

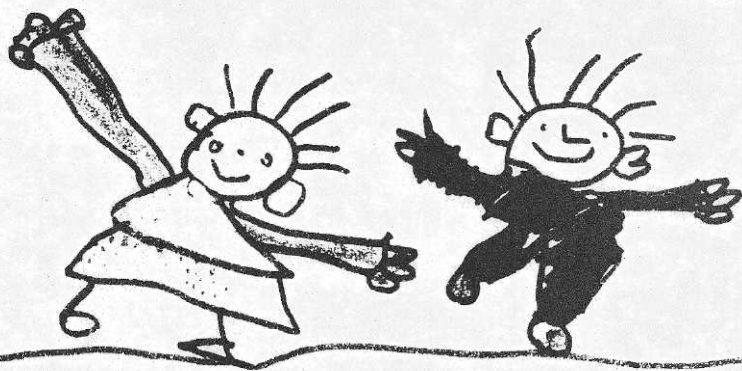


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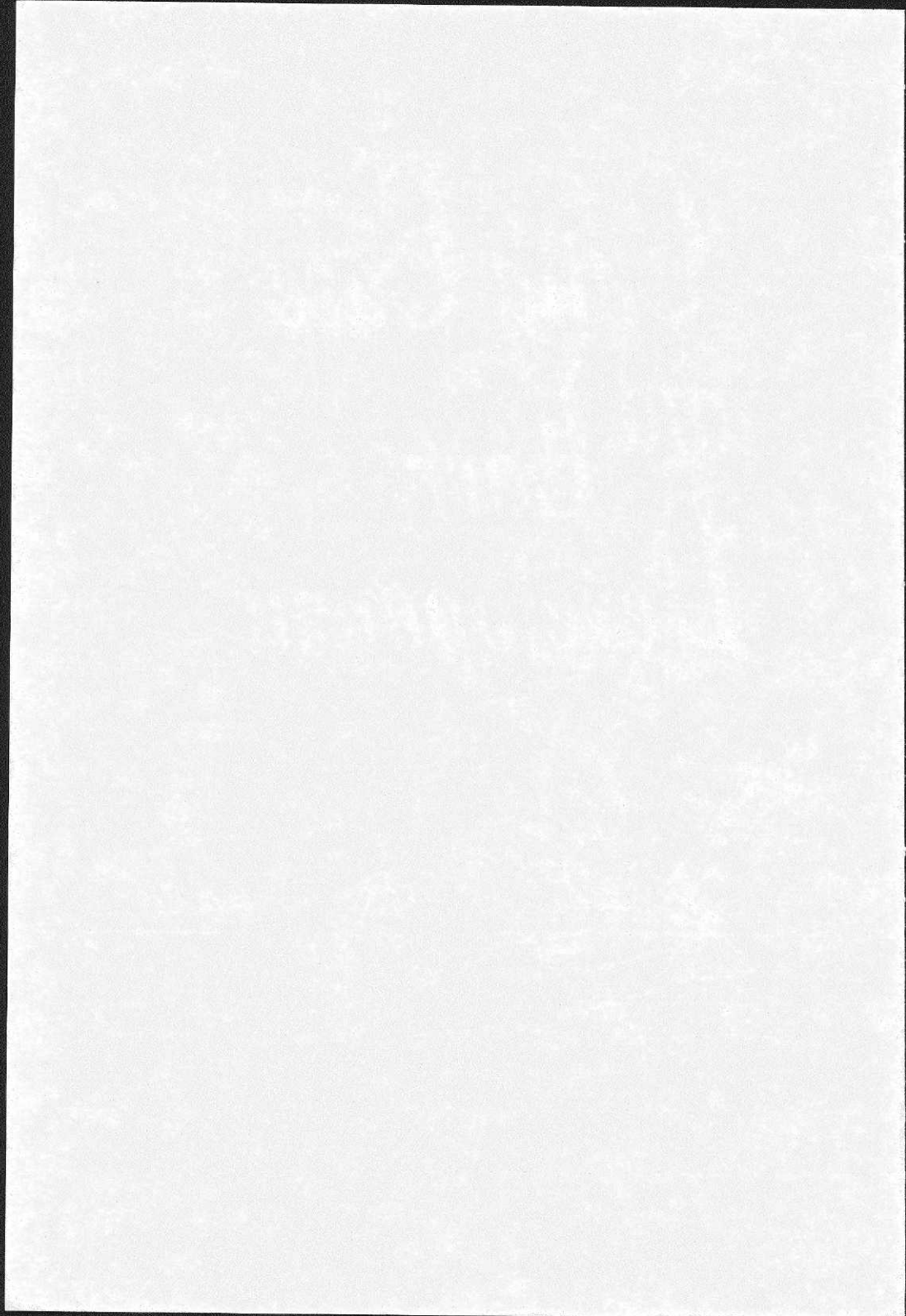
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Child Care and Early Development



By Anders Broberg



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**CHILD CARE AND EARLY
DEVELOPMENT;
A Longitudinal Study of Child Care,
and its Effects On Child Development**

by
Anders Broberg



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"I don't very much believe in blood,"
said Samuel. "I think when a man finds
good or bad in his children he is seeing
only what he planted in them after
they cleared the womb."
"You can't make a race horse of a pig."
"No, said Samuel, but you can make a
very fast pig."

Steinbeck "East of Eden"

CHILD CARE AND EARLY DEVELOPMENT; A Longitudinal Study of Child Care and its Effects On Child Development

by

Anders Broberg
Department of Psychology

ABSTRACT

In this thesis, child care is described and discussed, and its possible effects on child development are studied. Using a three-year longitudinal design, the effects of out-of-home care on toddler's and preschooler's social, personality, and intellectual development, were assessed in the context of family circumstances, quality of alternative care, and child characteristics.

One hundred and forty-five children, their parents and their careproviders participated in the study. The children, living in different areas of Göteborg, were between 12 and 24 months old initially, and came from diverse socioeconomic backgrounds. Parents were interviewed about demographic variables, social support, and child temperament. The quality of home care and children's sociability with strange adults were assessed, and children were observed interacting with peers. After the preassessment, eighty-six children began out-of-home care (53 in day care centers and 33 in family day care homes) whereas fifty-nine remained in the sole care of their parents. Shortly after enrollment, and again one and two years later, quality of out-of-home care was assessed, and children were observed playing with agemates in the alternative care settings. In follow-up assessments one and two years after the initial interviews and observations, home quality, peer social skills, sociability with strange adults, child personality (as rated by mothers and careproviders) and children's verbal abilities were assessed.

Findings showed that type of care (home care, family day care, or center day care) was not in itself predictive of social, personality or linguistic development one and two years later. Instead measures of the quality of home care, especially the "emotional climate" of the family, were most predictive of later performance. Socio-demographic factors were of surprisingly little importance. Quality of alternative care, was also predictive of child performance. Important structural measures of the quality of out-of-home care included (1) group size, (2) child/teacher ratio, (3) age mixture, and (4) age range. Other factors (paternal involvement, social support, and child characteristics) proved influential in one or more of the analyses reported here, but it was clear that the quality of care variables were the most important.

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To Ann

This thesis is based on the following original papers, which will be referred to in the text by their Roman numerals.

- I ***The Swedish Child Care System***
Anders Broberg,
Göteborg Psychological Reports, 1988, Vol. 18, No. 6.
- II ***Determinants of Social Competence in Swedish Preschoolers***
Michael E. Lamb, Philip Hwang, Fred L. Bookstein,
Anders Broberg, Gunilla Hult, and Majt Frodi,
Developmental Psychology, 1988, Vol. 24, pp 58-70
- III ***Factors Related to Verbal Abilities in Swedish Preschoolers***
Anders Broberg, Michael E. Lamb, Philip Hwang, and
Fred L. Bookstein,
Submitted to the Journal of Child Psychology and Psychiatry, 1988
- IV ***Child Care Effects on Socioemotional and Intellectual
Competence in Swedish Preschoolers***
Anders Broberg, Philip Hwang, Michael E. Lamb, and
Robert D. Ketterlinus,
Chapter to appear in J.S. Lande & S. Scarr & N. Gunzenhauser (Eds.),
Caring for children: challenge to America. Hillsdale, N.J.: Erlbaum,
in press.
- V ***Inhibition: Its Stability and Correlates in 16- to 40-month Old
Children***
Anders Broberg, Michael E. Lamb, and Philip Hwang,
Submitted to CHILD DEVELOPMENT, 1989

INTRODUCTION

One of the most dramatic life style changes to have occurred recently is the increased rate of employment among women. During the last twenty years this increase, which was first evident among unmarried women, has spread also to married women, who now tend to reenter the workforce relatively soon after they have given birth. In the United States, the employment rate among mothers of infants under twelve months of age, rose from 31 percent in 1975 to 50 percent in 1985 (Hofferth & Phillips, 1987), a rate virtually identical to that of all mothers with preschool aged children. Seventy-five percent of employed mothers with infants were employed on a full-time basis, in 1985 (Hofferth & Phillips, 1987). Other industrialized countries also report increasing maternal employment rates (France: Leprince, in press; West Germany: Niedersachsiches Landesverwaltungsamt für statistik, 1986, Statistisches Bundesamt, 1987; Sweden: Svenska Kommunförbundet, 1987). The sharp increase in maternal employment rates poses a major challenge to societies and highlights public responsibility for child care, which can no longer be considered the sole responsibility of mothers.

Contemporary societies differ tremendously with respect to how this challenge has been met. In the United States, at one extreme, new mothers are not entitled even to unpaid leave, and publicly supported day care is virtually non-existent. Sweden, at the other extreme, offers its citizens a year-long paid parental leave, and society has assumed a major responsibility for ensuring that out-of-home care is available for families with children over one year of age. In Anglo-Saxon countries, a strong belief persists that the family should be self-reliant and economically self-contained. The childrearing function of the family has thus been rigorously protected from government "intrusion". Public involvement in child care requires special justification, such as parental inadequacy or deviance (Moss, in press; Phillips, in press). This view of child care as a strictly private endeavour has remained essentially unchanged in the US and in the UK since the early 1950s when American and British mothers "returned home", after having been in the laborforce during the Second World War. In Sweden, by contrast, a broad political consensus holds that society should play a major role in issues related to children and child care, and that public day care should facilitate the lives of employed parents with young children (Socialstyrelsen, 1987).

Beginning in the late 1970s, research on day care has shifted from a narrow focus on children to the study of the child in the context of family and the surrounding society. One of the theorists who inspired this change was Bronfenbrenner who, in introducing his ecological theory of human development (Bronfenbrenner, 1979), stressed the need for empirical investigations not

only of the child itself but also of the "worlds" of which the child is a part (the micro-, meso-, exo- and macrosystems). Bronfenbrenner's theory, and the empirical research inspired by it, show how important societal factors are for the effects of out-of-home care on children's development. Thus day care research cannot be "culture-free", instead it is important that these issues are studied in a variation of societies. This thesis first chapter begins with an outline of Bronfenbrenner's theory, as a ground for the review of the literature presented in a later chapter. Bronfenbrenner's theoretical propositions will also be returned to when discussing our own study, and our results in relation to findings in other cultures, mainly the U.S.

During the 1950s and 60s the prototypical family in all western countries comprised a breadwinning husband and a wife who stayed at home and assumed principal responsibility for child care and child rearing. There was a strong "popular" belief that this was the only "natural" way to bring up children, a belief that was vigorously supported by leading theorists. In line with classical psychoanalytic theory, Bowlby in his early writings stressed the importance of the mother-infant relationship, and the prospect of deviant personality development that might result from a disruption of this relationship (Bowlby, 1944; 1951; 1953; 1958). In his later introduction of attachment theory, Bowlby elaborated this notion further, proposing that the mother-infant relationship served as a prototype for the child's later relationships to people, and he again stressed the risk that even short daily separations might have adverse effects on the mother-child relationship, and thus possibly on the child's development (Bowlby, 1969, 1973, 1981). In the theoretical chapter we give an outline of Bowlby's theory, and its importance for research on the possible effects of out-of-home care

Theoretical assumptions regarding stability and change in child development are essential in research on the possible consequences of out-of-home care. Psychodynamic theory has from the very beginning been a theory emphasizing early traumatic events and their adverse consequences for later development. Other developmental theories have stressed stability rather than change in child development and have emphasized the important role that the child itself, with his/her unique biological setup, plays in creating its own milieu. In the last section of the theoretical chapter some of these issues are explored.

Bowlby's attachment theory, in particular, has inspired an enormous amount of empirical research on the effects of out-of-home care on child development. The types of out-of-home care reviewed range from very unstable care by sitters, to university-based research-oriented day care centers. Bronfenbrenner's theory of human ecology has led to a shift of focus, and especially during the 1980s many researchers have broadened their scope and have started to deal with questions regarding both the quality and type of care. The

relations between the family and the out-of-home care settings have also been explored in some studies. In the second chapter we use the theoretical framework offered by Bronfenbrenner, to organize a review of day care research.

In the final chapter our own research is presented. The present longitudinal study was designed in order to explore the effects of characteristics of the child, the family, and the type and quality of out-of-home care on child development. More specifically, the aim of the research presented here was to study children's socio-emotional and cognitive development as well as the development of children's ability to play with peers in relation to individual factors (such as child temperament), family factors (such as SES, quality of home care and degree of social support), and child care factors (such as type and quality of out-of-home care). Our aim was to study these factors together rather than one by one, and thus be able to look at the relative and combined influences of the various independent variables.

THEORY

Up to the beginning of the 1930s children's social environment was analyzed on two different levels, one describing the social location of the child (e.g., ordinal position and experience of out-of-home care), and the other describing the location of the family within the larger society (e.g., parents' occupations and ethnic backgrounds). Environmental factors were thought to influence children's development, but these factors were dealt with one by one rather than in relation to each other, the processes through which environmental influences occurred was not yet an explicit focus of investigation. The scientific revolution began with the emergence of research on parent/child relationships and their effects on children's behavior and development. Levy, the initiator of this work, gathered systematic clinical data on cases representing contrasting patterns of parent/child relationships along the continuum from "rejection" to "over-protection" (Levy, 1930, 1932, 1933). The results revealed consistent relationships between modes of parental care and the corresponding behavior and personality characteristics of children. The second major wave of investigations can be viewed as a grafting of this new paradigm onto the old "social address"-paradigm. In a series of surveys conducted in 1932 for the White House Conference on Child Health and Protection (Anderson, 1936, cited in Bronfenbrenner & Crouter, 1983), data were reported on social class differences in parent practises. Parents' childrearing practises were thus seen as the links between higher-order environmental factors (e.g., social class) and child outcome.

The 1930s were also the decade in which father presence and mother absence entered the scene as environmental influences on children's development. The first studies of the impact of the father on the family as a child rearing sys-

tem were prompted by massive unemployment during the Great Depression, and research on the impact of maternal employment also appeared in the aftermath of the depression, when women began to enter the labor force to supplement family income. In relation to fathers unemployment that was seen as potentially detrimental, whereas in the case of mothers employment was presumed to have undesirable effects. Later with growing divorce rates and the entry of mothers into the labor force, single parenthood and day care became primary research concerns within an environmental framework.

The next development of the environmental approach to child development dates back to the early 1960s when the interaction between child characteristics and characteristics of the environment became the focus of many studies. Bronfenbrenner (1961), who studied the relations between parental and child behavior separately by males and females reported that parental treatment had different effects depending on the combination of roles involved. Kagan and Moss (1962) found that parental treatment in early childhood predicted adolescent behavior much better for boys than for girls. Other studies (e.g., Drillien, 1964; Werner, Simonian, Bierman, & French, 1967) had found that prenatal and perinatal traumas correlated with later IQ for children from lower-class families but not for those from middle-class homes.

It was by this time becoming more and more obvious that research designs based on the premise that specific environmental factors had specific effects were not defensible, and thus there was a clear need for theories linking intra-individual, inter-individual, and societal processes. According to General Systems Theory (Bertalanffy, 1968), living systems can be identified at any level of complexity, from cells to supranational organizations, provided they fulfill the requirements of a "system" (a "whole" in homeostatic balance, consisting of inter-related parts, with a permeable boundary between the system and other systems with which it shares information). Depending on the problems or questions at hand, researchers can choose to focus on any one of these levels of system organization. In his ecological theory of human development, Bronfenbrenner (1979) presented a model for linking processes on different system-levels (from the family to the surrounding society) and their effects on child development.

Bronfenbrenner's theory of human development

In Bronfenbrenner's theory, the individual is surrounded by systems on different levels of complexity, one embedded within the other. On the lowest level of complexity Bronfenbrenner describes the micro-systems of which the child is a part (e.g., the family, the day care center). On the next level he describes interrelations between different microsystems (the mesosystem), and then systems on a societal level (exo- and macro-systems).

Macrosystems comprise the highest system-level of Bronfenbrenner's model. A macrosystem both potentiates and constrains lower-level systems. Legislation regarding parental leave, and the expansion and quality of public day care, are all important aspects of the macrosystem pertinent to day care. Included in the macrosystem are also values and sexroles, and the goals, implicit and explicit, that guides public day care.

Exosystems comprise the next system-level in Bronfenbrenner's model. To describe systems on this level, Bronfenbrenner cites research pointing to the importance of maternal work status, especially the number of hours per week that mother work, in understanding the development of boys and girls whose mothers work outside the home (Bronfenbrenner & Crouter, 1983, pp. 387-388). Exosystem aspects related to day care research include decisions made by local authorities regarding day care facilities; the design and location of day care centers, the number of children's groups per center, the age-range within groups etc. Some of these aspects of the exosystem of day care affects children directly, whereas others exerts their influence more indirectly. For example, wages can affect staff turnover which in turn affects the microsystem of the day care center, and thereby children's experiences.

Another important aspect of family life and child development is the availability of social contacts and the degree of social support that parents perceive to be available. Social networks, both informal (relatives, friends and neighbours) and formal (day care centers, well-baby clinics, social services agencies, etc.) are of outmost importance for adults in their parental roles, and Bronfenbrenner has included them both on the exosystem level of his theory. Others (Cochran & Brassard, 1979), suggest that the informal (or personal) social networks are better described as the linkages or mediators between the micro- and the exo levels of Bronfenbrenner's model. Cochran and Brassard (1979), also stress the importance of the child's own emerging personal networks. Members of the personal social network give emotional and instrumental support to the parents, and they can also influence the parents' child rearing attitudes and behaviors by encouraging and/or criticizing parents' ways of interacting with their children. Cross-national comparisons (Cochran, Gunnarsson, Gräbe & Lewis, 1984) also point to differences between cultures with respect to the reliance on personal rather than formal or public systems of social support.

The exosystem, then, operates within a framework provided by a certain macrosystem, and the exosystem in turn provides a framework for aspects of the meso- and micro-systems.

Mesosystems are the first of two systems in Bronfenbrenner's theory of which the child is a part. Within the mesosystem the researcher, according to Bronfenbrenner, "*treats behavior or development as a function of processes occurring in two*

or more settings, or of the relations between these settings" (Bronfenbrenner & Crouter, 1983, p.382). As forerunners of research within an explicit mesosystem model, Bronfenbrenner cites the classical experiments of Hartshorne and May (1928), who studied the relative impact of parents' versus peer's values on children's attitudes about right and wrong as well as the work of Coleman (1961), on the relative impact of parents versus peers on high school achievement.

Implementing the mesosystem model involves analyzing the behavior and development of the child cross-sectionally, as a joint function of influences deriving from the child's participation in two or more settings simultaneously. It also means studying not only the direct effects of each microsystem, but also the second-order effects or, in Bronfenbrenner's terminology, the effects of setting transitions, that is how one microsystem affects the ways in which the other microsystem affects child development. Within day care research this means studying how enrollment in day care affects parent-child activities when the child is at home. Bronfenbrenner also stresses the importance, especially in intervention research, of strengthening the interpersonal linkages between settings. In day care research this could mean studying the possible roles played by parents in the day care setting.

Bronfenbrenner finally, defined a **microsystem** as "*a pattern of activities, roles, and interpersonal relations experienced over time by the developing person in a given setting with particular physical and material characteristics*" (Bronfenbrenner, 1979, p. 22). In his definition of the microsystem, Bronfenbrenner was influenced by the works of earlier environmentalist psychologists. It was the gestalt psychologist Kurt Lewin (1936) who had first emphasized the power of the immediate environment in steering a child's behavior, and the importance of the activities taking place within that environment as a context for evoking behavior. René Spitz (1945) had called attention to the important distinction between an environment's physical characteristics and the interpersonal transactions taking place. Caldwell and her associates (Bradley & Caldwell, 1976a, 1976b; Elardo, Bradley & Caldwell, 1975,1977) had shown how a mother can influence the child in her absence through her prior structuring of the environment so as to evoke certain kinds of activities and discourage others. Finally researchers had also shifted from dyadic to triadic conceptualizations of parent/child relationships. Studies on Norwegian sailor families documented the direct and indirect (mediated) effects of paternal absence (Grønseth & Tiller, 1957; Tiller, 1958, 1961).

Other aspects of Bronfenbrenner's model. Interpersonal relations occur within settings. A setting is a place where people can readily engage in face-to-face interaction, such as a home or a day care center. Activities, roles, interpersonal relations, time, and material characteristics constitute the elements, or building blocks of the system. The patterns of interaction, as they persist and

evolve through time, constitute the vehicles of behavioral change and individual development. Within a microsystem Bronfenbrenner stresses the important distinction between behavioral change and development. *"The former could simply represent a temporary adaptation to an immediate situation, and hence involve no lasting effect. By contrast, the latter implies a process of growth in which patterns of behavior are internalized and maintain some degree of consistency and independence across environmental settings (Bronfenbrenner & Crouter, 1983, p.382).* To Bronfenbrenner, then, behavior is best studied in a setting in which it was not "created". If a specific parent-child relationship is believed to have effects on child development, evidence for this should be studied in a setting that does not involve the parent, such as the day care center. *"If patterns of action or attitude evoked in one setting carry over to another time and place, this constitutes evidence for the occurrence of developmental change. We refer to this criterion as developmental validity(Bronfenbrenner & Crouter, 1983, p.382).* Bronfenbrenner stresses the importance of tracing changes in behavior as children move from one type of setting to another, when they undergo what Bronfenbrenner calls an ecological transition. *"An ecological transition takes place whenever, during the life course, a person undergoes a change in role either within the same or in a different setting..... From the view of scientific method, every ecological transition has the virtue that it constitutes a readymade experiment of nature with a built-in, before/after design in which each subject can serve as his own control (Bronfenbrenner & Crouter, 1983, p.381).*

In sum, Bronfenbrenner's ecological theory of human development is a theory of social systems of increasing complexity, the lowest being that of the microsystem, in which the child interacts with parents, teachers and/or peers in different activities, roles and interpersonal relations. As a consequence of his/her interactions with the worlds around him/her, the child starts to create his/her own views about these worlds and of how to handle them.

The individual as a system

The microsystem of the family is in many ways the prototypical social system, and its system-characteristics have been described by numerous students of the family (see e.g., Gray, Duhl, & Rizzo, 1969). Family subsystems have also been described (e.g., the parental subsystem, the sibling subsystem) (Minuchin, 1974). The younger the child, the more his/her interactions are restricted to very few persons. Furthermore, the infant's interactions with his/her environment are only gradually influenced by this environment. Instead the infant's own biological makeup and his/her experiences during the nine prenatal months determines his/her earliest interactions with the environment. A fuller understanding of the developing person thus requires theoretical tools aimed at understanding how these subsystems of the micro-system develop during the child's first years of life. Attachment theory is an attempt to describe and understand the infant's in-

teractions with his/her caretakers (primarily the role of the mother-infant subsystem).

Attachment theory: Bowlby viewed behaviors within a framework in which contributions from psychoanalysis and ethology were combined. Child and mother behaviors were interpreted with respect to their adaptiveness in, what Bowlby (1969) called, man's "environment of evolutionary adaptiveness". Bowlby's major conclusion was that, over many generations the human infant had developed behaviors that maximized the chances of survival by optimizing the relation between two contradictory behavioral systems, approaching the unknown out of curiosity and staying close to a protective adult because of a fear of strange situations and objects. Many infant behaviors that had previously seemed inexplicable, puzzling, or even irrational made sense within this new framework, namely the infant's distress upon separation from the mother, the tendency to follow mother about, to use her as a base for exploratory excursions, to keep visual tabs on her while exploring, to retreat to her in the presence of an unfamiliar adult, and to grieve in response to long absences or loss. The attachment behaviors of human infant's could now also be interpreted as homologous with similar behaviors shown by nonhuman primate species (Bowlby, 1969).

Human newborns emit a variety of signals that elicit caregiving and other social responses from adults and provide feedback regarding the success of caregiving interventions. In the course of the first few weeks and months, these infant social behaviors become more complex and coordinated. At the same time, infants begin to direct them preferentially towards specific caregiving figures. However, it is only during the second half of the first year of life that an infant's proximity-and interactionseeking behaviors become integrated into a coherent behavioral-motivational system, organized around a particular figure or figures who perform the role of secure base and haven. It is the preferential activation of this proximity- and security-regulating system with respect to a small hierarchy of caregiving figures and its resistance to "refocusing" to which the term *attachment*, as formulated by Bowlby (1969/1982) and Ainsworth (1973), is properly applied. The specific role of the attachment relationship is thus to protect the infant from physical and psychological danger and provide it with a secure base from which it can "explore the world". The function of playmates on the other hand, is to provide social exploration and interaction. The person that the child is attached to may or may not be the person the child most often chooses for a playmate.

The *attachment system* refers to a regulatory system hypothesized to exist within a person. Seen from an outside observer's viewpoint the system's set-goal is to regulate behaviors that maintain proximity to and contact with a discriminated protective person, referred to as the *attachment figure*. Several important features of the hypothesized system should be noted. First, although an attach-

ment relationship involves two individuals, Bowlby emphasized the organization of a system within the attached person. This system is preferentially organized around specific partners. In some species such a focused system exists in only one of the partners (the parent or the offspring). In humans and in nonhuman primates the attachment relationship is best conceptualized in terms of the joint functioning of both filial and parental attachment systems. When no clues to danger are perceived and the attachment figure is accessible, the child feels secure and may explore at some distance from the attachment figure, but when the child perceives the environment as mildly alarming the attachment system's proximity set goal will change, activating proximityseeking behavior. When the exploratory system evaluates the stimulus as highly attractive while the fear system evaluates the same stimulus as somewhat threatening, the child may oscillate between the stimulus and the attachment figure. In situations where the child is uncertain about how to appraise a stimulus, the attachment system may activate informationseeking behavior, that is social referencing (Campos & Stenberg, 1981; Emde, 1983). Finally, if the situation is viewed as highly alarming by the infant, mere proximity is not enough. The attachment system now activates contact seeking in addition to proximity, and the attachment figure can either calm and comfort the child or if in real danger leave the situation together with the child.

In infancy, it is important that an attachment figure can be physically close and emotionally available. By later ages the mere knowledge that an attachment figure is potentially accessible and responsive provides a strong and pervasive feeling of security. Persistently nonoptimal supportiveness on the part of the caregiver, however, as well as experiences caused by illness or other adverse circumstances, such as separations, tend to affect the set goal of the attachment system more chronically. The resulting clingy behavior is regarded not as a sign of strong attachment but as an indicator that the child is anxious about receiving insufficient security and support.

Bowlby (1969) suggested that, in the course of interacting with the physical and personal world, an individual constructs *internal working models* of important aspects of the world. With the aid of these working models, the individual perceives and interprets events, forecasts the future, and constructs plans. Internal working models need not be fully accurate nor very detailed to be useful, but to fulfill their functional role it is important that the structure of working models be consistent with the reality they represent. Of special importance are working models of the self and of principal caregiving figures. Bowlby's notions about the function of internal working models is closely related to the works of contemporary psychoanalysts in the so called British school of psychoanalysis (Guntrip, 1971; Fairbairn, 1952; Sullivan, 1953; Winnicott, 1965).

For the purpose of the present thesis some issues raised by attachment theory are of special significance:

- (i) When is the attachment relationship with the primary attachment figure sufficiently established to permit shorter separations without being disrupted? "*In the great majority of human infants attachment behavior to a preferred figure develops during the first nine months of life. The more experience of social interaction an infant has with a person the more likely is he to become attached to that person. For this reason, whoever is principally mothering a child becomes his principal attachment figure. Attachment behavior remains readily activated until near the end of the third year; in healthy development it becomes gradually less readily activated thereafter.*" (Bowlby, 1979, p. 131)
- "Thus early (initiated within a child's first year of life), full-time day care may affect the quality of attachment in two ways; first through the effect of daily separations on the infant's confidence in the availability and responsiveness of care and, especially, his or her sense of effectiveness in eliciting care; and second, in lost opportunities for ongoing tuning of the emerging infant-caregiver interactive system. Obviously, daily separations are not sufficient to cause anxious attachment because half of the early day care infants have secure attachments. However, such separations and the insecurity they engender may leave the young infant more needy of responsive care and at the same time tax the infant-caregiver system. To this is added the caregiver's own anxiety concerning the separations and the reduced opportunities for interaction. From this perspective it is not surprising that later day care and parttime day care have not been shown to have dramatic effects on attachment. Later day care would less likely disrupt the child's confidence in caregiver availability, and parttime day care leaves ample opportunity for tuning the relationship."* (Sroufe, 1988, p. 286).
- (ii) When is the normal child ready to form additional attachment relationships to so-called secondary attachment figures? "*Attachment behavior is directed towards one or a few specific individuals, usually in clear order of preference.*" (Bowlby, 1979, p. 130). According to Bowlby, it takes considerable time and repeated interactions with a person for an infant to form an attachment relationship with that person, and there is also a clear upper limit (1-4) as to the number of attachment relationships that a child forms. Attachment to mother, usually father, possibly an older sibling, and maybe a grandmother, are all that a child may accumulate.
- (iii) If out-of-home care has negative consequences due to their interference with the establishment or maintenance of well-functioning internal working models, how would this become evident in a child's later development? According to attachment researchers (e.g., Ainsworth, Blehar, Waters, & Wall, 1978) two forms of deviant attachment behavior occur. Avoidant children are in a sense prematurely independent. Their internal working models of the world tells them that they have to rely on themselves and not depend on grown-ups. Such children can at times seem to be quite healthy but their handicap becomes evident when optimal solutions depend on the ability to cooperate with adults. In the long run these children are at risk for serious disturbances in their personality development, especially when it comes to their capacity for

empathy and their ability to form close personal relationships (Bowlby, 1973). Anxious children on the other hand, are overly dependent on their attachment figures. They cannot let go of her/him, and they have serious trouble in developing autonomous relationships.

"Noncompliance and aggression are exactly the behaviors that have stood out in the longitudinal studies of developmental sequelae of anxious attachment, especially the avoidant pattern (Matas, Arend, Sroufe, 1978; Sroufe, 1983). Moreover thoughtful observers of early development have repeatedly suggested that one of the key functions of a positive infant-caregiver relationship is the foundation it provides for the interrelated tasks of limit setting and impuls control in the toddler period, with consequences for the later development of self-regulation (Erikson, 1963; Mahler, Pine, & Bergman, 1975; Sroufe, in press). Were it the case that early full-time day care disrupted the infant-caregiver relationship in the manner suggested, these are the sequelae that would be expected." (Sroufe, 1988, p.286).

Having described early attachment relationships, we now turn to the next system level, the child itself, and the effects of nature and nurture on children's development.

The issue of stability and change in child development. In recent years developmental researchers have come to emphasize the important role of the child itself in "creating a certain environment". *"The child is not merely the passive recipient of environmental shaping. Our theory assumes an interaction between the child and the forces that molds his personality. He is an initiator who in part makes his own environment. He is a reinforcer, selectively rewarding or punishing agents in his environment for the way they behave toward him. And he is a responder, who modifies the impact of the environment on his personality. This is a considerably more complex model of personality development than that of the child as a blank slate on which the environment writes. But we suggest that this is a true picture of what actually happens.* (Buss & Plomin, 1975, p.237)

Even if we accept the view that child development is best understood as the result of an interplay between the genetic makeup of the child and the ways that environments react toward the child, we still have to deal with the question how environments affect child development. Bowlby in his trilogy *Attachment, Separation and Loss* (Bowlby, 1969/1982, 1973, 1981) argued that attachment to another person is instinctive and endures from infancy to adulthood. Most important, he proposed that an insecure attachment during infancy permanently affects future vulnerability to psychopathology. Bowlby's view of the importance of the early mother-infant relationship is in line with classical psychoanalytic propositions regarding early traumatic events and their longlasting sequelae. But although there is ample support for the proposition that children who are at disadvantage early in life tend to have worse longterm outcomes than children with more favorable early experiences, this does not necessarily mean that adverse circumstances during early childhood by themselves produce unfavorable outcome. Instead, children who have unfavorable early childhood environments tend to have an equally unfavorable environment during middle childhood and

adolescence. The early experiences may thus simply initiate a vicious cycle. Within such a paradigm long-term effects of early experience depend on recurring experiences. This formulation is in accordance with Waddington's notion of canalization (Waddington, 1966); once a given developmental channel is entered it becomes deeper as one travels along it, and the likelihood of crossing into a different channel decreases. The forces that drive development do not change in magnitude with time, but the final outcome is increasingly fixed the longer those forces have been acting. This is not inevitable, however, the rhesus macaques that Harlow reared without mothers but on wire surrogates showed increasing signs of pathological behavior. The effects of their early social deprivation persisted into adulthood, and at one time it was thought that they were irreversible. It has been demonstrated however, that providing social experiences with younger, socially developing monkeys can eliminate most of the bizarre patterns of isolated monkeys (Kraemer, 1985). This plasticity of the growing organism has obvious survival value. Creatures, whose environments are full of surprises, would be ill-served by developmental rules that were so rigid as to be unresponsive to changes. Species with relatively low reproductive rates and long life spans, such as primates, require alternative pathways that allow development to continue in the face of perturbations. Rutter and Garmezy (1983) have introduced the notions of risk and vulnerability to conceptualize such events. A risk factor implies an increment in the probability of maladaptation but the majority of individuals in "at risk" groups commonly show normal adaptation (Garmezy & Streitman, 1974). Protective factors, on the other hand, decreases the probability that an individual belonging to "at risk" groups show maladaptation. In his review of research into so called stress-resistant children Garmezy (Garmezy, 1985; Masten & Garmezy, 1985) concluded that three broad sets of variables operate as protective factors facilitating a favorable outcome in children from adverse rearing environments: (1) personality features, such as self esteem, (2) family cohesion and the absence of discord, and (3) the availability of external support systems that encourage and reinforce children's coping efforts.

The implication of the research reviewed in this section, for research on day care is that out-of-home in itself cannot predict later outcome. At most, out-of-home care initiated in infancy can be treated as a risk factor. To trace the effects of such a risk factor, researchers must investigate the protective factors that can function as buffers, including family circumstances, characteristics of the child and the type and quality of out-of-home care presented to the child. This must be done in a longitudinal perspective since, according to for example Waddington (1966), it will usually take considerable time before the life-tracks of children with different rearing experiences have diverged enough to be measurable.

Summary: In this chapter we have given an overview of theories relevant for understanding child development in relation to out-of-home care.

Bronfenbrenner's ecological theory of human development has provided a tool to understand how societal factors influence the microsystems of child care and indirectly also the experiences of children. Attachment theory focuses on the child's earliest interactions with its environment, and how these interactions form the child's internal working models of the world around him. Attachment theory also highlights the importance of secure infant-caregiver relationships and the possible adverse effects of early separations, issues that are of great importance for young children in out-of-home care. Waddington's theory of canalization gives us a model for how the effects of differences in children's rearing environments may become increasingly evident over time. Finally, the concepts of protective versus risk factors help us understand the complex interaction between the child and his/her environments in determining developmental outcome. We now turn to the empirical studies that have dealt with the effects of day care on children's development.

REVIEW OF CHILD CARE RESEARCH

A number of reviews are now available regarding the effects of out-of-home care on early child development (Belsky, 1984, 1986, 1988; Belsky & Steinberg, 1978; Belsky, Steinberg & Walker, 1982; Clarke-Stewart & Fein, 1983; Lamb & Sternberg, in press; Scarr, 1985). Most of these reviews, however, overemphasize the effects of out-of-home care on children's attachment-relationships with their mothers, as measured using Ainsworth's "Strange situation". In this chapter, using Bronfenbrenner's ecological model as a guide, we broaden the scope and point to a number of important issues on different levels (macro-, exo-, meso-, and micro-) that influence children's development in out-of-home care. We end the review by summing up research on whether type of care (home care, family day care, and center based day care), has been shown to have differential effects on children's development.

Macro-systems of child care

Out-of-home care cannot be studied without reference to a society's overall family policy. Out-of-home care for infants is likely to occur only in the absence of a parental leave system. In Sweden, where there is a paid parental leave for twelve months, most children remain in the sole care of their parents during their first year of life, with a sharp increase in maternal employment shortly after the child's first birthday (Svenska Kommunförbundet, 1987). In the U.S., on the other hand, the maternal employment rate for mothers of infants is virtually identical to that of older children (Hofferth & Phillips, 1987).

Other important macro-level issues concern the expansion and quality of day care provided for children in different societies. Western countries have from

the beginning viewed out-of-home care as inherently inferior to home care (Moss, in press; Phillips, in press; SOU, 1955; Leprince, in press), but since the late 1960s there has been a definite change of view in some countries (e.g., France and Sweden). In these countries day care has begun to be viewed as an important aspect of society's general public services and support for families with young children (France: Leprince, in press; Sweden: SOU, 1972, 1981). The effects of such a change in view becomes obvious when one compares the USA (where the society assumes little responsibility for child care) and Sweden (which has a well-developed family policy). The maternal employment rates of mothers with preschool-aged children are very similar in the U.S. and in Sweden (50-60%), but the availability of good-quality out-of-home care differs tremendously. The percentage of children under five with working mothers being in licensed or regulated family- or center-based day care is less than 25 percent in the U.S.¹ In Sweden almost 70 percent of all children with working parents are in municipal center or family day care and only 15 percent of children with working parents are in paid private care (Official Statistics of Sweden, 1987). This cross-national difference is noticeable not only with regard to expansion (in terms of state planning and financing), but also when it comes to general goals and the enforcement of regulations regarding the quality of day care (Socialstyrelsen, 1987; Leprince, in press; Phillips, in press). In Sweden there is a governmental policy regarding the goals of day care (the "Preschool educational program", 1987; "Municipal Family day care", 1988, authorized by the Socialstyrelsen), whereas in the U.S. every attempt to formulate a policy regarding day care has been turned down by the federal government, and state regulations in most cases set only minimal requirements (Phillips, in press; Young & Zigler, 1986).

What bearing do these differences have on children's development? When analyzing what aspects of day care quality that really matter, researchers agree, that caregiver stability (Clarke-Stewart & Gruber, 1984; Cummings, 1980), small groups and low staff/child ratios (Clarke-Stewart & Gruber, 1984; Howes & Rubenstein, 1985; Roupp, Travers, Glantz, & Coelen, 1979), and specialized caregiver training and experience (Howes & Olenick, 1986; Roupp et al., 1979) are especially important. In summing up her own studies, Howes (in press) concluded that caregivers in both family and center based day care were better able to provide the type of care that is associated with good child outcomes (sensitive, responsive and contingent), when there were fewer children and more adults in the settings, when they worked shorter hours, had less responsibility for housework, and worked in environments designed to be safe and appropriate for children. Caregivers with more training in child development were more sensitive, responsive and contingent than caregivers with little or no training. Com-

¹ Calculated on the figures in Hofferth & Phillips, 1987 p.562 and with the premise that all day care centers but only 6 percent of family day care homes are licensed (Fosburg, 1981).

paring publicly funded and unfunded day care centers in the U.S. Coelen, Glantz and Calore (1978) found publicly funded centers to have, on the average, better adult-child ratios (1:6 versus 1:8), more teachers with training in child development (66% vs. 44%), and teachers who had been in the center longer (3 vs. 2 years). In Sweden the average adult-child ration is 1:4 and employees are either preschool teachers or children's nurses (Socialstyrelsen, 1987). Palmérus (1987) found social as well as verbal interaction between children and caregivers to change in the direction of more routine and less pedagogical activities, and less child-initiated interactions when the child:staff ratio in a Swedish day care center changed from 2.2 to 4.2 children/caregiver.

In the U.S., Fosburg, Hawkins, Singer, Goodson, Smith and Brush (1980) found that licensed day care providers were more likely than unlicensed individuals to talk, to help, teach, and play with the children, and to provide a stimulating physical environment. Emlen (1977) and Hall and Weiner (1977) both found unlicensed family day care homes to have less favorable adult-child ratios than did licensed and supervised homes. These and other results led Belsky to conclude that *"..those aspects of the social structure of day care which have been related to developmental consequences of day care tend also to covary in a meaningful manner with variation in day-to-day experiences in day care. Such a pattern of covariation provides support for the assumption that size, ratio and training influence child development by shaping experience."* (Belsky, 1984, p. 23).

Given the importance that most researchers place on the existence of well-trained out-of-home care providers, the wages earned by preschool-teachers and family day care providers relative to other professionals, is also crucial. In the U.S., Howes, Whitebook, and Pettygove (1986) found child care facilities that paid higher salaries to have lower staff turnover. If day care professions remain (Whitebook & Phillips, in press) or become low-status jobs with below average salaries, they will not attract interested and skilled women (not to mention men), and they will be viewed as jobs that people remain in for the shortest period of time possible, with high staff turnover rates as the inevitable consequence.

Staff turnover rates also differ between areas as a consequences of social segregation (Helsingborg, 1988; Svenning & Svenning, 1978, 1980). In Sweden, day care centers in typical middle class areas take care of children from intact families where most mothers work parttime, and where few (1-3) foreign languages are spoken by the children. In those areas parents are in general confident enough in their roles as parents to be able to cooperate with teachers in a mutually rewarding way, and children's basic physical as well as socio-emotional needs are met by the parents, leaving to the teachers a relatively easy and largely educational role, for which they have been trained at the preschool teachers' colleges. As a consequence, positions in such centers are highly valued and centers manage to recruit experienced teachers who tend to stay on for a number of

years. In typical lower-working class areas, on the other hand, most of these prerequisites are not met. In these centers more parents are single mothers who have to work full time. Children come from more diverse ethnical backgrounds, teachers are more skeptical about the parent's abilities to give children what they need, and parents are more watchful in relation to staff. All these differences tend to make preschool teachers' jobs more difficult and less in line with what they imagined their work to be like when in college, and as a consequence they tend to shift to other positions leading to high staff turnover rates. This in turn affects the climate in the group and makes parents more dissatisfied; a vicious cycle is easily started. A number of studies from the U.S. show that "good caregiving situations tend to go together" (Howes, in press). Stressed parents (Howes & Stewart, 1987); parents who lead more complex lives (Howes & Olenick, 1986); parents who lack social support (Howes & Stewart, 1987); and parents who have less developmentally appropriate in child-rearing values and behaviors (Howes & Stewart, 1987; Howes & Olenick, 1986) are more likely to enroll their children in low quality child care arrangements, at least in the USA.

One final macro-level aspect of child care is worth noting. In Sweden today, a growing proportion of society's support for families with young children is used to subsidize public day care, whereas families who decide, or are forced, to take care of their children on their own, receive little or no support. One consequence of this imbalance is the economic strain it puts on families, especially working class families, who are overrepresented among families utilizing home care (Persson, 1988; Landsorganisationen i Sverige, 1987), a strain that in turn may have consequences for parental behavior and thus also for child development.

In sum, then, there are a number of macro-level issues that are of great importance in shaping the experiences of children in home as well as out-of-home care, most of which are tied to the existence or lack of a comprehensive day care and family policy.

Exo-systems of child care

The world of work exerts tremendous influence on children's experiences in day care, and yet little systematic work has been done in this area. The distance between home and care settings, and between care-settings and workplaces vary widely and this affects the number of hours that parents have to be away from their children. The demands of work places also differ a lot with regard to the strain they place on out-of-home care facilities and the families using them. Required overtime, sometimes on short notice, can generate conflict between parents and careproviders, and working-class parents in particular have shift-schedules that sometimes make it virtually impossible to utilize regular day care facilities. In countries where industries make day care facilities available to em-

ployees, many of the conflicts between the roles of employee and parent is overcome, but on the other hand the child's worlds may be split apart. The child will not be able to maintain contact with his/her friends in day care in the evenings and on weekends, and the leaving and picking up of the child will be the sole responsibility of the parent at the workplace (usually the mother). In addition, if the parent changes jobs whilst still living in the same house/apartment, the child will have to change day care facility.

Another workrelated issue with impact on children's experiences in day care is the fact that careprovider's roles and rights as employees are sometimes in conflict with the best interest of children. In Sweden employees are entitled to parental leave, study-leave and to work temporarily in other positions. These rights have originated through negotiations between labor organizations and employers within the industrial sector where employees are interchangeable. For the children involved in day care it of course makes a lot of difference *who* does the job.

Children's experiences in day care are also largely determined by the communities/-municipalities which have authority over day care facilities. In the case of public day care, local authorities exert influence over issues like the number of places in family day care homes relative to the number of places in center based day care, the regulation and organization of family and center based day care, the number of groups in different centers, the size and age-composition of groups etc.. Prescott, Jones and Kritchevsky (1967) found that when total center population exceeded 60 children more emphasis was placed on routine guidance. Large centers were also less flexible in their scheduling and, offered children fewer opportunities to initiate and control activities (Heinicke, Friedman, Prescott, Pancel, & Sale, 1973). Most of these results were replicated in the National Day Care Study by Ruopp et al. (1979). Decisions on issues related to the organization of day care are taken on the exo-level and participants within the microsystems of day care unfortunately often have little or no influence on such decisions. In some instances this has led in Sweden to strong tensions between careproviders and parents on the one hand and local politicians on the other.

Leadership, another exo-level issue, most probably influences children's experiences in out-of-home care. Unfortunately almost no empirical research has been done in this area. The director of a day care center, and the local official supervising family day care homes, are responsible for the implementation of educational goals and for encouraging positive staff-parent interaction. In the case of center based day care, the director also plays an important role in supporting a positive interpersonal work-climate and supplying staff with new ideas and knowledge. Only Phillips, McCartney and Scarr (1987), found that the amount of experience the director had, predicted children's social development in day care, albeit in an inconsistent way. Number of years of experience can,

however, only be one of the important variables in relating director leadership to child outcome.

Family social networks are also important aspects of the exo-system. Parents who have good social support systems are not only likely to introduce their children to more social partners of all ages, but they can also count on material assistance which enhances both the quality and extent of parental behavior (Colletta & Gregg, 1981; Crnic, Greenberg, & Ragozin, 1981; Crnic, Greenberg, & Slough, 1986; Crockenberg, 1981, in press). Unfortunately, researchers have yet to determine whether these effects on parental behavior are translated into differences in child behavior. Such translations ought to occur, however, since variations in the quality of parental behavior are associated with differences in peer social skills and aspects of personality (e.g., Arend, Gove, & Sroufe, 1979; MacDonald & Parke, 1984).

Having explored some of the factors on macro- and exo-levels, we now turn to the homes and the out-of-home care facilities where children are active participants -- the microsystems in Bronfenbrenner's terminology. We start by analyzing the meso-system, the interface between these systems.

Meso-systems of child care

Unlike childrearing in 24-hour-institutions, day care does not substitute for home care, it merely supplements it. One consequence of this truism is that children in out-of-home care usually spend five days a week in two different micro-systems, that of their families and that of their out-of-home care facilities. What are the consequences of being brought up in two different rearing environments?

Powell's (1978, 1979, 1980), interviews with 212 parents and 89 caregivers about parent-caregiver communication, revealed that few efforts were made to coordinate children's socialization across contexts. In fact, Powell concluded on the basis of his work that "fragmentation and discontinuity" characterized the social world of day care children. Powell's detailed typology of parent-caregiver communication patterns indicated, however, that experiences across day care and home care were not the same for all children. A small group of "interdependent" parents believed strongly that family information (on a wide variety of topics) should be shared with day care workers, and these parents practised what they preached, engaging in frequent communication with caregivers. "Independent" parents, in contrast, maintained a significant social distance between themselves and their children's caregivers. Finally, a third group of "dependent" parents viewed the family-day care relationship as a one-way street in which information was transmitted only from day care to home.

Inconsistent language is one cause of discontinuity between home and day care. Other areas of potential home versus day care discrepancies are general childrearing practises (e.g., regulatory strategies for dealing with curiosity, hostility, anxiety etc.), physical environments (e.g., freedom of movement, opportunity for privacy), and value codes (e.g., delayed versus immediate gratification, justifiable aggression versus intolerance of aggression) (Powell, 1980). As Lippitt points out in his review, it is not always entirely possible nor necessarily advantageous to maintain continuity across all these domains, but the younger the child the more important it is to provide the child with a consistent and, thus, predictable social world (Lippitt, 1968). In the case of older children, it is possible that continuity is less important. Indeed, as Lightfoot (1975) suggests, dissonance between family and other rearing environments may make children more malleable and responsive to a changing world, whereas strong homogeneity across rearing contexts could discourage the development of adaptive functioning. Long and Garduque (1987) also suggest that, provided that parents and caregivers agree on important values, discontinuity between careproviders and parents with respect to behavioral styles and role expectations may be beneficial.

What happens when caregivers and parents are in discord? Unfortunately a series of studies on caregiver-parent relationships suggest that, at least in the U.S., discord may be common, and that caregivers' negative judgements of children and families are particularly problematic (Gipps, 1982; Joffe, 1977; Innes & Innes, 1984; Zigler & Turner, 1982). Parents most often identified by staff to be "poor parents" were more likely than others to be divorced, to value conformity in their children's behavior, and to be less interested in communicating with caregivers (Kontos, 1984, 1987; Kontos, Raikes & Woods, 1983; Kontos & Wells, 1986).

Children in out-of-home care are part of two different micro-systems. So too are their working parents, who spend most of the day either being at or traveling to and from work. Especially if both parents work fulltime, their time outside work must be at least as effectively organized as their time at work. Opportunities for unplanned activities are scarce. In a recently published study in Sweden, Lundén-Jacoby and Näsman (1989), interviewed children whose parents worked about their time together with their parents and their feelings about their situation. The most common feature in these interviews were children's (even preschoolers) experiences of being run by the clock. They felt stressed by their parent's timetables, and they felt they had little opportunity to live their lives "at their own pace". There was also a tendency, especially among young children, to take the burden of the situation upon themselves, seeing it as their fault that their parents were stressed.

Micro-systems of child care

We now turn to a comparison between the three types of childcare that are of greatest interest for the present study, that is home care, family day care, and center-based day care.

Center based day care has received the most systematic attention of investigators concerned with the microsystem of child care. The greatest strengths of most center programs are their stability and predictable hours of operation, strengths that can also be weaknesses as centers tend to have fixed hours of operation that often limit their ability to respond to the individual and special needs of working parents, such as work schedules. Center-based day care facilities offer a wider variety of formal learning experiences than do other types of care, and they are more likely to be staffed by well trained professionals. On the negative side, day care centers can, partly because of the professional staff, create an undesirable distance between parents and caregivers. Centers also lack a home atmosphere and children run the risk of not being part of normal daily activities (like cooking, cleaning, shopping etc.). As Prescott and Jones (1971) noted, day care centers tend to be modeled after nursery school programs which provide children with "*a protected environment scaled to their developmental level and designed to promote experiences of mastery within a child-sized manageable world*" (p. 54). This description is all the more valid for Swedish day care centers (see e.g., Socialstyrelsen, 1978). There are doubts (Belsky et al. 1982) as to whether such a model is best for children in out-of-home care on a full-time basis. Day care designed on a nursery-school model may inadvertently isolate children from the worlds of adults engaged in non-caregiving roles (Belsky, 1980). Work by Rubenstein and Howes (1979) and Cochran (1977) clearly suggests that in this regard family day care may be less isolating. In family day care homes (as in the child's own home) the caregiver must perform multiple tasks and the environment is not totally designed to meet the child's needs, as tends to be the case in day care centers.

Family day care homes are of different kinds. Unregulated (in Sweden private) homes are those that are not licensed or registered by a public agency. In the U.S. as many as 94 percent of all family day care homes are not licensed Fosburg (1981), whereas in Sweden a majority of family day care homes are run by the municipalities. Two possible strengths of family day care have already been mentioned; the daily and close contact it affords with mixed-aged peers and its limited isolation from the non-caregiving world. Another possible strength is the existence of a male figure, since fathers in family day care homes often have contact with the children. In family day care homes, contact between parents and caregivers can be more informal and thus smalltalk about children's behavior at home and in the family day care home can be made easier than in the more formal day care center context. As many have discovered unfortunately (Broberg & Hwang, 1987; Steinberg & Green, 1979), family day care tend to be unstable, making this kind of service unreliable in the long run. Additionally, there is often little assurance that the provider has any formal training in child care, though

most are experienced parents. As Howes (in press) has pointed out, however, being a good parent does not necessarily imply being a good careprovider, since there are large dissimilarities between those roles. Adult-child interaction in the family day care environment has been shown to be more controlling than in center day care (Cochran, 1977). The fact that children reared in home environments experience more restrictions and directives should not be surprising, and is not necessarily undesirable, given the different demand characteristics of day care centers homes with both residential living and care functions. In this sense the experiences a child can make in a family day care home resembles that of a child cared for in his/her own home. But there also seem to be differences. Rubenstein and Howes (1979) found affectively charged (both positive and negative) mother-child interactions to be three and a half times as frequent as caregiver-child interactions in family day care homes, and children reared by their mothers made two and a half times more bids for attention than did children in family day care homes.

Effects of out-of-home care on child development; What aspects of the micro-system of center and family based day care have been shown to have the greatest impact on child development? Many reviewers (e.g., Belsky et al., 1982; McCartney, Scarr, Phillips, Grajek, & Schwarz, 1982), have suggested that both structural and dynamic aspects of the quality of out-of-home care should make a difference. The main structural aspects (child-caregiver ratio, caregiver stability and training) were discussed above. Using observation based measures of quality, both McCartney and her colleagues (1982, McCartney, 1984) and Goelman (1989, Goelman & Pence, 1989) showed that children receiving high-quality out-of-home care developed better language and cognitive skills and were more empathic, sociable, and emotionally adjusted than children receiving care of lower quality.

The constructs of sensitivity, contingency and responsiveness are all associated with more positive patterns of child development for children in day care (Carew, 1980; Clarke-Stewart, 1984; Cochran, 1977; Golden, Rosenbluth, Grossi, Policare, Freeman & Brownlee, 1978; McCartney, 1984; Rubenstein & Howes, 1979, 1983; Rubenstein, Pedersen & Yarrow, 1977; Ruopp et al., 1979). In Sweden, Ekholm and Hedin (1984, 1986) have conducted studies on day care quality focusing on what they call "the climate" of day care centers. They found that high and low-quality centers could be differentiated on the basis of teacher's interactions with children in organized activities in contrast to free play. Teachers in high-quality centers behaved similarly in the two situations, whereas the behaviors of teachers in low-quality centers were strikingly different. In structured activities, teachers in high quality centers were not as rigid in their demands for teacher control and were more able to support children's initiatives than were teachers in low-quality centers. In nonstructured activities (free play) on the other hand, teachers in high quality centers were more active

in their interactions with children, suggesting activities, engaging in play with children etc, whereas teachers in low-quality centers were very passive, interacting with children primarily to solve conflicts or in response to active contact bids from children. So far, these studies have not included any child outcome measures, and therefore the effects of the different styles of teacher behavior on children's development remains unclear.

A number of studies have also shown that children in out-of-home care settings have the capacity to develop meaningful relationships with their substitute caregivers (Ainslie & Anderson, 1984; Anderson, Nagle, Roberts, & Smith, 1981; Colin, 1986; Howes, Rodning, Galluzzo, & Myers, 1988; Krentz, 1983; Sagi, Lamb, Lewkowicz, Shoham, Dvir, & Estes, 1985). To our knowledge, there exist no studies today that specifically examine the caregiver-child interactions that precede attachment (or attachment-like) patterns, but it seems safe to assume that they would parallel what has been found regarding the precursors of mother-infant attachment (see section on home care below). If so, then we can conclude that the younger the child, the more important it is for him/her to have stable relationships with only a few (one, two or three) sensitive, contingent and responsive substitute caretakers. Given such a rearing environment, supportive and emotionally meaningful relationships to careproviders can and do develop over time.

Meaningful relationships to substitute caregivers do not affect mother-child relationships negatively, and so infants in out-of-home care still have mothers as their primary attachment objects. They go to their mothers for help (Farran & Ramey, 1977), stay close to them (Cummings, 1980; Farran & Ramey, 1977; Finkelstein & Wilson, 1977; Kagan, Kearsley & Zelazo, 1978; Ragozin, 1975), approach them more often (Bryant, Harris & Newton, 1980; Mayall & Petrie, 1977), and interact with them more (Finkelstein & Wilson, 1977; Ricciuti, 1974) in assessment situations. As Ainslie and Anderson (1984) concluded, we should rather be concerned about those children who do not form secure attachment relationships with either their mothers or their substitute caregivers (29 percent in Ainslie & Anderson's, 1984, study).

One final aspect of the microsystem involves parental, especially maternal, anxiety. For infants and toddlers entering out-of-home care, maternal separation anxiety can affect children's adjustment to the out-of-home care setting. Hock and her colleagues have shown in a number of studies that infants as well as older children have the capacity to "read" their mothers' anxiety and to adapt their own behavior accordingly. Mothers with high separation anxiety have babies who have greatest difficulty separating from their mothers (Hock, 1984).

Those aspects of the caregiver-child relationship that promotes child development all resemble those aspects of parent-child relationships that are most

advantageous. We shall now turn to these studies as we describe the lives of children reared in their own homes.

Home care: Its obvious advantages include: the flexible scheduling, a single caregiver to whom the child is attached and who can perform functions other than child care (e.g., housework), and a setting that is familiar to the child, and a reduced need for children to adjust to their parent's work schedules. Two possible disadvantages include the risks of social isolation and the absence of peer contacts. These disadvantages can be offset using the "open preschool-facilities" in which parents meet and chat with other parents, whilst their children can play under the supervision of a preschool teacher. The most cumbersome aspect of home care is the great variability in caregiver competence. In Sweden, the variations among home environments are probably much larger than the variations among day care center environments. Some children in home care probably receive the best possible child care, whereas others receive care of extremely low-quality. What aspects of the home environment are of greatest importance for children's development? Both McCartney et al. (1982) and Goelman (1988) found that family socioeconomic status, especially as represented by maternal education level, affected aspects of cognitive and linguistic development. In Sweden, Nordberg and Alin-Åkerman (1983) found a similar relationship between maternal education and children's cognitive development.

Most research concerning the quality of home care has been guided either by attachment theory (with its emphasis on the the early mother-infant relationship), and Lewinian theory (with an emphasis on the child's immediate environment). Ainsworth, Blehar, Waters and Wall (1978), in their pioneering study of the formation of secure mother-infant relationships, reported that a number of early maternal behaviors (especially sensitivity, responsiveness and contingency in relation to infant needs) predicted later attachment relationships. Studying children's home environments within a broader framework, Caldwell and her co-workers (Bradley & Caldwell, 1976a, 1976b; Elardo, Bradley & Caldwell, 1975,1977) have demonstrated the formative impact of the home environment on children's development, taking into account both the quality of mother-child interactions, and different aspects of the ways parents stimulate their children's development and organize their activities. These results underscore the importance of measuring broad aspects of the home environment, at least with respect to children's intellectual development.

Paternal involvement, another aspect of the home environment, is associated with cognitive competence, peer social skills, and aspects of personality development (such as locus of control, empathy, and independence) similar to those studied here (Lamb, Pleck, & Levine, 1985; Parke, MacDonald, Beitel, & Bhavnagri, in press; Radin, 1982).

Summing up research on the different child care microsystems we can conclude that the aspects of quality of out-of-home care that have proven to be of importance closely resemble the important aspects of the quality of home care. In both types of care, it is the quality of adult-child interaction (especially adults' tendencies to be sensitive, responsive and contingent in their interaction with children), that have proven most predictive of child outcome. The review also supports Bronfenbrenner's theoretical proposition that higher level systems constrain and potentiate lower levels systems. Caregivers' abilities to be sensitive, contingent and responsive are affected by macro- and exo-level factors such as legislation regarding parental leave and public policy on day care issues.

It also seems safe to conclude that secure and mutually rewarding caregiver-child relationships do not threaten mothers' relationships with their children: instead, "good things tend to go together". Differences between care-settings have to do with formal educational/developmental objectives (most pronounced in center based day care, least in home care), number of adult and peer-contacts (highest in center day care and lowest in home care), detachment from ordinary daily life experiences (highest in center day care, lowest in home care) and the level of stress experienced by children (highest in center day care because more of the parents work fulltime).

So far we have reviewed research on child care with respect to its macro-, exo-, meso-, and micro-systems, without really comparing the effects of different types of child care on children's development. We now ask whether type of care really makes a difference for children's development.

Is type of care predictive of children's development?

Attachment: As reported above, young children in day care become attached to their parents and are able to form emotionally meaningful relationships to substitute caregivers (whether these also deserve to be named attachment-relationships is, however, not clear). The next question then, is whether there are any differences in the quality of mother-child attachments, between children in day care and those that are not. This question has caused a heated scientific debate in the U.S. in recent years. Belsky and Steinberg (1978) in their extensive review of research on the effects of day care on child development concluded: "*the total body of evidence reviewed regarding the effect of day care on children's attachments to their mothers offers little support for the claim that day care disrupts the child's tie to his mother.*" (p. 939). The renewed controversy, regarding the effects of infant day care (i.e., out-of-home care initiated before twelve months of age) on infant-mother attachment, began some years later with Belsky's article "Infant day care: A cause for concern?" (Belsky, 1986). Belsky has since elaborated his view in two papers (1987, 1988), where he summarizes his current viewpoint: "*If one does not feel compelled to draw only irrefutable conclusions, however, a relatively persuasive*

circumstantial case can be made that extensive infant day care experience may be associated with increased avoidance of mother, possibly to the point of greater insecurity in the attachment relationship. In addition, such experience may also be associated with diminished compliance and cooperation with adults, increased aggressiveness, and possibly even greater social maladjustment in the preschool and early school-age years" (Belsky, 1988, p. 256). Belsky's viewpoint has been sharply criticized by researchers who have drawn attention to the questionable validity of the "strange situation"-procedure, especially when used with children in out-of-home care (Clarke-Stewart, 1988; Lamb & Sternberg, in press; Phillips, McCartney, Scarr & Howes, 1987; Richters & Zahn-Waxler, 1988; Thompson, 1988). The discussion has been rather technical requiring a detailed knowledge of the "strange situation"-procedure itself and of the studies cited. We therefore refer the interested reader to the September 1988 issue of the Early Childhood Research Quarterly (vol 3, no. 3), in which most of these papers were published.

In Sweden there has been no research explicitly focusing on attachment and out-of-home care, but Hårsman (1984) compared groups of eight- to twelve-month-old infants in center based and home care. The results, using both repeated developmental test-scores and observations of infant-mother interactions, showed that the initiation of out-of-home care caused stress (indicated e.g., as lowered test-scores in the out-of-home care group). For most infants, however, the effects seemed to be transient, and after some months there were no longer any detectable differences between the out-of-home and home care groups. There were, however, striking variations in adjustment within the out-of-home care group, indicating that for a subgroup of children, placement in out-of-home care was really problematic.

Social development: Clarke-Stewart and Fein (1983), in their extensive review of the effects of day care, concluded that "*children who are attending or have attended early childhood programs are more socially competent or mature...more self-confident, more self-assured, more outgoing, and are less timid and fearful...more assertive..., more self-sufficient and independent of parent and teacher...., and yet more helpful and cooperative with peers, mothers, or examiners when the situation requires it. ..., more verbally expressive..., more knowledgeable about the social world ..., more comfortable in a new or stressful situation..., more realistic about their achievements..., more competent to manage on their own..., less sex stereotyped in their play..., more curious and more persistent on a task..., more mature in their figure drawing... and in their pretend play. When they go to school they are better adjusted, more task oriented and goal directed, and show more leadership and persistence They score higher on rating of social competence.... Generally the consistency of the findings is impressive. They are replicated across studies.... Findings are always in the same direction, in only one study of a very poor day care program ...was there a significant difference in the opposite direction. Significant findings occur in different assessment situations..., and with different kinds of subjects... And finally, they appear as the outcome of different kinds of programs; for example kibbutzim...; part-time as well as full-time day care center programs...; mo-*

del as well as mediocre programs." (Clarke-Stewart & Fein, 1983, p. 957-958, references omitted). The authors also concluded that "*They [children in day care] have been found to be not only more assertive, but also louder, more aggressive, rebellious, belligerent, irritable and hostile ...*" (Clarke-Stewart & Fein, 1983, p. 957-958, references omitted). As pointed out by Lamb and Sternberg (in press), however, the negative effects may be culture-specific, since similar effects have not been observed in China (Kessen, 1975), Japan (Bornstein, 1986), the Soviet Union (Bronfenbrenner, 1970) or Sweden (Andersson (1989)); Gunnarsson, 1978; Cochran & Gunnarsson, 1985).

Effects of out-of-home care on children's social development may also be dependent on the ages of the children involved. Scarr and Hall (1984) found no differences in social adjustment between children cared for at home and children who were placed in day care centers before two years of age. Children who were enrolled in day care centers between three and four years of age, however, were more cooperative and less aggressive, than children who remained at home at these later ages. As stressed above, quality of care also matters. Howes (1987), in her recent review of the features of child care associated with social competence with peers, pointed to a number of aspects of the out-of-home care setting, including attachment to adults, caregiver stability and training, stability and size of peer-groups (optimally 6 to 8 children) and the potential for interaction with both age-mates and older partners, that affect child outcome.

In sum, the available evidence lends some support to the notion that children in nonparental care settings become more socially competent than their home-reared counterparts, presumably because the former experience interactions with a greater variety of people. Age of enrollment, and the negative aspects of social interaction (i.e., aggression in relation to peers and adults), seem to be two areas where more studies are needed. Contemporaneous measures of quality of home and out-of-home care are also needed for a fuller understanding of the influences on child development.

Intellectual development: Belsky and Steinberg (1978), reviewing studies on the intellectual development of children with different rearing backgrounds concluded: "*The overall picture of evidence, duly qualified, suggests that the day care experience has neither salutary nor adverse effects on the intellectual development of most children. For economically disadvantaged children, however, day care may attenuate declines in test scores typically associated with high-risk populations after 18 months of age*" (Belsky & Steinberg, 1978, p. 931). Clarke-Stewart and Fein (1983) are more inclined to interpret existing evidence in favor of children in out-of-home care, at least with respect to some aspects of intellectual development. "*Moreover, there are consistent indications of advanced language development in program children: comprehension, fluency, naming objects, concepts, vocabulary, verbal expressiveness, and mean length of utterance.*" (Clarke-Stewart & Fein, 1983, p. 966). In relation to age effects,

Clarke-Stewart and Fein concluded that "*Differences seem to be smaller or less likely in the first 18 months of life; after that age differences are consistently observed up to 4 years and do not seem to be related to age within that period.*" (Clarke-Stewart & Fein, 1983, p. 966, references omitted). In Sweden, Cochran and Gunnarsson (1985) found no differences between five-and-a-half years old children with consistent daycare experience, children reared either at home or in family day care, or children with mixed child care experiences on the Griffiths' Mental Developmental Scale. Andersson (1989), however, found early entry into out-of-home care, especially center based day care, to be positively related to eight-and-a-half-year-olds' intellectual development, both as measured by standardized tests (verbal subscales of WISC), and by teacher ratings of academic success.

In sum, then, the existing evidence suggest that intellectual development may be enhanced by out-of-home care experience, especially among children from more deprived backgrounds. Some studies suggest that such differences are more likely to be evident the longer children have been in out-of-home care, whereas other studies indicate that differences may be immediate and transient.

As pointed out in the theoretical chapter, interaction between the environment and the child itself must also be taken into account. All children are probably not affected in the same way by specific environments. We now ask which child characteristics affect children's development in out-of-home care.

Child characteristics

Gender is the only individual characteristic that has been systematically examined. Studies on attachment and socio-emotional development have revealed more numerous differences between home care and day care children for boys than for girls (Cornelius & Denney, 1975; Moore, 1969; Moskowitz, Shwarz, & Corsini, 1977) perhaps reflecting the greater susceptibility of boys to all kinds of environmental perturbations (Rutter, 1982). In Sweden, Cochran and Gunnarsson (1985) found strong interactions between gender and care status on measures of the social behavior of five-and-a-half-year-old girls and boys. Andersson (1989), on the other hand, found no sex related effects when studying eight-and-a-half-year-olds' intellectual and social adjustment in relation to their prior child care history.

Age of entry has also been studied by a number of researchers but the results are inconsistent. Only with respect to attachment do some researchers make a strong case that age of entry affect children's adjustments (see above). With respect to intellectual and social development, Andersson (1989) found that children who had started out-of-home care (especially center based care) early, even prior to their first birthday, got better scores on standardized tests and higher

teacher-ratings on indices of social development when eight-and-a-half years old than did children who began out-of-home care later.

Inhibition and asociability have been associated with difficulties in interaction with peers and the adjustment to nonparental care (for references see paper V in this thesis). Clarke-Stewart, Umeh, Snow, and Pederson (1980) found sociability at twelve to thirty months of age to be positively related to the amount of contact with nonparental relatives, but negatively related to nonparental child care experiences. Ramey, Dorval and Baker-Ward (1983) found children in daycare to be more friendly and cooperative with a stranger than their home-reared counterparts, but only if the stranger was interactive and initiated a task. Hock and Clinger (1980) found children with daycare experience to be less likely to resist a stranger, but only when their mothers were not present, and Thompson and Lamb (1982), finally, found no consistent associations between measures of nonparental care experience and sociability.

Summary: In this chapter we have reviewed the literature on child care research. In line with the propositions put forward in the theoretical chapter, type of care seldom predicts child outcome, although some uncertainty still exists regarding full-time out-of-home care for infants. Quality of care (both home and out-of-home) is the best predictor of various aspects of child development.

The review also shows some major shortcomings of the research performed. Day care research has skyrocketed during the 1980s, but most of the research has been performed within the United States, which raises doubts about generalizability of the findings. Further, most of the reported studies were not longitudinal, and since the effects of different rearing environments may take time to crystallize, one has to be cautious when making conclusions about the effects of out-of-home care. Finally, most of the studies have considered only one or two of the possible causal factors, although, as was shown in the theoretical chapter, child development is multiply determined (i.e., by the combined effect of family-, care-, and child influences).

THE PRESENT STUDY

Aims: The aims of this longitudinal study were to assess the effects of out-of-home care, in the context of other important life events, family circumstances, and child characteristics, on toddler's and preschooler's social, personality, and intellectual development. The present study was designed in order to add to the existing knowledge of the effects of out-of-home care, by dealing with some issues raised above.

- * Our research took place in Sweden, a society with a public day care policy very different from that in the United States.
- * Our study is longitudinal, which will enable identifying causal factors which exert their influence over a prolonged period of time.
- * Our data analysis strategy makes it possible to study simultaneously a number of causal factors and their combined influences on child outcome.

Paper I

In paper I, Swedish child care is described and discussed. Given the importance of macro-level factors in establishing the possibilities and constraints for individual families and out-of-home care facilities, and thereby indirectly affecting child outcome, we analyze various family policy and child care issues: (i) what sort of care do young children receive, (ii) what level of responsibility does society at both national and local levels assume for child care and, (iii) how well integrated is public day care with other forms of social support given to families with small children?

By means of legislation, the national authorities have assumed the responsibility for both facilitating work or study by parents with young children and giving children whose parents work or study the right to "grow up under reasonable conditions". The Paid Parental Leave Act is designed to ensure that children and parents have a relatively long period (9 to 12 months) together under financially secure conditions. The Act also contains sections that are intended to make it easier for working parents to look after their children when they are ill and to enable parents to have contacts with their children and the careproviders. The main aims of the Paid Parental Leave Act are to make it possible for working parents to extend the time they stay at home with their children without running the risk of losing their jobs, and to adjust their working hours so that the time spent by children in out-of-home care is not unreasonably long. The national authorities have also fixed a date (1991) by which the availability of municipal child care must be sufficient to satisfy demand, that is every pre-school child older than 18 months who needs a place in municipal child care will be guaranteed this. Finally, in the educational program published in 1987, the national authorities have laid down the goals and aims of Swedish pre-schools. Thus, all the different parts of child care now have their legal foundations and the sanction of society. This means that, at least on paper, Sweden has a well-developed "child care system".

Another important aspect of the Swedish child care system is the relative lack of confound between family- and child care factors. As was discussed in the review of child care research, such confounds are a major problem in many

countries. Well situated parents can afford to give their children "the best day care money can buy", whereas families from other social strata have to make do with low quality day care, if they are not part of a university based program for disadvantaged families. In Sweden almost all children (90%) in out-of-home care are in public day care. Because all families who want municipal day care must queue for it, the only confound between family factors (such as SES) and the quality of day care is therefore a function of social segregation: families from similar social strata tend to live in the same areas and thus have their children in day care centers and family day care homes in these areas.

Before turning to the empirical papers, we briefly describe the child care system in Sweden in order to put our results in context. In Sweden, public day care is supervised by the authorities. To qualify for state grants, municipal day care has to comply with guidelines enforced by the National Board of Health and Welfare (Socialstyrelsen). One of the consequences of Sweden's national family policy is a remarkable homogeneity of Swedish day care, which enables researchers to control for some of the factors that otherwise would have to be dealt with as independent variables in the research design. This is especially true for formal aspects of day care quality.

Day care centers are built explicitly for this purpose; they are spacious, well equipped, and have rooms for gross, as well as fine motor behavior, a corner for games involving water, and most often also a "cosy corner" where children can sit and read etc.. Staffing is also regulated. Children under three are most often assigned to "toddler groups", with twelve children and four staff members, one of whom is a preschoolteacher and three of whom are children's nurses. After the age of three, children are transferred to "sibling groups", where there are usually fifteen to sixteen children aged three to six, two preschool teachers, and one children's nurse. Some centers have "extended sibling groups", where the age of the children spans the whole preschool stage (0 to 6). These groups normally contain fifteen children, and they have three staff members, although staff density can be higher if a group contains many children under the age of three. The average staff density, according to the latest estimate by the Swedish Association of Local Authorities (Svenska Kommunförbundet), in Swedish day care centers was 3.7 children per adult, that is four adults per group of fifteen children.

Family day care homes are subject to fewer regulations than are day care centers. Day mothers are employed by the municipalities, and to get full-time monthly payment, they must care for four children on a full-time basis, in addition to any of their own children. A recent survey by the National Board of Health and Welfare, showed that daymothers averaged 38 years of age, that they had been employed for an average of 6.3 years, that they took care of 6.4 children including their own children, and that 70 percent of the family day care pro-

viders had received some form of formal child-care training (Socialstyrelsen, 1988). In some municipalities, including Göteborg, it is now increasingly common for four to six daymothers in a housing area to bring their children together regularly in special premises. These may be premises used by "open preschools", special rooms at day care centers, or localities within one of the apartment-houses in the neighbourhood. The group activities take place once a week or so and make it possible to organize games and activities that might be unsuitable in a home environment. Since children get to know other family day care providers and "their" children in this way, it is also easier to substitute if one of the daymothers should fall ill or need to take time off.

Papers II, III, IV, and V

Independent variables: Various family factors (social status, quality of home care, paternal involvement) and repeated measures of the quality of out-of-home care were used. Family social support, and individual characteristics of the children (gender, age, temperament, and sociability) were also assessed.

Dependent variables were chosen from four broad classes; those concerning the quality of peer play, the degree of sociability with strange adults, verbal/linguistic ability, and the child's emergent personality style. Sociability, peer skills, and verbal competence have frequently been studied in research on alternative care and it was thus important to include comparable measures. The aspects of personality studied here -- field independence, ego resiliency, and ego-control -- have not previously been examined in the day care literature but have been considered in the context of research designed to explore the effects of parental behavior, child-parent attachment, and environmental circumstances (e.g., Block & Block, 1980; Lamb, Thompson, Gardner, & Charnov, 1985).

Specific aims of paper II: The aim of this paper was to study children's social competence and their emerging personality styles one year after some of the children had begun out-of-home care. It was expected that children in high-quality home care with well-supported families would appear better adjusted, more competent, and more sociable than would other children. For the subgroup of children with one year of out-of-home care experience, quality of out-of-home care was also expected to be influential. It was further expected that timid, cautious children, like children who had frequent negative moods, would have fewer successful interactions with peers and (as a result) would become less socially skillful with them. Such children should also be rated lower on ego resiliency, field independence, and ego control than children who were more self assertive and tended to have positive moods.

Specific aims of paper III: The goal of this paper was to assess children's linguistic/verbal abilities one and two years after some of the children had started

out-of-home care. Maternal education level and quality of home-care were expected to be influential. Quality of out-of-home care was also expected to be related to child outcome, but taking into account the high quality of Swedish day care, quality of out-of-home care was expected to be less important than quality of home care. Since the present study-group involved young children from intact, nondisadvantaged families, type of care was not expected to be related to child outcome. The availability of social support should affect cognitive and linguistic development, both by affecting the quality of parental behavior, and by ensuring a richer array of potentially stimulating social relationships for the children themselves. Consistent with earlier findings (reviewed by Lamb, 1982), it was also expected that unsociable children, and perhaps children perceived to have difficult temperaments, would perform more poorly on cognitive and linguistic tests because of their reduced willingness to attend and to cooperate with the examiner. In line with Nordberg and Alin-Åkerman (1983), girls were expected to do somewhat better than boys.

Specific aims of paper IV: The aims of this paper were twofold. First, we planned to follow changes in children's social competence and their emerging personality styles into the fourth year of life. In this respect, paper IV is essentially a continuation of paper II. The second purpose was to develop a broader measure of quality of out-of-home than had been used in papers II and III, and relate it to children's social development. Only those children who had been in out-of-home care consistently from phase I to phase III (N=48), were studied with respect this broadened measure of out-of-home care quality. Because the available sample was so small, it was not possible to distinguish between those twelve in family day care and thirty-six in center care facilities, even though this would have been desirable. Except for the quality of alternative care variables, the predictor and outcome variables presented in paper IV are the same as in paper II.

Specific aims of paper V: The aim of this paper was to examine individual differences in inhibition, their links to other social behaviors, and the possible role of out-of-home care in altering the tendency to be either shy or outgoing. In the paper, children's sociability in relation to unfamiliar adults, their fearfulness in different situations, their capacity to play with peers, their dependency on their mothers, and their adaptation to out-of-home care settings, were studied. It was predicted that children rated as inhibited (rather than uninhibited) at 16 months of age would:

- (1) be more inhibited one and two years later,
- (2) be less involved in high-quality peer play, including turn taking and social pretence,
- (3) be more dependent on their mothers and consequently less able to play alone in their mothers' absence, and

(4) have more difficulty adjusting to out-of-home care settings.

No predictions were made about the effects of out-of-home care experiences on subsequent inhibition, since results reported by other researchers were inconsistent.

Subjects

Names of children on the waiting lists for municipal child care facilities were obtained from local authorities in all areas of the city from June 1982 to October 1983. Parents were then individually contacted by the research staff first by mail and then by telephone, and invited to participate in the research. To be enrolled in the study, families had to fulfill certain criteria. These were chosen in order to reduce the number of factors that otherwise would have had to be dealt with as covariates in the analyses. According to the criteria, which were checked with the parent during the telephone interview, the child had to:

- (i) be between twelve and twenty-four months of age,
- (ii) be firstborn, or at least not living with siblings under twelve years of age,
- (iii) live with both parents, whether they were married or not,
- (iiii) not have begun regular day care, and not have had more than a total of four weeks of out-of-home care prior to our first visit to the family.

Finally, parents had to speak enough Swedish to understand questionnaires and interview questions.

Of the eligible families, 75 percent agreed to participate in the study. One-hundred-and-forty-five children (72 girls), with M and median age = 15.9 months ($SD=2.9$ months), were enrolled in the study. Because the number of available places in municipal day care was limited only some were successful in getting places. One group consisted of children receiving center-based day care ($N = 53$). Others were unable to get places in centers but were either offered care in municipal family day care homes (8), or the parents made themselves arrangements with private daymothers (25) -- they constituted a second, family day care, group ($N = 33$). A final group of children did not enter either centers or family day care facilities -- they remained at home in the care of their parents ($N = 59$). Because of our recruitment procedures, we hoped that preexisting group differences in parental values concerning out-of-home care would be largely eliminated. Unfortunately, this turned out not to be the case. The parents to home care children viewed home care as the "ideal form of care" to a greater extent than did parents whose children began out-of-home care. In order to examine whether these differences in parental values indicated differences in attitudes to child rearing in general, both mothers and fathers completed a Swedish translation of Block's (1965) 91-item Child Rearing Practises Report (CRPR). A one-way ANOVA with group (Home care, Family day care, and Center day care) as the independent variable, yielded only four significant F -values for

mothers and six for fathers, which is about what would be expected by chance. It thus seems safe to conclude that parents in the different care groups did not differ with respect to their general attitudes to child rearing.

Hollingshead (1975) scores showed that children came from a range of backgrounds. The representativeness of the children participating in the study was determined by comparing their characteristics with those of a representative sample consisting of 10 percent of all ten- to twenty-four-month-old children in Göteborg (Broberg & Hwang, 1986). With respect to maternal and paternal Hollingshead scores, and maternal and paternal age, the families with children in our home care and day care center groups did not differ from two-parent families with firstborn children with these arrangements in the larger sample. However, the children in our family day care group had parents who had significantly higher overall Hollingshead scores than children in family day care in the larger sample ($M=47.80$ vs. $M=37.70$, $p<.05$, respectively). The mothers of children in our family day care group were also significantly older ($M=30.85$ years vs. $M=28.64$ years, $p<.05$ respectively). These differences may be due to the relatively high proportion of children in private family day care homes (25 out of 33) in this study group.

During the three years of the study, nine families dropped out. From the pre-assessment to the first year follow-up, seven families withdraw; three children had severe somatic or psychological handicaps, and three families moved so far away from Göteborg that for practical reasons we could not visit them. One family refused further participation. Between the first- and second-year follow-up another family withdraw because they moved, and one family refused further participation. Our final longitudinal sample therefore comprised one hundred and thirty-six children, their parents and careproviders.

Procedure

Preassessment (phase I). After agreeing to participate in the study, all families were visited in their homes by a member of the research staff. The research assistant rated the child's reactions when the assistant, as a strange adult, made increasingly intimate overtures to the child during the first 5 minutes of her/his visit. During this visit, parents were interviewed about their education and occupations, their social networks, and father involvement. The HOME Inventory was also completed. The parents were given a copy of Rothbart's (1981) Infant Behavior Questionnaire (IBQ), and were instructed how to observe their child and fill out the questionnaire during the next two weeks. A second home-visit was then arranged. On this occasion, the child was also observed by the research assistant, this time interacting for thirty minutes with a familiar peer (selected by the parents) of roughly the same age. Children in the alternative care groups began out-of-home care within two weeks of the two home visits. Six weeks later

their child care facilities were visited by a member of the research staff who rated the quality of care using Belsky and Walker's (1980) checklist, and interviewed the principal careprovider about the child's adjustment and some aspects of the out-of-home care setting. Finally the child was observed playing with agemates in the out-of-home care setting for thirty minutes.

One year follow-up (phase II). Twelve months after the first interview, the families were visited again. During one visit, stranger sociability was again assessed, parents were interviewed about childcare arrangements, and the mothers completed a Q-sort description of their child measuring field independence, ego resilience, and ego control (the California Child Q-set or CCQ), and the quality of home care was sampled using Belsky and Walker's checklist and the HOME inventory. During a second visit, the research assistants administered Scale C of the Griffiths' (1954, 1970) Developmental Scales, the child was observed playing alone during a short separation from the mother and, after a break for snacks and drinks, the child was observed interacting for thirty minutes with a peer of the parents' choice. On a subsequent visit to the child-care facility (for children in the two out-of-home care groups), the quality of care was sampled and a teacher who knew the child well described her/his personality using the CCQ .

Two year follow-up (phase III). Another year later, a third phase of assessments took place. During an initial visit to the child's home, his/her sociability toward the research assistant was rated, parents were questioned about their out-of-home care arrangements, and the quality of home care was assessed. Children were observed playing with a peer, and the Griffiths' (1954, 1970) Scale C was also administered to all children. A visit to the child care facility was then made to permit observation of the children playing in the out-of-home care setting. The quality of alternative care was also assessed using the Belsky and Walker checklists, and the careproviders were interviewed.

Measures

Family social status. Maternal and paternal Hollingshead scores--weighted sums of the Education and Occupation scores for each parent--were computed as instructed by Hollingshead (1975). The Hollingshead scales, although developed in the United States, have been employed successfully in previous studies conducted in Sweden (e.g., Cochran, 1977; Frodi, Lamb, Hwang, Frodi, Forström & Corry, 1982).

The quality of home care was tapped using four measures in each phase: Caldwell's HOME Inventory, Belsky and Walker's (1980) checklist (both positive events and negative events scores), and a measure of father involvement.

HOME Inventory for infants was completed by the observers in phases I and II, as instructed by Caldwell (1970). In Phase III, observers completed four sub-

scales--IV (Pride, affection, and warmth), VI (Modeling and encouragement of social maturity), VII (Variety of stimulation), and VIII (Physical punishment)--of the Preschool version of HOME (Caldwell & Bradley, 1984) which was more appropriate for the age of the children at this time. The four subscales selected were chosen because pilot testing revealed little variability on the other subscales. Scores on the four subscales were combined into a single index for analytic purposes.

The Belsky and Walker checklist includes 13 positive and 7 negative events, and the observer notes whether or not each occurred at least once during a 3-minute long "spot sample" unit. The environment was sampled 3 or 4 times per occasion, and the numbers of negative and positive items per occasion were then averaged for purposes of analysis. Further details are provided in Belsky and Walker's (1980) scoring manual.

Paternal involvement was estimated from the full-day diary recalls provided by the two parents, who were asked to recall the previous day and the previous non-working day from midnight to midnight. From this we extracted estimates of the number of minutes fathers spent with their children. Estimates of father involvement per week were computed by combining the weighted sums of the weekday (x 5) and weekend (x 2) scores for these 3 aspects of father involvement.

Perceived Support. During the preassessment interview, when children averaged 16 months of age, a total of 24 questions were asked independently of mothers and fathers about the contacts with and support received from maternal and paternal grandparents, other relatives, friends, and neighbours. Three different composite measures were then computed for each parent: perceived support from maternal grandparents, perceived support from paternal grandparents, and perceived support from friends and neighbors.

Quality of alternative care. In papers II and III the quality of care provided in the alternative care settings was likewise assessed using the Belsky and Walker checklist described above. The alternative care settings were assessed three times: once six weeks after enrollment, again 11 months later, and finally 24 months after enrollment. Another measure of out-of-home care was the number of hours spent by the child in alternative care each week. Four structural measures of the quality of alternative care were included in paper IV only. Two traditional structural measures were added: absolute group size and the child/careprovider ratio. Two new indicators added were: the age range of children in the setting and the proportion of children in the group whose ages were within 12 months of the target child's age.

Child characteristics: Temperament was assessed using Rothbart's (1981) Infant Behavior Questionnaire (IBQ), a standardized parent-report measure of infant temperament. Responses to 87 items yield scores on six dimensions: Activity level, Positive emotionality, Fear, Anger/Frustration, Soothability, and Undisturbed persistence. Internal reliability coefficients for the six dimensions at 3, 6 and 9 months ranged from .72 to .82 based on a sample of 463 infants (Rothbart, 1981). Rothbart (1981, 1986) also showed temporal stability over assessments at 3, 6 and 9 months (coefficients varied across scales in a predictable fashion) as well as convergence between observed behavior and parental reports using the IBQ. Unfortunately, temporal stability and convergent validity in the second year of life have not been studied, although the IBQ has been widely used for children of this age (e.g., Thompson & Lamb, 1984). Significant mother-father or mother-babysitter agreement was found in previous studies in Sweden (Lamb, Frodi, Hwang & Frodi, 1983) and in the United States (Rothbart, 1981). Analyses in papers II, III, and IV involved only one composite measure: Following Frodi et al. (1982), we computed a score for perceived difficulty by adding the IBQ score for Anger/Frustration to the inverse of the scores for Positive Emotionality and Soothability, before dividing by three. Possible scores ranged from one to seven, with high scores indicating that the child's temperament was perceived to be difficult. In paper V, the fearfulness subscale was used, which comprises seventeen items designed to measure the child's distress to sudden changes in stimulation (new food, bathing and dressing, play with parent), and the child's distress and latency of movement toward a novel social or physical object (loud sounds, changes in parent's appearance, strange person, strange animal).

Sociability with a strange adult was assessed upon the observer/interviewer's arrival at the child's home using a procedure developed and more fully described by Stevenson and Lamb (1979) and Thompson and Lamb (1983).

In phase I, the child's response in each of eight contexts (initial reaction to stranger, reaction to offer of toy, reaction to attempted initiation of game, reaction when given floor freedom, reaction to offer of toy when on floor, reaction to attempted initiation of game, reaction to attempted pick up, and reaction to stranger's departure) was rated on five-point scales, with one indicating a fussy, unfriendly response and five indicating an outgoing, positive response. In addition, the observer recorded her/his overall impression of the child's sociability on a nine-point scale. The nine ratings were then added to yield a measure on which the possible range was from nine to forty-nine. Stevenson and Lamb (1979) reported significant correlations ($r=.46$) between scores on this index of sociability and sociability in a test situation as well as significant test-retest reliability between multiple assessments in both the same ($r=.73$) and different ($r_s=.49, .40$) contexts over a two-week period.

In phase II, the sociability assessment procedure was modified to accommodate the increased age of the children. The child's response in each of five contexts (initial reaction, response to request to approach, reaction to initiation of turn-taking game, response to a verbal query, reaction to stranger's attempt to pick up and read to child) was rated on five-point scales similar to those used in Phase I. In addition, the observer recorded her/his overall impression of the child's sociability on a nine-point scale, and the six ratings were then summed.

In phase III, a simple nine-point rating scale (similar to the overall impression scale employed earlier) was employed to rate the overall sociability in relation to the strange adult entering the house/apartment and seeking interaction with the child.

Child Personality: The child's score for field independence, ego resilience, and ego undercontrol were computed by correlating the ratings assigned by the mothers or careproviders on a Swedish translation of the hundred-item California Child Q-sort (CCQ) with the criterion scores for the most field independent, ego resilient, and ego undercontrolled child supplied by the Blocks. These correlation coefficients were then used as scores in all subsequent analyses. Mothers completed Q-sorts in Phases II and III; alternative careproviders completed them only in Phase II.

Peer skills: In each phase of the study, the children were observed interacting at home with familiar peers. The thirty-minute episodes were divided into consecutive fifteen-second observation units, followed by fifteen-second breaks for recording the child's behavior. For each observation unit, the observer recorded the incidence of any of twenty-three discrete behaviors or states and also rated the quality of peer play using Howes' (1980) six-point rating scale, on which 0 is scored when there is no play, a 1 is scored when there is parallel play without eye-contact or social interaction, a 2 is scored when there is parallel play with mutual regard, a 3 is scored when there is simple social play, including directing social bids to the other child, a 4 is scored when there is complementary and reciprocal play with mutual awareness, and a 5 is scored when there is complementary and reciprocal social play. Further details are provided in Howes' (1980) coding manual. As a measure of the tendency to engage in high quality peer play, we counted the total number of '3'-s, '4'-s and '5'-s (range 0-60) on the Howes' scale¹. In paper V the total number of '0'-s' (range 0-60) was used as a measure of withdrawal from peer play. The scores for 'withdrawal from peer play' and 'amount of high-quality peer play' are thus negatively correlated, but they are not redundant because they are not exhaustive. '1'-s' and '2'-s' were coded in about half of the observation units. Two peer interaction scores were

¹ In paper II, '2'-s, were also included, but since the 3- and 4-item measures were highly correlated in phases I and II we do not consider this problematic

also derived for the purposes of analysis (papers II and IV): positive peer-related behaviors (the sum of the observed incidences of initiate play, imitate, vocalize, touch, proffer, accept, and laugh/smile), negative peer-directed behaviors (the composite total for reject bid, turn away, take away toy, take toy from, have toy taken from, throw, defensive struggle, offensive struggle, strike/hit, and cry).

Verbal abilities: We used Scale C of the Griffiths' (1954, 1970) Developmental Scales, the most widely-used measure of early intellectual performance in Europe. At the ages studied here, Scale C demands that children be asked to name a number of objects, pictures of objects, and colors; to explain the proper use of objects; to describe the actions and activities depicted in a picture; to explain how to address an everyday problem (e.g., "What do you do if it's raining and you want to go out?"); to tell what different things are made of, and to repeat sentences of increasing length. All items are organized by increasing level of difficulty, with a baseline determined by completion of six successive items, and termination signalled by six successive failures. Criteria for success are fully specified, and there was near-perfect agreement among the three trained examiners employed in this study. Further details are provided in the books by Griffiths (1954, 1970), and Alin-Åkerman and Nordberg (1980), who conducted the Swedish standardization. All scores are converted into developmental quotients in order to adjust for variations in the children's ages.

Adjustment to out-of-home care arrangements was also assessed in paper V. Four weeks after the child entered out-of-home care, careproviders were asked to rate the child's adjustment to the alternative care facility. Careproviders rated the child's adjustment in relation to peers, to staff and to parents, on five-point rating scales (ranging from 1=much poorer adjustment than average to 5=much easier adjustment than average). The three scales were then summed. Two months later, parents of out-of-home care children were mailed a questionnaire in which they also rated their child's level of adjustment to out-of-home care on the same three dimensions. Parental ratings were also summed.

In phases II and III all parents were asked to provide their overall impression of their current child care arrangement. Interviewers rated the parents' answers on a 8-point scale with predetermined anchor points describing typical answers. Thus "*gives examples that show child care to have been beneficial for both child and parents during the year, doesn't want to change to other type of care*" was coded '8', whereas "*seriously worried that child care may have harmful effects on the child, wants to change type of care as soon as possible*" was coded '1'.

Ability to play alone was also assessed in paper V. The observer presented the child with a variety of interesting toys in the mother's presence. After the child had had a chance to play with the toys for a couple of minutes, the mother told

the child that she was going into the kitchen to prepare drinks and snacks, and instructed the child to continue playing with the toys. The observer stayed with the child for 1 minute (unless the child refused to remain alone with the observer), and then went to join the mother. The mother was instructed to encourage the child to return to the toys if the child followed her. Ratings continued for three minutes after the observer left the child. The child's behavior was rated on an eight-point scale ranging from 'child was never away from mother more than fifteen seconds and was distressed when the mother encouraged the child to return to play' (1) to 'child plays alone during the whole observation period and makes no attempt to contact the mother' (8).

Reliability. All observations (peer interaction, ability to play alone, sociability, quality of care indexes) were conducted by one of three individuals who trained together using videotapes and pilot subjects until achieving criterial degrees of reliability. For the peer interaction and HOME inventory codes, criterion was set at 80 percent exact agreement; for sociability and the Belsky and Walker items, criterion was set at 90 percent. Once data collection began, 15 percent of the sessions were conducted by two of the observers, working simultaneously but independently. Reliability coefficients were within 5 percent of the criterion levels in each of the subsequent reliability assessments.

*Data analysis strategy*¹

A concept such as "quality of home care" is an example of what is called a latent variable (LV). By definition, LV's can only be measured indirectly - - that is, they can be empirically described and analyzed only using some linear combination of a block of observed indicators, a list of measures which are assumed to represent the same unobservable concept or phenomenon when modeling its effects or consequences (see Bookstein, 1982, 1986). Structural equations modeling (SEM), for example LISREL, constitutes one technique for describing LV's and assessing the predictive power of one or many with respect to an "outcome" latent variable. There has been considerable discussion regarding SEM and its appropriate use both in the social sciences (Muthen, 1987) and developmental psychology (Biddle & Marlin, 1987). One major problem with the use of SEM,

¹ The PLS-analyses for the present studies were conducted by Dr. Bookstein at the University of Michigan, USA, who also performed the analyses for papers II and III. Dr. Bookstein also wrote the computer program utilized. Copies of the program are available from him. Dr. Ketterlinus at the National Institute of Child Health and Human Development, Bethesda, USA, performed the PLS-analyses for paper IV, and, he is the first author of the original article (Ketterlinus, Bookstein, Sampson & Lamb (1989) from which this description of PLS is excerpted.

at least in developmental research, is that large samples are needed to take full advantage of the method (Tanaka, 1987).

In these studies we have used a statistical analysis strategy called the Partial Least Squares technique (PLS), or "soft-modeling". This tool, developed principally by the Swedish statistician Wold (1975; Jöreskog & Wold, 1982), is intended as an alternative to LISREL in the exploration of complex social phenomena that have been measured indirectly. The reader who is interested in the principal differences between PLS and LISREL and the mathematical models underlying the techniques is referred to Bookstein (1986) or Ketterlinus, Bookstein, Sampson and Lamb (1989).

In using PLS one attempts to explain the cross-correlations between scores on one or more indicators (manifest variables) in one block and scores on one or more other (outcome) blocks. The goal of PLS is to provide a simple summarization of associations among multiple measures in two or more batches or blocks by providing the best (least-squares) reduction of the structure of a covariance matrix using the LV's included in an a-priori-list. In PLS the "best" estimate is one which best approximates the correlations as expressions of an association between single underlying dimensions of each block. In this approximation, each LV is a weighted sum of its own indicators, with the weighting coefficients equal to the correlations of its own manifest indicators with the other LV.

PLS-computations do not prove causal ordering, which must be specified according to theoretical assumptions and earlier findings. The data analysis therefore must start by organizing a model of the constructs and variables at hand, and the hypothesized links among constructs. This is usually done using a diagram or a figure (figure 1, paper I, figure 1, paper III, figure 1, paper IV). In the figure, the researcher names the blocks, that is the constructs or latent variables, under study and lists the manifest variables or indicators included within each block. These indicator variables are chosen a priori, on the basis of theory and earlier empirical research.

Once a design model has been outlined, a PLS analysis generally proceeds in two basic phases: (1) an analysis of two-block models, and (2) a multivariate (i.e., multiple block) analysis.

(1) Each two-block analysis extracts one pair of latent variables fitting a particular off-diagonal correlation matrix. Two-block analyses yield three basic statistics which are used to reach a decision concerning the final model; singular vectors and their saliences (s), the ratio of the first two singular values (rsv) of the cross-correlation matrix, and a two-block correlation coefficient (r) between LV scores.

Saliences describe the patterns of correlation between the indicators of one block with the LV score of the other block. These g 's are evaluated, block by block, in terms of magnitude and sign relative to other saliencies within the same singular vector or block. PLS analyses are most successful at reducing the complexity of the pattern of intercorrelations when the saliencies of indicators in the outcome block are roughly similar in sign and magnitude across the 2-block analyses involving each of the other LV's.

The singular-value ratio (rsv) estimates how effectively the first pair of indicators exhaust the correlation matrix under study. This ratio is used to determine whether a particular pair of LV's summarizes a sufficient fraction of the available correlational information. Ketterlinus et al. (1989) suggests a cut-off of a 2:1 ratio between the first and second singular values, representing a 4:1 ratio of explained summed squared correlations, as a threshold for "meaning" of the first LV pair.

Finally the between-LV correlation (r), which is the ordinary Pearsonian correlation between the two linear combinations of indicators as weighted by their saliencies, is computed.

The process of selecting LV's for inclusion in a final multivariate model involves a series of interlocking decisions based on some statistically reasonable criteria, on a well-grounded knowledge of the phenomena being studied, and on the ability to provide reasonable and logically consistent explanations of the interrelations among the concepts and variables in question.

(2) Multivariate analysis. In the final phase of a PLS analysis, the correlation between each block and the shared outcome LV is computed. Within each predictor block one then gets two columns of saliencies. The left-hand column saliencies are those yielded in the two-block analysis, whereas those on the right are derived from the multivariate analysis. The latter saliencies are proportional to the correlations between each indicator variable and the opposing outcome LV block. The end result of the multivariate analysis is two sets of Pearson correlation coefficients; those between each block of predictor variables and the final outcome block, and one between the sum of all the predictor blocks and the outcome block.

In sum, then, PLS is an exploratory data analysis technique which concisely summarizes the intercorrelations among a large number of variables, thereby providing insight into the links among indirectly-measured concepts and phenomena. Because the procedure emphasizes inter- rather than intra-block correlations, it makes questions of prediction paramount. The procedure also permits researchers to determine whether coherent blocks exist, and whether the distinctions between certain blocks are empirically defensible.

Results and discussion

Social Competence and personality development: The aim of papers II and IV was to assess whether the type of child care received by children over a three year period had an effect on their social-/personality development. Type of care received by children had no demonstrable effect on their observed social skills or reported personality. This finding is largely consistent with the results of a number of studies indicating that out-of-home care beginning in the second year of life does not have a reliable and consistent effect on emergent social competence (see pp. 25 to 26).

As noted earlier, quality of care was expected to be much more predictively informative than would the type of care, and in paper II and in study 1 of paper IV this was indeed the case. In these studies, which included children who were cared for by their parents in addition to those in family and center care arrangements, the quality of care received both at home and in alternative care settings was influential, as were measures of reported social support, prior social competence, and child gender. When we restricted our sample to only those children who were in out-of-home care arrangements throughout and included additional measures of the Quality of alternative care (study 2 of paper IV), there was a substantial increase in predictive power of our overall model and the Quality of alternative care latent variables gained in predictive power.

The quality of home care had a significant impact on both social skills and reported personality traits, and the most consistently informative variable was the score on Caldwell's Home inventory; coefficients for the Belsky and Walker checklist scores tended to be both more modest and inconsistent. In the sample restricted to those children with consistent out-of-home care (study 2 in paper IV), the Belsky and Walker positive score was the most powerful predictor of social skills, but counterintuitively, the coefficient was negative. The inconsistency of results involving the Belsky and Walker scores leads us to be cautious about any predictions involving them.

The findings concerning the association between paternal involvement and social competence varied across the studies. In paper II and in study 1 of paper IV, the degree of paternal involvement was negatively associated with social skills. Among the sample of children who consistently experienced out-of-home care (paper IV, study 2), the opposite relationship was obtained; the degree of paternal involvement in Phases I and II was positively associated with observed social skills in Phase III. Although there was no effect of group on social skills in paper II and study 1 of paper IV, the findings suggest that fathers of children in home-care situations may have become more involved in child care when their children showed poor social skills, perhaps in an effort to ameliorate the situation. It is also possible that fathers of children who were in alternative care si-

tuations throughout the study became increasingly involved with their children, and this increased involvement may have had positive effects on the children's subsequent social skills. In both studies, paternal involvement was positively associated with maternal ratings of more mature child personality.

In the earliest analyses (paper II), involving assessments through Phase II (when children averaged 28 months of age and had one year of out-of-home care experience) on data from the complete sample, the quality of alternative care, as assessed by non-structural measures, had no significant impact on social competence. By contrast, both sets of analyses reported in paper IV (when children were one year older and had one more year of out-of-home care experience), one using the same measures as in paper II and the other using an expanded model which included additional measures of the quality of alternative care, revealed noteworthy associations between quality of alternative care and both of the outcome latent variables. The second study, involving the most restrictive sample, revealed particularly strong associations between quality of alternative care and social competence. The differences across analyses could be attributable to either sample composition, improved model specification, or increasing effects over time. The less restrictive sample selection procedures employed in paper II led to the inclusion of children even when their group assignment changed before follow-up: measures of the quality of alternative care may have been rendered less sensitive as a result. In study 1 of paper IV, personality maturity was facilitated by greater numbers of hours in out-of-home care, by lower scores on the Belsky positive index, and by higher scores on the Belsky negative index. In the restricted sample used in study 2 of paper IV the direction of these associations were the same, but the relative importance of the Belsky indices were greatly diminished. Thus both sets of analyses again raised questions about the validity of the Belsky and Walker (1980) checklists as measures of the quality of alternative care, and about their usefulness as indicators of quality, relative to the structural measures of quality employed. Although the first analyses in paper IV provided limited support for the intuitive prediction that high quality alternative care would have positive effects on social competence, the results of study 2 provided strong evidence that some structural markers of quality care have a combined impact on social competence as measured here. These structural components included those traditionally found to be associated with infant and child outcomes (group size and child/teacher ratio), as well as peer group structure or composition, age range and age mixture.

Reported support had a modest association with outcome in paper II and in study 1 of paper IV (especially when personality maturity was the outcome measure), and variations in internal coefficients across analyses preclude specifying the type of support that was most influential. The generally positive influence of available social support is consistent with research which has demonstrated that high levels of available support enhance the quality of parental beha-

vior (see page 18), and our results indicate that this may in turn have a desirable impact on children's personality maturity. However, our predictions concerning support were not confirmed in the more restricted sample used in study 2 of paper IV, where available support had no impact on social competence. Perhaps social support was more important in the home care subgroup, or the effects of alternative care simply "outweighed" the effects of support as measured two years earlier in the more restricted sample of alternative care children.

Among the child characteristics studied, only gender was substantially predictive of social development; girls scoring higher than boys on the development of peer play skills.

Verbal/linguistic competence: As in the results regarding social-personality development, type of care was not predictive of verbal-linguistic competence. This finding, although at variance with the results obtained in Sweden by Andersson (1989), is in line with findings that out-of-home care experience has no influence on intellectual development except when the out-of-home care comprises an intensive intervention (see pages 26 to 27). One must also bear in mind that Andersson's results refer to eight-and-a-half-year-old children, with five to six years of day care experience, whereas the results in paper III are limited to preschool-aged children, with only two years of out-of-home care experience. Only a long-term follow-up of these children will make a comparison with Andersson's results possible.

Using different measures of intellectual development (the Griffiths' Scales) and subjects from a different culture (Sweden), the results in paper III confirm the association between quality of home care and intellectual/linguistic development in young children which has consistently been found in the United States using PPVT, Stanford-Binet, and WISC measures of intellectual development. Our findings thus demonstrate once again the validity of Caldwell's scales, including (in the case of our Phase III assessment) a composite score comprising twenty-five of the fifty-five items on the preschool version of the HOME inventory. The correlations between contemporaneous measures of home care and verbal-linguistic performance obtained in study 1 were just under .40 compared with coefficients of around .55 obtained in Caldwell's prior research with heterogeneous samples in the United States. Presumably the measurable impact of quality of home care would have been even more substantial had there been greater variability in the measure of home care, where we found less variability than, for example, in the standardization samples reported by Caldwell and Bradley (1984). Despite this, however, the HOME Inventory was the most useful source of information concerning the quality of home care, and knowledge of the quality of home care provided the best basis for prediction of verbal-linguistic competence in children averaging twenty-eight and forty months of age. In the case of forty-month-olds, knowledge of earlier cognitive competence provi-

ded nearly as good information, but knowledge of both sorts of information did not significantly increase the degree to which intellectual performance could be predicted. It is also worth noting that the latent variable tapping family socioeconomic background did not make a significant contribution, and that the correlations between the three quality of home care latent variables were modest. This indicates that quality of home care, as assessed here, is not simply a proxy index of socioeconomic status.

The results reported in paper III underscore the formative impact of the quality of home care and indicate that neither the type nor the quality of out-of-home care were predictively important where intellectual outcomes are concerned. The greater importance of home care variables is not surprising since those children averaged only thirty hours per week in alternative care settings and spent the rest of their waking lives (say 54 hours per week) in the care of their parents. Another interpretation of the result is that threshold effects are involved, such that the quality of alternative care is influential only when it falls below a threshold level. Because alternative care facilities are generally of high quality in Sweden, it is conceivable that most could have provided at least adequate (supra-threshold) quality. Finally, the relative unimportance of the quality of alternative care reported here may change when we reexamine the quality of alternative care variable in the more restricted sample, and with structural measures of quality.

Like quality of out-of-home care, individual child characteristics were predictively unimportant in this study. Although the contemporaneous measures of child sociability was significantly correlated with Griffiths' scores at both twenty-eight and forty months, in neither case did knowledge of sociability add significantly to the amount of variance in linguistic/verbal performance explained by knowledge of home care alone. Associations between sociability and verbal ability were expected on the basis of many previous studies, either because sociable infants are more cooperative with examiners and thus perform better and/or because sociable babies elicit more stimulation from adults and thus become more competent. The fact that contemporaneous coefficients were most useful suggests that the performance effect is more significant. Parental ratings of the child's temperament might have been expected to aid in predicting intellectual performance but did not, in fact, do so. Perhaps this represents a problem of scaling -- most toddlers were rated Easy. In addition, parents rated temperament one and two years before the assessments of cognitive competence.

Inhibition in relation to social development and out-of-home care: In paper V, a composite measure of inhibition was constructed, using indices of the children's behavior at home, when the children were 16, 28 and 40 months of age. Children's reactions to peers as well as to unfamiliar adults comprised the basis for the measure of inhibition.

The increased contact with strange adults that followed from enrollment in out-of-home care did not affect children's inhibition at twenty-eight and forty months of age. In addition, inhibited and uninhibited children were not differentially affected by the out-of-home care experience. The fact that these findings diverges from those of others (see page 28), who found that sociability was negatively related to out-of-home care, may be due both to the fact that our children did not enter out-of-home care until they were around sixteen months of age and to the fact that most children were in municipal daycare, which in Sweden is generally of high quality. Such an interpretation is validated by our finding that inhibited children had more difficulty initially adjusting to out-of-home care than did uninhibited children, although we could no longer detect differences in the adjustment of inhibited and uninhibited children at twenty-eight and forty months of age. One could speculate that supportive and stable out-of-home care settings might help inhibited children overcome their adjustment problems, whereas unstable and unsupportive environments might initiate vicious cycles in which inhibited children increasingly withdraw from challenging circumstances. Overall, these findings suggest that inhibition in the first years of life is best viewed as a fairly stable dimension that is not systematically affected by ordinary life changes like those implicit in the initiation of good quality out-of-home care.

Although out-of-home care did not affect later inhibition, it was related to children's dependency on their mothers, and it interacted strongly with type of care in this respect. In general, children with consistent out-of-home care histories were less able to play alone in their mothers' absence than were children reared exclusively at home. More striking, and somewhat puzzling, however, was the fact that inhibited home care and uninhibited out-of-home care children had the greatest difficulty playing alone. Among the children with one year of home care experience, who were rated uninhibited one year earlier, few made any attempt to contact the mother during the three-minute period they were expected to play alone. Inhibited home care children, were more likely to have difficulty letting go of the mother. These children tended to approach the mother a couple of times during the observation period to show her things, but then returned to the room where the toys were. In the out-of-home care group the children's behavior was quite different. A few inhibited children in this group were completely unable to let go of their mothers and refused to play alone, whereas others managed the 3-minute separation without much contact with the mother at all. The uninhibited children in the out-of-home care group demanded more contact with their mothers than did the inhibited ones: they wanted their mothers to participate in the play actively. This interaction between type of care and inhibition was found when using either the two- or three-item sixteen-month (but not 28-month) measures of inhibition as the independent variable. The meaning of these differences between children with and without out-of-home care experiences are not clear.

Individual differences in inhibition were moderately but significantly stable over the two years of study. Indeed, scores on the composite measure were more stable and predicted subsequent scores on the component constructs (sociability with an unfamiliar adult; withdrawal from peer play) better than did prior measures of these constructs themselves. Other findings underscored the predictive and construct validity of the inhibition construct. The composite measure of inhibition was related to the quality of peer play in the expected manner. Not only did inhibited children score lower on the contemporaneous measure of high-quality peer play (which in part could be attributed to the fact that peer withdrawal comprised one component of inhibition), but they also engaged in less high-quality play one and two years later. For the subgroup of children who entered out-of-home care, furthermore, the same relation was evident when peer play was studied in the out-of-home care setting. Thus inhibition was shown to be an important determinant not only of sixteen- to forty- month-old children's tendencies to participate actively in peer play, but also of their ability to engage in high-quality peer play involving turn-taking and social pretence.

Finally, American reports of sex differences in inhibition and sociability was not replicated. This is consistent with other findings (Lamb, Hwang, & Broberg, in press) suggesting a greater tendency among Swedish parents and preschool teachers than among their North American counterparts to treat boys and girls similarly.

Summary and conclusions

In this three-year longitudinal project, we have studied the effects of out-of-home care on toddler's and preschooler's social-, personality, and verbal-linguistic development. Our findings are in accordance with theoretical propositions put forward in the theoretical chapter, and the results confirm to a large extent what has been found earlier in other (mainly North-American) cultures.

- * Type of care -- that is whether or not a child began out-of-home care during its second year of life was not in itself predictive of social, personality or linguistic development one and two years later. Evidently, the average child is malleable enough (as discussed in the section on stability and change in child development) to develop normally in a variety of rearing environments. As in other studies performed in Sweden, we did not confirm some American assertions that children in out-of-home care settings develop more negative social behaviors. However, children in out-of-home care (especially those rated uninhibited at the preassessment), were somewhat more dependent on their mothers when instructed to play alone than were there home-reared counterparts.

- * Quality of both home and alternative care, was of decisive importance in determining later outcome, although the relative importance of those two aspects of quality differed depending on type of child outcome. Most important, for all the aspects of child outcome studied here, was the quality of home care, especially the "emotional climate" in the family (socioeconomic factors were of surprisingly little importance). Quality of out-of-home care was also of importance, mainly with respect to personality maturity and the development of social skills. Contrary to our initial presumptions based on the homogeneity of Swedish child care, some of the structural measures of the quality of alternative care were predictive of child outcome. These measures included (1) group size (fewer children more beneficial), (2) child/teacher ratio (fewer children/adult more beneficial), (3) age mixture (more same-aged peers relative to the total numbers of children beneficial), and (4) age range (low age range beneficial). Unfortunately, our dynamic measure of quality of out-of-home care (the Belsky-Walker spot-observation checklist) yielded very inconsistent results, and consequently we have to be cautious in our interpretations of results involving this measure.
- * Paternal involvement predicted child outcome for children in the out-of-home care groups, and social support (especially from grandparents) predicted positive child outcomes for children in the home care group. Both these findings are in accordance with theoretical propositions regarding the impact of a well-functioning family microsystems on children's development.
- * Two of the child characteristics studied here were predictive of child outcome. First, girls developed more positive peer play skills than did boys. Second, inhibited children had more difficulties in their initial adjustment to out-of-home care, and they developed less sophisticated peer play skills than did children rated as uninhibited. The results concerning inhibition highlight the need to include measures of child characteristics in future studies on the effects of out-of-home care.

Finally, one needs to keep in mind the composition of this study-group.

- * All our children were firstborn.
- * Although our children came from diverse social backgrounds, they were all living in two-parent families initially, and none of their home-environments were of really low quality.
- * Most of the children who entered out-of-home care, were in public day care facilities. Although this day care represent the type of day care offered to Swedish toddlers and preschoolers, by international standards the children must be said to have been in high-quality day care. Furthermore, the average length of stay in out-of-home care per week was modest (thirty-five and

twenty-three hours/week in the day care center and the family day care groups respectively).

We consider our results valid for average Swedish parents, who place their children in public day care, and take advantage of their right to reduced working hours, but one has to be cautious in generalizing our findings to vastly different care giving environments both at home (e.g., to socially isolated single mothers who has to work full-time), and out-of-home (alternative care environments of really low quality). However, given the predictive power of our quality of care variables (both home and alternative) in spite of the fairly narrow range, it seems probable that our results would have been even clearer had we also included home and alternative care environments of really low quality.

The children who participated in the longitudinal study described here are now seven to eight years old, and we have continued to follow them. Our follow-up studies in connection with their entry into the primary school-system will permit us to test whether differences in rearing environments (both at home and in the alternative care settings) will lead to increasing differences between children as they grow older.

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