

8. Differential age-effects of brief early hospitalization¹

Abstract

Age-specific effects of brief early hospitalization were investigated in a controlled natural experiment. The sample consisted of 27 children with cleft lip and palate. The children were admitted to the hospital for palatal repair either at 9.5 or 12.5 months of age. During hospitalization inhibited behavior was found characteristic of the earlier admitted group, whereas intensified attachment behavior typified the later admitted group both during and shortly after hospitalization. After hospitalization the older children were more likely to respond with disorganized behavior patterns to a stressful situation at home. It is concluded that brief hospitalization has a more disturbing impact at the age of 12.5 months.

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Introduction

About half a century ago psychologists were shocked by reports of Spitz (1945) and Bowlby (1951) on the impact of parental deprivation, more particularly, by the disastrous consequences early mother-child separation was said to have for adaptive functioning at a later age. In later years these ideas were increasingly relativized (Rutter, 1976; Van den Berg, 1972). In the late seventies, however, the discussion was brought to life again. Longitudinal studies of Douglas (1975) and Quinton and Rutter (1976), the second being a replication of the first, demonstrated an association between relatively brief hospitalization and increased risk of later behavior disturbance and delinquency. Moreover, despite the critique and subsequent amendments, mother-child separation during the first one-and-a-half year of life grew out into an important topic in attachment research. We only have to refer to the role of separation in the widely used Strange Situation procedure of Ainsworth, Blehar, Waters and Wall (1978), and to the reported risks of extensive early nonmaternal infant day care (Belsky, 1990).

Against this background a study was designed to examine the impact of brief hospitalization by the end of the first year of life. In an earlier publication (Koomen & Hoeksma, 1993) we reported on the effects of hospitalization on infant behavior and the developing relationship with the mother. Our main finding was that *avoidance* instead of attachment behavior was observed towards the mother in 9 to 13 month-old children with cleft lip and palate after brief hospitalization. Increased avoidance was found both under stressful conditions in the home environ-

ment and in the Strange Situation procedure. Notwithstanding these increased levels of avoidant behavior, hospitalized infants were not found to be 'at risk' with regard to establishing insecure-avoidant attachments to their mothers (Koomen & Hoeksma, 1993). The present paper supplements the previous one by focusing on age-specific effects of hospitalization. The main question is: are the effects of a brief hospital admission on the infant's behavior and the developing relationship with its mother related to the age at which hospitalization takes place? Moreover, considering the growing interest in so-called 'disorganized behavior patterns' (Main & Solomon, 1990), in the present study more explicit attention is being paid to the *organization* of attachment behaviors. Age-differences are investigated in a carefully controlled experiment, in which children born with cleft lip and palate are admitted for closure of the soft palate, either at 9.5 or at 12.5 months of age.

Separation and behavioral changes

According to the old studies (Heinicke & Westheimer, 1965; Robertson & Bowlby, 1952; Robertson & Robertson, 1971) maternal separation elicits widely divergent responses in children. In cases of comparatively brief separations, children were observed to react with acute distress, the so-called protest response. After some time this distress was replaced by passive, withdrawn sadness, the so-called despair response. And finally, if the separation lasted long enough, the child seemed to lose interest in his caregiver and was inclined to react to visits with a lack of affection, the so-called detachment response. It should be noted that the longer duration of separation periods occurring

in the old days, as well as the depriving circumstances of institutional placement, may have contributed substantially to the detachment responses observed.

Schaffer and Callender (1959), reporting on a comparatively brief separation period of less than two weeks for infants under one year of age, only mentioned agitated responses to hospitalization: loud crying, clinging to the mother, sleep disturbances, and stranger anxiety. These responses were found to be strongest for infants older than seven months, both during and following hospitalization. Compared to the younger ones, the older infants were more likely to show protest *during* hospitalization and in addition manifested more severe reactions, such as intense attachment behaviors and fears, in the period *following* hospitalization (Schaffer & Callender, 1959). This age-effect is in accord with the onset of the phase of clear-cut attachment described by Bowlby (1969) and Ainsworth et al. (1978), in which the child has acquired a notion of 'person permanence', which may manifest itself in separation protest. Hoeksma, Koomen and Koops (1987) found a similar age effect for children with cleft lip and palate in the age of 4 to 22 months. In this study parents filled out a questionnaire about negative changes in the behavior of their children after a brief hospital admission. Although the relation was weak, the intensity of the responses to hospitalization were found to increase significantly with age.

Besides intensified attachment behavior, an avoidant response to separation was reported in several studies: both in the classical separation studies mentioned above (Heinicke & Westheimer, 1965; Robertson & Bowlby, 1952), in recent hospitalization studies (Fahrenfort, 1993;

Koomen & Hoeksma, 1993) and in day-care research (Barglow, Vaughn & Molitor, 1987; Belsky & Rovine, 1988; Lamb, Sternberg & Prodromis, 1992). It should be noted, however, that in the latter two categories avoidance of the mother was observed after induced stress and *not* in normal life situations. Only in stressful circumstances the child was observed to display a lack of affection and to turn or look away from her. With respect to age, it may be added that in the old studies detached behavior was found in children from fourteen months to three years old, whereas in recent studies it was already observed at the age of twelve months. In our own study (Koomen & Hoeksma, 1993), avoidance was observed at the ages of nine and twelve months. No age-differences were reported.

Disturbance of the attachment relationship and behavioral (dis)organization

In terms of attachment theory, hospitalization can be characterized as a decreased availability or accessibility of the primary security provider (attachment figure) at a time when the infant needs him or her most. The decreased availability of the caregiver and the, from the infant's point of view, repeated neglect of its signals in stressful moments might affect the mother's trustworthiness (Ainsworth et al., 1978). As noted previously, this kind of damage to the infant's confidence results in widely divergent responses: intensified attachment behavior on the one hand and avoidant behavior on the other (Bowlby, 1973).

The concern about maintenance of proximity to the caregiver, displayed by the older children in the study of Schaffer and Callender (1959), corresponds with

what is expected in such situations on the basis of attachment theory. The attachment system is assumed to be activated by threats of separation from the mother and alarming events in the environment. In the first period after a stressful experience, the system may be expected to be more easily activated at high intensities. Attachment behaviors may even be released when there is no real danger (Bowlby, 1969). Following a stressful separation experience, an avoidant response, however, is precisely antithetical to the behavior predicted by biologically oriented attachment theory (Main, 1981). As was argued above, what would be expected in such circumstances is intensified attachment, that is proximity promoting behavior.

According to Main (1981) avoidance reflects an underlying mistrust and anger about the availability of the mother and may well serve as the infant's way of preventing behavioral disorganization, as a strategy of maintaining control and flexibility in behavior. In some infants, reunion with the mother after separation elicits opposing tendencies: both attachment behavior and anger, both approach and withdrawal. The child's only solution in such situations may be a shift in attention away from the caregiver. Even the phenomenon of suppression of distress *during* separation can be explained this way: "What is being deactivated in this account is the entire attachment behavioral system" (Main, 1981, p.683). In Main and Solomon (1990), *disorganization*, with respect to behavior patterns in the Strange Situation procedure, is specified as a sequential or simultaneous display of contradictory behavior patterns. By a sequential display of contradictory behavior patterns, a disordering of ex-

pected temporal sequences is meant, for instance a display of high distress during separation followed by strong avoidance upon reunion; or an initial full greeting upon reunion followed by avoidance. Examples of a simultaneous display of contradictory behavior patterns are: approaching the caregiver with the head averted or avoidant behavior while in contact with the parent. In such cases approach behavior seems to be partially but unsuccessfully inhibited through simultaneous activation of avoidant tendencies. Seemingly, as argued by Main and Solomon (1990), these infants neither succeed in responding to the parent, nor in fully shifting attention away.

Research questions and predictions

What differential age-effects of brief hospitalization might be expected in the last quarter of the first year? Both *infant behaviors* in natural situations and *interactive behavioral patterns* in stressful circumstances are studied. With respect to *infant behaviors* mainly agitated responses to hospitalization are investigated, such as crying, sleeping disturbances, stranger anxiety, attachment behavior etc.. Following from the findings of Schaffer and Callender (1959) and Hoeksma et al. (1987) we expect more intense agitation during and after hospitalization for older children in normal life situations. This expectation also fits developmental ideas of Bowlby (1969) and Ainsworth et al. (1978) in which the onset of clear-cut attachment is placed at the earliest from six months onwards but often later.

With respect to (*interactive*) *behavioral patterns* in stressful circumstances, the question arises whether the avoidant

response to hospitalization (Koomen & Hoeksma, 1993) indeed serves as a strategy of preventing behavioral disorganization (Main, 1981). It is therefore investigated whether infants, by the end of the first year, change in their ability to maintain behavioral organization under stressful conditions. In this context, two opposing predictions could be made. On the basis of Bowlby's developmental phases it might be expected that infants become more able to maintain behavioral organization under stressful conditions without supportive parental behavior. According to Bowlby and Ainsworth and associates, during the last months of the first year the infant is believed to be in the process of further consolidation of the relationship with its mother. However, considering the ideas of Waters, Kondo-Ikemura, Posada and Richters (1990), such an age-specific effect is not anticipated. In their view attachment figures continue to play a crucial role in organizing secure base behavior in their infants far into the second or even third year (Waters et al., 1990).

Methods

Sample and design

The sample consisted of 27 infants with cleft lip and palate (CLP), better known as "harelip and open palate", and their mothers. All children were born at term (i.e., > 37 weeks) and had no other congenital anomalies. They came from intact families and none of the mothers worked full-time.

The need for palatal repair of children with cleft lip and palate provided the natural conditions for an experiment. Thanks to the cooperation of the medical staff of

the hospitals of six Dutch cities (Amsterdam, Rotterdam, Breda, Delft, Dordrecht and Vlissingen), 14 out of the 27 CLP children were operated on at approximately 9.5 months of age (mean age in weeks: 40.8, *sd*=2.7) and the remaining 13 children at 12.5 months of age (mean age in weeks: 55.4, *sd*=1.6). Children operated on at 9.5 months will be labelled group I; children operated on at 12.5 months group II. At the outset of the experiment, group II also consisted of 14 children. Child number 14, however, had to be excluded from the experiment due to considerable delay in the date of operation.

The assignment of CLP children to group I and II is based on the preferences for age of operation of the seven different surgeons involved. Despite this nonrandom assignment of subjects to conditions, the two groups were matched on parity (44% first-born; 56% later-born), dwelling place (56% city; 44% village), and sex (78% boys, 22% girls). The nonuniform sex distribution is due to the larger number of boys that are gener-

ally born with cleft lip and palate. In addition, the two groups appeared to be balanced with regard to the level of education of both parents, which was measured on a five-point scale ranging from 1, elementary education, to 5, academic education. (Mean level of education of mothers: group I=2.50 (*sd*=1.29), group II=1.85 (*sd*=1.07); fathers: group I=2.29 (*sd*=1.07), group II=1.85 (*sd*=1.28)). All hospitals were modern, well-equipped institutions with very similar practices. In some cases the closure of the soft palate was combined with a small lip correction or (partial) closure of the hard palate. In all cases the lip had been closed previously at the age of approximately three months. For detailed information about selection procedure and hospital practices we refer to Koomen and Hoeksma (1993).

Procedures

Table I gives an overview of the instruments used at different ages for the two groups.

Table 1. Design of the study: age of hospitalization of group I and II in months and use of instruments on different occasions.

	Group I			Group II		
age:	9	9.5	10	12	12.5	13
Hospitalization	x			x		
Negative Behavioral Changes	-	Q	Q	-	Q	Q
Observed Disturbance	-	I	I	-	I	I
Daily Frequency of Crying	Q	-	Q	Q	-	Q
Perceived Attachment Behavior	Q	-	Q	Q	-	Q
Induced Stress at Home	O	-	O	O	-	O

Q: questionnaire, I: interview, O: observational procedure

Hospitalization took place at 9.5 months for group I and at 12.5 months for group II. Mothers and children were visited at home shortly before and after hospitalization: group I at 9 and 10 months of age; group II at 12 and 13 months of age. Visits at 9 and 12 months were scheduled at the respective ages plus or minus one week. Visits at 10 and 13 months were scheduled two weeks after hospitalization plus or minus three days.

Three kinds of instruments were used: a) questionnaires mainly for measuring agitated responses to hospitalization in natural situations, including the *Negative Behavioral Changes scale* (NBC scale), the *Perceived Attachment Behavior Scale* (PAB scale), and the *daily frequency of crying*; b) a semi-structured interview for measuring *observed disturbance* during and shortly after hospitalization; and c) an observational procedure for measuring interactive behavioral patterns after *induced stress at home* (ISH procedure).

At all ages video recordings were made of the ISH procedure. At the end of each visit the PAB scale and the crying scale was handed to the mother, which were subsequently returned by mail. In addition, the NBC scales during and after hospitalization were filled out by the mother at the age of 10 months in group I, and at the age of 13 months in group II. At the same ages mothers were interviewed about the admission (duration of hospitalization, visits to the hospital etc.) and their child's reactions during and after hospitalization (this interviewing is not included in Table 1).

Measurements and codings

Negative Behavioral Changes. The NBC scale was a revised and extended version of the 'Negative Behavioral Changes Scale,' used in an earlier study (Hoeksma et al., 1987). Identical sets of items were used to measure behavioral changes *during* and *after* hospital admission. The mother was asked whether her child, compared to the period before admission, behaved differently during hospitalization and in the first few days after hospitalization. Examples of some items of the scale are: "he/she did cry more often than he/she used to do" (yes/ no); "he/she was more fearful of strangers than he/she used to be (yes/no)", "he/she clung more to me than before" (yes/no). The mother was asked to mark the correct answer. Negative behavioral changes ('yes') received a code of 1, the other alternative ('no') received a code of 0.

Observed Disturbance. Before administering the NBC scale, in which the occurrence of a fixed set of behavioral changes derived from the literature was checked, the mother was asked to describe the impact of hospitalization *during* and the first few days *after* admission in an informal interview at home. Of the interview a nearly verbatim report was made by a research assistant. Afterwards, each record was given a code 0, 1 or 2 both for the responses *during* and *following* hospitalization, representing 'no disturbance', 'medium disturbance' and 'high disturbance', respectively. Contrary to the NBC scale, the hospitalization interview yields overall judgements of the negative behavioral changes during and the first few days after hospitalization.

Daily Frequency of Crying. In order to be able to measure the effect of hospitalization on the infant's irritability in everyday life, the crying behavior displayed in the home environment was measured. The mother was asked to mark on a graphical time scale (spanning 24 hours) for each hour of a normal week-day whether the child had cried or not. The variable 'Daily frequency of crying' resulted from summing these marks.

Perceived Attachment Behavior. The questionnaire 'Perceived Attachment Behavior' was administered to measure the intensity of attachment behaviors displayed by the infant in everyday life. The version used was, except for some minor alterations in response alternatives, identical to the scale constructed in an earlier study (Hoeksma et al., 1987). The items of the PAB scale were based on the Strange Situation procedure. Similar stressful events were described in normal life contexts, for instance a brief mother-child separation in the home environment, a visit from an unfamiliar person, and a visit to a birthday party. The mother was asked about the reactions of the child to these events and was asked to mark the appropriate alternative. Alternatives indicating increased attachment behavior were given the codes 1 or 2, other alternatives were given the code 0. An example of an item and the way of coding is: "If an unfamiliar person comes to visit you, how does your baby react?" Alternatives: "he/she behaves as usual" (code 0); "he/she communicates with me more often than usual" (code 1); "he/she seeks proximity continuously" (code 2); "this situation has not yet occurred" (code 0).

Interactive behaviors after induced stress at home. Inspired by the Strange Situation procedure of Ainsworth et al.

(1978), the ISH procedure was developed to measure the (interactive) behavioral patterns displayed by the child towards its mother after induced stress in the home environment. The combination of one brief separation from the mother and simultaneous exposure to one of two audio-tapes (at 9 and 12 months a tape with a sound of crying babies; at 10 and 13 months a sound resembling the squealing of pigs) was used to arouse stress or fear in the child. A detailed description of the procedure can be found in Koomen and Hoeksma (1993).

The amount of stress expressed by the child during the mother's absence was rated on a five-point scale, named the Overtly Expressed Distress scale (OED scale). Score 1 indicates: no reaction; score 3: stops playing, seems surprised; and score 5: cries loudly. From the moment the mother returned to the room, the interactive behavior of the child was rated on four 7-point scales, known from scoring in the Strange Situation procedure (Ainsworth et al., 1978). The *proximity-seeking* scale measures the child's efforts to achieve physical contact or proximity; the *contact-maintenance* scale measures the child's efforts to preserve physical contact once this is achieved; the *resistance* scale measures the child's opposition to proximity, contact, or interaction offered by the adult; the *avoidance* scale measures the child's evading of proximity and interaction with the adult.

Missing values: As noted above for group II one child had to be omitted from the analyses because of considerable delay in the timing of hospitalization. Of the remaining 27 cases, one case belonging to group I for the PAB scale was deleted from analyses, and one case belonging to

group II for the Daily frequency of crying. In both cases the questionnaires were not filled out at the prescribed points in time.

Reliability: The Negative Behavioral Changes scale, consisting of 15 items, proved to be a homogeneous scale (Koomen & Hoeksma, 1993), both for measuring behavioral changes during, (Cronbach's alpha = .83) and after hospitalization (alpha = .86). The homogeneity of the Perceived Attachment Behavior scale, consisting of 12 items, was satisfactory at all ages (Cronbach's alpha > .82) (Koomen & Hoeksma, 1993).

In the ISH procedure, interrater agreement was calculated for the four interactive scales and the OED scale (Koomen & Hoeksma, 1993). For this purpose 15 subjects were drawn at random, both at the age of 12 and 13 months. At 12 months the subjects were independently rated by two trained observers, the first author and a research assistant; interrater agreement ranged from .60 (for resistance) to .99 (for contact maintenance), with an average correlation of .85. At 13 months the subjects were independently rated by the first author and by a trained observer who was not familiar with the subjects, nor with the hospitalization conditions; interrater reliability ranged from .63 (for avoidance) to .99 (for contact maintenance), with an average correlation of .87. The relatively low correlation of .63 for avoidance was primarily caused by one case. After removal of this case the correlation rose to .88.

Data analyses: Age effects were tested by comparing changes due to hospitalization in the early and later hospitalized group. On all variables the number of

infants that showed increased responses and the number of children that remained the same or decreased was tabulated. Next the tabulations at 9.5 and 12.5 months were contrasted using either Fisher's Exact Test or the Chi-square Test.

Results

The results will be presented in three sections. The first section contains findings on negative behavioral changes during admission and the first days after discharge as measured by the NBC questionnaire and the hospitalization interview. The second section describes age-related effects in natural situations two weeks after discharge. The results pertain to daily frequency of crying at home and the intensity of attachment behaviors displayed in everyday life as measured by the PAB questionnaire. Finally, in the third section, age-specific hospitalization effects on interactive behavioral patterns in stressful circumstances two weeks after hospitalization are examined (overtly expressed distress, proximity seeking, contact maintenance, resistance and avoidance).

Negative Behavioral Changes during and after hospitalization

Admission data. Children admitted to hospital at 9.5 months of age (group I) stayed there on average for 6.3 days (SD=.7), whereas children admitted at 12.5 months (group II) stayed on average for 7.5 days (SD=1.2). The length of stay was significantly different for the two groups ($t=-3.31$, $df=25$, $p<.01$). The difference, however, amounted to just one

day. Mothers in group I and II paid daily visits to the hospital lasting 16.3 (SD=7.3) and 9.0 (SD=5.4) hours respectively. The difference in mean hours of attendance was 7.3 hours, which proved to be significant ($z=-2.70, p<.01$, Mann-Whitney test).

NBC scale. The NBC scale was used to measure the number of negative behavioral changes in the child both during hospitalization and the first few days after discharge. *During* hospitalization mothers of the earlier admitted group (group I) reported 8.50 (SD=3.74) out of 15 possible negative behavioral changes. The mean number of negative changes in the later admitted group was 7.54 (SD=3.53). The difference between the groups was not significant. *After* hospitalization the average scores in the two groups were: group I: $M=5.86, SD=4.26$, group II: $M=7.77, SD=2.95$. Again, there was no significant difference between the groups. In conclusion, on the overall NBC scales no age-specific effects were found. A closer look at the individual items of the scale did reveal some major shifts from one age to the other, however. *During* hospitalization, group II displayed significantly more intensified attachment/affectionate ($p<.10$, Fisher's Test) and contact-seeking behavior towards the mother ($p<.10$), whereas for group I a stalling response ($p<.05$) and a declining interest in toys ($p<.10$) was observed. *After* hospitalization, age-related differences were observed on four items: group II was reported to show more intensified attachment/affectionate behavior ($p<.05$), protest against being left alone by the mother ($p<.01$), exclusive preference for the mother ($p<.10$), and seeking contact with the mother ($\chi^2(1, N=13)=6.68, p<.01$). In sum, on individual items inhibited behav-

ior was found characteristic of the early admitted group, whereas agitated/ attachment behavior typified the immediate response to hospitalization for older children.

Observed Disturbance. From the hospitalization interview with the mother two overall measures of the child's disturbance during and the first few days after hospitalization were derived. Again, no age differences were found. Neither *during* ($\chi^2(2, N=13)=3.63, n.s.$), nor *after* ($\chi^2(2, N=13)=2.02, n.s.$) hospitalization any of the two groups appeared to be more disturbed than the other. However, examination of the pattern of changes from 'in' to 'out of' the hospital, revealed a significant difference between the two age-groups ($\chi^2(3, N=13)=7.17, p<.10$). It appeared that a substantial number of infants in group I showed a deviant pattern of changes: four children displayed medium disturbance after hospitalization, whereas they had not shown any sign of disturbance in the hospital; and two children acted highly disturbed (very distressed and/or angry) in the hospital, which disappeared after being back home. By far most children of group II (10 out of 13) showed similar disturbance during and shortly after hospitalization.

Infant behaviors in natural situations

Daily Frequency of crying. The daily frequency of crying was assessed to determine the effect of hospitalization on the infant's irritability in everyday life. Somewhat more than half of the children in group I (8 out of 14) and about one third in group II (4 out of 12) showed an increased frequency of crying two weeks after admission. The number of children showing increased crying due to hospital-

ization was not significantly different for the two age groups ($\chi^2(1, N=13)=1.47, n.s.$).

Perceived Attachment Behavior. By means of the PAB scale, the impact of hospitalization on the intensity of attachment behaviors displayed in everyday life was assessed. In both the earlier and later admitted group half of the children showed increased attachment behaviors in everyday life, two weeks after admission (group I: 6 out of 14; group II: 6 out of 13). Again, no age-specific effect of hospitalization occurred ($\chi^2(1, N=13)=.03, n.s.$)

Interactive behavioral patterns in stressful circumstances

Interactive behaviors. What are the effects of hospitalization on the variables observed in the ISH procedures for the two age groups? Table 2 displays the number of children showing an increase on the interactive variables and the OED scale.

Bringing into focus changes in individual children, an increasing level of OED was observed in this stressful situation at home for more than half of group II (8 out of 13), but for only 3 children (out of 14) of group I ($\chi^2(1, N=13)=4.49, p<.05$). An increasing level of proximity seeking was observed for 6 out of 13 children of group II versus 2 out of 14 children of group I ($p<.10$, Fisher's Exact Test). Consistent with our previous findings (Koomen & Hoeksma, 1993), the level of avoidance increased for approximately 70% of the children at both ages. Contact maintenance hardly increased, whereas approximately 40% of the children in both age groups displayed increased resistance in response to hospitalization.

Disorganized behavior patterns. Next, we investigated the frequency of increased disorganization at both ages. Different behavior patterns for the two hospitalized groups appeared. In group I increased avoidance was accompanied by decreased

Table 2. Age-effects of hospitalization on interactive variables and the OED scale of the ISH (Induced Stress at Home) procedure: number of children showing increased scores due to hospitalization divided by age-group including chi-square values.

	df	OED	Ps	Cm	Re	Av
<i>group I:</i> (n=14)		3	2	2	6	9
<i>group II:</i> (n=13)		8	6	2	5	10
χ^2	1	4.49**	3.28*	0.01	0.82	0.52

OED: overtly expressed distress, Ps: proximity seeking, Cm: contact maintenance, Re: resistance, Av: avoidance. * $p<.10$, ** $p<.05$).

proximity seeking and a consistent level of distress during the preceding separation; whereas group II displayed a combination of seemingly contradictory behaviors, namely increased avoidance, increased proximity seeking, and increased distress during separation. On the basis of these observations different patterns were distinguished. The next three patterns - combining OED, proximity seeking and avoidance - were considered to point to disorganization¹: 1. increasing (or consistently high) distress during separation followed by increasing (or consistently high) avoidance upon reunion; 2. increasing (or consistently high) distress during separation followed by decreasing (or consistently low) proximity seeking upon reunion; and 3. a combination of increasing (or consistently high) avoidance and increasing (or consistently high) proximity seeking upon reunion. Table 3 shows the distribution of disorganized patterns divided by group.

Although all three disorganized patterns occurred somewhat more often in group II, the distributions of neither of these patterns differed significantly for the two age-groups. The combination of these patterns into an overall category of disorganized behavior, however, did reveal a significant difference between the distributions of the two age-groups ($\chi^2(1, N=13)=3.03, p<.10$). It appeared that at a later age significantly more children were

inclined to display increased disorganization in stressful circumstances after brief hospitalization.

Table 3. Disorganized behavior patterns in the Induced Stress at Home procedure, according to group.

	group I (n=14)	group II (n=13)
OED ⁺ with avoidance ⁺	4	6
OED ⁺ with proximity ⁻	1	5
avoidance ⁺ with proximity ⁺	2	4
overall category disorganized	4	9

⁺ increased, ⁻ decreased.

Discussion

What age-effects of brief hospitalization were established for children with cleft lip and palate in the age-period between 9.5 to 12.5 months? Our results can be summarized as follows. First, two weeks after hospitalization age differences were found in effects of induced stress in the home environment (ISH). The early admitted group was observed to combine an increasing level of avoidance of the mother with a consistent level of distress during separation and a decreasing level of proximity seeking, whereas for the later admitted group increasing avoidance was paralleled by increasing distress and increasing proximity seeking. This age-specific patterning of behaviors resulted in a significant higher incidence of increased disorganization under stressful

¹ Although the disorganized behavior patterns measured in the present study were inspired by patterns described by Main and Solomon (1990), they should on no account be confused with the insecure disorganized/disoriented (D) attachment category (Main and Solomon, 1990) established in the Strange Situation.

circumstances in the later admitted group. Second, with regard to the immediate impact of hospitalization i.e., during and the first few days after admission, age effects were found for specific behaviors on the NBC scales and for the pattern of disturbance from 'in' to 'out of' hospital as reported by mothers in the hospitalization interview. The early admitted group was characterized by inhibited behavior in the hospital and a changing level of disturbance around the admission. The later admitted group, on the other hand, was typified by intensified attachment behavior and a consistent level of medium to high disturbance around hospitalization. On the NBC scales as a whole the expected age differences could not be established, however. Nor did we find age effects for the intensity of observed disturbance during and following hospitalization. More intense agitation of the older children during and after hospitalization was expected on the basis of the literature review, but not demonstrated by these overall measures. Third, in natural situations after two weeks, no age-specific effects of hospitalization were found. The expected differences did not emerge from the daily frequency of crying data, nor from maternal reports regarding attachment behaviors in everyday life (PAB scale).

In conclusion, these combined results give the impression that brief hospitalization has a more disturbing impact at the age of 12.5 months. Before engaging in a broader discussion of these results, we confine ourselves to some questions arising from this summary.

First, why was the expected age-effect of hospitalization on agitated responses not found on the NBC-scales and the overall judgements of mothers? To start

with the NBC-scales, why didn't we find more negative behavioral changes for the later operated CLP children? The first reason has to be sought in the measuring instrument itself. True, the NBC scales measure primarily agitated responses to hospitalization, but not exclusively. Some items, in fact, refer to inhibition rather than agitation. Due to these differences in items, the scales may fail to disclose the expected age-effects. On closer inspection, however, the results appeared to agree quite well with our expectations. For it was concluded that agitated - attachment responses were typical for the older hospitalized children, whereas inhibited responses characterized the early admitted children. The absence of age-effects on the overall judgements of mothers (Observed Disturbance) also may be due to the particular measuring instrument. It should be seriously doubted whether mothers are able to perceive disturbances correctly and to differentiate between levels of disturbance.

A second issue is the following. Why are the age-effects observed after two weeks in the ISH procedure - that is increasing distress and proximity-seeking behavior by the later admitted group - not found in maternal reports regarding the frequency of crying and attachment behaviors in everyday life? The most plausible explanation seems to be that the age-specific increases of distress and proximity behavior are only found in stressful situations. In the introductory section it was brought to the fore that normally the attachment system is only activated by threatening separation or alarming events in the environment. Following a stressful experience, the system is temporarily expected to be more easily activated. Apparently, in case of brief hospi-

talization, a period of two weeks is long enough to recover from insecurity feelings in normal everyday life situations.

All in all, some consistent patterns were disclosed. For the early hospitalized children, the picture shows an immediate response of inhibition and alternating disturbed and non-disturbed behavior, followed by clearcut avoidance of the mother and suppression of distress under stressful circumstances at home two weeks later. For the later admitted group, on the other hand, agitated - attachment behavior and behavioral disturbance around admission are followed by a mixture of avoidance, increasing distress and proximity seeking under stressful circumstances at home. In other words, at the age of 9.5 months we recognize a fairly consistent pattern of inhibited, avoidant behavior, both in the hospital and in a stressful situation after two weeks. Only three months later, at 12.5 months, intensified attachment behavior seems to be typical at all occasions, although it has to compete with avoidance after induced stress.

In our earlier study (Koomen & Hoeksma, 1993), the increased avoidance found in cleft lip and palate children after brief hospitalization was interpreted as a coping strategy to mask anger, i.e., as a means to prevent behavioral disorganization (Main, 1981). It was suggested that during hospitalization the painful medical experiences combined with decreased availability of the mother might have brought the child to an intolerable level of activation of both attachment behavior and anger. The child may try to escape from this by shifting his attention away from the mother. Moreover, because children with cleft lip and palate undergo

continuous medical treatment from birth onwards and all of them were in fact hospitalized previously, it seems likely that they may already have learned to cope with stressful situations in this manner *before* this admission. Of course the possible contribution of medical history to the impact of hospitalization hampers generalization to other groups of children.

Returning to the views on avoidance of Main (1981) and Main and Solomon (1990) as quoted in the introductory section, the age differences give the impression that the avoidant response to hospitalization in younger children is more successful as a strategy of preventing behavioral disorganization than in older children. In fact the later hospitalized group seems overwhelmed by contradictory impulses in stressful circumstances, resulting in increasing disorganized patterns of behavior. Increased disorganization in older hospitalized children seems to contradict Bowlby's general ideas about the attachment system. He maintained that attachment to the mother as well as withdrawal from a fear-arousing situation becomes better organized during the latter half of the first year (Bowlby, 1973). In fact, a large part of attachment research is based on the assumption that by the age of 12 months the child's attachment to his mother is crystallized and stabilized, and that prediction of future development is possible. As was noted previously, Waters et al. (1990) criticize such a view about the early onset of organized attachment. They emphasize the continuing role of attachment figures in organizing and providing coherence and consistency to early secure base behavior. They suggest to draw a distinction between the onset of secure base behavior by the age of one year and consolidation

of secure base behavior in the second or third year (Waters et al., 1990). Our findings support their view. At 13 months the hospitalized CLP children did not succeed in maintaining behavioral organization under stressful conditions. As a matter of fact, they seemed less able in doing so than the younger children participating in this research.

It should be noted, however, that the alternative view on attachment development of Waters et al. cannot account for the comparatively better organized reactions of the younger group. So, the next issue we are facing is, why the older children were less successful in this respect. In this context, the position of avoidance in the developing repertoire of behaviors should probably be (re)considered. In our opinion, avoidance may be an important mechanism of emotion regulation from early infancy onwards. For instance, gaze or face aversion is a well-known means of arousal modulation in early face-to-face interaction (Brazelton, Koslowski & Main, 1974; Cohn & Tronick, 1987; Stern, 1974). During the second half of the first year, the growing preference for the primary caregiver(s) and fear of being separated from them, however, triggers behaviors contradictory to avoidance. These developments require renewed organization. For the younger children in our study who were hospitalized at 9.5 months of age, the avoidant response to hospitalization probably was less accompanied by contradictory attachment behaviors simply because on average these competing behaviors were less developed than in the later admitted group.

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