.9)</td>
<td>3 (9.1)</td>
<td>10 (10.6)</td>
</tr>
<tr>
<td>Some/single words</td>
<td>13 (40.6)</td>
<td>8 (27.6)</td>
<td>5 (15.2)</td>
<td>26 (27.7)</td>
</tr>
<tr>
<td>Good/sentences</td>
<td>14 (43.8)</td>
<td>19 (65.5)</td>
<td>25 (75.8)</td>
<td>58 (61.7)</td>
</tr>
<tr>
<td>Total</td>
<td>32</td>
<td>29</td>
<td>33</td>
<td>90 (100)</td>
</tr>
<tr>
<td>$\chi^2 = 7.81; p = .099; NS$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: NS = not significant.*
aggressive behavior. None were reported to have severe levels of aggressive behavior.

Stereotypies. Differences were also noted among groups with regard to the incidence of stereotypies ($\chi^2 = 10.997$, $p = .027$). Approximately 75% of the PI and NI groups were reported to have no stereotypies, but only 50% of the ST group were reported to have no stereotypies. Approximately 25% of the NI group, 40% of the ST group, and 10% of the PI group had moderate levels of stereotypies. Approximately 15% of the ST and PI groups were reported to have severe or frequent stereotypies, but no children in the NI group were reported to have severe or frequent stereotypies.

Language. No differences in levels of language development were reported between the groups ($\chi^2 = 7.812$, $p = .099$) (Table 3).

Associated Problems and Disturbances of Attachment. Attachment disturbance was largely independent of aggressive behavior (Table 4). Low to moderate correlations were noted between attachment disturbance, stereotypical behavior, and language development. The correlations are sufficiently low to suggest that while there is a relationship among these problems, they are measuring something other than attachment disturbances.

DISCUSSION

This is the first study of disturbances of attachment in young children living in an institution that has been conducted in the past 25 years. The results clearly support the prediction that disturbances of attachment in young children are linked to the continuum of caretaking casualty. When young children were raised in environments that increasingly limited opportunities for them to form selective attachments, they were far less likely to develop preferred attachments. Children raised by their biological parents exhibited little evidence of attachment disturbance or disorder. Children raised in an institutional setting with adaptations aimed at “normalizing” the caregiving environment by limiting the number of caregivers to whom the children were exposed showed some evidence of attachment disturbance, particularly with regard to indiscriminate behavior. Children living on this pilot unit did not differ from those raised by their biological parents with regard to the emotionally withdrawn pattern of attachment disturbance. Scores for children from the standard caregiving environment were consistently higher, suggesting greater incidence of disturbances of attachment for children for whom a consistent caregiver was not available.

Most of the children in this study were identified as having a preferred caregiver. All of the children raised at home, almost all of the children in the pilot program, and slightly more than half in the standard caregiving environment were reported to have a preferred caregiver.

These findings of increasing signs of attachment disorder in children reared in increasingly more depriving environments illustrate the continuum of caretaking casualty. Given the ecology of the standard caregiving environment, it is surprising that so many infants were able to establish a preferred attachment to a caregiver. Conversely, the threshold of our coding method for identifying signs of disordered attachment may have been too low. An important way to examine this issue in future research is to examine the quality of attachment relationships between infants in institutions and their putative “favorite” caregivers.

In any case, having an attachment figure appears to be incompatible with the emotionally withdrawn pattern of RAD and to decrease somewhat the incidence of indiscriminate behavior. Nevertheless, in the standard care setting, more than half of those with a preferred caregiver still demonstrated indiscriminate behavior.

Indiscriminate behavior may be viewed as adaptive in the institutional setting for the child craving contact with adults. If the child’s goal is contact with a potentially caring adult, approaching most adults with whom the child comes in contact would support that goal. Children who had established a preferred caregiver in the pilot unit would have had consistent exposure to the caregiver. In contrast, children raised in the standard caregiving environment could not have predicted when their preferred caregiver would be present, because of scheduling vagaries, and would have to share their preferred caregiver with large numbers of other children when she was present.

| TABLE 4 | Relationships Among Signs of Disordered Attachment and Associated Problems |
|----------------------|-----------------------------------------------|-----------------------------------------------|
| Indiscriminate Behavior | Indiscriminate Behavior Without Preferred Attachment | RAD Inhibited/Withdrawn |
|                        | r    | p    | r    | p    | r    | p    |
| Aggression             | 0.14 | .196 | 0.13 | .232 | 0.17 | .105 |
| Language               | -0.28| .073 | -0.36| .005 | -0.45| .000 |
| Stereotypies           | 0.23 | .03  | 0.32 | .002 | 0.52 | .000 |

Note: RAD = Reactive Attachment Disorder.
The cluster analysis we conducted challenges the DSM-IV and ICD-10 conceptualizations of disordered attachment. Of interest, indiscriminate behavior is a component of all of the clusters except cluster 1, which consisted of children who showed no evidence of attachment disorder. The cluster of children identified as having a preferred caregiver but still exhibiting marked indiscriminate behavior (cluster 3) is similar to the children adopted into British and Canadian families who have been identified in recent research as having a pattern of attachment to a primary caregiver and continued indiscriminate behavior (Chisholm, 1998; Marvin and O’Connor, 1999).

Cluster 2 consisted of children who had no preferred caregiver but were able to interact reciprocally with caregivers. These children also were less likely to respond to comfort and exhibited moderate levels of indiscriminate behavior. This group is compatible with indiscriminate RAD and no attachment figure. Children in cluster 4 also had no preferred caregiver, but they exhibited moderate levels of inhibited/withdrawn behavior as well as indiscriminate behavior. In this cluster, we note, indiscriminate behavior was present even for children who were also reported to have moderate levels of inhibited and withdrawn behavior. Children in cluster 4 differed from those in cluster 2 in that those in cluster 4 responded somewhat to comfort but were less likely to interact reciprocally and had poorer emotional regulation.

Children who were never institutionalized showed little evidence of signs of attachment disorder. Indeed, relatively few of the children in the pilot program exhibited signs of attachment disorder, at least as reported by their caregivers. As predicted by attachment theory, infants and young children demonstrated a preference for a specific attachment figure or figures when a limited number of adults made themselves available. The fewer number of caregivers assigned to a specific group of children in the pilot program appeared to afford the children in that program the possibility of forming attachment relationships.

Related behaviors such as stereotypies, aggression, and language abilities also were examined in the three groups. Parents of never-institutionalized children reported some or moderate levels of aggressive behavior in a majority of their children, but none reported severely aggressive behavior. In contrast, more than half of the institutionalized children, regardless of type of caregiving environment, were reported to have no or very little evidence of aggressive behavior. In addition, approximately 25% of the children in both institutionalized groups were reported to have considerable or severe aggressive behavior. This result suggests a U-shaped pattern, with institutionalized children exhibiting both more and less aggression than never-institutionalized children.

Like indiscriminate behavior, aggressive behavior may be adaptive for children in the relatively unstructured environment of the institution. Children who are aggressive with others for food or for the few toys available to them may obtain higher caloric intake or be more able to explore the environment than those who are more passive. This does not, however, explain institutionalized children who had significantly lower levels of aggression. It appears that aggression may serve different purposes in the institution than in the home. A greater characterization of individual differences associated with aggression is important to help clarify the functions of children’s aggressive behavior in institutions.

Stereotypical behaviors, such as side-to-side and front-to-back rocking, are prevalent in the institutional setting and may be associated with marked neglect. It is interesting that a substantial minority of the never-institutionalized group had some stereotypies, such as rocking before bedtime, although severe levels of stereotypies were limited to the institutionalized children.

In a markedly understimulating environment, stereotypies may serve as a type of self-stimulation. The repetitive movement can also serve as an attempt at soothing when adults are unavailable to provide solace. In addition, stereotypies may reflect a child’s frustration, especially if the child lacks adequate speech and language to communicate verbally. Furthermore, children also demonstrate such behaviors when they are anxious or when someone or something has entered the environment and frightened them or made them anxious. A common thread with these behaviors may be deficits in communicative ability. Although caregiver report revealed no language differences between the caregiving groups, further exploration revealed that almost 75% of the children who displayed no stereotypies were reported to have little language delay. Although the number of children who had many or severe stereotypies was relatively small, only one child in that category was described as having adequate language. Further observations of such behaviors, both in institutionalized and never-institutionalized children, would permit an assessment of the nature and quality of the stereotypies. The child who briefly rocks before falling asleep would be expected to differ markedly from the...
child who displays stereotypical behavior in many situations throughout the day.

Inquiry regarding language development indicated delays for many (38%) of the children studied, although the ability of a majority (62%) of the children to communicate using multiple word combinations (sentences) suggests that language delays were not uniformly severe.

Furthermore, our findings suggest that signs of disordered attachment are largely independent of the associated problem of aggression. In contrast, low to moderate associations were noted for signs of disordered attachment and stereotypies and language delays. The obtained correlations were sufficiently low to indicate that problems such as language difficulties and stereotypies may show some overlap but are clearly not the same as attachment disturbance. It may well be that the same conditions of marked neglect that allow the development of attachment disturbance also may foster the development of language difficulties and stereotypical behavior. This finding suggests that these problems do not reflect a specific risk characteristic, but rather that multiple risk conditions may contribute in varying ways to these different problems.

Limitations

This preliminary exploration of the presence of attachment disturbance and other behaviors in institutionalized and never-institutionalized Romanian children has limitations that will need to be addressed in future research efforts. Information about each child’s behavior was gathered from one caregiver at one point in time. Differential bias in the reporting of child behavior among the various caregivers in this project cannot be ruled out. That is, caregivers on the pilot program might have reported child behavior more favorably because they were aware that they worked on a “special unit.” Caregiver bias in ratings of child psychopathology is a widely recognized problem in research (Zeanah et al., 1997). Although evidence gathered from multiple caregivers would be expected to increase our confidence in the responses of the individual caregivers whom we interviewed, even more useful would be ongoing observations in the institutional and noninstitutional settings to elaborate on caregiver-provided information.

Additional measures should illuminate further our understanding of attachment disturbance/disorder and the deleterious effects that arise as the continuum of caretaking casualty proceeds from adequate to markedly inadequate. The continuum we demonstrated would have been clearer if we had had either no weekly nursery group or four groups of equal size including a weekly nursery and a home-reared group who attended child care without overnight stays. Furthermore, given the multiple problems identified in institutionalized children (see Johnson, 2000), determining how these problems relate to disordered attachment will be important.

Clinical Implications

Although clinicians in developed countries are not likely to encounter institutionalized children, these same signs of disordered attachment have been described in children in foster care and in hospitals (Ertem and Zeanah, 2000; Hinshaw-Fuselier et al., 1999; Zeanah et al., 1993, 2000, 2001). Thus clinicians should be alert to signs of attachment disorders in children with histories of neglect.

The best approaches to intervention for children with attachment disturbances remain unclear. For children who do not have discriminated attachment figures, despite a cognitive age of at least 10 months, providing them with an opportunity to form a selective attachment is paramount. Results of this study, considered with results from follow-up studies (Chisholm, 1998; Chisholm et al., 1995; Marcovitch et al., 1997; O’Connor et al., 1999, 2000), suggest that even children who do not have attachment figures in conditions of extreme neglect are capable of forming attachment relationships once they are placed in more normative environments. What is less clear is how much recovery is possible for such children and what characteristics of the child and/or the environment increase the likelihood of recovery.

REFERENCES

Ertem IO, Zeanah CH (2000), Promoting infant mental health in the developing world: a case example. Presented at the Biennial Meeting of the World Association for Infant Mental Health, Montreal, July
O’Connor TG, Bredenkamp D, Rutter M, and the English and Romanian Adoption Adoptees Study Team (1999), Attachment disturbances and disorders in children exposed to early severe deprivation. Infant Ment Health J 20:10–29
Zeanah CH, Heller SS, Smyke AT, Scheeringa MS, Boris NW, Trapani J (2001), Disturbances of attachment in maltreated infants and toddlers. Presented at the Biennial Meeting of the Society for Research in Child Development, Minneapolis, April