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AUTHOR Cohen, Monroe D., Ed.
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ABSTRACT

This publication contains six papers presented at the 1975 Texas Conference on Infancy. The papers present discussions of (1) intervention studies and programs for infants and families, (2) the interaction between infants and their caregivers, (3) mutual adaptation of mother and child, (4) discontinuous mothering, and (5) the emergence of self-concept. Also included is an abstract bibliography of recent infant research. "Intervention and Infant Education" traces the evolution of government programs for infants and families through the past ten years. "Competent Infants and Their Caregivers: The Feeling Is Mutual" discusses the development of competence through interaction with self, others, and inanimate objects. Ideas about ways infants learn, and descriptions of real life behaviors are presented to help caregivers understand the dynamics of developmental changes. "Reciprocal Interactions Between Infants and Mothers" explores the mutual adaptation of mother and child. It is proposed that the quality of feedback from the infant's actions influences the quality of his motivation for subsequent interaction and his competence in getting what he needs or wants. "Discontinuous Mothering - Expanding the Alternatives" reviews statistics associated with discontinuous mothering, describes its effects on children, and presents some alternatives. The need for quality caregiving is identified as a national problem, involving comprehensive economic, political and social factors. "Roots in Infancy for Later Development" points out the importance of self-concept in the development of a competent, healthy adult. (Author/SB)

Understanding and Nurturing Infant Development

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Coordinator: Joe L. Frost

Editor: Monroe D. Cohen

Editorial Assistant: Sara Hadley

Association for Childhood Education International
3615 Wisconsin Avenue, N.W.
Washington, D.C. 20016

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Introduction

During recent years professionals concerned with child development have directed increased attention to infants and the total family. This focus has resulted from intense research and program activity showing that success and health in later living are closely related to: (1) the quality of the emotional and physical environment of the infant, (2) the health care provided the infant and his mother, and (3) the quality and extent of nurturing relationships between the infant and his caretaker(s).

Opportunity for many of America's youngest citizens to receive care of reasonable quality is presently in jeopardy as our traditionally intact, extended family structure is eroding at a rapid rate. Most mothers are now working outside the home, the rate of divorce continues to increase, and various types of abuse and neglect are documented with greater and greater frequency. Although we readily acknowledge that the family is the best setting for child development yet devised, the plain and sobering truth is that many mothers and fathers are not around to take care of their children. Many need assistance (informational and economical) in caring for their children, and some do not have sufficiently good health (physical or emotional) to care for their children. For such families we are learning what certain other modern countries already know: child care is a community responsibility—it is everybody's business.

The Association for Childhood Education International (ACEI) has a special interest in infant and family development. One expression of this interest was the Texas Conference on Infancy held at the Lyndon Baines Johnson Library and the Joe C. Thompson Conference Center on the University of Texas campus in Austin on June 22-24, 1975. ACEI co-sponsored the Conference with the College of Education, University of Texas; the Education Service Center, Region XIII; the Office of Early Childhood Development, Texas Department of Community Affairs; the Texas Education Agency; and the Texas Department of Public Welfare. Official registrations included 763 persons, representing a wide array of backgrounds, from twenty states and three countries. The contributors at this conference included leading infancy early childhood specialists and a large number of infant parent-program directors and personnel.

ACEI is preparing two publications from the Conference proceedings. The present publication contains papers that have a relatively strong technical or research orientation. The focus of the projected second publication will be on practical applications of knowledge about infants in center and home contexts. There is no pretext to represent the comprehensive range of information now available in the field. Rather, the two volumes will present an overview of selected topics that appear to be useful to parents and professionals seeking to improve their parenting/caretaking skills.

In the opening selection *Ira Gordon* explains why the United States is currently involved in intervention studies and programs for infants and families. In his usual lucid style, Gordon traces the evolution of programs through the past decade. Just ten years ago, coinciding with the birth of Head Start, these relatively narrow programs began and grew through many revisions to their current state of emergence into a fourth generation

of research and service efforts. These efforts will extend beyond initial simple concern with health and education to various types of longitudinal research, a broad range of social supports, and the entire range of societal arrangements. Gordon sets the tone for the remaining papers in stating that effective programs should assist children to meet three major needs: (1) close transaction of affection with a mothering person, (2) a stimulating environment and (3) continuity of care.

Catherine Cooper talks about how infants develop competence through interacting with self, others and inanimate objects. A two-way feeling develops between the caregiver and the infant, with each party contributing to the positive (or negative) feelings of the other. Cooper's discussion of key ideas about ways infants learn, and her descriptions of real-life behaviors, will help caregivers understand the dynamics of infants' developmental changes. Consequently, varying moods and activities can be read; and affectional and physical needs can be met in a personalized way.

The process of mutual adaptation of mother and child is explored further by *Jill Thrift*. The quality of feedback from the infant's actions influences the quality of his motivation for subsequent interaction and his competence in getting what he wants or needs. This competence that grows in "normal" interactions can be retarded or stopped by a marked absence of quality dyadic involvement.

John Holloman reviews the sobering statistics associated with discontinuous mothering, describes its effects on children and presents some alternatives. Supporting the previous views of Gordon, he identifies the need for quality caregiving as a problem of national scope, involving comprehensive economic, political and social factors.

Gloria Zamora places self-concept in a central position in respect to the development of a competent, healthy adult. The emergent concept of self is rooted in infancy and is influenced by five major areas of incompatibilities: poverty, culture, language, mobility and perceptions. Central elements of a child-care program intersect with these incompatibilities and can be studied as an aid in program improvement.

This first volume is concluded by *Sue Wortham's* extensive annotated bibliography of recent research, which will be supplemented in the second volume with an annotated bibliography of practical program-oriented materials.

I wish to extend deepest gratitude to the many friends of children and ACEI who worked to make the Texas Conference on Infancy a smashing success—particularly to Alberta Meyer, Lorrin Kennamer, Jeannette Watson, Joe Parks, Glen French, Merle Springer, Mauro Reyna, the Conference presenters, and my thirty-five good friends comprising the Planning Committee. Performance at every stage was simply *superb!* Special thanks to Monroe Cohen for his typical dedication and skill in preparing this material for publication. My optimistic hope is that it will have some impact on the attitudes and actions of those who influence infant care. Rearing healthy children *is* everybody's business!

JOE L. FROST
ACEI *Vice-President* Representing Infancy (1974–1977)
Convener, Texas Conference on Infancy (June 1975)
The University of Texas at Austin

Intervention in Infant Education

Ira J. Gordon

It has been approximately ten years since the United States began its first recent large-scale efforts in early childhood education. This summer (of 1975) is the tenth anniversary of Head Start. Although designed for children immediately prior to entry into the public schools, Head Start is a milestone because the same forces that led to it also led to efforts for infant intervention. The differences are that we began infant intervention work on a small scale research-oriented base in those years and only a few years later developed the federal research-and-demonstration approach and coming service efforts.

In this paper[1] I shall try to trace (1) the why of infant intervention, (2) the progression of programs from the 1965 period to date, (3) and the ancillary and emergent research from these programs, ending with a short view of where I think we are now and suggesting future directions.

WHY INFANT INTERVENTION?

What seemed to happen in the early 1960s in the United States was the intersection of several factors: the psychological research on the importance of infancy, the sociological research on the effects of poverty on achievement, the political impetus to raise living standards, and the socio-political push for civil rights.

The origins for infant education (or intervention, since efforts were assumed to be of value only for disadvantaged infants) programs lay in a number of different studies. First, the Iowa studies in the 1930s seemed to show that mentally retarded infants, removed from an orphanage and given loving care, prospered. Follow-up showed many of these infants were successfully integrated into the American society (Skeels, 1966).

When these efforts by Harold Skeels and colleagues (1938) were first presented to the scientific community before World War II, they were rejected because of belief in the doctrines of fixed, inherited intelligence and maturation. The turning points in the reconsideration of the role of the environment came in J. McV. Hunt's influential book, *Intelligence and Experience* (1961), and Benjamin Bloom's review of longitudinal studies, *Stability and Change in Human Characteristics* (1964). These two books and the re-examination of Piaget's work by educators, which began in the late 1950s as a result of Sputnik and the push for curriculum revision in math and the sciences, prepared the way for scientific involvement in early education.

Second, orphanage studies in the Middle East by Wayne Dennis (1957) during the 1950s indicated that a program of stimulation, introduced in the first year or early part of the second year of life, could overcome motor and intellectual retardation.

[1] Adapted from a paper presented at the Texas Conference on Infancy, Austin, Texas, June 23, 1975.

Third, many studies indicated the educational handicap of poor children and the correlation between poor academic achievement and family factors. But, which way to proceed? The importance of attachment, the disastrous record of institutional care, the general commitment to the family as the primary agency, all suggested some form of work with parents. At the same time, the existence of very disorganized homes, multi-problem families, the need for parents to be out of the home and at work suggested some form of day care. The fact that orphanages and other such institutions had been bad was no reason to assume that a carefully designed, adequately staffed and well-run day care program had to be bad and could not even be of positive benefit.

No guidelines, curriculum or program of structured, systematic infant intervention existed in the early 1960s—although (1) the Iowa and Middle East studies, the laboratory studies on vocalization (Rheingold et al., 1959), Irwin's (1960) project, and the theory and observations of Piaget (1963) all suggested that something might be done to influence infant cognitive and language development and (2) the English, psychoanalytically oriented comments of Anna Freud and Dorothy Burlingham (1940), Susan Isaacs (1929) and John Bowlby (1969) stressed the affective relationship. There were bits and pieces, but a scarcity of details. The efforts described below were therefore of a pioneer type, containing the usual false starts and back-tracks, joys and sorrows of any such undertaking. No good maps of the territory were available and much terra incognita is yet to be explored, but much more is known because of these and similar efforts.

Combination intervention/research programs were funded in the mid-1960s by the United States Department of Health, Education and Welfare to investigate the merits of a variety of approaches (Gordon, 1975, pp. 112-13).

A VIEW OF PROGRAMS

What was done in these efforts and what are we still doing? We have learned from computer and space jargon to talk of generations of models. We can describe generations of programs with the recognition that a generation may be only two or three years long. We are about to enter the fourth generation. This impetus is a marvelous achievement for a ten-year period, but it also means that we sometimes moved to implementation before longitudinal results and hardnosed scientific data were fully in. As educators we often have to do this, but we should acknowledge that we have our own forms of generation gaps.

I will briefly take each generation in turn. My colleagues (Michael Hanes, Linda Lamme, Pat Schlenker) and I have just completed a descriptive review of 44 parent-oriented home-based programs in early childhood education (Gordon et al., 1975). In doing this review we developed pictorial as well as textual approaches to description. Similar techniques have been employed in other such reviews such as the one being prepared by Robert Hess and those previously developed by me (Gordon, 1970), by the Stedman group (Stedman et al., 1972) and by Chilman (1973).

The Design

Table I presents the design. It is possible to describe the first and subsequent generation studies according to whether the focus was on the home, on the

center, or on combinations in which the center was secondary to the home or the home secondary to the center. Programs can be delineated as to: (1) whether the major person working with child or parent was professional or paraprofessional; (2) how activities were designed—sequential with a careful orderly arrangement, sequential with provisions for selection to match individual children or parents, or essentially nonstructured and nonsequential; (3) which view was held of the role of the intervener, regardless of location.

We delineated three major roles for home visitors, which for our purposes can be seen as equally appropriate for center director or teacher. First, the intervener is a teacher with all of the connotations of instruction this role implies. However, the target for teaching could be either the parent or the child or the parent-child dyad. Second, the intervener could be a demonstrator. Although demonstration is a form of teaching, it might be conceived of as a more indirect form using modeling as its major teaching device rather than direct instruction or modification. Third, the intervener might define his or her role as primarily that of a facilitator. In this orientation, the parent takes the major role and responsibility; the intervener simply finds ways to enable the parent to accomplish what the parent desires. This view is an enhancement of already existing parent-skill rather than the introduction of new skills that may be seen as foremost in the above two roles.

Facilitation can be either of two sorts: (1) facilitation of the intra-family arrangements in which parent and child adapt more effectively to each other in ways that the parent seeks or (2) facilitation of arrangements between the family and external agencies—such as medical services, social services and the like. The latter kind of facilitator might also be seen as ombudsman.

First Generation

Placed on Table I are the first generation of research efforts, all of which began around 1965–1966. You will note that I have stayed out of certain ideological debates of classifying programs as operant versus humanistic. I have also omitted the DARCEE program and the Ypsilanti efforts, both of which began in these years as programs for children of age three and above and later developed infant efforts.

Space does not permit detailed review. Since these programs have been around for some time, one may assume that a sophisticated audience is well aware of them. However, certain statements can be made. Schaefer's original work, although in the home, was not parent-oriented but aimed at the child. Clear differences were evident between the Caldwell and Keister approaches and that of Heber. All of these were different from Huntington's emphasis, which took place in a hospital setting. Heber is concerned with demonstrating that a massive intervention effort mobilizing many people and working with a child all day every day over several years can substantially eliminate the nonorganic retardation of children of retarded parents. Caldwell and Keister were funded, interestingly enough, to test whether or not infant day care would be harmful to children. This concern was based on the earlier attachment-literature and the older experience with institutions. Ten years later, in spite of the findings of both Caldwell and Keister, that debate continues. And, in spite of the findings of Heber, the debate about influencing potentially mentally retarded children and how much is "genetic" still rages.

TABLE I

A Pictorial View of First Generation Infant Intervention Projects

STRATEGIES	FOCUS: Home	Home-Center	Center-Home	Center
Intervener				
Professional	Schaefer (c), Levenstein			Caldwell, Keister, Huntington, Heber
Paraprofessional	Gordon (0–2)	Gordon (2–3)		
Activity				
Highly Sequenced	Levenstein		Karnes, Badger	
Moderately Sequenced	Gordon	Gordon		Caldwell, Heber
Unstructured	Schaefer			Keister, Huntington
Role				
Teacher —				
• Parent			Karnes, Badger	
• Child	Schaefer	Gordon		Caldwell, Heber, Keister
• Parent-Child dyad	Gordon	Gordon		
Demonstrator —				
• Parent				
• Child				
• Parent-Child dyad	Levenstein			
Facilitator —				
• External				Heber

If we look at the bottom of Table I, it is clear that these initial research programs were rather narrowly conceived and not comprehensive. Little attempt was made by them to cast the intervener as ombudsman, whether in the center or in the home, although our data reveal that home visitors often informally played this role. No "comprehensive services" were provided, as in Head Start.

A number of these programs were longitudinal in nature (Levenstein, Gordon, Caldwell, Heber); even before the results were in and firm, however, we moved to the second generation. But each, in its own way, was successful: jointly, they gave the field the engineering tools, the delivery systems, the first measuring rods, the beginning technology. And that *is* a great deal.

Second Generation

The second generation represents the movement from university-oriented and related research to field-demonstration projects with generic titles such as Parent and Child Center, Parent-Child Development Center, and First Chance Network. The exception might be the shift at Syracuse University, with the movement of Bettye Caldwell from Syracuse to Arkansas and the appointment of Ron Lally. These changes transposed the Syracuse program from center into the center-home category and, for pregnant prospective parents recruited in the program, to home category. The Caldwell program

in Arkansas is also a second-generation program fitting into the center-home category.

The Parent-Child Centers, of which 36 were established, fall into the two middle groups. In some places, depending on age of the child, the first three categories applied. For very young children, programs focused on home visits. As the children arrived at the walking stage, programs combined elements of center and home. Where an individual program might be assigned would depend on the amount of time spent in each and types of activities involved. These programs were established around 1968. In 1970, three sites were selected as more research/demonstration-oriented PCC's and re-labeled Parent-Child Development Centers. The New Orleans programs compared a home-visit approach to a center approach. The Houston program is a combination of home and center, in which for the first year in the program (child's age one-two) the effort is in the home; in the second year (child's age two-three), the focus is a combination of center and home. The Houston Parent-Child Development Center is one of the few places that has made a careful, systematic, and fairly successful effort to involve fathers. The Birmingham center is a center-based program.

The First Chance Network, funded by the Bureau of Educationally Handicapped, is an extension of infant efforts from the normal children involved in all of the first-generation programs (if one excepts Heber's focus on potential mental retardation) to children with special needs. The infant programs within the BEH operation are various combinations of home- and home-and-center efforts. All of the second-generation efforts were primarily "compensatory education" or "special education" in nature. We still had not developed the view, either in the research effort or at the federal level, of infant education for families across all socioeconomic groupings, except in cases where handicapped children had been identified. The concept that there was something worthwhile for infants had not yet surfaced in program development by the early 1970s.

Obviously, the PCC, PCDC and BEH programs do not represent all of the wide variety of local infant-intervention efforts that dot the countryside. Private foundations and groups such as the National Council of Jewish Women have been instrumental in varieties of day care efforts that have educational components. Basically, however, all of these programs can be placed on the grid shown in Table I. We can also include as second generation the Ypsilanti and DARCEE infant programs, Fowler's infant day care center in Toronto, and the Hawaii family day care satellite network (Rauch and Crowell, 1974). To some degree, these represent a research thrust rather than a demonstration or service thrust. A major characteristic of second-generation programs in contrast to first is the increasing role of facilitation. All of the PCC and PCDC efforts involve comprehensive services. The role of the teacher or home visitor may be direct or that of referral agent. All second-generation programs pay considerable attention to health, nutrition, social services, and the relationships between families and external agencies. Basically they rely on paraprofessionals as home visitors.

Third Generation

Although we are ready for the fourth generation, we are really still developing the third. And the fourth, to some degree, will be overlaid on it. The best-known representative of the third generation is the Brookline Early Education Project. Here we transcend compensatory education and move

into parent education and early education across social class, ethnic group and economic background. It also fits in the research-group category.

The Brookline program in its first year was very concerned with health status and physical examinations. It defines the role of the intervener primarily as facilitator rather than as teacher. As a reversal from the second-generation reliance on paraprofessionals, including the extension activities from Levenstein and our work, the staff at Brookline is professional (so is that of the Ypsilanti home-visit effort). The Brookline program combines home visits in the first year, on various schedules depending upon experimental group assignment, with opportunities for parents to attend group meetings and be involved in center-oriented work. As the children grow, there will be more and more movements to mixtures of center and home-visit and then probably a center program for the children themselves.

Before the 1965-marker time, obviously many efforts had been made in the field of parent education. Most of these were from a mental-health orientation and were of a group-discussion nature. Brim's book (1965) indicates that such efforts were not successful. An interesting third-generation thrust, however, which resembles elements of the Parent Child Development Center and earlier efforts of looking at parent-child dyads in interaction, is emerging. Two quite different examples are the work of Nina Leif at the New York Medical College[2] and that of Athol Packer and Michael Resnick at the University of Florida. The parent groups cut across socioeconomic lines, consist of volunteers, and meet in weekly sessions in which mother and child are together. Efforts are underway for the involvement of fathers as well. In the Leif program, at least as I observed it, the group leader (a semiprofessional) plays a highly active teaching role. The group leader in the Packer-Resnick program plays a much more non-directive facilitator role. In the former, topics are somewhat sequenced; in the latter, topics emerge from the observation of mother-child interaction. The Leif effort is a research one; the Packer-Resnick work is not, but is tied to teacher education.

Fourth Generation

Recent conferences on infancy and home-based early education, the work of the Education Commission of the States, the emergence of state offices of child development, all suggest that a fourth generation will soon be undertaken. This will be large-scale implementation in service programs, which is already present to some degree in many community mental health center efforts. It will be considered a normal institutional activity for social agencies and schools to undertake infant programs.

It has been a remarkable journey: from the goals in 1965 to demonstrate that infant day care was not harmful, that parents could be home-visited, and that teaching mothers "to play with their babies" was not foolish, to the institutionalization, to some degree, of the concept of infant education. I would suggest to you that, although we have come far, we have left a lot of territory uncovered. We still have much to learn, and many fundamental questions to be resolved.

Where are we now?

First, we seem to be moving rapidly from research-oriented programs to

[2]Personal visit

service- and replication-efforts. We find broad application of the varieties of activities that have been developed and utilization of mixtures of paraprofessionals and professionals. New programs combine many of the roles and settings that had been initially more narrowly defined. *Second*, we are moving from a compensatory-education and deficit-orientation view to the recognition that something is in this for all. Families and children can profit from outside assistance focused on enhancing parental child-development strategies. All parents can enhance their teaching and interpersonal skills; all infants can profit from some form of educational effort. To say this does not by any means imply sanction of compulsory programs, or removal from the parent of the family role as the central learning institution, or reduction of the parental role as primary decision-maker concerning the types of efforts, if any, in which the family chooses to be involved.

A *third* movement is a recognition that there are such things as parenting skills. These are not only narrowly defined in terms of necessarily specific acts, but also broadly cover notions of sensitivity, responsiveness, autonomy granting, openness. In other words, they are attitudinal as well as behavioral. We can identify some of these skills. We have data to suggest the relationships between them and child development. A movement is emerging for teaching such skills and attitudes to adolescents before parenthood—as in such efforts as the high school curriculum, "Exploring Childhood."

PARENT-INFANT INTERACTION RESEARCH RELATED TO INTERVENTION

When the intervention studies began, program designers had little in the way of data to draw on for indicating modes of parent-infant interaction. Most of the early efforts therefore tended to stress the nature of the activity or the delivery system rather than the nature of the interaction. The issues that divided programs stemmed more from ideology than from data. Partly as a result of these programs, we have built and are building a data base about factors in the homes of infants and in the adult-child interaction, which reliably contribute to child performance at a later date.

There have also been a series of nonintervention observations of infants' environments and effects on development. A major problem, however, and one that must be stressed, is that most of the nonintervention studies, and many of the intervention research efforts, have extremely small samples. I am constantly amazed at how often sweeping generalizations are made from a very small data base. Not only are the samples usually small in numbers, but also they are sometimes nonrepresentative of the American population. My suggestion is that we view findings as indicative, suggestive, supportive of directions, but that we not invest them with the aura of commandment. The facts are not written on the tablets.

Observational Studies

First, let us turn to the observational research that offers cues for program development. The following are, obviously, samples rather than the total field. I am confining myself to studies reported in the 1970s.

Wachs, Uzgiris and Hunt (1971) observed infants in a home setting and measured children on Piagetian-type cognitive tasks. With their small sample (20 at each of five age levels) they found consistent relationships between home environmental factors (e.g., "There is at least one magazine

placed where the child could play with it or look at it; the child was given regular training in one or more skills; the mother spontaneously vocalizes to the child, the mother spontaneously names at least one object to the child while the observer is in the home, the father helps take care of the child; the father plays with the child at least ten minutes a day; the child is regularly spoken to by parents during meal time"—pp. 295–304) and cognitive performance in the first two years of life.

Leon Yarrow and his associates (Yarrow, Rubenstein and Pedersen, 1975) observed 41 black infants in the District of Columbia when these children were five and six months of age. They observed the interaction of the infant with the primary caregiver, usually the mother, and measured the infants' functioning on the Bayley Scales and a number of other measures which they grouped as cognitive-motivational, exploratory behavior, and preference for novelty. They indicate the importance of taking into account infant individual differences. They draw as implications for intervention: (1) we have no norms for adequate child-rearing conditions; (2) we must engage in multi-variate analyses rather than assuming any single relationship between a child-rearing characteristic and child-performance; (3) a so-called disadvantaged group is not homogenous; (4) infants seem to have the capacity to form strong attachments to several adults when they have multiple primary caregivers; (5) environmental variables do indeed influence motor development. They also suggest that girls seem to be more influenced by the environment early in infancy than do boys. I would stress the importance of both data collection and reporting by sex, since we have found a number of interesting sex-related differences.

Mary Ainsworth and Sylvia Bell (1974) observed both middle-class and low-income families in the Baltimore area. Using attachment as the major theoretical variable, they found that, in the 26 white middle-class homes, not only were there relationships between maternal behavior on such dimensions as sensitivity-insensitivity, acceptance-rejection, cooperation-interference and attachment, but also that these behaviors were related to child performance on the Griffiths IQ Scales at age one. Bell (1970) found, in low-income black homes, relationships between attachment and cognitive performance as measured by the Uzgiris-Hunt Scales, based on Piaget.

A just-reported study (1975), by Mary Engel and William Keane, of 49 black mothers and their sons in Harlem demonstrates relationships *within* class and caste between child-rearing attitudes, home-setting variables and child test-performance. They observed in the homes when the children were 14, 18 and 22 months old and in addition scored the mother on a Psychological Mindedness (PM) Scale, based on interviews. Observations and PM scores were then related to Bayley at those months. They report that "different maternal behaviors are related to Bayley scores at different ages"; for example, maternal encouragement is related at 14 months, while "reward," "punishment" and "affectionate contact" are positively related and unavailability is negatively related at 18. A whole host are related at 22, including any verbal interaction (p. 4). But the more important finding, because of its longitudinal nature, is that PM predicts Wechsler Preschool and Primary Scale of Intelligence (for smaller N of 22) between PM at 14 months and WPPSI at 5½–6 years.

An interesting side finding from Engel's program of research is that mothers who had to take care of siblings when they themselves were in their

teens are less responsive, less confident and have more conflict with their own children than do other mothers (Wieder, 1972). So, again we see the complexity of forces that influence the mother-child relationship and the child's development.

Two other observational studies approaches that have been widely cited are those by Escalona and Corman (1973, 1974) and the Harvard Preschool Project of White, Watts and their colleagues (1973). Escalona and Corman draw few conclusions; it should be noted that their careful work is a longitudinal, observational study of two children. White and Watts et al. describe A and C children, in which A children are younger siblings of generally competent brothers or sisters and Cs are not. Extensive observations were conducted in the homes and a variety of measures made on children. Much has been made of the findings, yet sample-size raises caution flags. The total sample consisted of 31 subjects, 17 boys and 14 girls. Twenty-two belonged to their A category, and 9 belonged to the C. Further, when these are divided by either socioeconomic status, category or age of recruitment (1 year old, or 2 year old), there is no single cell with more than four children in it. (Class 1, 2-year-old boys). There is only one Class 5 child in the study. [There are 6 Class 4 children, 9 Class 3, 5 Class 2 and 10 Class 1] (White, Watts et al., 1973, pp. 32). Fathers of the children in Classes 1 and 2 have graduate professional training, while the education of the fathers in 3, 4 and 5 range from college graduation to elementary school graduation (White, Watts et al., 1973, pp. 32). This is a home-reared population, obviously mostly well educated and upper income. Half the sample is in Class 1 and 2. Even within this sample, the Class 1 and 2 families contain only A children; and Class 4 has only 1 A child and 5 Cs and the one Class 5 family contains a C child. Class 3 families contain 6 A and 3 C children. Thirty families are white, 1 is Afro-Latin.

I would urge that you not base program decisions on such a sample. If we are talking about implications for infant programs for the vast majority of the American population, then conclusions reached from this type of sample are obviously inadequate to the task.

Nevertheless, the observational research of White and Watts and of Escalona and Corman are extremely useful in giving us tools for the examination of relationships between observed mother-infant behavior and child performance within intervention projects. With the help of both research groups, we were able in our Social Roots Study (Gordon, 1974) to use elements of their observation schedules (which we found quite useful and productive) in the examination of videotaped intervention teaching events.

One other study, by Tulkin and Covitz (1975), deserves mention because it indicates relationships between mother-infant interaction and the intellectual performance of girls at age 6. Thirty middle-class and 30 working-class 10-month-old first-born white girls were studied twice in the home, each time for two hours. Of these 60 subjects, 25 of the middle class and 21 of the working class were observed again when the children were between 5½ and 6½ years old. The homes were visited on two separate occasions, and the ITPA, the Peabody, the Matching Familiar Figures test were administered. Many significant correlations are reported for the middle-class population between mother-infant interaction at 10 months and test performance at age 6. Few are reported for the working class. Among these are maternal vocalization, infant vocalization and the number of interaction sequences.

Further, Tulkin and Covitz (1975) report correlations between child laboratory variables at 10 months and test performance at age 6, with social class differences. It is a long gap from 10 months to 6 years; yet the pattern of relationships is clearly present in the middle class and equivocal in the working class. Tulkin and Covitz are extremely cautious about interpretation, but indicate the "highly consistent set of correlations between attachment measures and later test scores (1975, p. 6)."

We have then on varying small samples, without replication, cues from non-intervention research as to home conditions and parent-child interactions that relate either to performances in the infant period or to later child performance. Although it is a limited picture, it is useful.

Data from Intervention Projects

The picture is more hopeful when we turn to intervention programs that also gathered data on home factors and/or parent-child factors within their intervention populations. Of particular importance are the data from the Arkansas Project, the Verbal Interaction Project, the Ypsilanti infant project, the Florida projects, the New Orleans Parent-Child Development Center, the Hawaii Infant Satellite Nursery, the Toronto day care projects, and the Waterloo (Iowa) Home Start program.

Let us look more particularly. There were 77 families in the Arkansas study (Elardo, Bradley and Caldwell, 1975). Less than half were on welfare, fathers were present in 56, the average education was high school graduation. There were 29 black males, 21 black females, 15 white males and 15 white females involved in this study. Measures were made of the home environment, using Caldwell's Inventory of Home Stimulation. They found significant relationships between the emotional and verbal responsivity of the mother, the avoidance of restriction and punishment, the organization of physical and temporal environment, the provision of appropriate play materials, maternal involvement with the child, and opportunities for providing daily stimulation measured at 6 months with the child's performance at age 3 on the Stanford-Binet. They do not present data by either sex or interaction of sex and race. They conclude that their data "indicate that perhaps the most enriching environment as experienced by the children in our sample may be characterized as those in which a mother (or some other primary caregiver) provided the input with a variety of age appropriate learning materials and likewise consciously encouraged developmental advances by talking to, looking at, and otherwise positively responding to and attending to her child (Elardo, et al., 1975, p. 75)."

Levenstein, in a presentation this March (1975) at the American Orthopsychiatric Association Annual Conference, indicated that, for low-income families, there was a relationship between her measure of parent and child interacting together (which includes such things as control, encouraging autonomy, nurturance, verbal interaction) and IQ at 46 months, and a correlation of such child behavior traits as ability to cope and IQ. One can question the fact that the non-IQ data were collected by the toy demonstrator who obviously has a vested interest in the program, but nevertheless the relationships seem reasonable.

Lambie, Bond and Weikart (1974) gathered observational data on structured verbal mother-infant interaction data and mother behavior

during Bayley testing. They found a slight relationship (r = .32) for 56 families between Bayley scores at 19, 23 or 27 months (depending upon the cohort) and verbal total scores, but no systematic relationship between mother behavior during Bayleys and the Bayley scores.

Fowler (1974) at Toronto used the Caldwell home-stimulation measure and Andrews et al. (1975) at New Orleans used a form of the Watts scale to assess mother-child interaction. In both cases, sample sizes were so small and represent unclear portions of their total program populations as to make the result suspect.

Rauch and Crowell (1974) observed the behavior of seven infant caregivers on an instrument derived from Watts and others. They rated: "(1) teaching, directing and conversation; (2) suggesting and helping; (3) encouraging and praising and (4) ignoring and prohibiting (p. 93)." Twenty-six children were assessed on the REEL Scale of Receptive and Expressive Language and three clusters from the Bayley Infant Behavior Inventory. In this family day care project a substantial relationship was evident between the presence of the first three dimensions and absence of the fourth and children's progress.

Scott and Smith (1972) developed an FEPV (Family Environment Process Variables) scale based on home-visitor records in the Waterloo, Iowa, Home Start program for 2-to 3-year-olds. They reported that ratings by independent judges of FEPV (involvement, interest, aspirations, family routines, etc.) were unrelated to race (16 black, 10 white) but were related to both initial child Stanford-Binet scores and to gains on the Concept section of the Iowa Test of Preschool Development.

The important point is that efforts were and are being made in the above programs not only to assess changes in the home environment and in mother-infant interaction, but also to begin to relate such variables systematically to child performance within the intervention and control groups.

In our longitudinal efforts, Resnick (1972) audiotaped 41 black mothers with their 2-year-old babies in the waiting room prior to the child going in to be tested on the Bayley. He analyzed mother language variables, 26 in all. There were relationships between these variables and child performance on the Bayley at 2 and on the Binet at 3. We have re-analyzed these data for these families, in relation to Binet performance at age 6. We find a moderate (.50) relationship for the girls between Binet performance at 6 and maternal language at child's age 2.

When our children were 6, we used the Home Environment Review (HER), which is similar to the Caldwell measure, and found not only that the 126 parents in our experimental programs significantly differed in all seven items (awareness of development, rewards for intellectual attainment, press for language development, availability of reading materials, learning opportunities outside the home, materials and space in the home, reading press) from the 51 control families (Gordon and Guinagh, 1974), but also that within the experimental families there is a pattern of relationships between the provision of these home environments measured at age 6 and child performance at age 6. This finding seems to be particularly true in the utilization by the family of out-of-home experiences as learning experiences for the child.

The longitudinal data within the experimental group, based on 69 families

(31 of boys, 38 of girls), consisted of weekly home-visit reports between ages 2-3, mothers' attitudinal measures at 3, mothers' education at child's age 3, and Stanford-Binet data at age 6. For the total group, mother's attitude toward the project, feelings of internal control, self-reports of interpersonal adequacy and personal appearance, and amount of education all contributed significantly to the multiple correlation to the Stanford-Binet at age 6. Mother's education was the key single variable for the girls; personal appearance and social relationships, as measured by the How I See Myself Scale, were the key factors for the boys.

In two of our projects, Instructional Strategies in Infant Stimulation (Gordon and Jester, 1972) and Social Roots of Competency (Gordon, 1974), we observed and coded on the Reciprocal Categories System (a derivative of interaction-process analysis) the videotaped interaction of the mother and child in a home-visit session every six weeks, from 13 weeks to 49 weeks of age. For the 128 families in the ISIS project, there were significant relationships between teaching style at 37-49 weeks and Bayley Mental Development scores at 1 year. We can describe three teaching styles, two of which are positively related, and one negatively related to child performance. A positive style is one Escalona (1974) might call "sustained reciprocal social interaction," which we have labeled "Ping Pong." It is a back-and-forth, elicit-response style which may be begun by either mother or infant, lasting for maybe a half minute or so or longer. The other positive style is that after the baby has begun an activity, he or she then picks it up and carries it on his or her own. The negative style, labeled "professor", is adult talking to but not paying attention to the responses of the child.

The Social Roots study relied heavily on the assistance of observation schedules from Escalona and Watts in addition to the ISIS-RCS. We found a number of affective behaviors that seem more related to boy performance than to girl. For example, the Escalona item of mutual gazing is positively related, as early as 13 and 19 weeks, to Bayley scores at 52 weeks. A combination of Watts items we labeled "maternal push" seem to be negatively related to boy performance on some factors on the Bayley scale and positively to Piagetian items. For both sexes, maternal teaching behavior beginning as early as 19 weeks consistently predicts child performance on Piagetian type activities at 52 weeks.

In general, our longitudinal data and observations seem to complement the Arkansas study and to some degree, supplement the Wachs et al. study on the relationship between home factors and cognitive performance. Remember, these relationships are *within* a low-income population and are not the result of social class factors.

Perhaps the major conclusions from these intervention studies are: the importance of the movement away from seeing all people in a population as alike and, more than that, seeing all treatments as being equally applied, toward a much clearer recognition of something we all understand; first, the range of individual differences within the population and second, the fact that treatments have different effects. The third major conclusion is the set of relationships uncovered between home environments, maternal attitudes and behaviors, and child performance. These intervention/research efforts can be viewed as successful not only on the simple-minded basis that experimental children did better than control children on some measure of IQ, but also—and perhaps more importantly—because they give us maps of the

territory and suggest to the next travelers better means to get there. We need to develop more effective aptitude-treatment interaction or subject-by-treatment designs for matching what it is we intend to do with the family's desires, needs and already developed strengths.

SUGGESTIONS FOR THE FUTURE

This summary stems easily from the previous section. First, we note an emphasis on individuality—evident in the Yarrow, White-Watts, Engel and Keane, Wachs and Escalona studies and in the intervention research itself. It can be seen in many of the second- and third-generation efforts.

A second major common finding, with implications for programs, is the complexity and diversity of family life, transcending ethnic and socioeconomic groupings. Simple programs aimed at single factors will probably not be worthwhile. Suggested is a need for far more sophistication in our approach to infants and families and a wider spectrum of multivariate programing.

Hunt (1961) posed for us, almost fifteen years ago, "the problem of the match." As we develop infant education efforts, we have a dual match problem: (1) matching to family and (2) matching to child. We have to examine the transactional relationships of what it is the child contributes to the situation, rather than operating from the old concept of adult affecting the child. We have known for a long time of the importance of transaction, but we have really not become expert in implementing this kind of knowledge.

Continued Research

It is obvious that we need much more research. We occasionally hear people saying the problem is simply implementing what we know. That conclusion is not true. as we implement, we continue to increase our knowledge-base. What we know is based upon very small samples in scattered places without adequate replication. What we need in all these new fourth-generation efforts is a continued research thrust. We need more studies of the type conducted by non-intervention observers, but we also need far more studies of the type conducted by program people who seek not only to evaluate the effectiveness of their program, but also to understand and increase our knowledge of the family and child development. We have to continue a cycle of movement from research—program including research—program—further research. We need, that is, to impress upon the funders—whether at the state or federal level—that moving to institutionalized programs without continued research support will not be as productive as a combination of program and research. Somehow we must convince the Social Security Administration, for example, and state-level people that if they do not build in cost for research and evaluation not only will they not know whether the programs are effective, but also they will be fixated at the level of program we presently have. Such a level is far from sophisticated enough to solve the needs.

We know that programs should begin early and should be continuous. Examination of the longitudinal studies indicates that it takes time for effects to show up, and it takes continued involvement for effects to last. Again, a message is carried to funders that the short and snappy solution, the quick and dirty solution, is not in the long run the worthwhile one.

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The experiences of the Parent-Child Centers and Parent-Child Development Centers, particularly, along with Head Start and Follow Through, indicate the tremendous importance of comprehensive approaches. The Syracuse, Arkansas and Brookline efforts, for example, included and continue to include a heavy emphasis on health and nutrition. I would urge that we go beyond simple education and health to recognize that effective infant intervention programs require a range of social supports—in housing, jobs, adult education; adequate access to social services, sanitary conditions, and the whole sweep of societal arrangements—if children are to fully develop. Said another way, we need a synergistic rather than a reductionist approach to infant and parent education. Simply teaching parents a particular narrow skill, or concentrating on teaching a child a particular performance, is not what it is all about. Effective programs should provide a wide sweep of opportunities for children to meet the three major needs identified in the 1940s by Dorothy Burlingham and Anna Freud (1944): (1) the need for close transaction of affection with a mothering one, (2) a stimulating environment and (3) a continuity of care. Infant education requires that we enable families as well as institutions to provide this. If we do, then we can add on the whole variety of parenting skills or caregiver skills that have been and will be uncovered, and we can enhance the environment. But first these needs must be met. It will take various approaches to meet local conditions, but the history of the last ten years shows we are on the way.

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Competent Infants and Their Caregivers: The Feeling Is Mutual

Catherine R. Cooper

If you work with infants—as a parent or other caregiver—or are involved with training others to do so, you have the opportunity and challenge of guiding children through a time when some of the most dramatic and influential changes in all of human development take place.

In the astonishingly brief period of eighteen months, the infant is transformed from a person who cannot even turn over in his crib to one who can, with help, climb the stairs; from one unable to reach out and grab an object held directly in front of him to one who can poke a hairpin into an electric outlet; from one who communicates only with cries to one who can recognize and name pictures of animals in his story book.

In observing infants during this period, it is impossible to apply the distinction (which sometimes arises during the school years) between "work" and "play," between activities in which the child is learning and those in which he participates for sheer pleasure. For the infant, it is refreshing to see that learning truly is play; he will practice a newly acquired skill (e.g., making a new sound or nesting boxes of different sizes over and over), not because someone else rewards him but because it gives him a sense of well-being simply to be able to do it.

Throughout this paper, we will explore this sense of competence and its expression in the infant's feelings of curiosity, involvement and effectiveness as a learner and problem-solver. The infant develops competence with regard to: (1) physical objects around him, (2) his own body and sense of self as a person, and (3) the people around him (parents, other caregivers, peers). We will be talking about what this competence looks like, how it changes during infancy, and especially how caregivers can most effectively support and enhance their infants' development.

Before we begin to describe the competent infant, let us review one of the most important ideas about caregiving itself, one that lies at the heart of helping nurture an infant's sense of competence. It is that adults as well as infants have positive feelings when they are successful in doing meaningful things. Thus, the link between the baby's and caregivers' feelings of competence is the foundation of effective infant care. When your infant has a good day, happily involved in activities and materials, you also have a better day. Not only is it easier and more fun, but you also feel like a better parent or teacher.

And the link works the other way too. How does this two-way feeling develop? To gain it you are not required to memorize detailed charts of infant development or to have a college degree in psychology. You must,

however, have a commitment to becoming attuned to infants' needs and to finding out what each infant is ready to learn. For example, if a center's staff members feel recognized and supported and if they participate in deciding how the center is run, they are more likely to be hungry for new ideas and innovations; and the program will continue to seek and solve new challenges. The interest and energy to try new ideas in finding the appropriate match between caregiving activities and the infant depends on each adult's own sense of self-worth.

This paper will have five parts. In the first, we will discuss four key ideas concerning ways infants learn. These principles, true for all babies, provide a foundation for deciding on many aspects of infant caregiving. Second, we will meet and "watch" three babies: Shelly, who is 3 months old; Ysidra, 8 months; and Noah, 14 months. As we describe what they are like and how their caregivers interact with them, we will build a picture of the major landmarks of language, social, motor and mental development. The way their caregivers stimulate and respond to each of these babies is different, and we will see that these ways of interacting change with the baby's age and sometimes with the particular mood and activity as well. In the third part of the paper, we will extend the four ideas about how babies learn and our picture of the landmarks of how babies change. We will highlight ideas that can be used either by parents or by staff members in designing a center, including its equipment, teaching strategies and parent involvement. We will close with a group of questions that many caregivers ask about infants. Finally, we will list books and films that have been helpful to teachers and parents, as well as those with responsibilities for training new staff for infant centers.

KEY PRINCIPLES OF HOW BABIES LEARN

1. *Competent babies and their caregivers are individuals with distinctive needs and styles of interacting, able to "tune in" to each other in mutually responsive ways.*

Many of us, from experiences with the public schools or other settings in which children are evaluated according to age norms, approach an infant-care program wanting first of all to know what the average (and especially the "advanced") infant can do at each age. Of course, to see infants developing vigorously is highly satisfying; and we do need to have a general idea of the typical sequences and rates of development so that we may be sensitive to indications that an infant may need special attention. But, especially during the first two years of life, the normal course of development includes very broad variation. Not only is each baby different—even each identical twin—but each caregiver is, too. One infant may be quite placid, preferring to observe quietly the things and people in his world and to nap regularly and soundly, while another is active and energetic, vigorous to the point of almost exhausting himself in practicing reaching and other motor skills and preferring to nap only briefly and lightly.

With such differences, each infant and his or her caregiver need time to get to know one another. For the infant, this time means gaining experience looking at the caregiver's face; hearing his or her voice and becoming familiar with distinctive movements, sounds and smells unique to that person. Conversely, for the caregiver, getting to know the infant means learning not only to read the baby's general style but also his varying

moods. How does he act when sleepy, when ready to concentrate, when ready to withdraw his attention? When during the day is he alert for the longest time? When fretting, is he calmed by being cuddled, by being gently rocked or perhaps by hearing soothing humming? No single style "works" for all babies. When we look at Shelly, Ysidra and Noah, we will see how their caregivers explore different things that might be the most appropriate for their infant's age and current mood.

2. *Competent infants are able to develop a sense of basic trust with their parents or other special caregivers and build on this foundation of trust to become confident and self-sufficient toddlers.*

Infancy is a time when babies may learn that the world is one in which their needs for food, warmth and affection are met and in which they feel secure and safe. On the other hand, if they are never sure whether or when their urgent needs will be met and if satisfaction is uncertain, their days become frustrating and chaotic. A sense of basic trust is built on individual attention that is warm, consistent and sensitive to the infant's needs. One infant may frequently lie in his crib for fifteen minutes at a time, wet or hungry and screaming, then may receive the most solicitous attention the following day to make up for the previous day's experiences. Another may be put down for her afternoon nap one day at one o'clock, the next day at two, and miss it altogether the third day. The same child may be brought to the center two days one week, every day the next, and one day the next; when she does come, her caregiver may or may not be at the center. These are common examples of inconsistent treatment that undermine a child's security.

In one representative center, each caregiver takes special responsibility for four children (such as one child 6 months, two 15 months, and another 24 months old). While sharing responsibilities for all of the children in the center, the caregivers plan time during each day for one-to-one interaction with each of the children in their groups (Tronick and Greenfield, 1973). This arrangement offers a number of advantages. A stable relationship between infants and their special caregivers provides a familiar, finely tuned context for effective teaching. The security of this relationship provides the infants an essential foundation for independent activity. It has been observed that children who are secure in their relationships with their caregivers are likely to explore an unfamiliar situation and new people more extensively (Ainsworth, 1975). The world seems a great deal safer when a familiar leg or lap is ready to offer respite from a bold venture into the unknown. Finally, the infant with a trusting relationship is more gratifying to care for. He is likely to quiet more easily and to entertain himself happily for longer periods of time because he is confident that both his physical and psychological needs will be met.

3. *Competent infants thrive on stimulation that is varied, appropriately timed, linked to their actions and presented in a context of basic trust.*

Many people have felt that a quiet infant is a happy one and that an infant should be left alone in his crib if he does not seem to mind. We now know that children who have been left in their cribs except to be fed or changed, such as those in some orphanages, have shown signs of declining intellectual development as early as 8 weeks of age (Fantz and Nevis, 1967). In contrast, a high level of interest in exploring and manipulating the environment and a longer attention span have been directly linked to the stimulation that care-

givers provide as they smile, talk and touch their infants (Yarrow, Rubenstein, Pedersen and Jankowski, 1972.)

However, what forms the basis of competence is not simply the *amount* of stimulation (such as having a great many toys, books or mobiles placed around an infant). Rather, it is the *quality* of the stimulation, especially its interest to the infant, its timing, and the context in which it is presented. An effective caregiver chooses materials that are intriguing to the infant, given his particular level of skill and current mood. What was an exciting toy last week may have lost its appeal if it has been available every day. This situation occurs in many infant centers when mobiles are hung above young infants' cribs and left there for a month or more, or when "old standbys" such as shape-boxes are brought out day after day. The skillful caregiver watches to see if the infant is continuing to discover new things with a toy; if not, it might be put away for a week or more. In the meantime, the infant may have learned new skills so that the same object, perhaps in combination with others, becomes a new toy because of the new things the infant can do with it.

The timing of stimulation can make the difference between an intriguing and an intrusive experience. When the caregiver watches for a period in the day when the infant is alert, awake and interested in exploring and communicating, their one-to-one interaction will be most productive and mutually satisfying. If the infant is tired or fretful, the session is likely to be a trying one. Throughout the day, promptness in responding when the infant expresses himself by crying, gesturing or vocalizing shows him that he has an influence on those around him, and these experiences encourage him to learn to communicate.

Sroufe (personal communication, 1975) has observed that at some point everything is new to the infant. As he gains experience with the novel object or situation, he incorporates it into his understanding of the world. Frequently a new situation may set off a conflict between curiosity and wariness. When the infant feels secure—for example, when he is with his parent or special caregiver—he can tolerate the tension that can build up in a strange situation and can learn from that situation. Without this security, the infant will be more likely to turn away or burst into tears. Thus the foundation of consistent, warm, one-to-one interaction that supports basic trust actually helps the infant learn from a broader variety of experiences.

4. *Infant learning is built on action-cycles of action-result-new action, and the competent caregiver encourages and helps extend and elaborate these cycles.*

The infant begins a new learning sequence by performing some action, such as banging his rattle on the side of his crib. His action has an effect that interests him. it makes a noise. When that result intrigues him, he repeats the action to make the interesting result happen again. The older the infant, the more elaborate this action-cycle becomes. From repetition of simple body movements like scratching his blanket or kicking, the infant begins to use objects in his action-cycles—including mouthing, shaking, banging and (to the frustration of many caregivers) dropping them from cribs and highchairs—to see what effect his actions may have.

Since the young infant cannot speak, these actions are his way of thinking and experimenting with the world around him. Later, when he is able to use

words, images and other symbols, he will use these mental pictures of the actions instead of having to perform and test out each possibility with objects around him. But before he can use symbols, the chance to manipulate objects gives him the greatest opportunity to discover how his world works.

The competent caregiver encourages these action-cycles by: a) watching the infant carefully to see what his mood is, what is interesting to him, what his skills are; b) giving him a chance to practice the familiar and then c) challenging him to extend his skill in new directions with moderately novel materials or caregiver behaviors or follow-up on a new behavior the infant has produced.

The action-cycle thus becomes an action-spiral, leading the infant and his caregiver into new learning areas. The effectiveness of the cycle depends on the successful linking of two unique individuals; in such a system the infant develops a growing confidence that the world is responsive to his needs and feelings. For just this reason the human caregiver will never be replaced by television, which is only a one-way communication situation. In contrast, the interactions between caregivers and infants in these action-cycle "conversations" form one of the most intimate and mutually satisfying times of the day; and they are well worth planning for.

THREE INFANTS AND THEIR CAREGIVERS

We will now highlight some important changes in motor, mental, social and language development that take place between 3 and 14 months of age. Knowledge of these dramatic changes can provide the basis for many decisions about activities for infants. As we "watch" Shelly, Ysidra and Noah and their caregivers, we will be noting three aspects of each period: the infant's skills, the qualities of effective caregiving that are appropriate for each age, and the implications for infant caregivers—both parents and teachers. The behaviors described are based on videotapes made of actual children and their caregivers on typical days, they are not idealized pictures of perfect, unreal infants.

Shelly: Landmarks of Development at 3 Months

When we see 3-month-old Shelly with her caregiver LaDonna, we are struck with the many contrasts in Shelly's repertoire of skills. Even though temperamentally a quiet baby, she is actively using resources for exploring her world. She looks around her, wide-eyed and alert, for half an hour at a time. She follows with her eyes and head when LaDonna moves a bottle across her field of vision, and she searches for a sound when a bell is rung behind her or when people talk nearby. Even when she cannot yet reach out and grasp an object held in front of her, she becomes excited and wriggles when she sees a familiar object such as her bottle.

Because Shelly looks longer at things that are brightly colored, can move and make noise, LaDonna has suspended above Shelly's crib rattles, bells and plastic toys on different lengths of elastic. Shelly is just beginning to reach out and bat the objects with her hands or feet. When she does this, they bob up and down and make different sounds, and an action-cycle is begun. LaDonna changes the objects in the mobile frequently so that Shelly will have new things to attract her interest.

Shelly cannot yet turn over but, when placed on her stomach, holds her chest and head up and looks eagerly about. LaDonna affords encouragement by placing Shelly on her stomach frequently, both in the crib and on the floor, setting pictures and toys nearby which she can watch. Shelly is also propped on her back on a pillow at times to provide a view of what is happening around her.

Even though Shelly can only make cooing sounds, she and LaDonna have developed "conversations" that reveal how responsive each one is to the other. In one such conversation, LaDonna picks up Shelly and holds the infant up close to her face.

LaDonna: Hey, baby, are you going to smile at me?
Shelly (after long pause): Ah!
LaDonna (eagerly): Ah!
(Shelly does not respond.)

LaDonna then places Shelly down on a blanket on the floor, leans over her so their eyes are meeting, smiles, nods slowly and rubs her stomach.

LaDonna: Hey, baby, are you going to smile at me?
Shelly (sneezing): Ahchoo!
LaDonna: Ahchoo!
Shelly (quickly): Eh!
LaDonna: Eh!
Shelly: Ah!
LaDonna: Ah!
Shelly: Ooah!
LaDonna: Ooah!

Shelly then stops vocalizing. LaDonna tries to interest her in a rattle by shaking it over her head; Shelly waves her hand but cannot reach out to grasp it. LaDonna places it in Shelly's hand and wraps her fingers around it. After a few moments, LaDonna turns her over on the stomach and places a squeaky toy beside her.

LaDonna and Shelly are demonstrating three key features of reciprocal conversation (for further discussion, see Brazelton, Koslowski and Main, 1974). First, LaDonna *has set the stage* for effective conversation by choosing a time when Shelly is fed, dry and alert. LaDonna begins by holding Shelly upright, but Shelly is more responsive when lying on her back. LaDonna also nods and softly strokes Shelly's stomach as she brings her own face closer to Shelly's. As LaDonna smiles and gazes at her infant; she tries different ways to *focus Shelly's attention*. First she vocalizes and then waits. When Shelly does not respond readily, LaDonna switches to imitating Shelly's sneeze. Then Shelly spontaneously coos, after which there begins a series of Shelly-LaDonna imitations—with variations. When Shelly stops initiating the cycles, LaDonna responds to this cue by changing the activity, first with the rattle, then by placing Shelly on her back. When LaDonna feels that Shelly is trying to end the cycle, she does not force her to continue or bombard her with stimulation. Thus she *allows for reciprocity*, for two-way influence, and gives Shelly a feeling that Shelly can herself influence how their interaction proceeds.

Mealtime provides another setting for reciprocal interaction. Since Shelly has just begun trying solid foods, LaDonna is gradually acquainting her with the new experience of sucking on and swallowing solid foods by trying about one tablespoon of rice or applesauce after she has had her bottle. The mutuality expressed in the feeding situation is discussed elsewhere in this volume (Thrift, pages 33-36); but we can see the same three principles of the conversation applying to the feeding situation: setting the stage by having a quiet and relaxed atmosphere; focusing and holding the infant's attention and interest on eating rather than forcing feeding; and responding to the child's cues as to when to end the meal.

Ysidra: Landmarks of Development at 8 Months

Enormous changes take place in motor, mental, social and language development in 5 months. Ysidra, who is almost 8 months old, lives in a very different world from Shelly's because of her more advanced skills in each of these areas. Her perspective has shifted from a horizontal to a vertical one, since she can now sit without support and can even creep across the floor to reach a toy. She has begun to pull herself up to a standing position by grasping onto low furniture and even onto the seat of her highchair, which has prompted the use of a seatbelt during mealtime.

Ysidra is happy playing on the floor for long periods of time. She is intrigued with spoons, pans, buttons-in-a-can rattles and especially small blocks, which she enjoys banging together and knocking over when other children or adults build towers for her. She deftly uses her thumb and forefinger in a pincer motion to pick up small objects; and as she grasps an object, she shakes it, bangs it against another of its kind, switches it from one hand to the other, and may even compare it to one larger or smaller.

For the past few months, Ysidra has been developing a new concept known as "object permanence," or the understanding that objects continue to exist even if they are not visible. When Ysidra was younger, she could follow a moving object with her eyes; but when it disappeared from sight, she acted as if it were also "out of mind" (that is, even if she were interested in it, she would not search for it). As she gained more experience manipulating and examining objects from different viewpoints, she also began to look for them when they were hidden from her. In fact, peek-a-boo and hide-and-seek with a box and small toy are now two of her favorite games. The same skills that underlie her concept of object permanence also enable her to grasp the idea of "person permanence," that people continue to exist even if they are not immediately perceivable (Bell, 1970).

Perhaps because of this new understanding, in the last few months Ysidra's attachments to her parents and special caregivers have become more intense. When her mother leaves the infant center, Ysidra's protests are stronger than in earlier months. Children of this age are more cautious with strangers, and such feelings have led the center staff to make sure each child has a particular alternate caregiver so that, in case the infant's regular caregiver is sick, the infant will have an easier time without her.

Ysidra's interactions with her caregiver Bob provide many contrasts with those between Shelly and LaDonna. Ysidra is a more active participant in conversations around her; she listens to people speaking and "interrupts" adult conversations with her babbling or squeals. Bob speaks to Ysidra quite

differently than LaDonna does to Shelly. He *labels objects and events* around her to show that words are used to describe things and actions. Although he does not expect her to say them back, she does respond to her name, imitates some speech sounds such as "pa," "ma," "da," and "ba," and answers Bob with conversation-like but incomprehensible garble. Still, he *encourages her expressiveness* by answering as well as he can. Sometimes she appears to be saying a few wordlike sounds such as "up" and "ba" (which Bob thinks means "Bob"), but mostly she babbles by repeating syllables like "bababa" or "dadada" for fun.

In interacting with Ysidra, Bob sets up many different kinds of action cycles, such as hide-and-seek, give-and-take, and many forms of imitation (including clapping, banging blocks together, babbling, even "fake coughing"). Although Ysidra frequently enjoys repetition of games she already knows, she is attracted by novel objects and sounds. For example, Bob entices her to pull herself up to a standing position by rattling and then placing an inviting toy on top of a low chair.

Ysidra's new motor skills allow her a greatly increased independence during mealtime. She can feed herself a wide variety of finger foods such as scrambled eggs, orange sections, cheese cubes and cooked carrots, potatoes and squash. The food is interesting to her not only for its taste but also for its texture; and Bob gives her time to experiment with her food, squeezing it and changing its shape. One way Bob found to feed her a bit more efficiently with a spoon is to give her another spoon to hold, which keeps one hand occupied. Ysidra also gets "language for lunch" (Tronick and Greenfield, 1973), since Bob finds mealtime a good time for labeling foods and actions, imitating Ysidra's sounds and building conversation-cycles.

Compared to Shelly, Ysidra is very aware of other children. She watches them, crawling or creeping after them, and sometimes grasps unsuspecting playmates in uncomfortable places with her pincer grasp. If a nearby child begins to cry, Ysidra may also begin to wail, although she has been experiencing no apparent discomfort. While eating with other children, she watches to see what they are doing and may imitate table banging, dropping food off her highchair, or even eating foods that she has previously refused.

Ysidra's new mobility, inquisitiveness and finger dexterity have impressed Bob with the need for her surroundings to be thoroughly "baby-proofed": all electrical outlets have been plugged with plastic covers, her shaky infant seat has been exchanged for a bouncer chair, objects small enough to be swallowed or poked in ears or nose have been removed, and furniture for pulling up to stand has been checked for instability and sharp corners.

Noah: Landmarks of Development at 14 Months

Building on a foundation of basic trust, the toddler intensifies his search for independence and autonomy. Barely 14 months old, Noah is developing the motor, mental, language and social skills that place him on the threshold of this self-sufficiency; but we will also see situations that make him feel more dependent on his caregiver for support in exercising his new freedom.

Noah's walk has changed in recent months from a widely paced, tottering stagger toward a more smoothly balanced and direct stride. As testimony to his confidence in walking (and showing a pattern we will see in the mastery of other motor skills), Noah can now combine walking with other actions,

such as carrying large cardboard blocks or propelling one of the push-and-pull toys.

Inquisitive about the world around him, Noah pulls light switches on and off, unscrews jar lids (including the baby powder!), and sometimes frightens himself by turning up the radio without understanding how to reverse his action. As he plays with objects, he likes to manipulate them in combination with other objects rather than one at a time. Thus he enjoys building towers out of blocks, filling and emptying a jar of large plastic pop beads and clothespins, fitting poker chips through the slots in an oatmeal box and stacking plastic rings on a peg.

While Shelly and Ysidra have learned about their worlds primarily from their actions, Noah is beginning to use a new and powerful tool: symbols. Noah shows he is using an object to represent something else when his wash-cloth becomes a blanket for his toy bear, or in dress-up play when a paper sack or even a rainboot becomes his hat. With words and images he can remember past events, imitating actions of other children he has observed on previous days. His new symbolic skills allow him to recognize pictures in a book, and to label them, although sometimes he tries to pick them up as though they were real objects.

Ellen, his caregiver, provides him with stimulation and encouragement to try new things but does not force or ridicule him if he exceeds his limits. Since Noah had a bad cold the week preceding our visit, Ellen has planned some quiet activities. She brings Noah a simple puzzle of large circles and squares and cuddles him into her lap. She places the puzzle in front of him, takes out the pieces, and watches while Noah begins to pick them up and tries to fit them. As he plays, Ellen labels his actions ("Noah puts it in, Noah takes it out") and praises him softly as he fits the pieces. When his interest drifts, she extends his attention by picking up a piece and saying, "What about this one?" When he has placed all the pieces he wants, Ellen says, "Noah, you worked on a big puzzle" and gently hugs him.

Noah still seems interested in sitting in Ellen's lap, so she uses this opportunity for some more language learning. She takes out Noah's picture book and opens it to the first page.

Ellen: What's that, Noah?

Noah: Bird

Ellen: Yes, the bird is flying home to see his friend. . .there's a fish.

Noah: Fis?

Ellen: Yes, a fish. The fish is swimming in the water, like the fish in your bathtub.

As Ellen helps Noah turn the cardboard pages, she continues eliciting Noah's speech by encouraging him to talk about pictures familiar to him, labeling those with which he is familiar but whose names he may not know and expanding or extending things he has said into slightly more complex language patterns.

On more boisterous days, Noah can be seen actively engaged with his peers in his infant center. Even without elaborate language, Noah has made friends and engages in many forms of imitative and reciprocal play. Noah imitates one child's banging a block on the floor and another cuddling a doll

in the house corner. He watches closely as two older toddlers build a tower of cardboard blocks; he walks over and gives a block to one of the children.

IMPLICATIONS FOR INFANT CAREGIVERS

From our survey of infant development, we can identify the sorts of materials that will enhance appropriate and productive stimulation for the infants of the three age ranges we have reviewed.

For young infants (Shelly):

mobiles, wind chimes, brightly colored objects, balls, rattles, medium-size rings, squeak toys.

For infants who are sitting up and grasping (Ysidra):

small blocks, spoons, cups, pans, balls, shakers, unbreakable mirror, magazines

For toddlers (Noah):

Small muscle activities—large jars with objects; simple puzzles; poker chips or other simple items to fit through shapeboxes; stacking rings; nesting cans or boxes; cups for pouring; sealed-can shakers filled with beans, macaroni, etc.

large muscle activities—push-and-pull toys, stairs, slides, large cardboard boxes, balls, bean bags, rocking boats

language and pretend play—pictures, picture books, dress-up clothes, soft dolls and animals, toy telephone

Most of these items can be made easily or purchased at moderate cost. For more ideas, see Honig and Lally (1972), Tronick and Greenfield (1973) and, for one of the least expensive and most helpful resources, Huntington, Provence and Parker (1971).

In the home or in the infant center, the effective caregiver is familiar with each child and alert to match the content, complexity, and demand level of her teaching to the current skills and mood of her infant. She helps him concentrate by finding a good time and place for learning and extends his attention by varying the materials and her tone of voice and in other ways making the situation of greatest interest. She labels and describes the activity and elicits language when appropriate, realizing that he frequently understands more than he can produce. The caregiver may demonstrate or show the infant how to play with a toy, but more often she encourages exploration and the process of problem-solving rather than rushing him to the right answer. She may simplify a new learning situation and elaborate a familiar one, pacing the interaction to match his tempo. Praise, hugging or patting encourages positive behavior; while scolding, physical punishment, shaming or threatening undermines his confidence and self-esteem and presents a less positive adult model for him to imitate.

When parents decide to enroll their child in an infant center, they do so to supplement their child's experience and thereby strengthen their family. Even though parents may be grateful and even relieved to know that their children are receiving supporting and enriching experiences at the center, feelings may develop that can impair the home-center partnership. Sometimes parents become jealous of the affection their child develops for another caregiver, or they may feel inadequate when the center provides a

toy or experience the parent wished could have been a family contribution. Other parents may feel criticized when a caregiver reports that the child has had a bad day and asks if some home situation was its cause. From the caregiver's point of view, parents may be seen as encouraging and appreciative or distant, uninvolved or even apathetic or hostile. Sometimes staff and parents hold conflicting values concerning approaches to child care.

The more parents are involved, the more cooperation and continuity can grow between home and center. Parents and other caregivers can be partners in helping their infants by sharing information on how to encourage mutually desirable behavior, rather than competing against, suspecting or blaming one another. They can explore together the values on which the infant curriculum is based, including what sort of sex-role behavior is considered desirable, how aggression should be handled, what role should be accorded to physical punishment, how toilet-training is best facilitated, and other issues of common concern. In many centers parent-caregiver committees have planned activities that strengthen this cooperative bond, such as providing consumer-information on preparing nutritious, low-cost meals for growing children, conducting discussions on effective discipline, or holding a workshop on making toys for home and center.

The infant will thrive in an environment in which the adults he cares for also care for one another and are mutually supportive of their complementary roles.

COMMON QUESTIONS ASKED ABOUT INFANTS BY THEIR CAREGIVERS

A few questions seem to come up any time caregivers, especially new ones, talk about infants.

1 *Don't babies need to eat a lot to keep up their energy and help build their muscles and bones?*

According to Dr. T. Berry Brazelton, many caregivers overestimate the nutritional needs of their infants. An infant's daily needs are satisfied by a) a pint of milk or its equivalent, such as in cheese or ice cream; b) an ounce of orange juice or one piece of fruit; c) two ounces of protein containing iron, such as egg or meat; and d) a multi-vitamin preparation. Many caregivers supplement servings of milk, fruit and protein with dark green or yellow vegetables (high in vitamin A) and enriched or whole grain bread or cereal (rich in B vitamins) in place of a multi-vitamin preparation. By appreciating the extent of the infant's needs, many mealtime battles can be avoided.

2. *If you pick a baby up when he is crying, won't you spoil him and won't he cry even more?*

According to research by Dr. Mary Ainsworth, during the first year of life the caregiver who responds to her/his infant promptly by picking him up and trying to reduce his distress is more likely to promote basic trust and independence in the second year. Such responsiveness also appears to actually reduce rather than increase crying by encouraging the infant to communicate in other forms.

3. *Isn't it true that there is no real need to talk to babies, since they can't understand you anyway?*

Infants are responsive to speech sounds from birth, and quickly begin to

learn to "read" their caregivers by the tone and tempo of their speech as well as by their touch, gestures and facial expressions. Babies understand much more than they can say, and talking to them encourages them to begin figuring out the meaning of the language around them.

4. *Is it bad to talk "baby talk" to an infant?*

When an infant is very young, it does not matter whether his caregiver speaks baby talk or Shakespeare. The heart of early language development is building an easy, two-way give-and-take between caregiver and infant. A caregiver should speak, sing, laugh with her or his infant encouraging him to respond to her, in many ways with coos, gurgles, smiles and babbling. Soon the infant is listening to and watching conversations around him. These reactions show that he is becoming interested in words and language. The caregiver should use language with him, such as calling his name and labeling objects, people, actions and feelings. Such early exchanges, even those in which the infant does not say a word you can understand, encourage him to become involved and interested in the communication process and, as he enjoys it, motivated to seek more and more articulate ways of participating in it.

5. *Is it beneficial or harmful for infants to have someone other than their parents care for them?*

Consistency plays a primary role in early experiences and relationships. Continuity in relationships allows the infant to find regular patterns in his world which he can anticipate and influence. Most infants interact with many different people, including family members and neighbors; but they need a small number of central, continuing, warm relationships within which to develop a basic trust and confidence in themselves. From these stable relationships, the infant can reach out and explore the unfamiliar world around him. For this reason, it is important for a particular staff member in a center to care for an infant consistently and, whenever possible, to work with the infant's family to build consistency in values from which his experiences are planned.

6. *Is it true that the earlier you teach your baby to do certain things, the more intelligent he will be?*

Research has not found a consistently strong relation between early teaching of specific skills and later intellectual gains. In fact, the most effective teaching a caregiver can provide is to encourage the infant to learn how to learn—through exploring, watching, questioning and problem-solving—rather than force-feeding him particular skills. Learning how to learn enables him to use resources around him in an active way and builds his self-esteem as an effective person. Training him to perform some specific behavior at a precocious age, instead of fostering his curiosity and eagerness for discovery, may teach him to be a passive performer in response to adult praise.

In summary, we have seen that the competent infant is one who is eager to observe, explore and understand his world and is developing confidence in his experiences with the people, objects and events around him. We have also seen that effective caregivers in homes and infant centers interact with their infants in a personalized way, rather than from any packaged curriculum. These effective patterns start with the recognition that both infant and caregiver have special interests and preferences that will be reflected in their

behavior. The caregivers of Shelly, Ysidra and Noah adapted their interactions to the mood as well as the age of their infants. To find this "match," they used a variety of communication styles and materials, especially those that built up cycles of action-result-new action, so their infants kept learning how their behaviors affect people and objects around them. With warm, consistent support and encouragement from their caregivers, these infants are developing increasing levels of skills and feelings of accomplishment. These interaction-cycles not only promote the central emotional bond of basic trust but also are a primary source of intellectual stimulation. From the earliest conversations, the infant is learning how to communicate and that what he says is important to the person who is important to him! Finally, we have seen that, when the responsibility for caregiving is shared, parents and center staff have found that mutual support and close communication lead to smoother and more satisfying experiences for adults and infants alike.

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Jill Carol Thrift

Reciprocal Interactions between Infants and Mothers

The literature available to prospective and new parents most often focuses on the role of *parents* in their child's development. Although it is currently popular among researchers to investigate the effects of *infants* on their parents, it will be a while before this emphasis finds its way into the journals and paperbacks many parents depend upon for guidance in child rearing. The work of Brazelton (1969) and that of Chess, Thomas and Birch (1972) are exceptions. Brazelton and Birch in pediatric practice, and Chess and Thomas in psychiatric practice, have observed the striking individuality evident in infants from birth. Parental responsibility undoubtedly shapes infant development, but the infant's contribution to his or her own growth and to the growth of his or her family is becoming more impressive as more is learned of the infant's earliest capabilities.

Mother-infant reciprocity appears not to be a phenomenon brought about by good mothering, but rather a process of *mutual adaptation* between mother and child. In other words, both mother and infant learn to recognize the cues, signals or patterns of specific behaviors characteristic of each other in various situations. Thus, over a period of time, they are able to communicate to one another something about their involvement in the interaction. The back-and-forth sending and receiving quality of the interaction reflects conversational elements; it is a type of exchange that precedes linguistic communication. The development of reciprocity occurs as each member of the mother-infant dyad learns effectively how to sustain mutually satisfying interactions, and forms the basis of the child's system of communicating with the world beyond mother.

How Reciprocal Interactions Can Be Recognized

The cues to which mother and infant respond are frequently so subtle and minimal that an observer might have difficulty in catching the depth of mutual responsiveness. At other times, however, it is quite obvious and vicariously gratifying to witness a mother and her baby really "getting off" to one another. Brazelton (1974) describes mother-infant reciprocity as a parallel waxing and waning of each partner's *level of arousal* (i.e., degree of positive or negative involvement at given points during interaction). Mothers and infants learn how to vocalize, gaze and gesture to each other so as to acquire and maintain an optimal level of arousal.

One way in which even young infants can regulate their own arousal level is to avert their gaze or turn their head away from maternal stimulation when it becomes too overwhelming. In such situations a sensitive mother will cool down her stimulation or stop it altogether, allowing the infant a brief period to withdraw, reestablish equilibrium and regain control of himself. This ability of the young child to restore balance to his physiological system is the mechanism that in turn allows him to continue to engage his

mother in interaction with the security that he can become excited with her without being overcome by her. Thus the infant attends to mother's cues when his level of arousal is comfortable or stimulating and shifts his attention away momentarily in preparation for re-engagement. The infant's cycles of attention and nonattention may be smooth and coordinated, or rather jerky and tense. Brazelton has been able to distinguish from videotape of a baby alone whether the infant is interacting with his mother or with an object by the smooth, cyclic quality of behaviors directed toward the mother.

What Infants Learn From Reciprocal Interactions

The mutual responsiveness evident in reciprocal interactions between infants and mothers is revealed at first by sensitivity to arousal level, and then increasingly by sensitivity to the *meaning* or *significance* of certain behaviors. The infant learns, for example, which behavioral patterns represent "mother." In this way he is able to distinguish her from others in the environment. From a cognitive viewpoint, the infant's very exposure to maternal schemata (e.g., characteristics of her face and voice) allows him to construct a mental image of mother. Before the middle of the first year, most babies can discriminate mother from others and direct attachment behaviors like clinging and crying differentially toward her.

Psychoanalytic researchers describe the infant's learning during these months as the development of prototypic ego functions. This view likewise involves a process of increasing differentiation, not of the baby's ability to discriminate mother from others but of his ability to discriminate mother from himself. At first unaware of a mothering agent, the infant begins at the age of about 3 months to perceive what has been called a "need-satisfying object." As a result of the infant's total experience with a responsive caregiver—the object who feeds him, comforts him when he cries, bathes him and plays with him—he comes to experience himself as a unique recipient. It is *he* who is comforted when he cries, he who is bathed and played with. The infant's reality could be conceptualized as a protective, transparent bubble in which mother and baby are one and the same. Through his reciprocal interaction the baby learns that *he* is a person in his own right who can influence how other persons behave toward him.

The second half of the infant's first year witnesses the development of competence to get what he wants by interacting with mother. His behaviors no longer signal a desire for mere responsiveness but a preference for certain types of response. By this time, the infant has constructed not only a schema of mother but also of familiar sequences of events. More and more he anticipates her actions in response to his own. Learning theorists explain that the infant builds an "expectancy model" through repeated interactions, in which the sequence of initiating and responding events is relatively consistent. With the aid of an internal model of probability, the infant may initiate given interactive sequences with his mother or may alter interaction she has initiated to better suit his own needs and desires.

The ability that infant and mother develop to pick up and correctly interpret each other's cues provides a foundation for the growth of a prelinguistic signaling system. A behavior or pattern of behaviors is said to have signal value when it regularly affects the behavior of the receiver. Effective, meaningful communication is the sending of a signal, its perception and its accurate interpretation incorporated as feedback in the response. This system of communication is organized in large part by the nature of maternal response to infant signals. For example, Ainsworth and Bell (1972)

found that maternal responsiveness to crying signals in the first quarter of the infant's first year was inversely related to the amount of infant crying in the last quarter of the year. In addition, they found that by the end of the first year babies whose crying had decreased were able to develop a more varied signaling repertoire, relying on more complex modes of communicating their desires and needs. They had learned the power of a signal and had experienced meaningful communication with their mothers.

What Mothers Learn from Reciprocal Interactions

What the mother learns from interaction with her baby depends primarily on the degree to which she can see her child as a separate, autonomous person. A mother who, for example, views her infant as a narcissistic extension of herself, tends to ignore the wishes and moods of her child as having a validity of their own. Other dynamics can underlie such an attitude. Ainsworth (1969) contends that an obsessive-compulsive woman requires such tight control over other people in order to contain her own anxieties that she becomes angry when her baby fails to accommodate. A third dynamic that can block the development of reciprocal interactions manifests itself in mothers who attempt to teach or train their babies to live up to some ideal developmental standard. The shaping or imposing mother is characterized by her interference in the baby's ongoing activity and by her lack of spontaneity in play with the baby. She persists in engaging the baby in games that elicit the types of response she believes are educational or worthwhile, seldom responding to the baby's efforts to initiate interactions himself.

Given the mother whose interactions are not distorted by these sorts of defenses, tremendous learning is possible. Infant capabilities unfold so rapidly that the mother's behavior must also undergo continual change. She learns what the proper balance of consistency and novelty is at given points during the baby's first year. From the experience of previous mutual gazing episodes, for example, the mother of a 3-month-old baby knows how to modify her behaviors toward a more optimal level of arousal, gradually increasing the length of the infant's attention. Brazelton (1974) observed that the "mother holds the infant with her hands, her eyes, her voice and smile, and with changes from one modality to another as he habituates to one or another." The sequence of behaviors that constitute a *game* between mother and infant is dependent on what the infant already knows about her, what he is already familiar with. Whether the game be a face-presentation in which mother and baby vocalize together, peek-a-boo, or other forms of idiosyncratic reciprocal play, the mother must learn to create variations on the *theme* of the game, so as to confirm and challenge the infant's predictions.

In a broader way the mother's learning must be continuously adjusted. A mother may vary in her effectiveness, depending upon the baby's stage of development and the issues pertinent to that stage. Sander (1964) describes a case where the clear, reciprocal social experiences lacking during the 3- to 6-month period of the baby's life began to emerge between his 7th and 9th months as a result of greater maternal responsiveness to the more directed activities initiated by her son.

In a sense, a mother provides a stimulus barrier for her baby, mediating between the infant and the environment as he develops an ability to cope with external reality more successfully on his own. Mother sets the mood, modulating the pace, rhythm and intensity of her stimuli in order to maximize the baby's enjoyment and grasp of the meaning of her behavior. Also, she creates easy, smooth transitions from one scene to the next, inter-

ludes between shifts in focus of the infant's attention. If, for instance, baby is playing in his crib and mother wants to bathe him, she does not simply reach without warning to pick him up and quickly transfer him to the next activity. She might lean over by the mobile, getting in his line of vision, helping him transfer his attention to her face, and then with her voice and touch communicate, "Now we're going to take a bath."

Reciprocity and Caregiving

Reciprocity is mutual responsiveness revealed in the synchrony of arousal systems between two individuals. After the first few months of an infant's life, his competency to participate in reciprocal interactions develops beyond attention toward anticipation, and finally toward the coordination of his intentions with those of his mother. Little is yet known of the process by which an infant's behaviors become coordinated with his mother's and, therefore, of clinical intervention that could prevent or alter the developmental course of poor mother-infant communication. Here are a few points caregivers may keep in mind in terms of promoting reciprocity:

1. As the infant becomes more proficient in actively testing his control over the environment, feedback from his own actions can potently influence the quality of motivation he shows for interaction with others. When the infant achieves the consequences he seeks, he experiences a feeling of efficacy, or what White (1959) calls a "sense of competence". Caregivers can further motivate competence by providing opportunities for the infant to have an effect on them. The caregiver's intention to engage in *meaningful and responsive interaction* with the infant assists the infant to integrate experiences, rendering him able to behave with intention and purpose himself.

2. Perhaps of immense and long-lasting significance, the social rules that have been established in interaction with a caregiver may well influence the basic style with which children interact with other adults, peers, strangers, marriage partners, etc. Thus it is critical that caregivers *allow for reciprocity*, that they not be so eager to communicate to the infant that they fail to listen and look for what the infant may be communicating to them.

3. Finally, and of no lesser importance, caregivers must know the infant, must gain a history of experience interacting with him, to be able to recognize unique and subtle signals characteristic of the person for whom they are caring. Similarly, an infant needs to acquire familiarity with his caregiver in order to know how to communicate with that person. Thus, *continuity in caregiving* is paramount to the development of reciprocity.

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John W. Hollomon

Discontinuous Mothering--Expanding the Alternatives

As part of the enormous social change we are experiencing in the United States of the 1970s, every indication points to a permanent trend in child-rearing practices—discontinuous mothering. Insufficient continuity of care is being provided by many mothers or mother figures to ensure very young children sustaining physical hygiene, emotional response, balanced security and stimulating experiences. Although frequent contact may take place between mother and infant, a marked absence of quality interactions in the dyadic involvement cannot enable the child to feel free from anxiety, fear and threat to his well-being.

The Nature of Discontinuous Mothering

The nature of the problem of discontinuous mothering has been spelled out in the *Report to the President. White House Conference on Children* (1970):

> In today's world parents find themselves at the mercy of a society which imposes pressures and priorities that allow neither time nor place for meaningful activities and relations between children and adults, which downgrade the role of parents and the functions of parenthood, and which prevent the parent from doing things he wants to do as a guide, friend, and companion to his children. . .(p. 241).

In 1940, one mother in ten worked; the new 1970 census figures show that almost five in ten are working. Precise figures are impossible to obtain, but today approximately one in every three mothers with children under 6 years old works outside the home. Almost a million families in the United States are headed by women. About 7 million unmarried, separated, widowed or divorced mothers are living alone with their children (*Time*, 1973). The day care places available at a price most mothers are able to afford can probably accommodate about one-fifth of that amount. Most day care facilities will not take children under age 2; yet more than one and one-half million children under 2 are in need of day care. Day care places for only between 3 and 15 percent of the infant children needing them are currently available. These conditions pose serious threats to individual stability and to family structure—the fabric of a democratic society.

Effects of Discontinuous Mothering

Discontinuous mothering may cause passiveness, listlessness, abnormality and brain impairment in the infant child. Research studies (Hunt, 1961) have shown that young children separated from the love of their mothers become

deficient on most measurable variables of social development and fail to achieve their best intellectual and physical growth.

If a mother is separated from her infant at birth for a period of time, she is not as effective later with the baby. Sometimes her emotional attitude suffers. The incubator appears to have an adverse effect upon the sensorimotor development of the baby; perhaps the monotonous noise of the machine affects him. The younger the infant, the more stable and repetitive should be the stimuli within the same environment to produce learned responses. Such stimuli serve as referents for later concept development. Any separation from the mother—regardless of the reason, length of time and kind of care the child receives in the interim—may have adverse effects on the child.

Many young children suffer from maternal-deprivation syndromes, which consist of a developmental arrest or failure to thrive, attributable primarily to inadequate environmental stimulation. These syndromes are characterized by marked retardation of both physical and mental growth and of personality and social development. Although this pattern is most pronounced in children placed in institutions of foundling homes, we should not assume that maternal deprivation (such as exists in the institutional environment) and discontinuous mothering are the same thing. In the context of the former, there is not as likely to be a continuous mother-child relationship to interrupt as in the latter.

Discontinuous mothering fails not only the child who comes from difficult family conditions, but also many children from satisfactory and even excellent family conditions. Without a quality mother-child relationship combined with sensitive care, the child is deprived of the opportunity to develop a firm sense of personal trustworthiness, of identity combined with a sense of being "all right," of being himself, and of becoming what other people trust he will become within his culture's life style (Erikson, 1963).

The Infant's Need for Continuous Mothering

If we believe that the period of infancy is the foundation for later development, we must accept the principle of the infant's need for continuity of care Until the age of 3, infants are dependent upon adults for almost all experiences and learning. After 3, most children dramatically switch their attention to both older and younger children if they are present; however, during infancy, the older a child gets, the more he becomes attached to the continuous mothering figure and the more traumatic a separation is for both mother and infant. His healthy development requires a continuous emotionally responsive relationship with a single mothering figure. Lack of continuity of mothering can lead to intense anxiety and to hostility toward the mother who has left and who continues to separate herself (Bowlby, 1951).

The continuous mother's attachment to her child, combined with the visual auditory, tactile and motoric stimulation she provides, is crucial for his early development. Separation of the infant-mother attachment formed between 8 and 24 months often results in disturbed patterns of behavior, which are difficult for substitute caretakers to relieve, no matter how much emotional response, security and stimulation they provide.

Although a young child needs some permanent person in his life, that person need not be his biological mother. The biological mother's genetic at-

tachment to her infant provides for greater adaptation and identification however; she usually can best predict her child's behavior. Nevertheless, in the case of adopted infants, attachment to the adoptive mother can be every bit as strong as it would be to the biological mother. No harm evidently comes to a child so long as he has one consistent and devoted person to care for him during the critical attachment period years (Weiner and Elkind, 1972; Goldstein, Freud and Solnit, 1973). Mead (1970) stresses the need for at least one adult who interacts with the child every day, recognizes a new skill, encourages progress or sometimes takes alarm at a sudden lack of progress. Only individual attention can turn an infant child into a full human being, capable of continued growth.

Continuous mothering apparently achieves its effectiveness and staying power by focusing neither on the child nor the parent but rather on the parent-child system. It affords the child the opportunity to observe an adult closely and to get the buffering from distraction and pressure that a mother normally provides for continuous growth (Bruner, 1975).

In an elaboration of the need for continuity of care, Comer (1974) emphasized that to perform well as adolescents and adults, children must grow up in homes, neighborhoods, churches, child care centers and a larger society that meet their needs every step of the way. An infant's first feelings about himself depend on how he is treated by parents and other significant people. Qualitative interactions between the infant and important adults enable the child to trust and feel affection for them. Such interactions require a regular and adequate amount of time, attention, warmth and enthusiasm on the part of parents and significant others. The positive result of these interactions is that the caring adults become child developers and models around whom the child organizes his life and the world.

The Haphazard Parental Experiment

Wilson (1974) related that a massive, haphazard and little discussed parental experiment is underway.

> The old child-centered family, a peculiarly American invention, has collapsed with astonishing suddenness, as though from its own weight of intolerable responsibility and impossible expectations (p. 180).

In talking about children with young married couples, Wills (1974) found "a great sense of doom in their helpless acceptance, equally, of children and of childlessness" (p. 171). They empathize with their future offspring and remember acutely their own parents' failure. A surfeit of parenthood, the "kid syndrome," the built-in odds, the unromantic facts and delayed consequences of child-rearing practices have all contributed to discontinuous mothering.

> The instinct for parenthood seems to have withered in this generation. In defiance of all the received wisdoms, a new arrangement is evolving in which children become the appendages, as it were, of a man and woman who see the roles of father and mother as entirely secondary in their life plan (Wilson, 1974, p. 180).

The change is abrupt and extreme, because women of the old style who will take over the custodial role of working mothers are in short supply. These mother-substitutes are not likely to be replaced from the ranks of the daughters of the discontinuous mothers in this generation.

A turbid flood of literature is devoted to the effects of maternal deprivation on the child. A great deal of emphasis has been placed on the duties and responsibilities of the mother, much less on expanding the alternatives that enable her to deal with the elusive problems of motherhood. While more women are joining the job market, other pressures battle against childbearing. "Even those who have children do it tentatively now, as with a lab experiment that may blow up (Wills, 1974, p. 170);" they therefore feel considerable pressure to perform better than they can.

The basic questions are: How can we develop institutions that will expand and improve the alternatives for establishing sufficient continuity of quality care for infant children of discontinuous mothers? How can we make it possible for the mother to spend the necessary time for quality interactions with her child? How can we improve and increase the involvement of some other person who can do so in the absence of the mother, such as a grandparent, a neighbor, a married sister or friend? How can we convince employers that the demands of child rearing are legitimate reasons for a father as well as a mother to be absent from work, justifying an adjustment in his working schedule so that he can spend some time during regular working hours with his child?

It is futile to think that taxpayers are going to support a mother while she remains home to sustain continuous involvement with her young children. Nor can any state-supported infant care program afford enough well-trained nurturing persons to provide continuous quality care for all the infants needing it.

It appears to be neither practicable nor economical to employ infant care workers on three eight-hour shifts a day to accommodate all mothers who work during each of the work-day periods. Even if the additional needed infant-care centers were made available and accessible in terms of cost and transportation for mothers who work because of sheer economic need, unless fully staffed they could not solve the problem of discontinuous mothering for those infants who are placed in them for perhaps ten hours a day. Such centers would indeed be safer than many other child-care arrangements and should continue to be provided. But the problem of developing the whole child to live in the whole world is not likely to be solved by such arrangements.

Pressures are increasing for women to become discontinuous mothers by working outside the home, even while their children are very young. Even those who do not have the sheer need to work now face added pressure to do so in the name of self-fulfillment. The middle-class mother is being caught up, in the thinly disguised social statement of society's need for educated workers. In addition, the current emphasis of the women's liberation movement on individual achievement, equality, equity and self-actualization, rather than upon women's traditional roles, may cause even more discontinuity of mothering.

EXPANDING THE ALTERNATIVES

Hopefully, in the not-too-distant future, a consensus can be reached that the quality of care given a child represents a major value to a society badly in need of a highly educated, skilled and emotionally secure population. Such a consensus will obviously take time, in the face of other national and international economic, political and social problems.

Six alternatives for continuity in infant care are proposed and elaborated below: (1) education for parenthood, (2) infant care facilities, (3) changes in welfare laws, (4) neighborhood infant-care specialists, (5) increased family involvement and (6) industrial involvement. The order in which they appear does not represent a priority in importance. Each can make a significant contribution toward ameliorating the conditions of discontinuous mothers.

Education for Parenthood

Some junior and senior high schools already have education for parenthood programs (Casey, 1974; De Orio and Anderson, 1974). The design of such programs needs to be expanded for the purpose of maximizing the physical, social and intellectual development of young children and their family situations. On the premise that the family is the most important influence in a child's life (Schaefer, 1972), such programs should be made available to all students beginning in junior high school and continuing through senior high school. By heightening adolescents' awareness of social, emotional, educational and health needs of young children and of the role of parents, child caretakers and other significant adults in fostering a child's development, these programs could prepare teenagers to meet problems encountered in rearing children and alert them to possible careers in child care. They could also benefit older children who care for younger siblings as well as those who take babysitting jobs.

The students might work actively with infants in child-care facilities and in their homes under the supervision of an infant-care specialist. Parents could be involved in the program, and students and program personnel be involved in the parent, home and community. Techniques of upgrading family environments could be employed, with students, parents and their young children involved in such a way that all would benefit. Both male and female students and parents should be recruited in such programs so that each might become more aware of the expressive and instrumental roles of parenthood, thus assuring that more male caregivers would be available to children (Lally, Honig and Caldwell, 1973).

Infant Care Facilities

More quality infant-care facilities should be appropriately located in close proximity to the mothers in need of them. These facilities should be staffed by adults trained to be surrogate mothers of infant children. Their training should be as intensive as that for the Child Development Associate (CDA), but geared primarily toward the development of the "Mother Surrogate Associate" for the children under 3 years old. Parents can take part in the training of the MSA as well as carry some responsibility for planning adult-child activities.

Infant care facilities need not be housed in large centers or institutions; improved standards for licensed home care for children under 3 with a MSA in charge may be a better arrangement. Such standards would guarantee parents the opportunity to participate in decision-making about the operation of the facilities, which could also be made available for the infants of mothers who are sick, suffering from tenseness and difficulties in personality, or plagued by problems in the home.

In addition, more programs similar to the family day care program of the

New York City's Agency for Child Development (ACD) need to be planned and operationalized. This program offers technical assistance, educational input, training, health and nutrition advice, and establishes strong links to existing community support and social services. It is

> . . . a home-based child-rearing setting designed to enhance the one-to-one relationship between child and caregiver that, by its very nature, meets the individual and special needs of our children, particularly those who, for a variety of reasons, benefit more from the closer "mother-child" relationship possible in a private home than they do from a group setting (Whaley, 1974).

Perhaps the most outstanding service this program offers is the parent-involvement component at the policy-making level.

Changes in Child Welfare Laws

Changes in adoption laws could expedite the process of making an adoption final soon after the prospective parents have been found to meet the special needs of an available child. We have some evidence that the age of the child at adoption and his or her experiences before moving to the new family are strongly related to later IQ. Early adoption of children of discontinuous mothers not only relates to an increase in IQ, but may also be a positive factor in later school achievement (Scarr-Salapatek and Weinberg, 1975). In an often cited report of a longitudinal study of the effects of adoption on children from institutions, Skeels (1968) concluded that a high degree of one-to-one emotional relationship between mother-surrogate and children can have a positive effect in rate of mental growth and social development. Goldfarb (1949) published a series of studies contrasting patterns of intellectual functioning in a group of adolescents reared in institutions up to age 3 and then placed in foster homes and in a group placed in foster homes shortly after birth. The group that had spent the most time in the institutions were deficient in many ways, compared with the group placed in foster homes earlier.

Foster parents can be encouraged to develop quality relationships with their charges. An infant who has developed an attachment to one continuous mother may be in a better condition to transfer that attachment to another.

Acting on a theory that lacks evidence to support it—namely, that a dependent mother or child is better off if the father is absent—public welfare agencies often create, and then sustain, conditions that force mothers and their children to receive financial assistance and to remain dependent. Dependent mothers and all those concerned with the healthy development of America's children need to communicate the inequities of these conditions to their legislators and to make their voices heard at the ballot box. Whether thousands of young children will receive continuity of quality care will depend mostly on what society does and how federal agencies encounter and change outdated behavior of local government and industry (Mead, 1970).

Neighborhood Infant-Care Specialists

Neighborhood family centers, employing trained infant-care specialists to provide professional services to needy mothers and their infant children, could play a real and important role in keeping the family together. In cooperation with parents, specialists might develop a comprehensive

community plan, and carry it out to promote and maintain continuity of care for young children. They could encourage stability of neighborhood association over the appeal to move to a less expensive place near the mother's or father's job. "Stable residence means a known neighborhood, habitual interchange of baby sitting and baby tending among neighbors." (Mead, p. 15).

The infant-care specialists could also help the working mother to become better organized and to do more inside her immediate family, by planning her time better and making more efficient arrangements for cooperation with father and children. They could show a new mother how to respond naturally to her child while doing her housework. They could prepare weekly guides for parents to use in their interactions with the infant, based upon his developmental level. They could help a mother to evaluate food advertisements or aid in preparing a meal while showing her how to involve her young children. They could talk to a mother about what she is doing to further her children's development and demonstrate techniques of doing it better.

In addition, infant-care specialists could help mothers to locate and use community resources and to find better housing, legal counsel and better health care. They could point out materials in the home that can be used as educational toys and show mothers how to invent games that involve quality interactions with their children.

The neighborhood center could offer space for a parent-child drop-in open seven days a week on a part-day, part-week or full-week basis of developmental day care for those children whose parents need or prefer group care.

This group program could be connected by a formal network of homes throughout the community where children receive care in a group of four to five children under the guidance of a person who receives the same training, support and supervision as the staff of the group day care center (Pizzo, 1975, p. 15). This child-care system could actively seek to reduce the stress on employed parents.

Training courses for teenage babysitters, visibly identified to the community, could take place. The elderly could spend part of the day in the neighborhood center, socializing with neighborhood residents who frequent the center, advising young groups and transmitting their life experiences, playing with (or just observing) the children, organizing activities of interest to themselves, or getting needed information about health and transportation services, etc.

The benefits are obvious. Rings of support, protection and care could be drawn around today's fragmented and harried families. Neighborhoods in the geographical sense could become neighborhoods in the real sense (Pizzo, 1975, p. 15).

The neighborhood infant-care specialist could collect and disseminate information and make referrals to all sorts of child care within and surrounding the community: nursery schools, day care centers, playgrounds. Phone numbers could be made available of people willing to care for young children in their own homes for a few hours a week or a full-work-week, in exchange for either a few hours of care for their own children or for a fee, along with the names and phone numbers of mature people in the

community whose own children are teenage or grown. These people might be willing to come in and help out in the middle of the day or night when mother and or father suddenly gets the flu (or worse) and needs help with the children.

Increased Family Involvement

Some ways to increase family involvement in the continuous care of the infant-child are: (1) by including grandparents who have retired or are not working, (2) by dignifying the structure of extended family living, and (3) by encouraging single and discontinuous mothers to live near relatives willing to share in the care of their infants. "The evidence indicates that the family is the most effective and economical system for fostering and sustaining the development of the child (Bronfenbrenner, 1974)."

A monthly newsletter could be published by a day care center, a church or a welfare agency to inform all parents about the child-care services available in the neighborhood, including a calendar of upcoming events. The children could be included in the publication of the newsletter by soliciting news items from them or by using their art work for decoration and communication. A special section of each newsletter might be reserved to thank parents for help or to make special note of parents for whatever reason. To further involve parents in their children's development, another section might suggest home parent-child activities to further extend the experiences they are already providing, as well as those planned by other sources (Vukelich, 1975).

The basic objective would be to encourage parents not to abdicate their responsibilities toward their infant children by surrendering them to so-called child-care experts, who only undermine the home situation. The infants' families and other child welfare agencies must be drawn into a common orbit, in cooperative endeavors to improve the family situation. In this manner, the agencies and the families would not be working at cross purposes. The parents would come to understand more readily what the child-care and family agencies can do for their children and what only the parent-family can do for them.

Infant-care agencies can coordinate the care and development of the child by stressing the importance of positive interaction in the home between the parent-family and the child. These agencies will have no lasting impact on the child's development unless they affect both the child and the people who constitute his day-to-day environment. Infant-care programs therefore cannot be confined exclusively to outside agencies in specified settings, "but must reach out into homes and communities so that the whole neighborhood is involved in activity in its children's behalf (Bronfenbrenner, 1972)."

As the environment that affects children for all the years of their growth, the family situation—not the infant-care center—must be the core of a child's life. The center, no matter how good, is peripheral to his growth. Early care and learning in a center can help, in a limited way, but a center or any other child care arrangement will never be home (Stein and Smith, 1973). What the mother does in the infant years is essential to what a child-care staff can do in a center. If the discrepancy between what the mother can do at home and what a child-care staff can follow up in a group setting is too great, then the center ceases to function as it is expected to do (Mead, 1970).

A quality infant-care program must assume a partnership between the

parents and the child-care facility. It must involve close cooperation and planning for the welfare of the child in order that he may receive continuity of care. Unless the child finds a connection between his experiences at home and those in the child-care program, he may gain little lasting value from the latter and the quality of his relationship with his parents or child-care center may be diluted (Butler, 1970). Gordon (1973) has demonstrated the positive effects that can be accrued by using a home-learning-center approach to early stimulation. He sends indigenous "parent educators" into homes to show mothers how to play helpful baby games. His results indicate that when mothers saw they could have a positive effect on their children's development, their self-esteem as women improved (evidenced by a number of "graduate" mothers who moved to better housing, found better jobs and even went back to school).

The basic objectives are to get services to children and their families and to help families act on the behalf of their children. If the family situation is not improved, then much of what ought to be done for children remains undone and the family-system will deteriorate. If the family-system deteriorates, justice and morals will go astray. Our children then will stand about in helpless confusion.

If the family situation is not improved, many dependent children will be placed in detention facilities, be neglected or abandoned, become wards of the court, or otherwise be institutionalized. The public welfare system, the supposed guardian of children and the poor, does little to improve the family situation—being willing only to spend a pittance to keep a mother and child dependent, more to keep the child in a foster home, and even more to institutionalize him. Mothers need different kinds of child-care delivery systems. Young children need quality adult guidance and supervision, health care, food, shelter, positive emotional response, security, belongingness, self-esteem and the type of stimulation that enhances their development and growth.

Industrial Involvement

More industries could provide child-care facilities for the infants of their working mothers. They could recognize that home-demands are legitimate reasons for a father as well as mother, to be absent from work. They could encourage mothers who live in the same neighborhood to take turns being home for a week so that they can take care of each other's infant children. In addition, they could increase the number and status of part-time jobs made available to working mothers of young children. It is impossible for many working mothers of young children to provide quality child-care services for their infant children at a price they can afford to pay. More industries could make it feasible for working mothers to afford better care for their young children by adopting policies to realize either one or several of the above suggestions.

CONCLUSION

No one of the above-mentioned infant care alternatives should be accepted as a panacea to the phenomenon of discontinuous mothering. What is needed is a greater diversity of alternatives, as well as more research into what kinds of infant care and delivery systems are good or bad for families and children. Until we have data to support the pros and cons of this unresolved problem, we need to increase parents' options and to respect

their right to free exercise of choices only they can make. We need too to allow infant-care providers and parents to express what they have observed as to the effects on children and families of discontinuous mothering and the various delivery systems of infant care.

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Gloria R. Zamora

Roots in Infancy for Later Development

Central to developing a competent, mentally healthy adult is the development of a positive self-concept. The latter has its roots in earliest infancy and is the result of children's interactions first with their parents and later with all of the other important people with whom they come in contact. "This self is built almost entirely, if not entirely, in relationship to others" (Kelley, 1962). These interactions, verbal and nonverbal, help children perceive themselves as others see them. Their behaviors reflect the expectations of their parents and society and so they become—secure, trusting, competent, fully functioning human beings or suspicious, alienated, less-than-competent adults. The latter are often incapable of establishing trust relationships with others and of nurturing their own children in the future.

Parents are the first and most important teachers of their children. In a recent presentation (1974), Burton White stated that "the family is the primary educational delivery system in a child's upbringing" and that "most parents are capable, willing to learn, and loving" but have had little preparation for the important task of parenting. He raises the question: "If you aren't prepared for the job, and it's difficult and you get no help—why should you be good at it?"

Being a good, nurturing, parent means taking joy and pleasure from the role. This kind of parental nurturance builds up the child's sense of trust, which is basic to the development of a fully functioning human being—or as Abraham Maslow (1954) would say, a "self-actualized" person.

Erikson (1964) describes trust as a general state of being in which the child has learned to rely on the sameness and continuity of the outer providers. Trust versus mistrust is a conflict; finding an enduring solution to this conflict becomes the first task of the ego. Erikson maintains that the amount of trust that develops from an infant's earliest experiences is dependent upon the quality of the maternal relationship. By combining ". . .sensitive care of the baby's individual needs and a firm sense of personal trustworthiness within the trusted framework of their culture's lifestyle" (p. 249), mothers can create a sense of trust within their babies, essential to the development of a positive self-concept.

Developing a Sense of Physical Identity

Children develop their sense of physical self through many kinds of physical stimuli. Knowledge of how the body works is the result of using it in different ways, observing its parts and their uses and experiencing feelings about it.

The quality of the physical interactions between parent and child is important at this time. how mother (or father) feeds, bathes, diapers, cuddles and later toilet-trains the child has an effect on the child's developing sense of physical identity. Consistency of care in performing these tasks and the way they are performed convey to the child either the positive feelings born of maternal parental love and care or negative feelings generated by parents who feel disgust and anger in performing these tasks.

Developing a Sense of Personal Identity

Cohen (1974) states that for infants, no clear dichotomy exists between their developing physical identity and personal identity. Children's personal identity development is affected by two major types of experiences:

(1) how they are treated by the people close to them
(2) what they observe about the adults they admire.

During later infancy, at about 8 or 9 months of age, healthy children enter a period of greater mobility and tremendous curiosity about everything around them. This period is described by many as being a particularly stressful time for mothers. It appears that young children are testing their relationships with their parents as well as their own power to control their world. If children are treated with love and respect they will grow up to have worthwhile feelings about themselves.

Preschool children are very observant. Not only are they aware of their parents' behaviors toward themselves and others; they are also aware of how others treat their parents. They perceive adult attitudes in behaviors even though they may not yet be able to interpret them fully. Children begin to identify with these important adults and imitate their behaviors and thus become kind and understanding persons; rejected, alienated ones; or overbearing bullies.

The adult behaviors—verbal and nonverbal—directed to them by the important adults around them give young children many clues as to how these adults feel about them and what the adults' expectations are. Children will tend to fulfill these expectations. All of us have seen children who are defeated before they begin because they have been told that they are not as smart as big brother or big sister. The "dumbbell," the "tomboy" and the "straight A" labels are also too often fulfilled.

Factors That Determine Parent-Infant Relationships

Naylor (1970) suggests that three major factors determine the relationships between parents and infants:

(1) the quality of the parents' own early experiences—the care each received as a child
(2) the conditions of the present situation: family stability or marital discord, job security, health, etc.; how much stress the parents experience in their daily lives
(3) the characteristics of the infants themselves.

"Maternal or motherly feeling does not always immediately accompany biologic motherhood. . . .(it is) an unfolding developmental phase activated by pregnancy and the birth of the child" (Solnit, 1970, p. 62). Solnit also concludes that the parents' ability to handle this responsibility is affected by their own childhood experiences as well as the strengths they have to cope

with the stress of the infant. What emotional resources can they call upon? What support from parents and grandparents do they have? Can the mother count on her husband's support? How many other young children has she borne? All of these affect the energy with which she can face this task as well as her ability to cope with stress and frustration. Finally, the mother's sensitivity to her infant's needs and characteristics and her ability to adapt her mothering techniques to match his needs are necessary for a successful, satisfying relationship.

Studies of infants who fail to thrive are also described by Solnit. Many of the mothers evaluated had inadequate mothering themselves; they had minimal or no support from their husbands; and their physical, emotional and mental resources were depleted. Because many of these women represented the second or third generation in a poor, slum environment and had failed to thrive in their own development, they experienced frustration and anger at their inability to help their children thrive. This further reinforced their feelings of worthlessness.

With conditions such as these replicated thousands of times in the barrios, in the ghettos, and even in our middle-class and upper-middle-class neighborhoods, is it any wonder that we find daily evidence in our newspapers of the growing rate of child abuse and school crime?

Prevention or Remediation?

In attempting to answer the problems we have posed, we should be focusing on prevention and designing a number of alternatives: neighborhood courses in parenting, parent-infant intervention programs, high school courses in parenting, etc.

One very definite alternative is the development of quality day care programs in sufficient quantity to meet the existing demand. In Texas alone, the State Department of Community Affairs reports (1974) that for the 420,000 Texas children under the age of 6 whose mothers work, only 108,000 licensed child care spaces are available. Approximately 32,000 Texas children under 6 are left to care for themselves while their mothers work. Children left alone without supervision feel neglected, isolated, unwanted and are more prone to accidents. These feelings do not contribute toward the development of trust and a positive self-concept.

Clearly we need more day care, and it must be quality care. Critical too is the need to prepare child advocates who understand child growth and development, as well as parenting specialists who can help parents learn more about how their children grow and develop.

In day care centers that serve culturally and linguistically different infants and children, we find that the problems are compounded by conflicts existing between the culture and values of caregivers and children. Using the model designed by Cárdenas and Cárdenas (1973), we can group the problems into five major areas of incompatibilities: Poverty, Culture, Language, Mobility and Perceptions. Next, we identify the elements of a child care program. Philosophy, Curriculum (the caregiving practices), Staffing, Services and Policies. Now we can employ a Developmental Matrix (Figure 1) to analyze the problems and to design some responses that will solve the problems. The point of *intersection* of each *area of incompatibility* and *element* becomes a *Cell* which can be individually examined. A careful examination

of our philosophy, for example, as it relates to Poverty, Culture, Language, Mobility and Perceptions, can be very revealing. What we believe about these areas and how they affect the development and behavior of young children determines the responses we will make in selection of staff, curriculum, services to children and parents, and policy statements.

Figure I. DEVELOPMENTAL MATRIX*

Elements of a Child Care Program

Areas of Incompatibilities	PHILOSOPHY	CURRICULUM	STAFFING	SERVICES	POLICIES
POVERTY	1	2	3	4	5
CULTURE	6	7	8	9	10
LANGUAGE	11	12	13	14	15
MOBILITY	16	17	18	19	20
PERCEPTIONS	21	22	23	24	25

Analysis of the Developmental Matrix

Cell 1: Poverty-Philosophy of Early Childhood Development

- Poverty breeds frustration and negative feelings of self-worth in parents, which they convey to their infants.
- Poor children may have nutritional, medical and dental problems.
- Children growing up in a poor home may have limited experiences.

Cell 2: Poverty-Curriculum (Caregiving Practices)

- The curriculum must provide children with nurturance and must foster their positive self-identity.
- We must understand the home's caregiving practices in order to provide continuity of care which promotes trust.

*This matrix is adapted, with permission, from a hitherto unpublished document by Jose A. Cárdenas and Blandina Cárdenas of Intercultural Development Research Associates in San Antonio, Texas.

Cell 3: Poverty-Staffing

- Staff must be sensitive to the individual child's needs and be able to provide for them.
- Staff may include many caregivers (multiple-mothers), to rebuild the sense of the extended family which has long been a part of many cultures but is lacking today.

Cell 4: Poverty-Services

- Parenting classes, health-care services and social services (employment, consumer education, etc.) should be provided.

Cell 5: Poverty-Policies

- Parents should be involved in decision-making to build up feelings of self direction.
- Alternative day care arrangements should be made available: drop-in, full-day, half-day, etc.
- All policies should reinforce the lifestyles and values of the consumers.

Cell 6: Culture-Philosophy of Early Childhood Development

- Children's development is culture-bound.
- All people have a culture.
- Cultures differ in many ways.
- The cultures of all ethnic groups are good.

Cell 7: Culture-Curriculum (Caregiving Practices)

- Caregiving practices should be consistent with home and family practices.
- Culturally supportive curriculum helps build children's sense of trust.

Cell 8: Culture-Staff

- Staff must understand each child's culture.
- Staff must know how to support each child's culture.
- Staff ethnicity should reflect children's ethnicity.

Cell 9: Culture-Services

- Cultural reinforcement activities should be provided for both children and parents.

Cell 10: Culture-Policies

- Staffing patterns should reflect ethnicity of students.
- The center will recognize and encourage children's ethnic heritages to help them develop a sense of personal identity.

Cell 11: Language-Philosophy of Early Childhood Development

- Children learn the language modeled in the home.
- All languages are good.

Cell 12: Language-Curriculum (Caregiving Practices)

- Children should not be denied the use of their home language (i.e., Vietnamese, Spanish).
- Respect for the child's home language should be reflected through its use in the center.
- A second language (i.e., English) can be gradually introduced.

Cell 13: Language-Staffing

- Some staff should be able to communicate with the child in his home language when it is other than English.

Cell 14: Language-Services

- Language development classes for parents should be provided and include both the native language and the second language.
- Parents should be helped to encourage language development activities at home.

Cell 15: Language-Policies

- Children should be allowed to use their native languages.
- The staff (or a proportionate representation) should be able to speak to the child in his native language.

Cell 16: Mobility-Philosophy of Early Childhood Development

- High mobility accompanied by poverty, negatively affects children's developing self-concepts.
- A limited mobility factor (ethnic isolation) can also be damaging to children's development.

Cell 17: Mobility-Curriculum (Caregiving Practices)

- A child whose parents are highly mobile may need extra nurturing, cuddling, comforting.
- Stability/consistency in caregiving practices in the center will help to relieve children's anxieties.

Cell 18: Mobility-Staffing

- Efforts should be made to maintain consistent constellation of caregivers with whom the child can form some attachments.

Cell 19: Mobility-Services

- High mobility may be due to under-education and limited employment opportunities.
- Employment services and continuing education must be provided.

Cell 20: Mobility-Policies

- No policies should exclude the highly mobile child from the services and care available at the center.

Cell 21: Perceptions—Philosophy of Early Childhood Education

- Children's self-concepts are rooted in their early experiences.
- Children's positive self-concepts are born of trust.
- Nurturing environments develop trust and security.

Cell 22: Perceptions-Curriculum (Caregiving Practices)

- All children are valuable.
- All children must perceive themselves as having worth.
- Caregiving must be performed consistently and must be culturally compatible.

Cell 23: Perceptions-Staffing

- Sufficient, high-quality staff must be available.
- Staff must promote each child's positive self-concept.

- Staff must perform day-to-day tasks with care and love.

Cell 24: Perceptions-Services

- Social services should be provided for parents to help build their self-esteem.
- Health services should be made available to families.

Cell 25: Perceptions-Policies

- Policies must not cause alienation.
- Policies must promote involvement of parents.

Summary

The development of a fully functioning human being depends largely on the development of a healthy, accurate, accepting concept of self. Becoming this kind of person has its roots in earliest infancy.

Growing crime statistics and child-abuse statistics point out the need for action. Clearly, families need a variety of support services so that their relationships may be strengthened. Prospective parents need to be prepared for successful parenting. In the child-care centers, staff who are actually surrogate mothers must be well-prepared in order to fulfill this role and may skillfully provide the nurturance, reinforcement and culturally consistent care that Erikson (1968) describes as a vital need if children are to develop a sense of trust in their world and the people in it.

This large order will require commitment, money, and a variety of creative responses.

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Selected Recent Research on Infancy: An Abstract Bibliography

Compiled by Sue C. Wortham.

In view of increasing interest in the first months and years of human life, resources for locating recent research data are much needed. The purpose of this bibliography is to make available a collection of relatively current infancy research on topics of wide concern. Most of the studies reported have been conducted since 1970. In the case of several studies conducted by one person or a group, generally the most recent or comprehensive works were selected.

It should be noted that criteria for inclusion stressed information, or citations, used by contributors to this publication and other major infancy researchers. In the second volume to follow, more attention will be given to such practical concerns as programs for infancy care and development, training for parents and infancy-care personnel, and establishment of infant-care centers.

Ainsworth, M.D.S. "The Development of Infant-Mother Attachment." In *Review of Child Development Research*. Vol. 3. B.M. Caldwell & H.N. Ricciutti, eds. Chicago: University of Chicago Press, 1973. Ainsworth explains the concept of attachment, examines studies related to it and reviews theoretical approaches that established attachment within developmental theory.

Ainsworth, M.D.S., & S.M. Bell. *Mother-Infant Interaction and the Development of Competence*. 1972. ERIC Document Reproduction Service No. ED 065 180. Ainsworth and Bell propose through their data that the quality of interaction between mother and infant influences the infant's relationship with his mother, his exploratory and play behaviors and his consequent cognitive and social development.

Ainsworth, M.D.S.; S.M. Bell & P. Stayton. "Infant-Mother Attachment and Social Development: Socialization as a Product of Reciprocal Responsiveness to Signals." In *The Integration of a Child into a Social World*. M. Richards, ed. London: Cambridge University Press, 1974. This chapter gives an excellent overview of the meaning of attachment and its relationship to social development, as well as reviewing research relevant to the subject. Topics discussed include infant crying, infant obedience, and effect of the mother's sensitivity (or lack of it) upon the infant's development.

Aleksandrowicz, M.K. "The Effect of Pain-Relieving Drugs Administered During Labor and Delivery on the Behavior of the Newborn." *Merrill-Palmer Quarterly* 20 (1974): 121-141. This study found that drugs commonly used during labor and delivery produce significant physiological and behavioral effects upon the newborn. The author suggests that the evidence supports consideration of natural childbirth whenever possible.

Arganian, M. "Sex Differences in Early Infancy." In *Individual Differences in Children*. J.C. Westman, ed. New York: John Wiley, 1973. Reviews research on sex differences in the first three years of life, examines the roles of nature and nurture in sex-role identification and ways biological and organismic influences interact with socialization experience in development of sex identity. One conclusion is that the early years are critical for sex-role typing.

Badger, E.D. *Mothers' Training Program. The Group Process*. 1969. ERIC Document Reproduction Service No. ED 032-926. In this two-year program, mothers were trained to implement an infant tutorial program with their children. Mothers attended a weekly one-hour class to learn teaching techniques, teachers in turn visited the homes to observe the mothers. The study concluded that parents must be included in programs for the disadvan-

taged The two-year span was also considered necessary for the mothers to develop self-confidence in teaching their infants.

Barbrack, C.R., & D.M. Horton. *Educational Intervention in the Home with Paraprofessional Career Development. A Second-Generation Mother Study*. 1970. ERIC Document Reproduction Service No ED 045 190. Twelve black preschoolers and their families were selected for a study to build mothers' intervention skills. In addition to presenting training, mothers made home visits to other selected mothers. Subjects were pre- and post-tested on three measures of academic aptitude. No significant increases or decreases were evident between tests The home visitors appeared to have increased their own self-esteem, aspirations and expectations.

_____ & _____. *Educational Intervention in the Home with Paraprofessional Career Development A Second Generation Mother Study with an Emphasis on Costs and Benefits*. Final Report, July 1970. ERIC Document Reproduction Service No. ED 052 814. Compares three home-visiting projects designed to train low-income mothers to stimulate their children. The children involved were tested, using the Stanford Binet and Peabody Picture Vocabulary Test. Little difference was found between the groups. The results proved useful in planning an intervention project staffed by paraprofessionals.

Beckwith, L. "Relationships Between Attributes of Mothers and Their Infants' IQ Scores." *Child Development* 42 (1971). 1083-97. Twenty-four adoptive mothers were observed with their babies in their homes Although no relationship was evident between IQ scores on the Cattell Test and socioeconomic status of the adoptive mother, there was a significant relationship between how the adopted mother interacted with and behaved toward the child.

_____. "Relationships Between Infants' Social Behavior and Their Mothers' Behavior." *Child Development*, 43 (1972). 397-411. The report is concerned with the Mother's social behavior toward her baby, the baby's behavior toward the mother, and the baby's response toward a stranger Twenty-four middle-class mothers were observed with their adopted infants for two one-hour sessions. Differences in amount of interaction affected how much the baby ignored the mother and stimulated himself. The more critical the mothers' interactions, the less responsive the baby was to her.

Bell, R.Q. "Contributions of Human Infants to Caregiving and Social Interaction." In *The Effect of the Infant on His Caregivers*, M Lewis and L.A. Rosenblum, eds. New York: John Wiley, 1974. The mother's interaction with the infant has effects upon the child's behavior; likewise, the infants' behaviors have an effect upon the mother. An infant's behavior gives cues to the mother of his condition, contributes to and actively initiates social interaction.

Bell, R.Q.; G.M. Weller & M.F. Waldrop. "Newborn and Preschooler: Organization of Behavior and Relations Between Periods." *Monographs of the Society for Research in Child Development* 142 (1971). Seventy-five subjects were studied as newborns, and a later sample between ages 27 and 33 months. There was clear evidence of relationships between the newborn and preschool periods Findings showed that respiration rate, tactile threshold, and reaction to interruption of sucking in the newborn period were most effective in measuring overly intense behavior. These same characteristics had a longitudinal relationship or outcome of low intensity in the preschool period.

Bell, S.M., & M.D.S. Ainsworth. "Infant Crying and Maternal Responsiveness." *Child Development* 43 (1972). 1171-90. In contrast to the traditional view that maternal responsiveness increases a baby's tendency to cry, this study found the opposite. In a longitudinal study of 26 infant-mother pairs, the authors found that consistency and promptness of maternal response was associated with a decline in infant crying. Close physical contact with the mother was the most effective way to terminate crying. With increased age, crying changed from a means of personal expression to a mode of communication with the mother.

Bloom, L.; P. Lightbown & L. Hood. "Structure and Variation in Child Language." *Monographs of the Society for Research in Child Development* 40, 2 (1975). Reports a study of four children in a period in which mean length of utterance expanded from 1.0 to 2.r morphemes. The children showed a similarity in the developmental sequence with regard to the emergence of some semantic-syntactic categories of verb relations. Although all the children used the

same semantics in their utterances, they used different linguistic means for representing information. While two of the children used a pronominal form in verb relations, the other two learned categories of nominal forms. The monograph includes commentaries by Melissa Bowerman and Michael Maratsos, with subsequent replies by the authors.

Braun, S.J., & B.M. Caldwell. "Social Adjustment of Children in Day Care Who Enrolled Prior to or After the Age of Three." *Early Child Development & Care* 2 (1973). 13-22. Reports data from 30 children of low-income families, in a group day care program. Nineteen of the children had been enrolled prior to age 3. No significant differences in social and emotional adjustment were found as a function of age of child at time of enrollment.

Brazelton, T.B. "Effect of Maternal Expectations on Early Infant Behavior." *Early Child Development and Care* 2 (1973). 259-73. Studying newborns in Mexico and Africa, Brazelton found that interuterine experiences of malnutrition, infection and uterine depletion seriously affected genetic potential. The results also showed that the individuality of the infant shaped parental responses.

Brazelton, T.D.; B. Koslowski & M. Main. "The Origins of Reciprocity: The Early Mother-Infant Interaction." In *The Effect of the Infant on His Caregivers*, M. Lewis & L.A. Rosenblum, eds. New York. John Wiley, 1974. Five mother-infant pairs were studied from 2-20 weeks to analyze interaction between them. Interactions between the mother and the infant and the infant and an object were filmed, 60-second sections of film were selected from the sequences for analysis. The interactions of the child with the mother proved cyclical in nature. Individual differences in infant-mother interactions were also studied.

Bronson, G.W. "Infants' Reaction to Unfamiliar Persons and Novel Objects." *Monographs of the Society for Research in Child Development* 148 (1972). Studying 32 male and female infants over the age period of 3 to 9 months, Bronson found that wariness of strangers first began to appear at about the 4th month and that acquired fear was evident at 9 months. In the second half-year the quality of the infant's response was dependent on the infant's interpersonal history as well as the conditions of the encounter with the stranger. Responses to unfamiliar objects did not follow a sequential development. Throughout the time period the reaction was of exploratory interest.

Burt, M.R., & R. Balyeat. "A New System for Improving the Care of Neglected and Abused Children." *Child Welfare* 53 (1974). 167-79. Burt and Balyeat report on a new child welfare emergency services program which resulted from an analysis of services for neglected and abused children in Metropolitan Nashville and Davidson County. The three-year demonstration program included 24-hour intake, foster homes, and caretaker and homemaker services. A goal of the program was to reduce the number of children being removed from the home. One result has been the increasing placement of children in noninstitutional environments.

Caldwell, B., & J. Richmond. "The Children's Center in Syracuse, New York." In *Early Child Care The New Perspectives*. C.A Chandler, R.S. Lourie & A. Peters eds. New York: Atherton Press, 1968. Although somewhat dated and superseded by Caldwell's work in Little Rock, Arkansas, this account is valuable—not only for reported results but for the account of evolution of the project. Background of policies, decisions, practices, etc., are explained in the light of events that led to their use. The reporting of problems encountered and steps taken to develop the center should be helpful to anyone attempting to establish a day care or nursery center.

Caldwell, B.; C.M. Wright; A.S. Honig & J. Tannenbaum. "Infant Day Care and Attachment." *American Journal of Orthopsychiatry* 40 (1970). 397-412. A group of home-reared children and a group of children who had been enrolled in an infant day care center were examined at 30 months of age for differences in child-mother and mother-child attachment patterns. Essentially, no differences could be detected. However, an association was found between strength of attachment and developmental level of the child, and between strength of attachment and amount of stimulation/support for development available in the home. Authors' Abstract.

Chess, S., & A. Thomas. "Temperament in the Normal Infant." In *Individual Differences in Children*, J.C. Westman, ed. New York: John Wiley. 1973. Nine categories of individual behaviors were analyzed for reactivity of temperamental attributes. 1) activity level, 2) rhythmicity, 3) approach-withdrawal, 4) adaptability, 5) intensity of reaction, 6) threshold of responsiveness, 7) quality of mood, 8) distractibility, 9) attention span and persistence. Children were found to show consistency over time in characteristics of reactivity. Children were classified as the "easy" child, the "difficult" child, the "slow-to-warm-up" child. Temperament and behavior disorders in relation to characteristics described are also discussed.

Chilman, C.S. "Programs for Disadvantaged Parents." In *Review of Child Development Research*, Vol. 3, B. Caldwell & H. Riccuitti, eds. Chicago: University of Chicago Press, 1973. Much of the emphasis in intervention with infants and children has been upon programs that involve parents. Chilman gives the historical perspective of infant education as well as different approaches to parent-education programs. She discusses projects falling within the different approaches with results of research, classifying them as those that seek to promote changes in parents through programs designed for them and those that involve the parents in altering their own condition.

Clark-Stewart, K.A. "Interactions Between Mothers and Their Young Children: Characteristics and Consequences." *Monographs of the Society for Research in Child Development* 38 (1973): 6-7. This study observed 36 black and white mothers and their children over a 9-month period. The infants were observed from 9 months to 18 months of age. White children measured higher than black children in cognitive, language and social development. Sex differences increased with age as boys became more object-oriented, while girls became more socially oriented. All children showed an increasing interest in the environment and decreasing interaction with the mother. There was a significant correlation between mothers' care and children's competence.

Coates, B.; E.P. Anderson & W.W. Hartup. "Interrelations in the Attachment Behavior of Human Infants." *Developmental Psychology* 6 (1972): 218-30. This study focused upon the attachment behavior among 10-, 14- and 18-month-old infants in the presence and absence of the mother. Crying was more frequent during separation than before separation, visual regard, touching and closeness to the mother were more frequent following separation than before. There were few significant sex or age differences in the behaviors.

Collins, Camilla. "On the Dangers of Shaking Young Children." *Child Welfare* 53 (1974): 143-46. Collins reports on Caffey's research on damaged blood vessels in the brain as a cause of early death in children. Caffey's evidence of death or severe damage to children caused by shaking has implications for parent behavior as well as for design of infant equipment.

Coursin, D.B. "Nutrition and Brain Development in Infants." *Merrill-Palmer Quarterly* 18 (1972): 177-202. Reports that maternal nutrition, as well as infant nutrition, is important for infant brain growth. Malnutrition before or after birth may produce structural and metabolic derangement in the central nervous system which can affect capabilities and performance.

See also. Coursin, D.B. "Maternal Nutrition and the Offspring's Development." *Nutrition Today* 8, 2 (1973): 12-19.

Dennis, W. *Children of the Creche*. New York: Appleton-Century-Crofts, 1973. This study in Lebanon explored whether adopted children could overcome the early effects of institutionalization. The data showed that children adopted before 2 years of age overcame initial retardation, but children adopted after 2 years of age did not.

Durfee, J.T., & L.C. Lee. *Infant-Infant Interaction in a Daycare Setting*. 1973. ERIC Document Reproduction Service No. ED 087 563. Using the Infant-Infant Contact Code developed for the study, the authors observed social behavior in infants. Results indicated differences between baby-adult and baby-baby interactions. Contacts between infants were found to be complex in nature, with developmental changes in encounters.

Elardo, R.; R. Bradley & B. Caldwell. "The Relation of Infants' Home Environment to Mental Test Performance from Six to Thirty-six months. A Longitudinal Analysis." *Child*

Development 46, 11 (1975). 71-76. The purpose of the study was to develop techniques to measure precisely the child's home environment. A home-environment inventory was administered to 77 mothers and infants. Data indicated that the most positive environment for the child was one in which the caregiver provided age-appropriate materials and engaged in positive, verbal interaction when responding to and attending to the child

Escalona, S. "Basic Modes of Social Interaction. Their Emergence and Patterning During the First Two Years of Life." *Merrill-Palmer Quarterly* 19 (1973). 205-232. Social transactions in the areas of social input, social output and sustained reciprocal social interactions were recorded weekly in two babies from birth to 2 years at representative times and places. The infants, from different SES environments, showed a similar sequence in which inputs and outputs emerged.

_____. "The Differential Impact of Environmental Conditions as a Function of Different Reaction Patterns in Infancy." In *Individual Differences in Children*. J C. Westman, ed. New York. John Wiley, 1973. Escalona proposes that individual differences in infancy predispose the child toward certain ways of functioning or serve as indices of later characteristics The predispositions do not remain as stable attributes of personality throughout the life span, however, although some characteristics may be maintained if experience supports them. Therefore, the study of experience-patterns can identify dimensions of individual difference.

Escalona, S., & H. Corman. "Early Life Experiences and the Development of Competence." *International Review of Psycho-Analysis*. 1974, 151-68. Two infants, a boy and a girl, were studied during the first 2 years of life. The families were very different in their interactions with the child. Maternal behavior styles are reported to account for differences found at 2 years. One child developed far more rapidly than the other in cognitive development while the other developed more rapidly in interpersonal characteristics.

Fowler, W. "A Developmental Learning Approach to Infant Care in a Group Setting." *Merrill-Palmer Quarterly* 18 (1972). 146-175. Reports on a three-year study of Canadian Mothercraft, an infant care center, which followed a developmental learning approach Dual objectives of the research were to explore the significance of early experience and to establish a program of infant day care to serve as a model. Components of the program included student education and parent education in addition to the day care program. Positive results are reported, with an informative description of operations of the day care center.

See also. Fowler, W.; N. Khan et al. *The Development of a Prototype Infant and Child Day Care Center in Metropolitan Toronto: Year III Progress Report*. Toronto. Ontario Institute for Studies in Education, 1974.

Frost, J.L. "At Risk. Intervention for High Risk Infants and Young Children." *Childhood Education* 51, 6 (Apr., May 1975): 299-304. This report is based on information resulting from the National Conference on Early Intervention with High-Risk Infants and Young Children held at the University of North Carolina at Chapel Hill in May 1974. Provides a generalized perspective of the extraordinary quality and range of the conference deliberations.

Garber, H., & R. Heber. *The Milwaukee Project. Early Intervention as a Technique To Prevent Mental Retardation*. 1973. ERIC Document Reproduction Service No. ED 080 162. The project focused on intervention with very young disadvantaged children. Training for the mothers stressed preparation for employment, improvement of homemaking skills and development of child-rearing skills. Assessment of the program was done by using various measurement tools with children. Conclusions were that success of such projects depends on active community service programs.

Gilmer, G., et al. *Intervention with Mothers and Young Children. A Study of Intrafamily Effects*. 1970. ERIC Document Reproduction Service No. ED 050 809. Younger siblings of preschool children in an intervention program were studied to determine the diffusion effects of the intervention program. Results showed that maternal involvement was a factor in conceptual development of younger siblings. Children in groups involving mothers showed superior performance on the Basic Concept Test.

Gordon, I.J. *Parental Involvement in Compensatory Education* Champaign, IL. University of Illinois Press, 1970 Surveys early compensatory-education projects, university-based programs and school-and-community programs. Two areas stressed are the importance of home-visitation programs and the need for improved research and evaluation design and methods

_____. *An Early Intervention Project A Longitudinal Look*. Gainesville, FL: Institute for Development of Human Resources, University of Florida, 1973. This publication was originally presented as a paper at the Merrill-Palmer Conference on Research and Teaching of Infant Development in 1973. Gordon gives an overview of the various programs contained within the Early Intervention Project: Parent Education Program, Early Child Stimulation Through Parent Education Project, Home Learning Center, Instructional Strategies in Infant Stimulation, Social Roots of Competency, and the Effect of Reinforcement on Infant Performance Research data as of 1972 are included

_____. *Early Child Stimulation Through Parent Education*. Gainesville, FL: Institute for Development of Human Resources, University of Florida. Final Report to Children's Bureau of Project No P H.S. R-306(01). Parents in this study were trained to be educators for indigent mothers of infants. The parent educators made weekly visits to execute a series of exercises with the infants for nine months. Results showed that paraprofessionals could teach mothers Specific stimulation exercises were found to be effective for infant development.

See Also Gordon, I.J. *The Florida Parent Education Early Intervention Project. A Longitudinal Look* ERIC Clearinghouse on Early Childhood Education, 1975.

Gordon, I.J., & B. Guinagh. *A Home Learning Center Approach to Early Stimulation*. Gainesville, FL. Institute for Development of Human Resources, University of Florida. Final Report on Project No. RO 1 MH 16037-04, to NIMH Nov. 1974. This project sought to use mothers as nonprofessional teachers of mothers in intervention with their infants. Backyard centers located in low-income neighborhoods were staffed by the mother trained to assist other mothers who brought their infants. One purpose was to extend the services of professional workers by using paraprofessionals.

Gordon, I.J., & R.E. Jester. "Instructional Strategies in Infant Stimulation." *Selected Documents in Psychology* 2 (1972). 122. The project compared teaching the mother versus teaching the infant and using paraprofessionals versus professionals. The study, which involved 200 lower-class mothers and their infants, found that professionals worked better with girls, while paraprofessionals were more effective with boys.

Haith, M.M. "The Forgotten Message of the Infant Smile." *Merrill-Palmer Quarterly* 18, 4 (1972) 321-22 Reviews various viewpoints regarding the role of smiling in infant development. The stress in this paper is on the internal stimulus for the smile rather than external stimuli Haith proposes that cognitive factors alone do not account for smiling, affective factors also play a role in the behavior.

Hamilton, M.L. *Evaluation of a Parent and Child Center Program*. 1970. ERIC Document Reproduction Service No ED 045 189 Emphasis of the program was on stimulating retarded development for Mexican American children under 3 years of age. Children were engaged in a nursery school experience five days a week, while the mothers were given inservice training three hours a week. Paid participation as an aide ten weeks was available to the mothers. There was no control group, but post-tests scores showed significant gains over pre-test scores Areas of greatest improvement were language development and vocal stimulation.

Hearings *Before the Select Committee on Nutrition and Human Needs of the United States Senate, Ninety-Third Congress, First Session, Maternal, Fetal, and Infant Nutrition—1973. Part I—Consequences of Malnutrition*. Hearings held in Washington, DC, June 5, 6 & 7, 1973 ERIC Document Reproduction Service No. ED 083 352. Includes testimony of scientists and doctors engaged in research concerning maternal, fetal and infant nutrition and its relationship to the mental and physical development of the child. Testimony declared maternal nutrition during pregnancy is of great importance to the birth-weight and health of the infant Nutrition during the first year of life had developmental implications since this is the crucial period of the child's growth.

Holmes, M., et al *The Impact of the Head Start Parent-Child Center Program on Parents* 1973. ERIC Document Reproduction Service No ED 088 598. This study reports research on the impact on parents of Parent-Child Centers administered through Head Start. The project focused on children from conception to age 3 and their parents The income of the parents had to fall below federally established poverty levels The findings showed that the program as implemented did not have a significant effect on the majority of parents served. Nevertheless, some parents made beneficial gains as a result of their participation in the program.

Holzman, Mathilda. The Verbal Environment Provided by Mothers for Their Very Young Children." *Merrill-Palmer Quarterly* 20 (1974). 31-42. Four mothers were studied for verbal interactions with their children. Findings were that all the mothers used both explicit and implicit directions. All mothers engaged in explicit teaching. The mothers' socioeconomic status had no relationship to differences in the verbal environments

Honig, A.S., & J.R. Lally. *Assessing the Behaviors of Caregivers, ABC-I and ABC-II.* 1973. ERIC Document Reproduction Service No 081 480. The authors discuss how the two rating checklists, ABC-I and ABC-II, may be used to assess infant environments. ABC-I focuses on caretaker behaviors that reflect educational goals for infants under 18 months ABC-II is appropriate for use with infants from 18 to 36 months. Studies used with the instruments are listed.

Horowitz, F.D., & L.Y. Paden. "The Effectiveness of Environmental Intervention Programs." In *Review of Child Development Research* Vol. 3, B. Caldwell & H Ricciutti, eds Chicago. University of Chicago Press, 1973 Horowitz and Paden first differentiate between enrichment and intervention. Next they review many programs of intervention. Effectiveness of the different kinds of programs has been researched, but longitudinal results are still to be studied. The authors are concerned about the possibility of intervention as a factor in eliminating differences in cultures They feel there must be a balance between preventive intervention and cultural annihilation

Johnson, D.L., et al. *The Houston Parent-Child Development Center A Parent Education Program for Mexican-American Families* 1973. ERIC Document Reproduction Service No. 086 320 The project is open to low-income Mexican-American families and starts intervention in infancy, aiming the educational efforts at the parents. The project is described as having in-home family-workshop and in-center components. Initial data after two years seem to indicate positive results.

Johnston, C.M., & R.W. Deisher. "Contemporary Communal Child Rearing: A First Analysis." *Pediatrics* 52 (1973). 319-26. In the 20 communal groups studied, each showed variations in communal child rearing. Some commune members have realized advantages of communal child rearing that cannot be provided by nuclear families. In other groups none of the members, including the biological parents, have provided the environment of basic trust As a result, personal and physical difficulties have developed.

Karnes, M.; J. Teska; A. Hodgins & E. Badger. "Educational Intervention at Home by Mothers of Disadvantaged Infants." *Child Development* 41 (1970). 925-35. Mothers from poverty environments were used as intervention agents with their children, aged between 13 and 27 months. The mothers learned teaching techniques based on positive reinforcement in a two-hour meeting each week. Mothers were asked to use acquired strategies with their child each day. Comparisons were made with a matched group and a sibling group, with the target group revealing a post-program superiority.

Keister, M.E. *A Review of Experience Establishing, Operating, Evaluating a Demonstration Nursery Center for the Day-Time Care of Infants and Toddlers, 1967-1970. Final Report to Children's Bureau, DHEW.* Greensboro, NC. University of North Carolina, 1970. ERIC Document Reproduction Service No. ED 050 810. The director of the Demonstration Nursery Center reviews the history of its development. Since establishment of the center was a pioneer venture, no models were available in devising the program. One unique aspect of the center is its provisions for caring for sick infants The project was evaluated by comparing its children with others who remained at home. Although home children made higher scores during the first testing session, center children scored highest at the last testing session.

Korner, A.F. "Individual Differences at Birth. Implications for Early Experience and Later Development." In *Individual Differences in Children*, J. C. Westman, ed. New York. John Wiley, 1973. Korner describes how individuals are different at birth. He discusses three characteristics, how much they cry, how "cuddly" they are, and what their capacity is for self-comforting behavior. Infants also differ in frequency and duration of spontaneous visual alertness. Implications projected are that individual differences in infants result in requirements for different kinds of care. The author rejects one kind of infant care as being appropriate for all infants.

_____. "The Effect of the Infant's State, Level of Arousal, Sex, and Ontogenetic Stage on the Caregiver" In *The Effect of the Infant on His Caregivers*. M. Lewis & L.A. Rosenblum, eds. New York. John Wiley, 1974. Reviews infant's active contribution to mother-infant interaction. The major point of this study is that infants exhibit individual differences, and these differences should be reflected in the mother's care for the child. These individual infant characteristics are discussed in terms of the infant's state of arousal, sex and ontogenetic stage of development.

Lambie, D.Z., & D.P. Weikart. "Ypsilanti-Carnegie Infant Education Project." in *Disadvantaged Child* Vol. III, J. Hellmuth, ed. New York. Brunner/Mazel, 1970. Describes the Ypsilanti Perry Preschool Project and the Ypsilanti Home Teaching Project. The assumption was that early infancy is an optimal time to assist parents in developing relationships with their children to promote intellectual development. The project proposed to assess the effectiveness of intervention by public school teachers, beginning with infancy. Curriculum used in the project is discussed, as well as results of research connected with the program.

Leifer, A.D., et al. "Effects of Mother-Infant Separation on Later Maternal Behavior." *Child Development* 43 (1972). 1203-18. Mothers of full-term babies were compared with mothers of premature babies who remained hospitalized for three to twelve weeks after birth. Mothers of full-term babies held their babies closer and interacted with them more than mothers of premature babies. Mothers of premature infants had a higher incidence of divorce and relinquishment of custody of the infant. The authors state hypotheses as to the causes of these differences in maternal behavior.

Levenstein, P. "Cognitive Growth in Preschoolers Through Verbal Interaction with Mothers." *American Journal of Orthopsychiatry* 40 (1970). 426-32. The study is deemed important because it indicates that intervention can take place in the home. The researcher found mothers willing to cooperate and interested in taking action toward preparing their children for education. Experimental children made significant gains over control children. Fifty-four children aged from 20 to 43 months and their mothers were divided into an experimental and two comparison groups. The experimental group was exposed to seven months of home sessions with the purpose of stimulating verbal interaction between mother and child.

See also Levenstein, P. "The Mother-Child Home Program." In *The Preschool in Action*, 2nd ed., R.K. Parker, ed. Boston, MA: Allyn & Bacon, 1972.

_____. *Verbal Interaction Project: Aiding Cognitive Growth in Disadvantaged Preschoolers Through the Mother-Child Home Program July 1, 1967–August 31, 1970.* Feb. 1971 ERIC Document Reproduction Service No. ED 059-791. This is the final report of the Verbal Interaction Project, which was a home-based mother-child program aimed at fostering cognitive growth in preschoolers 2 to 4 years old from lower-income families. Trained visitors visited mothers and their children twice weekly over seven-month periods and trained the mother how to use toys and books. The mother then used her acquired skills in interaction with the child. Children in the program made significantly higher gains on IQ tests than control children

See Also Levenstein, P. *The Verbal Interaction Project.* Paper presented at Symposium, American Orthopsychiatric Association Conference, Washington, DC, Mar. 24, 1975.

Levenstein, P.; A. Kochman & H. Roth. "From Laboratory to Real World. Service Delivery of the Mother-Child Home Program." *American Journal of Orthopsychiatry* 43, 1 (1973). 72-78. Describes the procedures for a research project's assistance to service

organizations in successfully replicating a model program found effective in the laboratory. Reports the goals, methods and problems and offers some general recommendations. Authors' Abstract.

Levine, Jacob. *From the Infant's Smile to Mastery of Anxiety The Developmental Role of Humor* 1972. ERIC Document Reproduction Service No. ED 073 851 Reports that the absence of smiling in infants can have as much significance as its presence. Smiling develops into communication of pleasure early in infant development. The absence of smiling indicates distress or fear. Humor is an essential element of the growth process that parallels the stages of cognitive and psychological development. Humor is conceptualized as a reassertion of one's competence and can be used to facilitate learning.

Lewis, M. "Infant Intelligence Tests. Their Use and Misuse." *Human Development* 16, 1 (1975). 108-18. Lewis reasserts the inaccuracy and instability of infant intelligence tests and their use in infant intervention programs. As an alternative he suggests measuring development by acquisition of specific skills.

Lewis, M., & S. Lee-Painter. "An Interactional Approach to the Mother-Infant Dyad." In *The Effect of the Infant on His Caregivers*. M. Lewis & R.A. Rosenblum, eds. New York: John Wiley, 1974 This study utilizes various models of interrelationships in discussing the relationship between the child and the environment. The authors propose that data obtained are highly specific to the type of measurement utilized by the model. The authors further suggest that the interaction flow between the child and the environment moves in both directions; both elements significantly influence each other.

Lewis, M. et al. "Mothers and Fathers, Girls and Boys. Attachment Behavior in the First Two Years of Life." In *Determinants of Behavior Development*. F.J. Monks, W. Willard & J. de Wit, eds. New York. Academic Press, 1972. This longitudinal study examined the attachment of the child with each parent. The ten boys and girls aged from 1 to 2 years were observed with each parent in a play situation in sessions one week apart. Attachment behaviors were affected by the sex of the infant and the sex of the parent. Results of the Bayley Mental Maturity Index obtained at age 2 correlated with some attachment behaviors observed during the first two years of life.

Maccoby, E.E., & S. Feldman. "Mother-Attachment and Stranger-Reactions in the Third Year of Life." *Monographs of the Society for Research in Child Development* 37, 1 (1972). Two studies compared American and kibbutz-reared Israeli children in observations of a stranger's entrance, the mother's departure, a period when the child was alone, and reunion with the mother. Kibbutz and American children of the same age showed similar reactions to the episode. Behaviors changed at different ages with both groups.

Mann, M. *The Effects of a Preschool Language Program on Two-Year-Old Children and Their Mothers*. Final report. 1970. ERIC Document Reproduction Service No. 045 224. A structured language program for 2-year-old children who were educationally disadvantaged was complemented with a structured language program for their mothers to determine if the program would significantly affect the language behaviors of the mothers and children. Three groups were arranged with the following treatments. 1) language treatment 2) counseling and day care treatment and 3) control with no treatment Conclusions were that the group with structured language treatment produced a significant change in the syntax-style of mothers and children.

McCall, R.B. "Exploratory Manipulation and Play in the Human Infant." *Monographs of the Society for Research in Child Development* 155 (1974). Infants 7 1/2 to 11 1/2 months of age were studied for possible differences in exploratory manipulation and play behavior. It was possible to group half the subjects by style of play behavior Subjects tended to spend longer periods of time with a toy that provided appropriate feedback to the child's level of development No sex differences were found in the nature of play behavior, in choice of toy or in the infant's orientation toward the parent.

Meier, J.H., et al. *An Educational System for High-Risk Infants A Preventive Approach to Developmental and Learning Disabilities*. 1970. ERIC Document Reproduction Service No. ED 043 379. In addition to reviewing literature in the field of infant education, two ap-

proaches are suggested to prevent experiential deprivation. An infant curriculum, which should be initiated as early as possible, needs to incorporate both an enriched day care setting and the training of mothers in infant stimulation to be implemented in the home.

Moerk, E. "Changes in Verbal Child-Mother Interactions with Increasing Language Skills of the Child" *Journal of Psycholinguistic Research*. 3 (1974): 101-116. As children developed increasing levels of language skills, changes occurred in the interaction between mothers and children. The children studied were from 2-2 to 5-1 years. Mothers were found to adapt the verbal utterances as the language competencies of their children improved.

Naeye, R.L.; W. Blanc & C. Paul. "Effects of Maternal Nutrition on the Human Fetus." *Pediatrics* 52 (1973) 494-503. Mothers' weight gain and low-calorie diets during pregnancy had a correlation with fetal growth. Pronounced effects resulted from maternal undernutrition in the last trimester of pregnancy. The mother's stature had little correlation with fetal growth.

Nelson, K. "Structure and Strategy in Learning To Talk." *Monographs of The Society for Research in Child Development* 38 1-2 (1973). Eighteen children were studied for acquisition of first words between 1 and 2 years of age. The authors discussed acquisition in terms of an interaction model. Children began by naming objects, learned words of all major form classes, and differentiated small concept domains from the beginning. Strategies used by the children for acquisition were found to be related to language progress. Mother behavior that was nondirective and accepting facilitated acquisition of words.

Osofsky, J.D., & B. Danzger. *Relationships Between Neonatal Characteristics and Mother-Infant Interaction* 1973 ERIC Document Reproduction Service No. ED 086 323. The findings of this study provide information about the early relationship that develops between infant and parents. Fifty-one mothers were studied. Infants were assessed using the Brazelton Neonatal Assessment Scale, and mothers were interviewed. Data suggested that infants show consistency in state and behavioral measures across situations. There is consistency between patterns of maternal stimulation and infant behaviors.

Pederson, D.R. *The Soothing Effects of Vestibular Stimulation as Determined by Frequency and Direction of Rocking*. 1973. ERIC Document Reproduction Service No. ED 084 017 The effects of rocking on the activity of 2-month-old infants was the focus of this study. The direction of rocking was not related to changes in activity, but more rapid rocking resulted in a greater reduction in activity.

Pedérson, F.A., and others. *Father Absence in Infancy*. 1973. ERIC Document Reproduction Service No. ED 085 088. The results of this study lead to the speculation that the father's interaction with the infant provides stimulation that complements the mother's by introducing a degree of novelty. Fifty-four black infants classified as "father-absent" were rated on sixteen measures of infant functioning. There was no relationship between father variables and infant variables for female infants but a significant relationship on some behaviors for males. There was no explanation for sex differences, and results were considered tentative.

Phillips, J.R. "Syntax and Vocabulary of Mother's Speech to Young Children. Age and Sex Comparison." *Child Development* 44 (1973). 182-85. The researcher tested the hypotheses that adults do not speak to children as they speak to other adults and that the adult's speech becomes more adult-like as the child increases in linguistic competence. Both hypotheses were affirmed significantly. Phillips found that at about 18 months the mother begins to use more adult-like speech with the child.

Powell, L.F. "The Effect of Extra Stimulation and Maternal Involvement on the Development of Low-Birth-Weight Infants and on Maternal Behavior." *Child Development* 45, 1 (1974) 106-13 Although mothers of low-birth-weight newborns were allowed to handle their babies during the period of hospitalization, it did not influence their maternal behavior after the babies were released. Hospital staff gave the infants extra stimulation while they were hospitalized to improve development. Development was improved through 6 months corrected age when compared with a control group of infants.

Rebelsky, F., & C. Hanks. "Fathers' Verbal Interaction with Infants in the First Three Months of Life." *Child Development* 42 (1971). 63-68. Fathers' verbal interactions with their infants were gathered by means of a microphone attached to the infant for a 24-hour period every two weeks, from the time the infant was 2 weeks of age to the time he was 3 months old. The data show that fathers spend little time vocalizing to their infants and that the number of interactions varies by time of day, age, sex of the infant, and the kind of activity occurring during the interaction.

Richardson, S.A., et al. "School Performance of Children Who Were Severely Malnourished in Infancy." *American Journal of Mental Deficiency* 77 (1973). 623-32. Jamaican boys aged from 5 to 11 years who had been severely malnourished during infancy were compared with classmates of the same age and sex. They did significantly less well on the WRAT, class grades and teacher's evaluation. No relationship was found between age at which they experienced malnutrition and school performance.

Robinson, H.B., & N.M. Robinsin. "Longitudinal Development of Very Young Children in a Comprehensive Day Care Program. The First Two Years." *Child Development* 42 (1971). 1673-83. The authors suggest that high quality day care in the first two years of life may enhance verbal development. Comparisons of test scores with control children were significant in verbal ability differences. Deprived, preschool black children received more benefit than more advantaged Caucasian children.

Robinson, H.B.; N.M. Robinson; M. Wolins; U. Bronfenbrenner & J. Richmond. "Early Child Care in the United States of America." *Early Child Development and Care Monograph* 2 (1973). 359-582. Each of ten chapters deals with different aspects of child care in this country. 1) History of Child Care in the United States, 2) Theories and Methods of Child Rearing, 3) Role of the Family and Society, 4) Planning for Children, 5) Changes in the Family, 6) Programs Providing Child Services, 7) Training of Personnel for Programs, 8) Resources for Parents, 9) Funding and Research, and 10) Recommendations.

Roeder, L.M. "The Effect of Maternal Nutrition on the Development of the Offspring. An International Symposium." *Nutrition Reports International, Special Issue* Los Altos, CA. Geron-X, 1973. Among the topics presented at the symposium were "Prenatal Nutritional Factors Affecting Brain Development," "The Developing Brain. . .," "Perinatal Undernutrition and the Metabolic and Behavioral Development of the Offspring." Some papers dealt with research on rats, with implications for human mothers and babies.

Rosenbluth, L., et al. *New York Infant Day Care Study*. 1973. ERIC Document Reproduction Service No. ED 084 015. A five-year longitudinal study was made of service-oriented day care programs in New York City. Three kinds of groups were studied: 1) children in group day care centers, 2) children in family day care centers and 3) home-reared children. Data are based on observations and instruments to indicate effects on families. Cross-sectional analysis was made to compare early versus late entry into programs.

Saunders, M.M. *Some Aspects of the Effects of Day Care on Infants' Emotional and Personality Development*. 1972. ERIC Document Reproduction Service No. ED 067 166. Infants reared at home were compared with infants enrolled in a day care center to identify differences in emotional and personality development. Infants were aged 3 to 24 months. Data were collected using questionnaires, observations, the Bayley Scales of Infant Development and telephone interviews with mothers. No significant differences were found between the groups.

Schaefer, E., & M. Aaronson. "Infant Education Research Project. Implementation and Implications of a Home Tutoring Program." In *The Preschool in Action* R.K. Parker, ed. Boston, MA. Allyn & Bacon, 1972. A program of home tutoring to facilitate intellectual development as conducted with 31 black male infants in Washington, DC. Tutors visited each infant's home for an hour each day, five days a week, from age 15 months to 36 months. Tutors used toys, books, music and rhythm, puzzles, games, and walks or excursions. Post-testing showed gains for the experimental infants.

Schmitt, R., & M.R. Erickson. "Early Predictors of Mental Retardation". *Mental Retardation*, 11, 2 (1973). 27-29. Parents' reports of age of onset of smiling and sitting alone were examined for 454 children who were referred for diagnosis of developmental problems. The data indicated that the two milestones predicted the same percentage of children who were subsequently diagnosed as severely retarded. The onset of smiling, however, was considered to be more useful for purposes of early prediction because of its occurrence in nonretarded children by the age of 5 months. Authors' Abstract.

Seltzer, R.E. "The Disadvantaged Child and Cognitive Development in the Early Years." *Merrill-Palmer Quarterly*, 19 (1973). 241-52. This symposium-paper discusses literature on maternal influences, social-class differences, and intervention programs for the first three years of life. Noting that differences between the lower socioeconomic group and middle socioeconomic groups begin to appear around the third year, it proposes hypotheses to explain the delay in development of the differences.

Simmons, M.P. *Piagetian Theory on Imitative Behavior in Childhood. Direction for Parent-Infant Education*. 1973. ERIC Document Reproduction Service No. ED 075 091. Simmons is concerned with early intervention utilizing Piagetian principles of development. Her program objectives include means to guide parent and child in building a relationship that would use developmental sequence stages from birth through 18 months. She proposes that parents be taught techniques of natural intervention in the home, which will facilitate the child's development.

Snow, C.E. "Mothers' Speech to Children Learning Language." *Child Development* 43 (1972). 549-65 Snow reports that middle-class children do not learn language as a sorting-out and modification process, but hear consistent, organized and simplified language from their mothers. In this study the findings were that mothers simplified their speech to young children and that children played a role in modifying the mother's speech. Snow concludes that children who are acquiring language have a model that is simpler and more redundant than adult speech.

Sroufe, L.A., & J.P. Wunsch. "The Development of Laughter in the First Year of Life." *Child Development* 43, 4 (1972). 1326-44. In a study of 150 infants in the first year of life, a significant change was noted in the amount of laughter and the nature of stimuli eliciting it. Tactile or auditory stimuli were primary with young infants, while visual and social were successful in the second half of the first year.

Stern, D.N. "Mother and Infant at Play. The Dyadic Interaction Involving Facial, Vocal and Gaze Behaviors." *The Effect of the Infant on His Caregivers*, M. Lewis & L.A. Rosenblum, eds. New York. John Wiley, 1974. Stern uses an interactive model of the relationship between mother and infant in which interaction flows in both directions between mother and infant. This study describes behaviors involved in the interaction between the dyad, relating how the elicited behavior of one member in turn influenced the behavior of the second member.

Tautermannova, M. "Smiling in Infants" *Child Development* 44, 3 (1973): 701-704. The development of the duration of smiling response was studied in the first 6 months of life. The results showed significant individual differences in the length of smiling, which increased with age. The length of smiling depended on the age of the infants, on the interaction between the adult and the infant, and on how much time had elapsed since the beginning of the observation period.

Taylor, A. "Deprived Infants' Potential for Affective Adjustment". *American Journal of Orthopsychiatry* 38 (1968). 835-45. This report contradicts literature asserting that children who are deprived as infants are typically without affection. The thirty adopted children in this study who suffered severe deprivation as infants demonstrated healthy potential after receiving treatment from age 2½ years on.

Tulkin, S.R. "Social Class Differences in Attachment Behaviors of Ten-Month Infants." *Child Development*, 44, 1 (1973). 171-74. The study sought to determine whether middle-class infants were more likely to show attachment than working-class infants. Female infants

of middle-class and working-class parents were observed during a play session and a separation session. Findings were that no significant differences were found, although middle-class female infants tended to cry sooner upon separation from their mothers than working-class females.

Tulkin, S.R., & F.E. Covitz. *Mother-Infant Interaction and Intellectual Functioning at Age Six*. Paper presented at meeting of Society for Research on Child Development, Apr. 1975, Denver, CO. The study reported was a follow-up to a study conducted in 1967 in which differences in home experiences for infants of different social classes were examined. The follow-up used subjects from the original study who were now 6 to 6½ years old. The purpose was to determine whether the differences observed in the infants were important for later development. Findings were positive, with highly consistent relationships between attachment measures and later test scores This study expanded data on the relationship between attachment and cognitive development.

Tulkin, S.R., & Kagan, J. "Mother-Child Interaction in the First year of Life" *Child Development* 43 (1972). 331-41. While this study found no nonverbal interaction differences between white middle-class and working-class mothers with their babies, significant differences were noted in verbal interaction. Verbal behavior was more frequent among middle-class mothers.

Uzgiris, I.C. "Patterns of Cognitive Development in Infancy" *Merrill-Palmer Quarterly* 19, 3 (1973). 180-204. As a result of this study, the author suggests that there are four distinct levels in object concept development. Six girl and six boy infants were seen at weekly intervals from 4 to 8 months to 1 year and then at monthly intervals from 1 to 2 years. Piagetian Scales developed by Hunt and Uzgiris were administered. Subject variability was found to be greater for steps higher in the sequence. The rate of development of an earlier period did not predict later rate of development.

Vore, D.A. "Prenatal Nutrition and Postnatal Intellectual Development" *Merrill-Palmer Quarterly* 19, 4 (1973): 253-60. Reviewing data available on the effect of prenatal nutrition on infant and child brain development, Vore concludes that maternal malnutrition is associated with deficits at birth and later in life and that these deficits may be somewhat reversible through environmental intervention.

"Vulnerability of Young Infants to Food Additives." *World Health Organization Technical Report Series* 488 (1972). Reports that very young infants have not acquired or developed the mechanisms that protect them from foreign substances. They are less efficient in metabolizing food additives and may accumulate them over a period of time, with possible consequences in later development.

Wachs, T.D. *Utilization of a Piagetian Approach in the Investigation of Early Experience Effects. A Research Strategy and Some Illustrative Data*. 1973. ERIC Document Reproduction Service No. ED 087 562. With a paradigm utilizing Piagetian-based strategy for the study and evaluation of cognitive and intellectual development, infants were observed naturalistically. The Purdue Home Stimulation Scale was used to code the observations. The study also includes a review of research on the effects of early experience on subsequent cognitive and intellectual development.

White, B.L. *Human Infants, Experience and Psychological Development*. Englewood Cliffs, NJ. Prentice Hall, 1971. White's stated purpose in writing this book is to call for a radical reorientation of research efforts concerning infancy. The book presents what is presently known through research. Topics covered are. the current state of knowledge concerning the behavior of human infants, the role of early experience, recent additions to that knowledge; and major issues in current research.

See also. White, B.L. *Critical Influences in the Origins of Competence*. Paper presented at Merrill-Palmer Institute Conference on Research and Teaching of Infant Development, Feb. 1974.

White, B.L.; J.C. Watts et al. *Experience and Environment*. Englewood Cliffs, NJ. Prentice-Hall 1973. The researchers sought to discover environmental events in the 2nd and 3rd years that affect children's competence or incompetence in school. Intensive home observations consisted of sessions of three 10-minute continuous observations in a half-day period. Watts assessed the functional environment using periodic structured interviews, while White assessed competence using periodically administered structured tests. No attempt was made to analyze the relationship of the instruments.

Wilson, G.S.; M.M. Desmond & W.M. Verniaud. "Early Development of Infants of Heroin-Addicted Mothers." *American Journal of Diseases of Children* 126 (1973). 457-62. Thirty infants of heroin addicts were observed from 3 to 24 months. Eighty percent had withdrawal signs for up to 6 months. Other behavioral disturbances including hyperactivity, brief attention span and temper outbursts were identified in infants observed 1 year or longer.

Yarrow, L.J.; J.L. Rubenstein; F.A. Pederson & J.J. Jankowski. "Dimensions of Early Stimulation and Their Differential Effects on Infant Development." *Merrill-Palmer Quarterly* 19 (1972). 205-18. Authors of this study were interested in evaluating the impact of "disadvantaged environments. Important findings were that the environment can be differentiated into caretaker behaviors and that events in the environment can be coordinated with theoretical concepts. Results also reinforced data on the importance of stimulations, both human and inanimate, for the development of the infant.

CONTRIBUTORS
to this publication:

Top row (l. to r.)—Joe L. Frost, Ira J. Gordon
Middle (l. to r.)– Catherine R. Cooper and friends, Jill C. Thrift
Bottom (l. to r.) –John W. Hollomon, Gloria R. Zamora, Sue C. Wortham