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**ABSTRACT**

The expansion process of the family after the arrival of a second child was the focus of this longitudinal study. Sixteen families, each with one child between one and three years old and a second child born at the beginning of the study, were observed in everyday situations when one or both parents were interacting with one or both children. Videotaped interactions from seven time periods (6-8 weeks; 4-5, 8-9, 12-13, 16-17, 20-21, and 23-24 months) were split into 20-to-40-second episodes. Every episode was scored for two variables: first, "family constellation," which measured (1) number of family members present, (2) interaction modality (single, dyadic, triadic, etc.), and (3) family configuration (family members involved in a specific interaction, e.g., mother-child with father present); and second, "family dynamics," in which dyadic relationships were scored by indication of who took initiative in an episode and who was the target of this initiative. Mothers showed high frequencies of initiatives toward the second child during the first eight months and a continuing preference for the second child for the whole two-year period. During the next eight months, mothers' preoccupation with the second child declined, while children's initiatives toward the parents and frequencies of nonsocial activities increased. Fathers' initiatives toward their children reached a low point at 16 months, followed by a period in which the variation in family constellation and dynamics leveled off. (BN)

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Changes in the Family Interaction Patterns after  
the Arrival of a Second Child

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Changes in the family interaction patterns after the arrival of a second child

Abstract

The expansion process of the family after the arrival of a second child was the focus of a longitudinal study. Sixteen families having one child aged between 1 and 3 years and a second child born at the beginning of the study were observed in everyday situations when one or both parents were dealing with one or both children. Videotyped interactions from seven time periods (6/8 weeks, 4/5 months, 8/9 months, 12/13 months, 16/17 months, 20/21 months, and 23/24 months) were split into episodes lasting between 20 and 40 seconds, yielding about 1100 episodes per family for the whole period. Every episode was scored for family constellation and family dynamics. Family constellation was registered by specification of family members and their participation in interaction; family dynamics were recorded by indication of initiative of family member and target of initiative in each episode.

Analyses of constellations and dynamics over the two year period revealed a consistent integration rhythm and an expansion process from a triadic to a tetradic family in which the mother showed high frequencies of initiatives toward the second child during the first eight months and a continuing preference over the first child for the whole period. Results are discussed in light of family-developmental processes.

### Introduction

For a family with one child, the arrival of a second child creates a whole set of problems. For example, the attention of the parents that has been concentrated on their only child has to be newly distributed. As the second child needs special care, particularly during the first months; the older child, of course, continues to expect and demand the attention and care he or she is used to receive from the parents. From a family perspective, it is not only the child who suffers from the arrival of the new member; the parents and their marital relationship as well are touched by this event. The arrival of the second child implies a change in the relationship between the parents insofar as the father becomes more involved in and responsible for caretaking and household activities than before. From a family developmental perspective, the arrival of the second child creates various family developmental tasks (Aldous, 1978; Duvall, 1977) such as a parental sharing of caretaking activities, changing relationships with first child and between spouses, and establishing new relationships with the newly arrived and rapidly developing second child. Moreover, within the family a new class of relationship has to be fostered and monitored by the group, the sibling relationship. For the adults, the managing of the various facets of extant relationships within the family, such as being parents and spouses at the same time, is another topic on the long list of family tasks.

The transition to parenthood has been emphasized by a number of authors as a period of increased stress and reduced marital satisfaction (Belsky & Isabella, 1985; LaRossa & LaRossa, 1981; Olson & McCubbin, 1983; Osofsky & Osofsky, 1984). Most of these studies have dealt with the problem of the

first child's arrival; only sparse information is available concerning the family's transition from a one-child to a two-child family (Kreppner, 1987). Transition to a formation with two generational groups, the parents and the siblings, brings with it additional tasks. From a life-span perspective on family development, the arrival of a second child spurs the expansion of the family from a dyadic to a polyadic formation. During the expansion process from a triadic to a tetradic system, the family as a social relational network has to alter its internal structure dramatically. For example, under a structural view of family expansion, the change from a triadic to a tetradic formation implies the duplication of extant dyadic relationships (from three to six), and a quadruplication of extant triadic constellations (from one to four). Thus, changes in dyadic relationships during the first months after the second child's arrival provide a kind of baseline for family interactions during a critical period in its development.

Infancy research in general has stressed the mother's eminent role for defining the child's proximal context; at the same time, it has neglected the importance of the family as a whole for the child's social experiences in early development. The focus for investigating the development-in-context process has been the interaction between mother and child. In addition, since Bell (1968) claimed mutuality in the mother-infant socialization process, the conceptualization of the child's role for the mother and the mother's influence upon the child has ever increased. However, the child's most relevant context during the early years is not the mother-child dyad, but the family as it exists at the time of the new member's arrival. Although the mother-child dyad still appears to be the most preferred target in empirical infancy research, other members of the

family, fathers and siblings, have found increasing attention in recent years. Although separate dyadic father-child (Clarke-Stewart, 1978; Lamb, 1976; Parke, 1979; Pedersen, 1980), sibling-sibling interaction (Abramovitch, Pepler, & Corter, 1982; Jacobs & Moss, 1976), or triadic mother-sibling-sibling interaction (Cicirelli, 1978; Dunn, 1983; Dunn & Munn, 1985) were investigated on an empirical basis, the multichild family as a whole with two parents and at least two children has largely been neglected. One possible reason for this could be that for most of the past decades a big gap existed between developmental psychologists' thinking about concepts for families and family researchers' considerations about developmental issues in their domain. It was not before the seventies that a general demand was articulated to merge infancy and family research (Hill, 1981; Hill & Mattissech, 1979; Hooper & Hooper, 1985; Minuchin, 1985).

The intention of this study is to describe changes in family relationships both as global constellations and as dyadic initiative-target combinations over a longer period of time. Whereas many studies have been conducted depicting single dyadic relationships among specific members of the family at different time periods during the development of the child, this study's intention aims at the delineation of changes in the whole family's relational network, focusing on family configurations and alterations of family dynamics during the two year period after the arrival of a second child. The depiction of changes in the whole family's network provides a basis for assessing general trends of adaptation and rearrangement processes during the expansion period. The course of changes in family configurations is one means of following critical periods of family development. In addition, the disentangling of the change patterns

inside the dyadic relationship network could produce guidelines for drawing a more comprehensive picture of the single family members' different roles and changing positions in this period. For the study of the expansion process with its various implications, the arrival and the two year period after the arrival of the second child can be taken as a kind of "natural experiment" in which a series of tasks have to be accomplished in all families giving the possibility of comparison among different families.

#### Method

Sampling of family interaction. Sixteen families having one child between one and four years old and a second child born at the beginning of the study were observed during a two year period. All families were observed in their homes monthly, when one or both parents were dealing with one or both children. Everyday interactions among the family members were videotaped; each observation lasted between one half and one hour. The two year period was partitioned into 7 segments (centering around 6/8 weeks, 4/5 months, 8/9 months, 12/13 months, 16/17 months, 20/21 months, and 23/24 months). Two half hour videotapes from two different observations within one segment were selected from every segment and every family in order to balance for situational effects. Thus, each family is represented by a one hour unstructured family observation tape per time segment. The videotaped interactions were split into interaction episodes, lasting between 20 and 40 seconds, yielding about 160 to 180 episodes for each family per time segment, about 2800 episodes per segment over families, or about 1140 episodes per family over segments. One episode was taken as a time sample of family interaction and scored according to a number of categories

describing various characteristics of family interaction (Kreppner, 1984). Two aspects were focused on in this study: changes of family constellation and alterations in family dynamics.

Family constellations. Family constellations were measured by three indicators: presence (number of family members present in one episode), interaction modality (single, dyadic, triadic etc.), and family configuration (family members involved in a specific interaction, e.g., mother interacts with second child, father present but not participating). To indicate the constellation, a three-digit number has been chosen, for example, 410, signalling the presence of four persons in an episode, no interaction among them. Although these indicators are rather general characteristics of family interaction, they carry fundamental information about the family's modalities of arranging the interaction network at different periods after the new member's arrival. For example, it is of interest which parent deals with which child at specific segments of the two year period. The general trends of the families' interactions and their changes over time are taken as indications for time-specific activities concerning the rearrangement of family interaction patterns in this period of family expansion. Interrater reliabilities (Cohen's Kappa) for the different categories of family constellation were between .90 and .98.

Family dynamics. Family dynamics in dyadic relationships were indicated by two categories: who in the family is taking the initiative in an episode, and who is the target of this initiative. With this procedure, the direction of family interaction is represented as well as the family constellations. For example, the mother's turning to the second child at different time periods is counted and can be contrasted to the second

child's own initiatives in choosing the mother as the target of activity. Thus, the various dyadic initiative-target combinations representing change patterns in the family's interaction during the two years can be compared with one another. A synopsis of the family's various dyadic interactions renders a more comprehensive picture of the single member's positions and responsibilities during this process in the relational network after the new member's arrival. A comprehensive picture of movements in the family's efforts to find a new balance can be analyzed in detail. Interrater reliabilities for these two categories were between .81 and .95.

Family constellations as well as family dynamics were tested against a continuous course over time (equal distribution); selected initiative-target combinations were tested against each other for matching differences in the family's dyadic interaction courses over time.

### Results

Family constellations. The frequencies of family constellations with two, three, or four members present are presented in Figure 1. From the multitude of these constellations, only nine had frequencies higher than 3 percent of all constellations' total number (see Tab. 1). These nine constellations cover 56.7 percent of all occurring constellations and represent a relevant sample of the families' most usual modes of arranging internal relationships. The nine constellations are 222, 312, 323, 325, 410, 422, 423, 424, and 428. The highest frequencies are found in those constellations which display a single member configuration without interaction among them (312: M, C1, C2 and 410: M, F, C1, C2). Another group of constellations contains the mother-child2 configuration (222: M-C2;

325: M-C2, C1; 422: M-C2, F, C1; and 428: M-C2, F-C1) with varying other family members. Finally, three more constellations display the mother's interaction with the first child (323: M-C1, C2) and the father's interaction with his two children (423: F-C1, M, C2; and 424: F-C2, M, C1). The father's constellations are insofar of specific interest as in both cases the mother is present with the other child but not interacting with him or her.

The nine single constellations' frequencies have been analyzed according to their respective changes over the two year period. Statistical analyses reveal that all constellations display fluctuations over the two years deviating significantly from an equal distribution (see Table 1). Interestingly, the constellations with three or four members present but not interacting show very similar trends. During the first months after the second child's arrival, very low frequencies are found in these constellations. Beginning with the fourth month, an increase in the 410, and with the eight month, in the 312 constellation is manifest. Moreover, although the 312 constellation remains one segment behind the 410 constellation, at the 12/13th or the 16/17th months the two constellations show their highest frequencies during the two year period, with a similar decreasing tendency thereafter. It seems as if the two constellations signal that the families' tendency to show no interaction at all varies during the two year period amazingly consistently as a pattern. From a family systems perspective, this trend points to kind of rearrangement of an already extant constellation under new conditions, that is, after the expansion from a triadic to a tetradic system (Fig. 2). Constellations encompassing mother-second child interactions present courses showing

similar patterns of change which obviously contrast the changes of the single members' constellations. For all mother-second child constellations, high frequencies dominate during the first eight months with a decreasing tendency. After eight months, and specifically during the second year, a more balanced continuation of these mother-second child interactions seem to prevail (Fig. 3). The three remaining constellations show a somewhat divergent picture of constellation change. The configurations with the father and the two children display a rather continuous pattern, although the comparison to equal distribution show significant differences. Whereas the father-child2 constellation with mother and first child present indicate a peak at the 4/5 months period and a rather constant course thereafter, the constellations with the father and his first child occur infrequently during the first two segments and increase in the 12/13 months period, remaining at a constant rate until the 20/21 months period, decreasing to the end of the second year. A similar trend is visible in the 323 constellations, depicting the mother with her first child and the second child present but not integrated. Here low frequencies during the first months alternated with a moderately higher frequency rate after the eighth/ninth month period (Fig. 4). Taken together, one can draw the conclusion that these trends affirm the impression that constellation changes mirror a general rhythm of adaptation to the new situation during this family expansion period.

Constellations, however, are only a rather crude indicator for family changes. More detailed information as to how single relationships among members are altered or established with the new member are obtained by analyzing trends of dyadic initiative-target combinations for all family members.

Family dynamics. Twelve combinations of directed dyadic interactions were tested against equal distribution of frequencies over time. As Table 2 shows, all dyadic initiative-target combinations follow a course which deviates significantly from an equal distribution. The different dyadic interrelationships within the family have been clustered according to the single members' initiatives toward the rest of the family. The mother's initiatives toward the other family members exhibits salient changes in the mother-child2 initiatives, apparently similar to the general trend found in the constellations' courses when mother-child2 configurations were included. The initiatives point to a high maternal involvement with the second child during the first four/five months with a decreasing tendency that reaches a constant level in the second year. Interestingly, the mother's attention for the second child remains at an overall higher level compared to her attention for the first child through the entire period (Fig. 5). In contrast, the father's initiatives toward his two children are apparently more balanced. The frequencies indicating initiatives toward both children increase between the 4/5th and the 8/9th months periods and develop a decreasing tendency thereafter. When the second child reaches the age of sixteen months, the fathers show a higher frequency in initiating activities with their second children than with their first ones. However, at the end of the second year, the initiatives are again balanced (Fig. 6). Keeping in mind the permanent higher frequencies of mothers' initiatives toward the second children, the conclusion can be drawn from these courses that for the first child the time at about 21 months is most likely a critical period when even the father tends to prefer the new child. From both mother's and father's initiative figures the course of the marital relationship during

the two year period can be reconstructed. A constant rate of decreasing mutual attention during the first year is obvious in this comparison of the two initiative-target combinations. For the first child, the father is a preferred target over the mother at the 8/9 months period; however during the second year, the mother becomes the most attractive target in the family (Fig. 7). The second child's initiatives toward the family's other members show an overall increasing tendency, with a permanent preference for the mother over the father; the second child's interests for the older sibling are prominent mainly from the 8/9th months through the 16/17th months period (Fig. 8).

Some of these dyadic combinations were compared pairwise with the Kolmogorov-Smirnov two sample test showing, with only one exception, significant deviations in all combinations (see Tab. 2). Only the marital relationship as expressed by mother-father and father-mother initiative-target combination showed no significant variation over time. The paternal interaction with the two children and the interaction of the two children with the two parents were significantly different in their course over time at the .05 level; the other combinations were highly significant at the .01 level.

### Discussion

The family's relational network neither remains constant nor is changed instantly after the new child's arrival. Instead, rearrangement of extant relationships and establishment of a new relationships with the second child create systematic fluctuations in both family constellations and family dynamics. Furthermore, the mother's eminent role in the integration of the

new member during the first eight months is stressed in the data, and the father's importance for "buffering" the mother from being distracted from this child, especially during the first eight months, can be interpreted from the different courses of dyadic family relationships. The delineation of general trends of interaction changes during the expansion period has pinpointed the complexity of the integration of a new child over a longer period of time on the one hand, and the necessity of including all members of the family in the analysis on the other.

Within the two year period of expansion, two segments appear of specific interest: the 8/9 months and the 16/17 months periods. During the first eight months, the mother-child<sup>2</sup> constellations as well as initiative-target combinations display extreme frequencies. At the same time, the mother's interactions with her first child remain rather low. After this period, at the 12/13th month and at 16/17th month, the two constellations 410 and 312 display distinctive peaks. This means that during this period, the single members in the family prefer to a considerable degree nonsocial activities. When the initiative-target combinations are regarded, the father's initiatives towards his two children appear to reach a low at 16 months, whereas the two children's activities toward the two parents reach a high at this point. After this time, the single constellations 410 and 312 level off to a new continuous frequency, and the initiative-target combinations seem to show no relevant movements, either upward or downward. Thus, a three phase integration process can be hypothesized, in accordance with considerations that were put forth after a first analysis (Kreppner, Paulsen, & Schuetze, 1982). A kind of "normalization" concerning the reduction of the mother's preoccupation with

her second child can be noted after the first eight months; an increased interest in both sibling and father can be seen in the second child's developing initiatives during the next eight months; finally, during the period between 16/17 months and the end of the second year, a general equalization or "calming down" of fluctuations can be interpreted from the synopsis of all dyadic combinations.

From a life-span family developmental perspective, the trajectories of constellations as well as of family dyads not only indicate a critical period in the family's life as to the integration of a new child, but also represent an important phase during family development. The expansion of the family demands a rearrangement of extant relationships and a continuous adaptation of newly established interaction patterns to the growing and changing needs of the second child. This stage in the family's life cycle can be interpreted as contributing to alterations of interaction patterns among all members in the family, including the marital relationship between the adult parents.

Moreover, the general trends of change found in family constellations and dyadic interaction patterns over the two year period can be taken as baselines for describing structural alterations in family development as they may occur at various periods in the individual's life time. The trends found may shed new light upon the occurrence of "normal" crises in expanding families. Thus, the critical period of rearranging relationships can also be regarded as a time period with possibly far reaching consequences for the single members' position in the family's relational network. If, for example, transient formats of strongly preferring or neglecting interaction among specific family members, quite normally emerging during this critical

period, become permanent and recurring patterns for a longer period of time, the danger exists that the family as a whole is creating interaction formats that can be described as pathological forms of family interaction.

As a final consideration, this period of family expansion may be compared to other critical periods in the life of a family, for example to the contraction period, when adolescent children leave home and all members again have to rearrange their extant relationships.

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FIGURE 1 : Distribution of Family Constellations

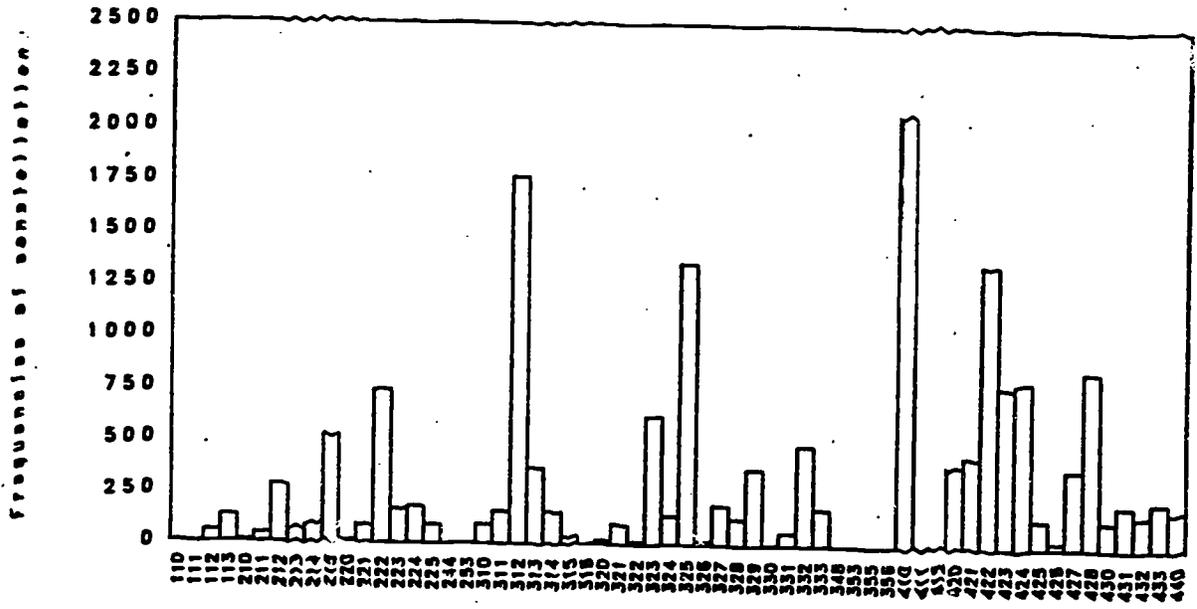
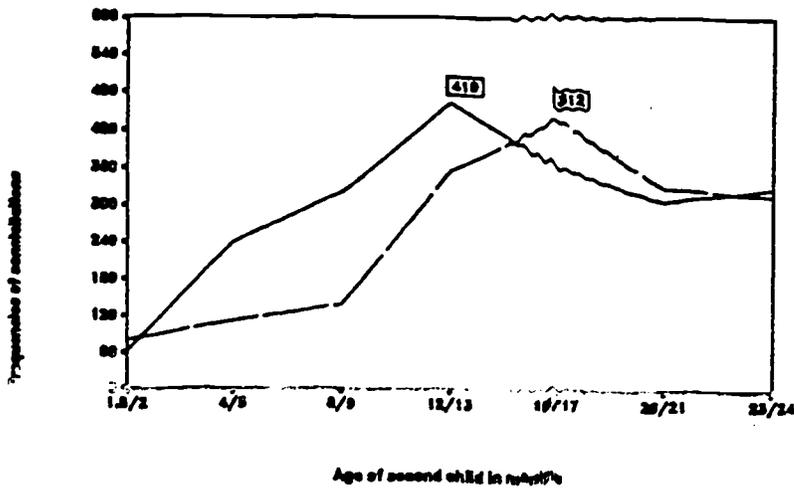


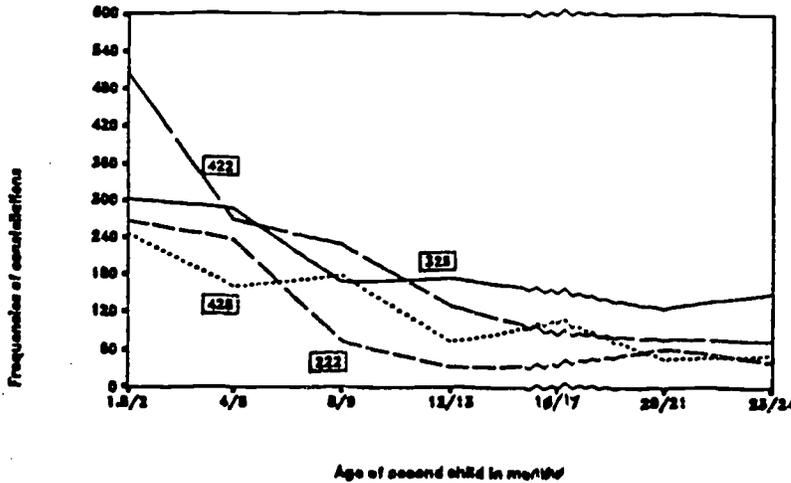
FIGURE 2 : Family Constellations 410 and 312



312 : M, C1, C2  
 410 : F, M, C1, C2

Figure : Family constellations 410, 312

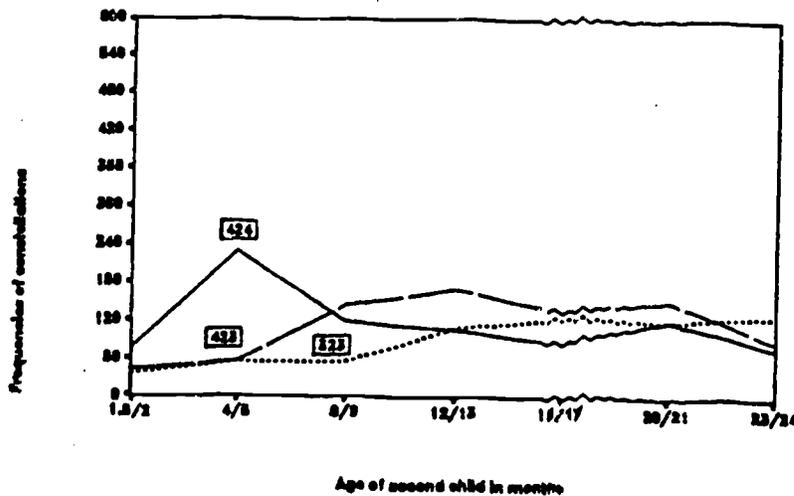
FIGURE 3 : Family Constellations 222, 325, 422, and 428



222 : M - C2  
 325 : M - C2, C1  
 422 : M - C2, F, C1  
 428 : M - C2, F - C1

Figure : Family constellations 222, 422, 428 and 325

FIGURE 4 : Family Constellations 423, 424, and 323



323 : M - C1, C2  
 423 : F - C1, M, C2  
 424 : F - C2, M, C1

Figure : Family constellations 424, 423 and 323

FIGURE 5 : Mothers' Initiatives to other members

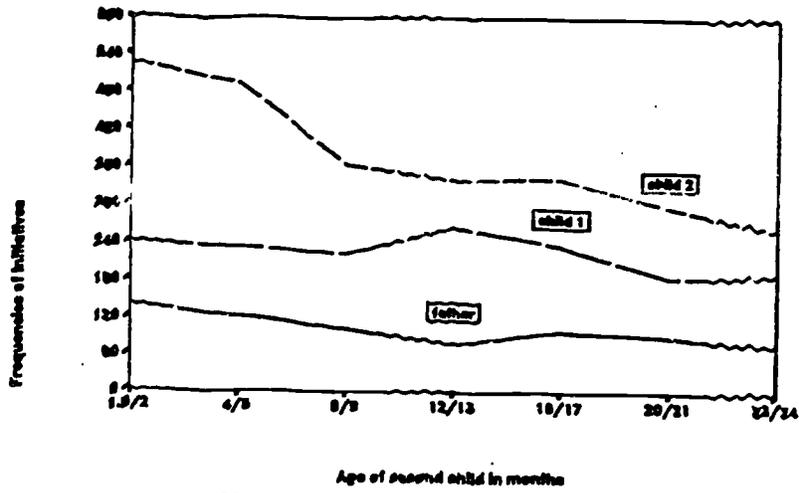


Figure : Mother to father, child 1 and child 2

FIGURE 6 : Fathers' Initiatives to other members

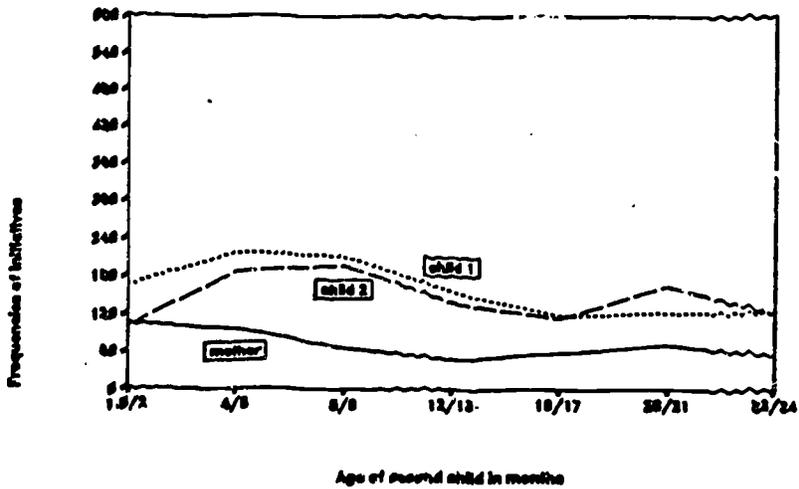


Figure : Father to mother, child 1 and child 2

FIGURE 7 : First Children's Initiatives to other members

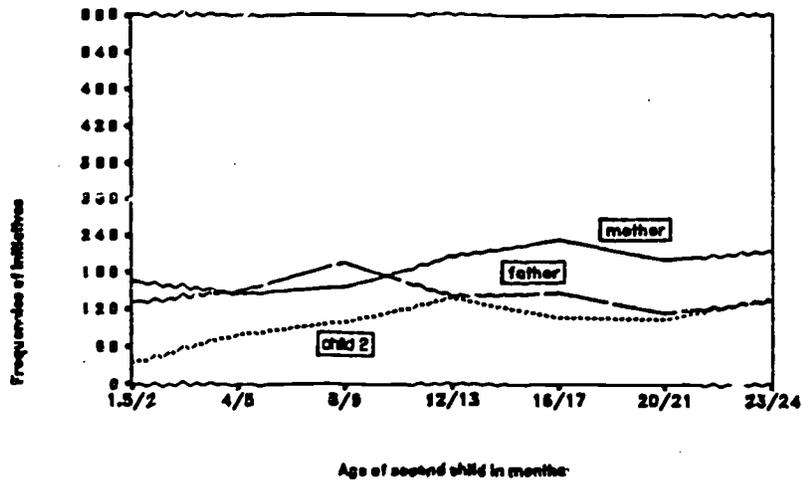


Figure : child 1 to mother, father and child 2

FIGURE 8 : Second Children's Initiatives to other members

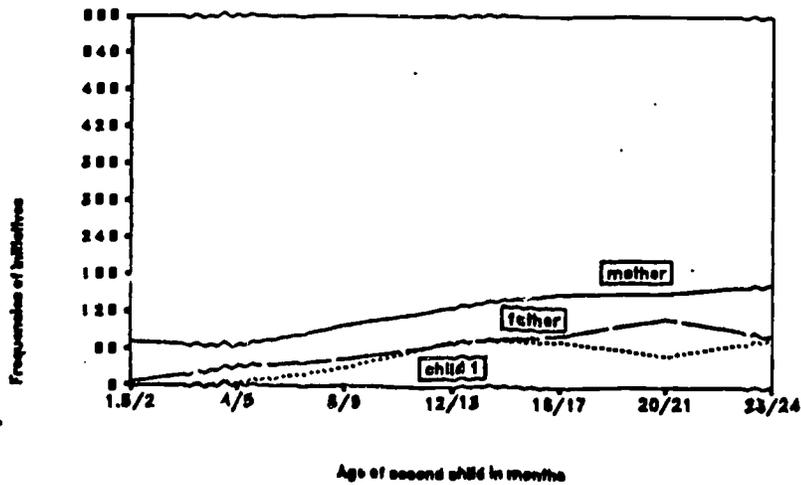


Figure : child 2 to mother, father and child 1

Table 1:

Percentages and Kolmogorov-Smirnov z's (equal distribution over time) of the nine most frequently occurring family constellations

Constellation	Configuration	f	Percent of total number (N = 18,313)	Kolmogorov-Smirnov z	p
222	M-C2	745	4.1	13,843	<.001
312	M,C1,C2	1769	9.7	13,360	<.001
323	M-C1,C2	662	3.4	6,976	<.001
325	M-C2,C1	1353	7.4	9,882	<.001
410	M,F,C1,C2	2081	11.4	9,218	<.001
422	M-C2,F,C1	1362	7.4	14,822	<.001
423	F-C1,M,C2	778	4.2	5,784	<.001
424	F-C2,M,C1	803	4.4	5,970	<.001
428	M-C2,F-C1	855	4.7	10,157	<.001

M = Mother      C1 = First Child  
 F = Father      C2 = Second Child

Table 2:

Kolmogorov-Smirnov one and two sample test for initiative-target combinations

One sample test (equal distribution)				Two sample test			
Initiative-Target	f	K-S z	p	Initiative-Target Comparison	f	K-S z	p
M-C1	2626	11.422	<.001	M-C1/C2	4199	2.787	<.001
M-C2	1573	6.076	<.001	F-C1/C2	3126	1.472	<.05
F-C1	1022	4.452	<.001	C1-M/F	3322	2.807	<.001
F-C2	1114	5.641	<.001	C2-M/F	3244	1.581	<.05
C1-M	1317	5.897	<.001	C1/C2-M	3128	1.662	<.05
C1-F	1005	4.353	<.001	C1/C2-F	3428	4.898	<.001
C2-M	821	6.643	<.001	C1/C2/C2-C1	1000	2.866	<.001
C2-F	423	6.467	<.001	M-F/F-M	1204	0.531	NS
C1-C2	692	5.208	<.001				
C2-C1	308	5.140	<.001				
M-F	706	5.470	<.001				
F-M	498	5.288	<.001				

M = Mother      C1 = First Child  
 F = Father      C2 = Second Child