The social behaviors of 14 autistic children and 14 normal children of equivalent mental age were observed during a free-play situation as well as during separation from and reunion with their mothers and a stranger. As a group, the autistic children showed evidence of attachment to their mothers, directing more social behaviors and more physical contact to their caregivers than to the stranger during the reunion episodes. Within the autistic group, the children who showed an increase in attachment behaviors in response to separation and reunion demonstrated more advanced symbolic play skills than those autistic children who showed no change in attachment behaviors. One possible explanation may be that autistic children require more advanced levels of symbolic ability to form attachments to others than is necessary for the development of attachments in normal children.

The primary relationship in the life of a very young child is the relationship with the mother or the principal caregiver. This relationship is seen as involving attachment on the part of the child when a tie is formed that binds the child and a specific person together in space and that endures over time (Ainsworth & Bell, 1970). Attachment is thought to develop gradually in the early years of life through four phases (Bowlby, 1969).

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In the first phase, occurring in the first few months of life in normal children, infants begin to respond selectively to people as compared to inanimate objects, although they do not differentiate between specific individuals. In the second phase, the infant is capable of differentiating between the principal caregiver and other individuals and directs more attention and proximity-seeking to the principal caregiver. In the third phase, the child shows distress in the absence of the principal caregiver and greater comfort in his or her presence. Finally, in the fourth phase, the normal 4- to 5-year-old, with greater representational abilities and social comfort than the younger child, can tolerate separation from the principal caregiver for increasing lengths of time. Besides empirical studies demonstrating that normal infants differentiate between their caregivers and other individuals, a great deal of research has focused on characterizing the nature of the attachment relationship in 12- to 24-month-olds (Ainsworth, Blehar, Waters, & Wall, 1978) and investigating the consequences of specific patterns of attachment (Vaughn, Egelund, Sroufe, & Waters, 1979; Waters, Wippman, & Sroufe, 1979).

The autistic child is known to suffer from a disturbance in social relationships (Bettelheim, 1967; Kanner, 1943; Rutter, 1978b; Wing, 1981). The pronounced social withdrawal of young autistic children is obvious, but social behaviors of autistic children have rarely been investigated directly. The few studies carried out to date have examined social behaviors with peers (Lord, 1984; Martini, 1980; McHale, Simeonsson, Olley, & Marcus, 1980) and social communicative skills in research, school, and clinical settings (Curcio, 1978; McHale, Simeonsson, Marcus, & Olley, 1980; Wing, 1981). Very few direct observations of the relationship between autistic children and their mothers in standard situations have been reported (Goldfarb, 1970; Cantwell, Baker, & Rutter, 1978).

For this reason, there is little research evidence indicating whether or not young autistic children differentiate between their mothers and other people or show any selective response to separation and reunion with their caregivers. While the clinical evidence suggests that attachment is disturbed in autistic children (Rutter, 1978a), it is unknown whether autistic children show attachment behaviors toward their mothers that are in any way similar to those demonstrated by normal children. The present research was designed to address this issue.

Attachment behaviors in autistic children were explored by observing social behaviors directed toward the mother relative to another adult female in a play situation, and by assessing their behavioral responses to separation and reunion with their mothers. We considered as indices of attachment the same types of social behaviors that have been observed in studies of attachment in normal children. These included behaviors like fretting during
separation from the mother, and looking, smiling, vocalizing, or proximity-seeking directed toward the mother upon reunion. No attempt was made to judge the quality of attachment—for example, anxious, avoidant, or secure (Ainsworth et al., 1978)—demonstrated by the autistic group. Preliminary attempts to apply these qualitative categories to the data indicated that they did not differentiate meaningfully among the autistic children who showed very few social responses. For this reason, individual behaviors were observed in order to describe how autistic children demonstrate attachment behaviors to their caregivers.

Another goal of this research was to explore the relations between cognitive skills and attachment behaviors in autistic children. Research on normal children indicates that the kinds of attachment behaviors they demonstrate depend partly on their level of cognitive functioning. In order to become attached to the mother, the infant must be able to differentiate the mother from other figures. Furthermore, an elementary notion of object permanence as manifested during the fourth stage of sensorimotor development (Piaget, 1952) is thought to be necessary for attachment to occur. With the development of symbolic representation beyond the sixth sensorimotor stage, children are expected to be better able to sustain relationships over periods of separation so that brief separations have less effect on their immediate social responses.

To determine whether the autistic children showed relations between cognitive skills and attachment behaviors, we assessed their performance on two symbolic representational tasks. These were a free-play assessment and a measure of receptive language skills. Previous work with this same group of children (Sigman & Ungerer, 1981; Ungerer & Sigman, 1981) indicated that they all had achieved the sixth stage of object permanence, a level of functioning considerably above that required for the formation of attachments in normal children. However, their symbolic representational skills, as demonstrated in play and language, were much more variable. Therefore, it was in the domain of symbolic representation that we expected to identify relations between cognitive skills and attachment behaviors in the autistic children.

**METHOD**

**Subjects**

The autistic sample was composed of 14 children, 13 males and 1 female, with a mean chronological age of 51.9 months ($SD = 11.2$). Based on the Cattell Scale of Infant Intelligence, the mean developmental quotient of
the group was 46.6 ($SD = 7.5$) and their mean mental age was 24.1 months ($SD = 5.1$). All children were subjects in the Clinical Research Center for the Study of Childhood Psychosis at UCLA, and their diagnoses were determined independently of the experimenters by at least two psychiatrists using the DSM-III criteria for autism (APA, 1980). These consist of the following criteria: (1) onset before 30 months; (2) pervasive lack of responsiveness to other people; (3) gross deficits in language development; (4) if speech is present, peculiar speech patterns such as immediate and delayed echolalia, metaphorical language, pronominal reversal; (5) bizarre responses to various aspects of the environment, e.g., resistance to change or peculiar interest in, or attachments to, animate or inanimate objects; and (6) absence of delusions, hallucinations, loosening of associations, and incoherence as in schizophrenia. If the current syndrome fulfilled the criteria of the necessary and sufficient symptoms above but was associated with known organic brain disease, the child was not included in the target population.

At the time of testing, all autistic subjects had been inpatients on a ward for developmentally disabled children for about 2 months. This sample was particularly worthy of study for two reasons. First, it was composed of a sizable number of very young autistic children from a broad geographical area. Second, diagnosis of these children had been carried out by clinicians very experienced in the field of autism. For this reason, the diagnoses could be accepted with confidence, which frequently is not true for young children diagnosed as autistic.

**Observations of Social Behaviors**

Social behaviors were recorded during a free-play situation. The mother and child were brought by the experimenter into a 2.3 × 3.7-m room that contained two chairs in diagonal corners for the mother and the experimenter. All children were tested with their mothers, except for one autistic boy who was tested with the caregiver with whom he had been living for a number of months.

Following a short modeling procedure to be described in the next section, the caregiver and the experimenter sat in their chairs and the child was permitted to play alone with a set of toys for 16 minutes. The caregiver and the experimenter refrained from initiating interactions with the child but responded naturally to the child's overtures. In general, both showed very little behavior directed toward the children because the caregivers were instructed not to initiate interactions. While seated in her chair, the experimenter recorded the child's play behaviors. The play session was videotaped using an unmanned video camera and recording equipment located in
Attachment Behaviors

an alcove separated from the main playroom by a wooden gate. Recording was done for the purpose of checking any ambiguities in the play data.

The free-play situation was followed by the separation and reunion episodes. Before beginning these episodes, the experimenter recording play was replaced by another adult female to ensure that the person playing the role of the stranger was new to the child. About 30 seconds following this change, a 2-minute separation from the caregiver and a subsequent 2-minute reunion, and a 2-minute separation from the stranger and a subsequent 2-minute reunion occurred. The caregiver remained in the room with the child during the stranger's absence, and the stranger remained with the child during the caregiver's absence. Both the caregiver and the stranger were present with the child during the reunion episodes. The order of the stranger and caregiver was varied randomly across subjects. The separation situations were terminated early if a child showed 20 continuous seconds of distress.

The caregivers in all groups were told that we wished to observe their children's responses to separation from them as well as from a stranger. None of the mothers of autistic children said anything to their children on departure. A few mothers of normal children inquired whether they should say anything on leaving. These mothers were asked not to in order to keep the condition the same for all groups, since maternal departure style seems to affect children's responses (Weinraub & Lewis, 1977). During reunion, the caregivers were instructed to enter the room, sit in the chair they had left, and allow their children to do whatever they liked. The children were not observed in the room alone because we were uncomfortable leaving the autistic children by themselves.

Social behaviors were observed by another observer through a one-way mirror and recorded on a Datamyte event recorder. The following social behaviors directed either toward the caregiver or stranger were coded: touches, stands or sits close to (without touching), looks at, smiles, frets, and vocalizes. Smiling, vocalizing, and fretting were coded only when accompanying looking to the caregiver or stranger. Stands close to was defined as standing within 12 inches of the adult, and observations were facilitated by the presence of a semicircle outlined in black tape around the adult's chair. Standing at the gate, from which the mother and the stranger exited and entered, also was recorded. The durations of all behaviors were calculated from the recordings so that the data consisted of durations of behaviors in minutes.

Reliability for the individual social behaviors was computed for a sample of autistic and normal children whose behaviors were recorded by two observers during the free-play situation. Interrater reliability was particularly high for the proximity-seeking measures, with a Spearman rank
order correlation of $r = .92$, and adequate for looking ($r = .77$) and smiling ($r = .67$). Because fretting and vocalizing were extremely infrequent during the free-play situation, reliability for fretting and vocalizing was calculated for eight children from the videotapes of the caregiver separation episode when these behaviors were more frequent. The interrater correlation for fretting was excellent ($r = .92$) and for vocalizing to the stranger was good ($r = .71$).

There were some missing data for the autistic children. The separation and reunion episodes were not administered to one boy who was distressed by the end of the play situation. In addition, the stranger separation and reunion episodes were not administered to the first two autistic subjects in the study. Analyses of the data from the normal children were carried out, removing the data from children of mental age equivalent to those autistic children with missing data.

Observations of Play Behavior

Play behaviors were observed simultaneously with social behaviors using a procedure and scale demonstrated to reflect developmental changes in early representational abilities (Ungerer, Zelazo, Kearsley, & O'Leary, 1981). The toy set used in the assessment was composed of 31 items, including a tea set (two cups, two saucers, a teapot with a lid, and two spoons), a telephone, doll furniture (table, chair, and bed), three dolls (33 cm, 25 cm, and 10 cm in height), two baby bottles, a brush and mirror, a dump truck and garage, a piece of white paper ($22 \times 28$ cm), three pieces of sponge (2.5 cm square), three blue rectangular blocks, and three yellow cylindrical blocks.

The play session began with the experimenter modeling four different symbolic acts with the toys. These included bringing a telephone receiver to the ear of the largest doll as if it could speak, feeding the largest doll a piece of sponge on a spoon as if it were food, moving the medium-sized doll across the floor as if it could walk, and covering the medium-sized doll with a piece of white paper as if it were a blanket. The modeled acts were used in an effort to stimulate the production of symbolic play by the children (Watson & Fischer, 1977).

The children's play behaviors were observed and recorded by the experimenter seated in the playroom, using a time-sampling procedure with a 10-second sampling unit and a checklist that included the behaviors most frequently observed with this set of toys. Play behaviors not included in the checklist were separately noted. Following the play session, the videotaped record was reviewed to clarify any ambiguities in the checklist completed by the experimenter.

Two categories of play behaviors were analyzed in this research.
Functional Play. This constituted the use of objects in a functionally appropriate way or the conventional association of two or more objects, e.g., bringing a telephone receiver to one's ear or placing a spoon in a cup. Functional play first appears in normal children at about 12 months of age and develops sequentially such that infants begin by directing functional acts toward themselves or objects only and progress at later ages to directing acts toward dolls or other persons. These four types of functional acts are seen in normal children between 12 and 18 months of age.

Symbolic Play. Three types of symbolic acts were recorded: the use of one object as if it were another different object (e.g., using a teacup as a telephone receiver), the use of a doll as an independent agent of action (e.g., propping a bottle in a doll's arms as if it could feed itself), and the creation of objects or people having no physical representation in the immediate environment (e.g., making pouring sounds and saying "tea" as imaginary tea is poured into a cup). Symbolic play first appears in normal children between about 18 and 22 months of age.

The duration of play was measured by the total number of 10-second intervals in which each type of play was recorded. Diversity of play was measured by the number of different instances recorded for each type of functional and symbolic play.

Reliability for the duration and diversity play measures was computed separately for each type of functional and symbolic play and was based on a sample of autistic and normal children whose play was recorded live by two independent observers. One observer recorded play while seated in the playroom with the child, and a second observer recorded play from behind a one-way mirror. Reliability levels for all play measures were within acceptable limits. The mean Pearson product-moment correlation for the duration play measures for the two observers was .88 (SD = .11), and the mean correlation for the diversity play measures was .88 (SD = .10). Reliabilities for the duration of substitution play and for the diversity of substitution and other-directed functional play ranged from .69 to .79, whereas reliabilities for the remaining duration and diversity play measures were greater than .80.

Assessment of Receptive Language

Receptive language was measured with a procedure developed by Beckwith and Thompson (1976), which is described fully in other publications (Sigman & Ungerer, 1981; Ungerer & Sigman, 1981). The child is shown 34 pairs of slide pictures of real objects or events and is required to touch the member of the pair labeled by the experimenter. Receptive language ability is indexed by the total number of pictures identified cor-
rectly. In a previous study (Beckwith & Thompson, 1976) this measure was shown to have high test-retest reliability ($r(17) = .87, p < .001; r(13) = .94, p < .001$) and high item reliability for normal children (Kuder-Richardson coefficient $= .91$).

**RESULTS**

The data were analyzed to answer the following questions: (1) Did the autistic children direct more social behaviors toward their caregivers than toward the stranger in situations where both persons were present? (2) Did the autistic children respond differentially to separation from and reunion with their caretakers? (3) What were the relations between attachment behaviors and representational skills in the autistic group?

*Attachment Behaviors Differentiating Caregiver and Stranger*

The frequencies of individual social behaviors were low in the autistic group, so two composite variables were constructed for use in data analyses. These were (1) total proximity-seeking, which was composed of the number of minutes that the child sat, stood near, or touched the adult, and (2) total social behaviors, which consisted of the number of minutes that the child looked at, smiled, vocalized, fretted, or was proximal to the adult. Since there was overlap between the two variables, we have chosen to present the data for total proximity-seeking. However, it should be noted that similar results were found for analyses of total social behavior and that the addition of more distal social behaviors to the measures of proximity-seeking did not alter any of the results reported. Differential attachment to the mother was assessed by using $t$ tests to determine if the difference in duration of total proximity-seeking toward the mother as compared to the stranger was significantly different from zero in the free-play and reunion episodes. On both measures, the normal children showed a strong preference for interacting with the mother in the three episodes where the mother and either the experimenter or the stranger were present (see Table I).

For the autistic children, there was no significant preference for interacting with the mother during the free-play situation. However, the autistic children did show significantly more total proximity-seeking ($t(12) = 2.34, p < .05$) in the 2-minute reunion period following separation from the caregiver. This difference in behavior cannot be attributed simply to the children's spending more time with any individual after separation, since
### Table 1. Mean Durations of Proximity-Seeking in Minutes Toward Caregivers and Strangers

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<th>Caregiver</th>
<th>Stranger</th>
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<td>$\bar{X}$</td>
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<tr>
<td>Autistic group</td>
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<tr>
<td>Free play</td>
<td>2.6</td>
<td>5.4</td>
</tr>
<tr>
<td>Reunion-caregiver</td>
<td>.6*</td>
<td>.8</td>
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<tr>
<td>Reunion-stranger</td>
<td>.5</td>
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<tr>
<td>Normal group</td>
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<tr>
<td>Free play</td>
<td>5.0*</td>
<td>3.9</td>
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<tr>
<td>Reunion-caregiver</td>
<td>1.0*</td>
<td>1.0</td>
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<tr>
<td>Reunion-stranger</td>
<td>1.0*</td>
<td>.7</td>
</tr>
</tbody>
</table>

*$p < .05$, caregiver-directed versus stranger-directed behaviors.

there also was somewhat more proximity-seeking directed toward the mother than toward the stranger during the stranger reunion episode ($t(10) = 2.12, p = .06$). In both reunion episodes, the autistic children’s behavior was directed more toward the mother than toward the stranger, indicating differentiation of the caregiver in this setting.

### Attachment Behaviors During Separation and Reunion

In order to assess whether the autistic children demonstrated attachment behaviors in response to separation, the children’s reactions during separation from the mother were contrasted with their reactions to separations from the stranger. Duration of time fretting and standing near the gate were contrasted for the two separation episodes. There was very little distress manifested by the children in either separation situation and no difference in response between the two episodes. The same findings were true for the duration of time that the children stood by the gate through which the individuals left and entered the room. Thus, in terms of distress during separation, the autistic children showed no specific attachment responses.

The autistic children did demonstrate attachment through an increase in total proximity-seeking during reunion with the mother. The difference between total proximity-seeking directed toward the mother during mother reunion and proximity-seeking during the last 2 minutes of play was compared to the difference between proximity-seeking to the stranger during the stranger reunion and proximity-seeking to the stranger in the last 2 minutes of play. The autistic children showed a dramatic increase in their mother-directed proximity-seeking during reunion ($\bar{X} = 25$ sec) and a small decrease in their behaviors toward the stranger ($\bar{X} = -.6$ sec). The difference in the two change scores was significant ($t(22) = 2.22, p < .05$), indicating that the autistic children showed a specific response to reunion with
their mothers. These data, then, indicate that the autistic children spent about 20% of the reunion episode in proximity to their mothers, and this was an increase relative to their social behaviors prior to separation. Moreover, the lack of change in reaction to separation from the stranger indicates that the response was a specific attachment response to the mother and not simply a reaction to any separation and reunion.

Relations Between Representational Skills and Attachment Behaviors

To identify the associations between representational skills and attachment behaviors in the autistic and normal groups, Spearman rank order correlations were computed between measures of social behavior during the mother reunion episode and measures of play and language. The composite measures of total proximity-seeking directed to the mother was used, as well as a preference score defined as the difference between the total social behaviors directed toward the mother versus the stranger. The play measures were the duration and diversity (number of different acts) of functional and symbolic play in the free-play situation. Correlations were computed for the mother reunion episode since this was the only episode in which social behaviors indicating differential attachment to the mother were demonstrated by the autistic children.

Autistic Group. Significant correlations between degree of preferential attention directed to the mother and representational skills were found during the mother reunion episode. Preferential social interaction directed toward the mother was significantly correlated with both the duration and the diversity of symbolic play ($r(9) = .67, p < .05$; $r(9) = .73, p < .05$). Thus, autistic children who interacted more with their mothers during reunion showed longer and more diverse symbolic play. No significant correlations between the measures of social behavior and language were found.

Another method of analyzing these data was to compare the play behaviors of those children who showed some response to their mother’s departure and return with the play behaviors of those who did not. Six autistic children showed either distress during separation from the mother or increased proximity-seeking during reunion, as compared to the amount of proximity-seeking demonstrated in the last 2 minutes of the free-play episode. Six children showed neither of these responses, and one had an equivocal pattern of response. Five of the six children in the group who showed increased attachment behaviors also demonstrated some form of symbolic play, particularly with the doll, while only one child in the other group demonstrated any symbolic play ($p = .04$, Fischer’s test). The kinds of doll play observed included feeding the doll with the sponge, putting the bottle in the doll’s mouth, and holding the telephone to the doll’s ear.
Attachment Behaviors

Because of these observations, the duration and diversity of symbolic play were compared for the two groups. Although t tests indicated that the duration of symbolic play did not differ for the two groups \((p = .09)\), the diversity of symbolic play was different \((t(7.7) = 2.86, p < .05)\). The children who showed an increase in attachment behaviors in response to separation and reunion demonstrated more different symbolic acts than the children who gave no evidence of a separation response. However, it should be noted that the autistic children displayed much less symbolic play than normal children and mentally regarded children of equivalent mental age (Sigman & Ungerer, 1984).

Although attachment responses may have been affected by hospitalization, there is no evidence that the length of hospitalization was related to the presence or absence of attachment behaviors. The length of hospitalization was similar for those children who showed some separation or reunion response \((\bar{X} = 9.2\ \text{weeks})\) and those who showed no response to their mothers' departure or return \((\bar{X} = 8.3\ \text{weeks})\).

Normal Group. When the relations between social behaviors and play and language skills in the normal group were assessed with Spearman correlations, several significant findings emerged. Total proximity-seeking toward the mother was negatively correlated with the number of words identified correctly in the language task \((r(11) = -.56, p < .05)\). Children with more diverse symbolic play showed less total proximity-seeking toward their mothers during the reunion episode \((r(11) = -.68, p < .05)\) and less preference for their mothers \((r(9) = -.62, p < .05)\). Thus, unlike the autistic children, more sophisticated representational skills were associated with the demonstration of fewer attachment behaviors during reunion in the normal group.

Relations Among Attachment Behaviors, Mental Age, and Chronological Age

To identify the associations between mental age and chronological age with attachment behaviors, Spearman correlations were computed between the first two variables and the two social measures, total proximity-seeking directed to the mother and degree of preference for the mother in the reunion episode. For the autistic children, none of the correlations were significant. There was a tendency for children with greater mental age to show a greater preference for their mothers in the reunion episode \((r = .41)\). None of the correlations were significant for the normal children either, although the older children with higher mental ages tended to show less preference for their mothers in the reunion episode \((r's = -.48\ \text{and} \ -.52)\).
DISCUSSION

To summarize the results, the autistic children as a group directed more social behaviors toward their mothers than toward strangers and preferred to be in close proximity to their mothers following separation. Thus, the autistic children did demonstrate the capacity to differentiate between their mothers and strangers and showed at least some attachment behaviors similar to those seen in normal groups. While some clinicians and parents may have been unaware of this capacity, it was not apparent generally and has not been documented in the research literature.

The demonstration of preferences for the mother and strong reactions to her returning by many autistic children was surprising and particularly compelling with this sample. These children were separated from their families during most of the week, although they spent weekends at home. The observation of attachment behaviors even after a period of separation from the home suggests that many autistic children do form strong attachments to specific caretakers.

The autistic children in this study who demonstrated discriminative attachment responses also showed advanced levels of representational ability. All the children in the autistic sample were capable of object permanence. Although normal children are thought to require elementary levels of object permanence in order to form attachments, half the autistic children in this sample did not demonstrate clear-cut attachments even with advanced levels of object permanence. While some understanding of object permanence may be necessary for the development of attachments in autistic children, it clearly is not sufficient. The capacity to represent objects and people symbolically in play was related to the demonstration of attachments. The majority of autistic children who showed attachment behaviors in the separation and reunion episodes also played symbolically, most frequently using a doll as an agent of action. Normal children clearly do not require this level of symbolization to form attachments. The most intense separation responses are shown by 12-month-old normal infants, most of whom manifest little symbolic play. Furthermore, the observations of normal children in this study showed that the development of more sophisticated representational skills was accompanied by fewer attachment behaviors directed toward the mother. Thus, autistic children may require higher levels of representation than normal children in order to demonstrate attachment responses.

Another possible explanation for these findings is that autistic children whose relationships with their caregivers are characterized by strong attachments may develop symbolic capacities better than those with less satisfactory relationships with their caregivers. A specific deficit in
functional and symbolic object use seems to be a primary cognitive dysfunction in autistic children, as compared to mentally retarded children of the same mental and chronological age (Sigman & Ungerer, 1984). It may be that those autistic children who are able to form strong attachments with their caregivers, because of their own characteristics and those of their caregivers, may have more opportunities for the kinds of social interactions that are facilitative of cognitive development and, in particular, of symbolic play. Whatever the direction of effects, the social and cognitive realms seem to be integrated in autistic children, although the integration is different from that generally reported for normal children.

REFERENCES


