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## THE EFFECT OF SAME-AGE AND MIXED-AGE GROUPING IN DAY CARE ON PARENT-CHILD ATTACHMENT SECURITY

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This pilot study investigates the effect on parent-child attachment relationships of same-age versus mixed-age grouping in daycare centers in the Netherlands. For 45 children in the age range of 2 to 6 years, parent-child attachment relationships were assessed by means of the Attachment Q-Sort. It was found that attachment security did not differ significantly for children who had been in mixed-age or in same-age grouping, or who had experienced a change of daycare center.

Attachment plays a key role in children's upbringing and development. Attachment is generally understood to refer to a relatively long-term affective relationship between a child and one or more specific persons (so-called 'attachment figures'), with whom the child interacts regularly (Ainsworth, Blehar, Waters, & Wall,

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1978; Bowlby, 1984). Children are said to be securely attached if they tend to seek the closeness of, and contact with, a particular person in frightening situations, or whenever they are tired or ill (Bowlby, 1984). When a child is upset, an attachment figure may serve as an effective source of security. The concept of attachment is not restricted to the relationship of a child with the parents, but it may apply to the child's relationships with other caregivers as well.

The actual attachment formation usually takes place in four phases, with the main (third) phase starting around 6 months of age (Ainsworth et al., 1978; Bowlby, 1984). In the Netherlands, where the present study was conducted, children usually enroll in day care at the age of about three months, when the mother's pregnancy leave — combined with some holidays — is finished. This means that day care takes place in a period which is generally regarded as crucial for attachment formation (Bowlby, 1984). Therefore, children will benefit optimally from the structure or organization of day care if it is geared towards enabling them to build secure relationships with caregivers (Barnas & Cummings, 1994). Many studies have testified to the fact that quality of day care may affect children's opportunities for establishing such secure attachment relationships (Belsky & Rovine, 1988; Clarke-Stewart, 1989; Phillips, 1987).

Caregiver stability, the quality of the caregiver-infant interaction, and the quality of the daycare setting are generally regarded as important quality aspects of day care (Howes, 1987). Other important quality aspects are age differences among the children, and group size in that smaller groups are associated with more effective caregiving and more secure attachment behaviors (Clarke-Stewart, Gruber & Fitzgerald, 1994; Phillips & Howes, 1987; Allhusen & Cochran, 1991).

Age differences are, to a large extent, determined by the type of grouping employed in a daycare center. Groupings are basically of two types. The first, most common, type is referred to as *homogeneous*, *horizontal* or *same-age* grouping. In such same-age groups, the largest age difference is usually about two years (Freedman, 1982). In *mixed-age* (also referred to as *heterogeneous* or *vertical*) groups, by contrast, age differences may well exceed two years. In the Netherlands, mixed-age groups are generally composed of approximately 12 children aged 0 to 4 years, with two to three permanent caregivers taking care of the children in the group (Van IJzendoorn, 1995).

An important difference between same-age and mixed-age grouping is the stability of the group and its caregivers. Several studies have shown that the caregiver-child attachment relationship is often more secure the longer a caregiver is part of the group (Cummings, 1980; Raikes, 1993; Barnas & Cummings, 1994). When children in day care are in same-age groups, they make at least one transition from a younger to an older group. When moving to the new group, they miss the secure base of their familiar caregivers, i.e., attachment figures (Howes & Hamilton, 1993). At the same time, they need to explore in a new group of peers, building up new

secure attachment relationships with new caregivers, and establish themselves anew in the novel group (Van IJzendoorn, 1995). In a mixed-age group the child remains a member of one and the same group throughout the daycare period, so that most transitions will be gradual (and absorbed) in contrast with the sudden transition by the child itself from one familiar same-age group of children and caregivers to a new same-age-group. The contrast is even stronger when a child moves over from one daycare center to another (Howes & Hamilton, 1993). On the whole, same-age grouping seems to constitute a less stable environment than mixed-age grouping.

In the present pilot study, it was explored whether children in mixed-age groups form more secure attachment relationships to their parents than do children in same-age groups. It was investigated whether both mixed-age and same-age children form more secure attachment relationships than children who have changed daycare center. The hypothesis was that children in mixed-age groups are able to form more secure attachment relationships than children in same-age groups because of the stability of the group and, more importantly, the stability of the caregivers.

## METHOD

### SUBJECTS AND QUASI-EXPERIMENTAL GROUPS

Seventy parents were contacted by letter, asking them and their children to participate in the study. All parents had participated two years earlier in a large-scale study on the attitudes and beliefs about child-rearing and the quality of day center care held by both parents and day care staff (Van IJzendoorn, Tavecchio, Stams, Verhoeven, & Reiling, 1998). As quality of day care had not been observed by all parents in the study, all 40 parents for whom this measure was available were selected, together with an additional random sample of 20 out of those parents in the same study, by whom the quality of day care had not been assessed. This group included 12 randomly-selected children from mixed-age groups to oversample mixed-age grouping (which is a less common type of grouping in the Netherlands). The total sample amounted to 60, of whom 15 refused, so that the response rate was 75%.

The 45 children in this study had a mean age of 46.7 months (range 28-68 months). Twenty-four were boys, 21 were girls. Twenty-seven were still in day care, 18 had enrolled in elementary school. Twenty-five children had been in same-age grouping, 10 had been in mixed-age grouping. Another 10 had experienced a change of daycare center.

### PROCEDURE

The 60 selected families received a letter with an explanation of the purpose of the study and an invitation to participate. The authors asked the parent who usually spent most time with the child to be home during the observation procedure. After

one week parents were contacted by telephone, and appointments were made with those who agreed to participate. Because the authors asked for the parent who usually spent most time with the child, 39 mother-child attachment relationships and 6 father-child attachment relationships were observed.

Two observers, both of them social science students, collected the attachment observations. Attachment measures were collected blindly, as during data collection neither observer was aware of the child's daycare grouping. At the agreed time, one observer visited the family at home. She explained the purpose of the study once more, and asked a number of factual questions such as the child's age, and the total number of children in the family. Next, she explained how the observations would be made, and that the parent and child should continue their usual activities. The observer took a seat somewhere in the background and observed interactions between parent and child for three hours. During the observations only minimal notes were made, to make families feel as much at ease as possible. Towards the end of the observation period, the child was given a small present (a book or puppet). After leaving, the observers wrote down and scored their observation as soon as possible.

#### **INSTRUMENTS AND VARIABLES**

**Attachment Q-Sort.** The Attachment Q-Sort (Vaughn & Waters, 1990; Waters & Deane, 1985) was used for assessing quality of attachment. This instrument has been validated for children from 1 to 5 years (Waters & Deane, 1985; Thompson, 1998). In the absence of validated instruments for assessing attachment of 1 – 6 year olds the authors decided to use the Q-Sort for the entire group<sup>1</sup>. The English version (Waters, Vaughn, Posada & Kondo-Ikemura, 1995) was translated into Dutch. The instrument consists of a list of 90 behaviors that serve as indicators of attachment (Waters & Deane, 1985).

Interobserver reliability was assessed during six sessions throughout the data collection period. Two observers visited the family at the same time and independently assessed the quality of attachment at a later point in time. Average interobserver reliability was  $r = .78$  (Pearson correlation). Attachment scores were obtained by correlating the Q-Sort distribution for every child with the criterion distribution of attachment as given in Waters et al. (1995, Appendix D).

**Quality of day care variables.** For 24 children, all of the following measures for the quality of day care were available from the prior study (Van IJzendoorn et al., 1998): the Early Childhood Environment Rating Scale (ECERS), the Infant/Toddler Environment Rating Scale (ITERS) (Harms & Clifford, 1980; Harms, Cryer & Clifford, 1990), and the quality of caregivers' interactions with an individual

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<sup>1</sup> Indeed, quite a few earlier authors have also used the Q-sort for children over 48 months of age (Honig & Park, 1993; Denham, 1987; Oppenheim, 1997; Posada, Waters, Crowell, & Lay, 1995).

child, as measured with Arnett's (1989) Caregiver Interaction Scale (CIS). Two factors emerged from a principal components analysis of the 26 items: Authoritarian Interaction and Stimulating Interaction. A more extensive description of the ECERS, ITERS and CIS can be found in Van IJzendoorn et al. (1998).

**Background variables.** Additional variables concerning the child's age, sex, rank in the family and number of children in the family were available from the parent's information prior to the observation.

## RESULTS

Analysis of variance (ANOVA) was used to compare the three groups on the attachment score, with the grouping variable - mixed-age groups, same-age group and change of daycare center - being the independent variable. As the attachment scores were not normally distributed within each group (a condition to be met for ANOVA, cf. Stevens, 1992), the scores were transformed using Fisher's R-z transformation (Hays, 1988). All other assumptions were met.

The average attachment scores for the three groups were as follows: mixed-age grouping: .28, same-age grouping: .42, and change of daycare center: .32 (the overall mean was .36). Children in same-age groups had on average the highest scores, followed by those who had made a switch to another daycare center, with children in mixed-age groups having the lowest scores (higher scores indicating more secure attachment). ANOVA showed that the means of the three groups did not differ significantly ( $F(2,42) = 1.67, p = .201$ ).

As quality of day care, as well as quality of the daycare setting may be a confounding factor, the authors checked whether these three groups differed with respect to the quality of daycare measures. This could be done only for the subset of the present sample for which all quality measures were available ( $n = 24$ ). Differences emerged only on the Stimulating Interaction scale of Arnett's CIS. Next, the authors performed analysis of covariance on the attachment scores for the three groups, using the same dependent and independent variables, now adding Stimulating Interaction as a covariate. This analysis confirmed that the three groups did not differ significantly in attachment scores ( $F(2,20) = 0.48, p = .626$ ).

## DISCUSSION

The results do not support the hypothesis that children from mixed-age groups in day care form more secure attachment relationships with their parents than do children in same-age groups, or than do children who have changed daycare centers at least once. These results are, therefore, in line with recent findings that fail to show any effects of daycare grouping on infant-parent attachment security (NICHD Early Child Care Research Network, 1997).

One explanation for these findings may be that the sample was too small. However, sample size as such should not be considered a decisive factor. More pertinent aspects are the relevance of variables, design, and the study's methodology. In this study, attachment was assessed with the Attachment Q-Sort — which may have advantages for children in day care (Van IJzendoorn, Vereijken & Riksen-Walraven, in press). In addition, study characteristics were blind data collection, trained observers, an adequate methodology and control for various quality aspects of day care. While the design of this study is quasi-experimental, the 'assignment' of children to same-age and mixed-age groups may very well be far less select than the assignment of children to 'day care' and 'no day care' conditions in other studies. In the Netherlands, where day care is a scarce commodity, parents usually choose daycare centers that are either affiliated with their employer, have vacancies or are closest to home or to the office.

A second explanation may be that this sample is select. However, given that the response rate was 75%, and overall attrition of the representative sample from the original study 63%, the authors do not believe that the validity of these findings is at greater risk of selection than it might be in other studies.

A rather different explanation is that working in mixed-age groups is generally perceived as more demanding than working in a same-age setting, because activities for children of various developmental stages are difficult to combine, and qualitatively different activities have to be planned at the same time. As a consequence, working in mixed-age groups may be difficult and less satisfactory. Bollin (1993) investigated the relationship between job satisfaction and turnover of employees in daycare centers and found, not surprisingly, that satisfaction is related to stability. It thus may be that the greater stability of mixed-age groups is counterbalanced by a higher staff turnover-rate in mixed-age groups, and the positive effect of stability in the daycare center on the caregiver-child attachment relationship is undone (Raikes, 1993; Barnas & Cummings, 1994; Howes & Hamilton, 1992).

This study failed to show beneficial effects of mixed-age grouping as such on the quality of the parent-child attachment relationship. As it is considered important for a child to have as many secure attachment relationships as possible (see, for instance, Howes, Rodning, Galluzzo & Myers, 1988; Van IJzendoorn, Sagi & Lambermon, 1992), further research into factors affecting the formation of secure attachment relationships for children in day care remains warranted.

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