

The importance of caregiver-child interactions for the survival and healthy development of young children

A REVIEW



DEPARTMENT OF CHILD
AND ADOLESCENT HEALTH
AND DEVELOPMENT

WORLD HEALTH ORGANIZATION

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Contents

Photo credits	iv
Acknowledgements	v
Foreword	vii
Executive summary	1
Chapter 1. Introduction: The role of caregiving in the development of children	5
Methodology for the review	5
The caregiver	6
Chapter 2. Historical background: The importance of stable, loving care for young children	8
WHO and the work of John Bowlby	8
The effects of separation from a familiar caregiver on the health and development of children	9
Chapter 3. Advances in child development theory and research: Perspectives from psychology, linguistics, neurobiology, and evolutionary theory	11
Contemporary psychological theories of how children develop	11
Psychoanalytic theory, particularly Object Relations Theory	12
Lev Vygotsky and social mediation	12
Developmental psycholinguistics	13
Developmental psychology	14
Empirical findings regarding the perceptual and learning capacities of infants	16
Recent advances in understanding the neurobiology of early experience	18
Phylogenetic perspectives on human capacities for social and cultural communication and cooperation	19
Chapter 4. The nature of caregiver-child relationships: Attachment, development and cultural adaptation	22
Attachment theory	22
Developmental changes in caregiver-child relationships	25
Features of supportive and facilitative caregiver-child interactions	28
Mutuality, synchronicity, emotional availability, and social referencing	29
Sensitivity	30
Responsiveness	31
Applicability of caregiver-child dimensions across cultures	31
Models of caregiving and parenting	33

Chapter 5. The impact of caregiver-child interactions on the development and health of children	36
Child development outcomes	37
Follow-up studies from early interactions	37
Psychopathology and child abuse	38
Institutional care	39
Child health outcomes	40
Prematurity and low birth weight	40
Growth and failure to thrive	41
Malnutrition	43
Chapter 6. Social and personal determinants of the quality of caregiver-child interactions	46
Socio-economic conditions	46
Child characteristics	47
Caregiver characteristics	47
Chapter 7. Improving caregiver-child interactions: Implications for intervention	51
Glossary	53
Bibliography	57

Photo credits

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Page 18	Jacqueline Cidérac
Page 20	Anthony De Casper
Page 20	WHO Department of Child and Adolescent Health and Development
Page 21	WHO Department of Child and Adolescent Health and Development
Page 23	Linda Richter
Page 29	Eleanor Gibson (Cornell University)
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The WHO Department of Child and Adolescent Health and Development supported this review as the second in a series to guide interventions to improve the health, growth and psychosocial development of children, particularly those living in resource-poor settings. The first in the series is *A Critical Link: Interventions for physical growth and psychological development* (1999, WHO/CHS/CAH/99.3), available in English, French, and Russian. For these documents and further information, please contact:

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Foreword

Nearly 11 million children died before reaching their fifth birthday in the past year. Almost 40% of these children die within the first month of life. Millions of children survive but face diminished lives, unable to develop to their full potential. Poor nutrition and frequent bouts of illness limit the young child's opportunities to explore the world during a critical period for learning basic intellectual and social skills. Often neither the caregiver nor health personnel are aware of what to do to prevent or lessen the worst effects of illness, nor how to provide compensatory experiences to get the child's growth and psychological development back on track.

This review lays the groundwork for including interventions *to improve the relationship between the caregiver and child* in an overall strategy to improve the child's survival, health, and development.

The recognition of the importance of the child's relationship with a primary caregiver has been limited. In the area of child health, we have tended to focus on the caregiver's role in bringing the child to the attention of health services and in implementing treatment recommendations and follow up. On their side, psychologists and psychiatrists have tended to concentrate on the caregiver's role in the child's emotional development and on residual themes to be addressed in the psychoanalysis of the adult. We have failed to recognize the effects of the caregiver-child relationship on the very survival and health of children most at risk.

This has not always been so. This review goes back to the work of John Bowlby. In 1951 he wrote the influential monograph *Maternal Care and Mental Health*, commissioned by the World Health Organization. Using the available empirical evidence, he demonstrated that a loving, stable parental relationship is as critical to the young child's survival and health as is food and health care.

Carrying on the work of Bowlby and others, this paper is important for several reasons. First, it gathers a wealth of information on the nature of the interactions between the mother – or other principal caregiver – and the child.

It blends theory with current scientific evidence from both advantaged and resource-poor countries to describe the interactive processes that shape this relationship during the first days through the early years of the child's life. This relationship meets the child's basic needs for food, safety, warmth, affection, and stimulation – and the caregiver's need to feel effective and satisfied in caring for her child.

From recent research, the review identifies two fundamental qualities that determine the caregiver's ability to provide effective care: sensitivity and responsiveness to the child. These skills enable the caretaker to detect the child's signals and to respond appropriately, in synchrony, to meet the child's needs.

Second, the review summarizes what we have learned about how a strong and supportive caregiving relationship supports the development of a child who is physically, intellectually and socially healthy, and more resilient to the damaging effects of poverty and violence.

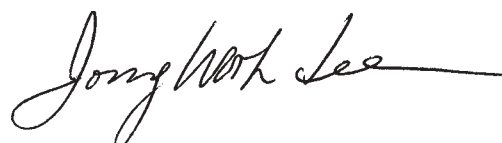
The review shows us what it looks like when this relationship works, and identifies the consequences when the caregiver and child fail to engage. The most vulnerable children – those who are premature, low birth weight, non-organic failure to thrive, and malnourished – are the ones to suffer the most from the effects of this failure on the child's health. We also see the human cost on children living in institutions, conflict, refugee camps and other settings that deprive them of stable, caring relationships.

Finally, this review calls us to work with the whole child and with the child's closest caring environment. It presents a solid foundation for the need to integrate interventions to promote better caregiver-child interactions into the design of primary health care programmes for mothers, other caregivers, newborns, and young children. These interventions are also appropriate for community-based nutrition, early child care, violence prevention, orphan care and parent education programmes. A response to this call has

implications for the training of physicians, nurses, child care workers, and others who assist families in caring for their children.

Focusing on the quality of caregiver-child interactions as a critical aspect of the care of young children is a new direction for the World Health Organization, UNICEF, and their international and local partners. We need to marshal adequate

organizational and financial support to promote effective caregiver-child interactions as a fundamental condition for ensuring that children survive and thrive. It is our wish that all will draw upon this rich evidence to rethink the meaning of our shared responsibility for the survival of children and a strategic investment in their future.

A handwritten signature in black ink, reading "Jong-wook Lee". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

LEE Jong-wook
Director-General
World Health Organization

Executive Summary

Young children are dependent on the care they receive from others. In this sense, there is no such thing as a baby on its own. There is always a baby in the care of someone. All the child's physical and psychological needs must be met by one or more people who understand what infants, in general, need and what this baby, in particular, wants. The child's growth, in all aspects of health and personhood, depends on the capacity of adults, in whose care the child rests, to understand, perceive and respond to the child's bids for assistance and support.

This paper reviews current theory and evidence on the importance of caregiver-child relationships for the survival and healthy development of children from birth to three years of age. It begins with the seminal contribution of the World Health Organization (WHO) in the area of caregiving. In 1951 WHO asked John Bowlby to review the impact of the separation of children from family and caregivers as a result of the Second World War in Europe.

Bowlby's most important contribution lay in his emphasis on the importance of the close and caring interpersonal relationships that infants and young children have with their primary caregivers. Bowlby was convinced that an ongoing warm relationship between an adult and a young child

...the care that children receive has powerful effects on their survival, growth and development...care refers to the behaviours and practices of caregivers (mothers, siblings, fathers and child care providers) to provide the food, health care, stimulation and emotional support necessary for children's healthy survival, growth and development...Not only the practices themselves, but also the way they are performed – in terms of affection and responsiveness to the child – are critical to a child's survival, growth and development.

Engle & Lhotska (1999, p.132)

was as crucial to the child's survival and healthy development as the provision of food, child care, stimulation and discipline. The lack of personalized care during the early years of life has a devastating effect on the child's health, growth, personality adjustment and cognitive capacity.

Conclusions

This review brings our evolving understanding of the importance of caregiver-child interactions up to the present. Following are the critical findings:

■ **Sensitive and responsive caregiving is a requirement for the healthy neurophysiological, physical and psychological development of a child.** Sensitivity and responsiveness have been identified as key features of caregiving behaviour related to later positive health and development outcomes in young children. Sensitivity is an awareness of the infant and an awareness of the infant's acts and vocalizations as communicative signals to indicate needs and wants. Responsiveness is the capacity of caregivers to respond contingently and appropriately to the infant's signals.

To ensure the child's health and growth, caregivers need to be sensitive to the physical state of the young child, to be able to judge whether the child is hungry, tired, needs toileting, or is becoming sick. Responsive caregivers are able to make these judgements because they monitor the child's movements, expressions, colour, temperature, and the like. By continuously taking account of the child's response, they are able to adjust their own actions to achieve an optimum outcome – for example, to comfort the child's fretfulness, put the child to sleep, and encourage the child to feed when ill.

In addition, the capacity of infants and young children to cope with biologically challenging conditions, including low birth weight and illness, is dependent on the ability of caregivers to adjust their caregiving to the special needs of the child.

They must compensate for the immaturity or limits of the child's abilities. For example, sick infants and young children need additional fluids and food even though they lack appetite. It takes a caring and skilled caregiver to encourage a child to eat and drink under these circumstances.

Beyond survival, interactions between caregiver and child that are sensitive to the child's cognitive functioning, and complement and extend the child's capacity to identify and act on objects in the world, are essential to the child's psychosocial development, including the acquisition of language and cultural meaning. A stable and close emotional relationship, long before the infant learns to speak, enables the caregiver to describe and mediate the child's experiences, and lays the foundation for the child's language development.

Loving care also provides the infant with a mirror reflecting a tender and sympathetic view of the child's self and of the world. Early experiences function as schema on which the infant then predicts future events and encounters. The young child who receives loving care feels that he is a loved person and expects other people to respond to him as someone deserving of care and attention. In contrast, a child whose needs have been neglected does not usually expect others to be kind and considerate, and frequently behaves aggressively and defensively.

■ **Inadequate, disrupted and negligent care has adverse consequences for the child's survival, health and development.** The quality of caregiving relationships has an impact on children's health and development. These effects occur because children, whose care is less than adequate or whose care is disrupted in some way, may not receive sufficient nutrition; they may be subjected to stress; they may be physically abused and neglected; they may develop malnutrition; they may not grow well; and early signs of illness may not be detected.

Research on what occurs when young children are placed in institutions provides powerful evidence of the importance of supportive and stable caregiver-child relationships for the health of young children and their cognitive and social development. Young children in group care often fail to thrive, they tend to be sickly, they are demanding of attention, and they find it difficult to have normal peer relationships with other children.

■ **Infants and caregivers are prepared, by evolutionary adaptation, for caring interactions through which the child's potential human capacities are realized.** The evolving biological and social capacities of the newborn and young child set out an agenda of requirements for support from caregivers to meet the child's full potential for health, growth and development. The infant's brain is prepared to anticipate and depend on nurturant human care. Babies, for example, are born with neurophysiological and sensory filtering mechanisms, which enable them to focus on human contact and communication. From the first moments of life, they preferentially attend to the face, gestures and voice of other humans. The capacity of newborns to express simple emotions through facial expressions and movements guides caregivers to understand and respond in ways that are most helpful for infants to calm, feed, sleep, stay alert or interact with others.

In a matched way, all normal human beings, young and old, male and female, have a capacity to care for young children. When interacting with a young child, adults adapt the pitch and simplicity of their language, make their actions slow and purposeful, carefully watch the reactions of the child to them, and make ongoing modifications to their behaviour to engage and accommodate the child.

■ **Factors directly affecting the caregiver and child, as well as underlying social and economic issues, influence the quality of caregiver-child relationships.** Barriers to the natural emergence of a caring relationship disrupt the care a child needs. Caregiver mood and emotional state are critical determinants of caregiver behaviour, for example, with consequences for the child's health and development. Studies of maternal depression illustrate how self-preoccupation and a negative mood can disrupt caregiving. Faced with chronic stress or anxiety, the caregiver may withdraw from her infant and become inattentive to the child's physical and psychological states. With a lack of attention and poor surveillance, the caregiver is not aware of early signs of illness, that a child has not eaten sufficiently during the last meal, or that no one has praised the child for efforts to do something or provided the child with guidance and limits for behaviour. Chronic stress, associated with poverty and other environmental challenges, can also disrupt the capacity of adults to give loving care. The effects of caregiving on young children

can persist well into adolescence in the form of behaviour disorders, anxiety, and depression.

On the other hand, a strong caring relationship can protect a young child from the effects of deprivation and disadvantage. The caring relationship is the strongest explanation for why some children who grow up under wretched conditions nonetheless grow well, are healthy, are able to be productive in school and work, and have good relationships with other people.

Caring interactions promote the health and development of vulnerable children. They increase the resilience of young children to the potential damaging effects of poverty and deprivation.

■ **Nurturant caregiver-child relationships have universal features across**

cultures, regardless of differences in specific child care practices. In all human groups, babies depend on warm, responsive, linguistically rich, and protective relationships in which to grow and develop. They cannot survive in environments that do not meet threshold levels of these characteristics. Caregivers in all cultures demonstrate sensitivity and responsiveness towards infants and young children, although the form of the caregiver's actions may vary considerably from one cultural milieu to another. Sometimes these features of caregiver-child relationships are not so easily observed because interactions with children, or the expression of emotions, are kept private as a matter of social convention. This does not mean, however, that caring adults do not watch young infants, cuddle and talk to them, and stimulate babies to develop skills indicative of healthy growth and wellbeing.

There are also factors that commonly affect the quality of caregiving relationships and the child's development. For example, the positive correlation between the family's socio-economic status and the psychological development and adjustment of the child is found in all societies.

Research priorities

The review exposes several areas of much needed research, including on:

■ **The nature and determinants of child care by caregivers in poor communities, especially in developing countries.** As in other fields of science, most of the available research has been

conducted in developed countries, and the extent to which the results can be applied in different cultural and socio-economic conditions is not known. For example, comparatively little is known about the varieties and effects of rearing children by more than one intimate adult, a common practice in many non-Western communities.

■ **The link between the qualities of the caregiving relationship and the child's survival and health, in addition to psychosocial development.** The strongest empirical evidence on the importance of sensitive and responsive caregiving is from developed countries, where the greatest effects have been demonstrated in school performance and later behavioural outcomes. More research is needed on the direct contributions of the qualities of effective caregiving to the survival and health of infants and young children – particularly among children living under poor and otherwise high-risk conditions. Some potential outcomes of positive care to study include: the reduction of the frequency and severity of episodes of common childhood illness; the speed and adequacy of catch-up growth and development; adherence to medical treatment and return for follow-up care; the prevention of injury and family abuse; and improvements in feeding and the prognosis for low birth weight infants and malnourished young children. In many areas of the world, additional documentation of these effects on the health and growth of children, as well as on their psychosocial development, will be key to mobilizing attention and resources to improve caregiver-child interactions.

■ **The effectiveness of interventions in changing the basic skills in caregiving and the qualities of the caregiver-child relationship.** Interventions need to be designed and tested for their effectiveness in improving the basic qualities or skills – sensitivity and responsiveness – that determine the effectiveness of caregiving, as well as specific care practices, for example, those included in feeding, attending to the sick child, and stimulating the child's language and cognitive development. The technology is now available to observe the patterns of interaction and changing affect between caregivers and children to demonstrate how these qualitative improvements in the relationship are likely to benefit the child.

Interventions for children: Promoting effective relationships with caring adults

The theoretical and empirical evidence, which has accrued since the middle of the last century, needs urgent application in developing countries. Children living under disadvantaging conditions need as much help as they can get from caregivers. It is also the most effective help children can get to compensate for other deficiencies in their environment. While it is beyond the scope of this paper to review specific interventions, the evidence here has implications for designing and supporting appropriate and effective interventions to improve caregiver-child relationships.¹

■ **Interventions to improve caregiver-child interactions may be targeted at one or more of the factors that affect sensitive and responsive caregiving.** These include socio-economic conditions, social support, knowledge about children's health and development, caregiver emotional states, caregiver skills and characteristics of the child.

■ **Interventions need to be directed at especially vulnerable children living in poor communities in developing countries.** Improve-

ments in caregiver-child interactions among these groups of children benefit the child by stimulating health and development. They are also likely to improve the impact of complementary interventions to reduce childhood malnutrition, low birth weight and other limiting conditions on the child.

Children who live in difficult conditions are dependent on the nurture of primary caregivers to shield them from the most threatening features of their environment. Warm and responsive caregiving extends protection to children in otherwise adverse situations.

Conditions of chronic and worsening poverty prevail in many parts of the world. There are countless communities fraught with violence and instability. Thousands of people flee their homes each year in search of food, safety and a better life. The impact of the HIV/AIDS epidemic, like the homelessness of children following the Second World War, is a crisis of human development whose effects will endure for several generations through its impact on young children.

It is urgent that we apply the knowledge gained about the importance of caring relationships between adults and children to benefit children and caregivers in all of these situations.

¹ An overview of interventions to promote the development of especially low-income, nutritionally-at-risk children is the subject of a separate paper.

Chapter 1

Introduction

The role of caregiving in the development of children

All aspects of human functioning are, at least in part, a product of an individual's developmental history. Nature and nurture, genetic endowment and experience interact in response to contemporary external conditions and mental

and motivational states, to determine the survival, health and development of children (Rutter, 1989).

This paper reviews theoretical ideas and empirical evidence attesting to the importance of a key aspect of the experience of children that has a determining impact on their survival and healthy development – namely, their day-to-day interactions with their intimate and regular caregivers. The review is limited to the developmental period from birth to three years. These early years of life have an important influence on later experiences. They determine the impact that later experiences have on future health and development. This is because the first three years of life are believed to be a sensitive period in biological and social development (Bornstein, 1989a).

Methodology for the review

This technical report builds on previous reviews of closely related topics, especially those of Marian Zeitlin and her colleagues in their book *Positive deviance in child nutrition* (1990); Patricia Engle and Henry Ricciuti's paper *Psychosocial aspects of care and nutrition* (1995); and Peter Fonagy and Anna Higgitt's overview *An attachment perspective on early influences on development and social inequalities in health* (2000).

The topic, *the importance of caregiver-child interactions to survival and healthy development*, covers an enormous field. The greatest proportion of the subject areas of developmental psychology and behavioural paediatrics are of relevance, as are psychiatry, family sociology, and nutrition. In

...the care that children receive has powerful effects on their survival, growth and development...care refers to the behaviours and practices of caregivers (mothers, siblings, fathers and child care providers) to provide the food, health care, stimulation and emotional support necessary for children's healthy survival, growth and development...Not only the practices themselves, but also the way they are performed – in terms of affection and responsiveness to the child – are critical to a child's survival, growth and development.

Engle & Lhotska (1999, p.132)

addition, over six or seven decades we have progressively modified our prevailing ideas about caregiving. The paper is based on a selection of the available literature and, of necessity, on more recent rather than older work. Methodological and disciplinary debates with respect to the interpretation of research findings, of which – as in any other field – there are many, are not reflected in detail.

The review proceeded from known overviews of related topics, used keyword searches in Medline and PsycINFO, and combined electronic databases such as EBSCOHost, Expanded Academic and ScienceDirect. About 900 papers and chapters in books were consulted in developing the framework for the report. However, because the topic cuts across several specialities and many sources, some very relevant reports might nonetheless have been overlooked.

There is extensive literature on the effects of early caregiver-child relationships on social and psychological outcomes, particularly on later cognitive development, social competence and behavioural adjustment. In contrast, the literature on survival, growth and physical health outcomes associated with early childhood relationships is limited. This is probably due to lingering suspicions about mentalism, associated with the view

All aspects of human functioning are, at least in part, a product of an individual's developmental history.

that physical, rather than psychological, factors are likely to act causally on the child's survival and healthy development. Consequently, much of the literature cited in this report on the effects of early caregiver-child relationships on children's survival and health tends to be more indirect.

As in all other fields of science, most of the available research has been conducted in developed countries, and it is not known to what

This review exposes areas of much needed research, especially on the nature and determinants of child care by caregivers who are subjected to chronic stressors in their poor communities.

degree the knowledge generated can be applied in different cultural and socio-economic conditions. Published work from the United States and Europe tends to take place within a tradition of sustained research on a topic and is therefore progressive. It is of generally good quality

and is subject to replication and validation by researchers from different ideological and theoretical standpoints.

In comparison, work done in developed countries is frequently conducted by visitor scientists with little knowledge of local priorities and culture. It tends to be once-off and is not sustained. As a result, comparatively little is known about important issues of child care in non-Western cultures, including the varieties and effects of the rearing of children by more than one intimate adult (polymatric child-rearing). In this respect, the review exposes areas of much needed research, most especially the nature and determinants of child care by caregivers subjected to chronic stressors in poor communities in undeveloped countries.

The caregiver

The word *caregiver* as used in the paper denotes the people who look after infants and young children. However, there is considerable controversy about the most accurate and appropriate term by which to denote the wide variety of people involved in regular child care. Some advocate the term *parent* or *parenting* to denote long-term family care. *Parenting* embodies past and future perspectives and deep emotional involvement in the rearing and socialization of a young child. In these ways, it is distinguishable from the motives and activities of people involved in short term or professional care of children. Call (1984), for example, argues that the term *caregiver*, used

instead of *mother*, loses something essential to the core activities of what mothering care involves and which is precisely what young children need. The word caregiver does not capture the continuity and emotional commitment to a child that is part of parenting, and thus potentially obscures what might be latent features of childcare that are critical to healthy development.

Nevertheless, the term *caregiver* is preferred because many young children are not looked after by their biological mothers. Furthermore, with the exception of the earliest days of life, the care of young children is not limited to one person. Infants and young children frequently have several key caregivers, as occurs in many African societies, as well as in situations in which fathers, other relatives, siblings and friends participate actively in the care of young children. There is no evidence that biological mothers are more capable of caring for young children, apart from their role in breastfeeding, than fathers or other people who have a stable presence and are emotionally committed to the wellbeing of the child (Parke, 1978).

There are other ways in which the term *caregiver*, as a single individual responsible for the care of one or more young children, may distort our understanding of the effects of caregiving on children. Firstly, responsive caregiving by one person is frequently dependent on the caregiver's supportive relationships with other people in the caregiver's intimate social group. In addition, the qualities of the caregiving relationships young children have with different people vary. The differences may serve to compensate for a deficiency in a primary relationship, if and when it does occur (Hewlett, 1992; Rutter, 1979).

Several international agencies have incorporated a focus on early child development and caregiving into their frameworks of action for social development. For example, the World Bank has committed support for interventions to improve early child

A caregiver is the person who looks after infants and young children.

development on the basis of the fact that the quality of the first few years of a child's life has a multiplier effect on society (Keating & Hertzman, 1999; Young, 1996). The arguments outlined in the Bank's documentation stress both the economic and the neurobiological evidence for this support. For example, Mary Eming Young argues, "Fogel, the 1993 Nobelist in economics, states that the quality of early child development

Caregiving behaviours are mediators between social, health and caregiver attributes and the child's survival, growth and development. They are a key determinant of the quality of the environment provided for children.

has a significant effect on the quality of populations and influences health outcomes in later life" (Young, 2002, p.3). Further, "inadequate and inappropriate social and emotional experiences in the early environment can compromise higher level neural systems that provide the information needed to bond, imitate and generally respond in socially appropriate ways" (p.4).

UNICEF has made considerable effort to incorporate care into its programming with its diagrammatic representation of the role of care (Engle & Lhotska, 1991; Engle, Pelto & Bentley, 2000; Richter, 1998). Shown below, in Figure 1, is the UNICEF "expanded model of care" developed by Engle, Lhotska & Armstrong (1997).

In the UNICEF model, caregiving behaviours are mediators between social, health and caregiver attributes and the child's survival, growth and development. Caregiving is also a key determinant of the quality of the environment provided for children.



LINDA RICHTER/BIRTH TO TWENTY STUDY

These 5-year-old children from the Birth to Twenty Study in Soweto-Johannesburg were born within weeks of one another and demonstrate large individual differences in growth.

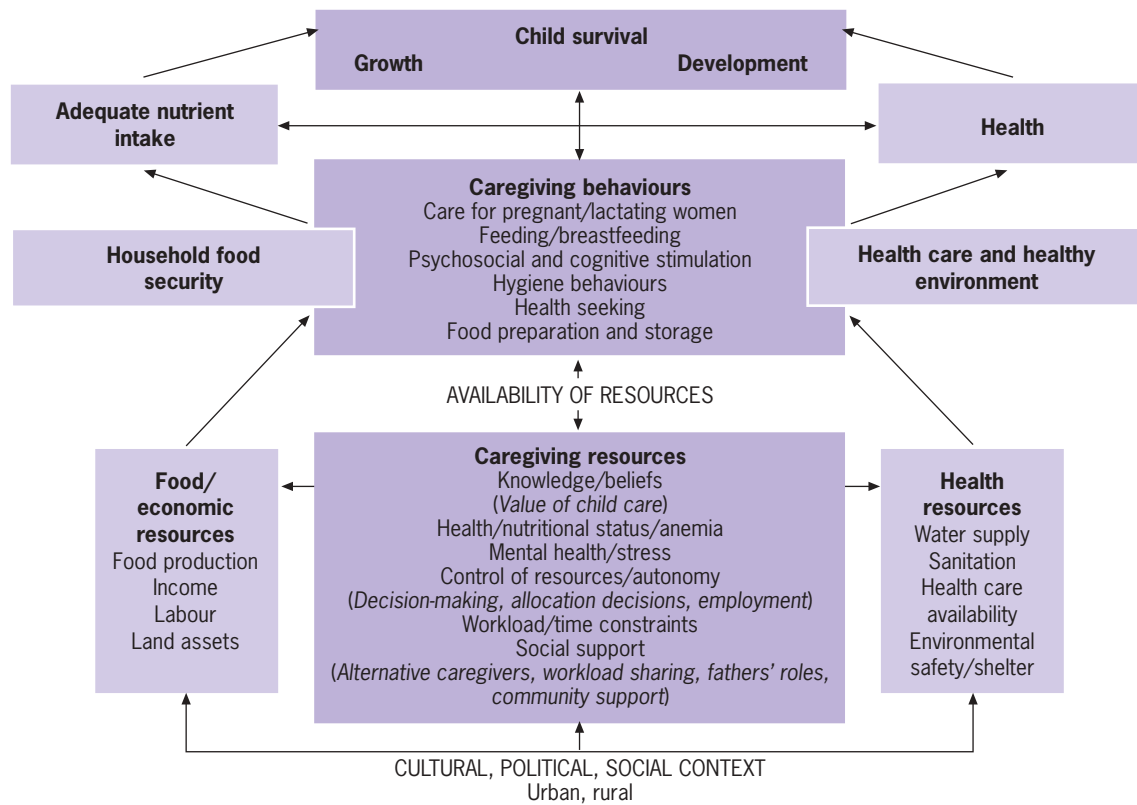


Figure 1. The extended model of care (UNICEF)

Chapter 2

Historical background

The importance of stable, loving care for young children

WHO and the work of John Bowlby

The World Health Organization (WHO) has incorporated early child development through activities in the areas of the Mental Health of children and Child and Adolescent Health and Development. For example, the *Programme for the Enrichment of Interactions between Mothers and Their Children* was developed as a primary prevention tool in mental health, and Care for Development is an element to support caregiving in the larger strategy Integrated Management of Childhood Illness (IMCI).

WHO played a unique role in fostering research on attachments and early child development through its commission to John Bowlby (Kjellberg, 1953; WHO, 1977; 1978). In 1949, Dr George Brock Chisholm, the first Director-General of WHO, established a mental health section with Dr Ronald Hargreaves as head. The third session of the Social Commission of the United Nations, held in April 1948, decided to make a study of the needs of homeless children, given the widespread social dislocation that followed in the wake of the Second World War. WHO offered to contribute a study of the mental health of children orphaned or separated from their families and in need of foster or institutional care.

The initial groundbreaking work took place when Hargreaves employed John Bowlby, then head of the Children's Department at the Tavistock Clinic in London, on a 6-month contract to write a report on the mental health of homeless children in post-war Europe. Bowlby reviewed the available literature and interviewed people in the United States and Europe. WHO published his monograph *Maternal care and mental health* in 1951, and it has been translated into 14 languages.

Bowlby's major conclusion, grounded in the available empirical evidence, was that to grow up mentally healthy, "the infant and young child should experience a warm, intimate and continuous relationship with his mother (or mother substitute) in which both find satisfaction and enjoyment" (1951, p.13). Bowlby also saw

the caregiver-child relationship in a social and economic context, and argued, "Just as children are absolutely dependent on their parents for sustenance, so...are parents, especially their mothers, dependent on a greater society for economic provision. If a community values its children, it must cherish their parents" (p.84).

Together with a film made in 1953 by James Robertson, who worked with Bowlby at the Tavistock Clinic, the WHO monograph led to widespread improvements in the care of children in hospitals, care centres and residential institutions. Robertson's film, *A two year-old goes to hospital*, graphically illustrated the phases of separation effects on young children as they pass through protest, to despair and finally detachment in their efforts to cope with the stress and pain of being separated from their principal attachment figures. Practices began to be put in place to avoid separating young children from caregivers. Furthermore, staff-child ratios in institutional care environments were reduced to allow professional care staff to give more individual attention to young children, and efforts were made to encourage family fostering and adoption in order to avoid the institutionalization of young children.

The importance of Bowlby's early writings on maternal deprivation lay in his emphasis on the primacy of interpersonal relationships for young children. He asserted that the formation of an ongoing, warm relationship was as crucial to the child's survival and healthy development as the provision of food, child care, stimulation and discipline (Hinde, 1991; Rutter, 1995).

Bowlby also conceptualized a mental mechanism, an internal working model, whereby early attachments came to influence later relation-

The formation of an ongoing, warm relationship is as crucial to the child's survival and healthy development as the provision of food, child care, stimulation and discipline.

ships. On the basis of the quality of relationships with caregivers, young children developed a set of expectations about how people would behave towards them and continued to respond in terms of these expectations irrespective of the other person's actual behaviour. Bowlby went on to write a trilogy, *Attachment* (1969), *Separation* (1973) and *Loss* (1980). Together with the work of his early collaborator, Mary Ainsworth, he established what is the pre-eminent contemporary account of the development of personal competence, social capacity, and child and adolescent behaviour problems.

In looking back on...the 25 years since the first volume of his [Bowlby's] trilogy on attachment, it is obvious that the field has changed out of all recognition. From the early years when he was criticized by academic psychologists and ostracized by the academic establishment, attachment concepts have become generally accepted. That they have become so, is a tribute to the creativity and perceptiveness of Bowlby's original formulation and to the major conceptual and methodological contributions of Ainsworth.

Rutter (1995, p.566)

The effects of separation from a familiar caregiver on the health and development of children

John Bowlby's work did not take place in isolation. The studies he reviewed for the WHO went as far back as the turn of the century. He incorporated into the review the accounts of infants less than 6 months of age who had been institutionalized for some length of time. The outstanding features of these children were: listlessness, emaciation and pallor, relative immobility, quietness, unresponsiveness to stimuli, an appearance of unhappiness, poor sucking response, indifferent appetite, failure to gain weight properly, frequent stools, poor sleep, and proneness to febrile episodes (Bowlby, 1951).

One of the major influences on Bowlby's thinking at the time that he undertook the commission for WHO was the work of René Spitz. Spitz described emotional development in the first year of life, and the emergence of what he called *anaclitic depression* in infants separated from their primary caregivers (Spitz, 1945; Spitz & Wolf, 1946). He identified the high level of mortality

among these infants who had food, water, medicine, and other essential elements of care. He proposed that the absence of a close caring relationship led to the progressive signs of anaclitic depression and finally death. Spitz depicted his observations of infant withdrawal, regression and deterioration in his powerful 1947 film, *Grief: A peril in infancy*. The film widely publicized the debilitating effects on young children of separation from caregivers and institutional care.

The plight of orphaned children after the Second World War created concern about the ill-effects on personality development of prolonged institutional care or frequent changes of mother-figures during the early years of life. This led to a great deal of clinical and empirical research, in both the United States and Europe, on the developmental significance of the infant's relationships with others (Bowlby, 1982).

Following Bowlby's monograph, the momentum in child mental health was maintained in the WHO. Between 1953 and 1955, Ronald Hargreaves organized four meetings of the world's leading scholars in fields having an impact on children's development. The people who attended these meetings included Jean Piaget, Margaret Mead, John Bowlby, Erik Erikson, Julian Huxley, Bärbel Inhelder, Konrad Lorenz and Ludwig von Bertalanffy – all regarded today as classic figures in the social and psychological sciences. The WHO also funded English and French sound versions of James Robertson's film on hospitalization and, in 1954, convened a *Study Group on the Child in Hospital*.

In 1962, in response to widespread criticism of Bowlby's 1951 monograph, the WHO commissioned a second monograph edited by Mary Ainsworth, *Deprivation of maternal care: A reassessment of its effects*. The follow-up 1962 monograph dealt with misinterpretations of Bowlby's work (such as the assumed importance of the biological mother as the primary caregiver), definitional problems (such as the effect of psychological versus physical separation from caregivers), the validity of generalizations (for example, from institutional environments to day care), and methodological problems in controlling for confounding effects in determining long-term consequences. The monograph concluded that separation experiences are only one factor in what are frequently complex and multi-determined problems. It recommended greater specificity regarding the universality and enduring nature of maternal separation and deprivation effects, especially in relation to the development of what

Bowlby called an affectionless, psychopathic character.

Since that time, several reassessments have been made of the impact of “maternal deprivation” in early childhood on long-term adjustment and social functioning (Rutter, 1962; 1972; 1980; 1995; Yarrow, 1961). Despite increasing differentiation and conditionality of effects, Michael Rutter in 1995 concluded that the key features of Bowlby’s theory – particularly the importance of

early relationships for later personal and social competence – were empirically supported, and that attachment was the best supported theory of socio-emotional development available.

Much of the evidence for attachment theory accumulated either directly or indirectly as a result of the advances in theory

and methodology introduced by Mary Ainsworth. Ainsworth worked with Bowlby at the Tavistock Clinic until 1953, when she accompanied her husband to Kampala. During her two years in Uganda, Ainsworth conducted her groundbreaking observational study of interactions between 26 mothers and their babies between one and twenty-four months of age. She observed the dyads every two weeks for two hours in their home environments over a period of nine months. From these observations, Ainsworth developed the sensitivity-responsivity theory of attachment, or the idea that children develop secure attachments with caregivers who are sensitive and responsive to them. Ainsworth went to Baltimore from Uganda where she was able to test the cross-cultural validity of her observations amongst the Baganda. There, with colleagues, she developed the Strange Situation, a measurement tool for studies of attachment (Ainsworth & Wittig, 1969).

Evidence establishes the importance of early relationships for later personal and social competence.

Chapter 3

Advances in child development theory and research

Perspectives from psychology, linguistics, neurobiology, and evolutionary theory

An understanding of how early interactions and relationships with caregivers can exert a strong effect on the survival and healthy development of young children comes from recently refined theories and new empirical findings describing children's development. This chapter reviews four areas of work:

- contemporary psychological theories of children's development;
- empirical findings regarding the perceptual and learning capacities of infants;
- recent advances in understanding the neurobiology of early experience; and
- a phylogenetic perspective on the innate human capacities for developing social and cultural communication and cooperation.

Early interactions and relationships with caregivers exert a strong effect on the survival and healthy development of young children.

Contemporary psychological theories of how children develop

Freudian and behavioural theories of children's development, dominant until the 1960s, assumed that the infant was passive and dependent on the environment for stimulation. The theories held that the baby had a few specific instincts and drives, and a huge capacity for learning. Learning occurred largely through the reinforcement associated with drive reduction or the satisfaction of basic needs, as well as by the observation of others (Gewirtz, 1972; Gewirtz & Boyd, 1977; Maccoby & Martin, 1983). In essence, they thought that the infant associated pleasure resulting from feeding, as an example, with the presence of the caregiver.

This basic connection enhanced the potency of the caregiver for subsequent learning through reinforcement and identification. That is, the presence of the caregiver became reinforcing. It was assumed that, through these mechanisms, toddlers around three years of age would have

started to learn a language, have begun to use abstract thought, have deep love for their caregivers, and express empathy and moral awareness towards others' pain. They would be able to coordinate their actions with adults and children in cooperative and joint enterprises, and understand cultural conventions, such as saying hello. They would be able to share humour and creativity with members of their family and their growing circles of friends.

However, it soon became clear that, regardless of the importance of learning mechanisms in early socialization, a behaviourist or drive-based view of the child was not tenable. An adequate account of children's development needed to incorporate new findings about babies. These included information on the neonates' preparedness for social interaction and their psychological or mental capacities, both of which enable them to actively shape and synthesize their experiences. This preparedness gives them the capacity, from birth, to attend to some features in their environment, such as the human face, and block out unwanted stimulation through inattention.

It also became clear that child-caregiver effects were bidirectional. Adults not only influence children, but infants and young children exerted



LINDA RICHTER

A young baby turns to the sound of his mother's voice in a demonstration to mothers of the capacities of infants

considerable influence over the behaviour of others through the expression of their emotional states and through their temperamental characteristics (Bell, 1974; 1979).

More complex models of children's development, necessitated by these gains in knowledge, incorporated the concepts of feedback mechanisms with homeostatic functions taken from control and cybernetic theory (Miller, Galanter & Pribram, 1960). Neither caregivers nor

children behave in fixed ways without regard to the other's behaviour. Instead, their interactions are mutually regulated in a dynamic and adaptable system (Bretherton, 1994).

Several strands of theory and research have come together to form a complex contemporary

understanding of children's development in the first three years of life, including the role that personal exchanges with other people play in children's development (Bronfenbrenner, 1979). The strands include psychoanalytic theory, particularly the Object Relations Theory, the work of Lev Vygotsky and his followers, developmental psycholinguistics, and developmental psychology.

Psychoanalytic theory, particularly Object Relations Theory

René Spitz, Melanie Klein, Donald Winnicott and other early child psychoanalysts based their theories on insightful observations of infants in relationships with other people. They postulated that babies had an inborn sensitivity to the emotions of others, and to the ongoing interactions between themselves and their caregivers. They believed that these interactions were highly significant for the child's healthy psychological development, and that insensitive care, neglect or abuse could distort or delay development (Fraiberg & Fraiberg, 1980; Spitz, 1945; Spitz & Wolf, 1946). In their relationships with others, infants develop a sense of self that is akin to a mirror image of their experience with the caregiver. If the infant is treated with love and kindness, he or she feels worthy of love, and becomes capable of feeling and expressing love and kindness towards others.

It is in this sense that Winnicott (1965) observed that, without the mother's contribution,

“there is no such thing as an infant”. In these early relationships, the infant forms mental representations of the world, including a self-concept, and these concepts and representations determine the child's later motivations and interpretations of experiences (Waters et al., 1991). For this reason, loving, mutually responsive early care is essential for the child to develop into an emotionally secure and confident individual.

Donald Winnicott (1965) described the caregiver's role in the early relationship with the infants as “a stage of primary maternal pre-occupation”. This is a period of heightened awareness on the part of the caregiver to the state, emotional expressions and behaviours of the infant. This awareness enables the caregiver to adjust sensitively and responsively to the child's needs.

Winnicott described how the infant “finds himself reflected” in the absorbed adoration of the mother's gaze. In this relationship, the caregiving creates a “holding” environment, which comprises both physical protection and psychological containment or envelopment. Early relationships mirror for the infant a sense of being recognized, understood and validated through the experience of warm and empathic care.

Further, the mental state of the caregiver, determined by her own developmental history, exerts an effect on the attitudes, emotions and behaviours that she brings to child care. When an adult watches a loved infant or toddler during everyday life, there is a moment-by-moment triggering of her own thoughts, feelings and memories. These subjective experiences exert a determining effect on caregiving behaviour.

Many of these psychoanalytic concepts are dealt with in more detail in Chapter 4.

Lev Vygotsky and social mediation

Jean Piaget's theory depicted the cognitive growth of a child as occurring largely as a result of the child's maturation. The Russian psychologist, Lev Vygotsky, challenged this notion. Instead,

Neither caregivers nor children behave in fixed ways without regard to the other's behaviour. Their interactions are mutually regulated in a dynamic and adaptable system.

Loving, mutually responsive early care is essential for the child to develop into an emotionally secure and confident individual. If the infant is treated with love and kindness, he or she feels worthy of love, and becomes capable of feeling and expressing love and kindness towards others.

Vygotsky asserted, as did George Mead, that mental processes have social origins (Feinman, 1991; Wertsch & Tulviste, 1992). According to Vygotsky's theory of cultural development:

“Any function in the child's cultural development appears twice, or on two planes. First it appears on the social plane, and then on the psychological plane. First it appears between people as an interpsychological category, and then within the child as an intrapsychological category. This is equally true with regard to voluntary attention, logical memory, the formation of concepts, and the development of volition...It goes without saying that the internalization transforms the process itself and changes its structure and functions. Social relations or relationships among people genetically¹ underlie all higher functions and their relationships” (Vygotsky, 1981, p.163).

In this view, an individual's functioning derives from the internalization and mastery of social processes, that is, from the internalization of what occurs between people. With respect to young children, Vygotsky argued that there exists a “zone of proximal development”, a potential level of cognitive functioning, which the child can achieve with the guidance and collaboration of a more experienced, perceptive and responsive adult.

This idea has a lot in common with Werner & Kaplan's theory of symbol formation (1963), whereby the child is able to acquire complex concepts on the basis of the “primordial sharing situation”. This sharing situation is a meeting point between the child's developing capacities and the symbolic medium provided by a caregiver.

The caregiver mediates the child's experience of the world by structuring it and giving it cultural meaning. The adult points out and explains objects and events. In this way, the adult simplifies and personalizes the child's experience so that it occurs in a form that the child, at her current level of development, is able to use.

Interactions between caregivers and children

The caregiver simplifies and personalizes the child's experience so that it occurs in a form that the child, at her current level of development, is able to use. The caregiver complements and extends the child's capacity.

¹ Genetically means developmentally in this context.

that are sensitive to the child's cognitive functioning – complementing and extending the child's capacity – are essential for the child's cognitive development and acquisition of cultural meaning (Rogoff & Wertsch, 1984). When caregivers successfully instruct young children, they do so by providing a scaffold consisting of linguistic and situational props, contingent on the child's efforts and errors. The caregiver might move an object closer, point to something, or name an action to assist the child to overcome an obstacle in the way of achieving a particular goal (Feinman, 1991; Wood, 1980).

Developmental psycholinguistics

Enormous advances were made in developmental psycholinguistics when knowledge about the pragmatics of communication, how people try to influence others with words and communicative gestures, was applied to pre-speech communication between infants and their caregivers (Austin, 1962). By this view of communication, the infant's growing use of language requires first that the infant become competent at influencing their caregivers through the communication of his or her emotional and motivational states (Bruner, 1975).

Caregiver-child interaction during the first few months of the child's life – the reciprocal and turn-taking interchange of looks, expressions and vocalizations – is a proto-dialogue or preverbal conversation (Bretherton & Bates, 1979; Stern, 1977). Caregiver and child alternate “utterances”, vocalizations, gestures and facial expressions in what are called proto-conversations (Stevenson et al., 1986). Caregivers attribute meaning to the utterances, gestures and actions of infants and respond according to inferred meanings and the baby's intentions. The caregiver might ask if the baby is tired when she observes the child' becoming fretful, and she might try to settle the child to sleep.

This early interaction predisposes the child to language acquisition by sensitizing the infant to a sound system, to the referential requirements of speech or what is being talked about, and to communication objectives such as getting the other person to understand what one wants (Bruner & Sherwood, 1983). Prelinguistic

Long before the child is able to speak, the caregiver attributes meaning to the utterances, gestures and actions of the infant, and responds accordingly.

communication first fulfils these functions in the interactions between caregivers and infants. According to Halliday (1975), in these interactions the child learns how to convey meanings to others long before she speaks. Although the precursors to language are extremely complex, in these ways early social interactions play a central role in language development (Bruner, 1983; Nelson, 1973).

The preceding three strains of theory and research, (object relations, social mediation, and psycholinguistics) indicate the importance of early interactions to emotional, social, cognitive and language development. In each theoretical area, the mechanisms are assumed to be universal, although specific manifestations may vary with different cultural and situational circumstances. What follows is an outline of findings since the 1970s regarding the development of infants and young children in interaction with their intimate caregivers.

Developmental psychology

In the early 1970s, there were dramatic changes in studies of infants. One of these changes occurred in observations of both naturalistic and contrived interactions between infants and their familiar caregivers, both at home and in

An approach to observing and recording caregiver-infant interactions in a naturalistic setting

1. An observer might watch a caregiver and child in their home environment, in a care centre or in some other everyday setting. The dyad may be engaged in routine activity, such as feeding, bathing, changing or playing.
2. The observer will make the caregiver and child comfortable and will try to be unobtrusive so that the couple's behaviour is as natural as possible.
3. The observer may make continuous observations, or record behaviours sampled on the basis of time (for example, every 30 seconds) or on the basis of events (for example, caregiver vocalization).
4. Recordings are made using pen and paper on checklists or rating scales, or using hand-held events recorders of a variety of kinds.

developmental laboratories (Beckwith, 1972; Fish, Stifter & Belsky, 1993; Hinde, 1976; Maccoby & Martin, 1983; Murray, 1991; Schaffer, 1977; Trevarthen, 1977).

To a large degree, these advances in observations were dependent on technological advances, including improvements in videotaping, psycho-physiologic measurement, and the creation of behavioural taxonomic systems (Miller, Hollingsworth & Sander, 1985). Small sections of videotape of the face-to-face interactions between non-clinical samples of mothers and their babies were subjected to micro-analysis. The analysis followed coding schemes that are sensitive for capturing complex interactive processes (Sawin, Langlois, & Leitner, 1977; Stern, 1974). In some studies, these filmed observations were paired with measurements of infant heart rate, respiration and brain electrical activity.

A variety of rating scales were developed, suitable for different ages and with differential emphasis on language and/or socio-emotional communication. New coding systems also described aspects of the interaction between adult and child, such as reciprocity and sensitivity. Reliability and validity studies have confirmed the usefulness of these measures for research and clinical purposes, as well as the associations between the constructs they measure and child outcomes (Baird et al., 1992; Bakeman & Brown, 1977; Fogel & Thelen, 1987; Moustakas, Sigel, & Sachalock, 1956; Price, 1983; Siebert, Hogan & Mundy, 1982).

A remarkable reciprocity and mutuality is seen as early as 4-6 weeks of age in these interactions between infants and their caregivers. This mutuality is expressed in cyclical bouts of emotional expressiveness, eye contact, facial configuration, gesture, postural orientation, and vocalization (Cohn & Tronick, 1988). Caregiver and infant engage in rounds of smiling and looking at one another and alternating their communicative signals in a dialogue. The infant responds to the expressions of the caregiver and the caregiver appears to mirror and interpret the ill-formed acts of the baby through her attunement to the infant's apparent "state of mind" (Trevarthen, 1980). Caregivers speak in finely modulated and repetitive "baby talk". The adult's talk is:

"...synchronized with large smooth and undulating movements of her head and face...She may touch her infant's hands, face or body in time with her speech. Her voice is

Observing and recording caregiver-infant interactions: An experimental procedure

1. In an environment with few distractions, the infant is placed securely in a high chair opposite the caregiver, at a distance of 1 to 2 feet from, and at the same height as, the caregiver's face.
2. The caregiver is asked to interact with the baby, "as she does at home". Sometimes she is given specific instructions such as "try and make your baby smile", or other specific instructions to elicit particular interactions.
3. The "still face" condition involves asking the caregiver to become motionless and to look expressionlessly at the baby, or slightly away from the baby, until told to stop.
4. Each interactional condition is recorded for a short time, approximately 3 minutes. Efforts are made to achieve optimal face-to-face interaction, uninterrupted by fretfulness and crying.
5. The interactions are videotaped in one of two ways to produce a simultaneous view of both caregiver and infant:
 - a. Cameras on tripods are placed behind the caregiver and the child, and the output from both cameras are electronically mixed to appear together on a single screen; or
 - b. A large mirror is placed behind the baby, at a slight angle, so that a single camera behind the caregiver is able to capture both the caregiver and the infant in a single image.
6. The videotapes are logged, watched several times and then subjected to either narrative description, molar coding of interactional sequences, or sequential micro coding of interactions of very short duration (frame-by-frame or up to 2–5 seconds in duration).
7. Several software applications are available to render either qualitative or quantitative coded data, and to provide for inter- and intra-observer reliability assessments and further analysis. Statistical procedures used include lag sequential analysis, which calculates the probability of an individual's actions in relation to preceding events, such as the actions of a partner.



LYNNE MURRAY AND PETER COOPER

A filming technique: using a mirror to see the faces of the mother and child simultaneously

coaxing, questioning or appreciative and encouraging. What she says indicates that her infant is aware of her; she is trying to understand what her infant feels...The vocal contours of her baby talk define emotions that are simultaneously conveyed in head nodding and turning, and movements of eyebrows and lips" (Trevarthen, 1987b, p.43).

Newborns distinguish humans from objects, and behave in fundamentally different ways towards them. Newborns meet objects with rapt attention, fixed gaze, and reaching and grasping movements. In contrast, they respond to persons with communicative behaviour and animated gestures (Brazelton & Tronick, 1980; Mundy-Castle, 1980; Tarabulsky, Tessier & Kappas, 1996).

A key difference between objects and persons is their contingency, or the specificity of the response to the infant's behaviours. People

respond to babies in feedback loops, initiated and adjusted in response to the infant's ongoing behaviour. The highly discriminating response of infants to people, in comparison to objects, led Colwyn Trevarthen to propose intersubjectivity as an innate pattern of communication in human beings (1979; 1980).

Caregiver-child interactions are also viewed as the crucible for moral development through expansion of the child's sensitivity to the emotional states of others, and through internalisation of experiences of empathic care by a loving adult (Emde, 1990; Sagi & Hoffman, 1976; Simner, 1971; Zahn-Waxler & Radke-Yarrow, 1990; Zhou et al., 2002). Helping, sharing and cooperative

Caregiver and infant engage in rounds of smiling, looking at one another and alternating their communicative signals in a dialogue.

behaviours emerge in the caregiver-child relationship in the second year and build on the reciprocity and turn taking established at the start of the caregiver-child relationship (Hay, 1979; Zahn-Waxler et al., 1992).

People respond to babies in feedback loops, initiated and adjusted in response to the infant's ongoing behaviour.

Experiments that disrupt or distort caregiver-child interaction produce dismay and distress in both the caregiver and the infant. One such experimental perturbation involves asking the caregiver to stop talking and to look at her child in an expressionless way, called the "still face" condition (Cohn & Tronick, 1989; Field, 1977; Tronick et al., 1978). Another, using closed circuit video technology, has the child or the caregiver interact with relayed filmed images of their partner from a previous session, producing an unsynchronised and non-contingent interaction that resists repair and adaptation.

Under these conditions, when the infant's expectations for rhythmic, reciprocal interaction are violated, she becomes visibly concerned. The infant's movements become jerky and uncoordinated, and she attempts to draw the caregiver into interaction. When repeated attempts to do so fail, the infant withdraws, averts her face, and shows signs of distress such as self-stimulation, yawning and sleepiness, and fretfulness. The infant is initially puzzled when the caregiver resumes their regular interactional style, but the partners soon pick up their interactional tempo (Brazelton et al., 1975).

Behaviour during perturbation experiments indicates that infants only a few months old are extremely sensitive to the caregiver's responsiveness, and that babies expect a particular kind of contingent human interaction. In these short exchanges, infants behave in ways that are reminiscent of the behaviour of the toddler in James Robertson's film, passing through phases of distress, despair and detachment. While these brief experimental demonstrations are quickly repaired, they illustrate the likely response of infants to repeated or enduring experiences of these kinds. These disturbances probably play a part in the development of insecure attachments and in the response of infants and small children to depressed caregivers.

Several experts in the field have interpreted the perturbation experiments as indicating that infants have intrinsic abilities to recognize emotional

states in others and to be expressive in reciprocal ways. In a complementary fashion, caregivers of all ages, respond to babies in the same supportive ways, raising the possibility of corresponding intrinsic systems in human caregivers to interact with infants (Trevarthen, 1987b).

Although caregivers and infants spend only a small fraction of each day in the kind of intense interaction elicited in observational studies – usually during care routines of bathing, dressing and feeding – even brief interactions are nonetheless regarded as highly emblematic of the quality of the early relationship between caregiver and child.

Infants have intrinsic abilities to recognize emotional states in others and to be expressive in reciprocal ways.

Empirical findings regarding the perceptual and learning capacities of infants

A major form of mythology about infancy has been that the infant, especially during the neonatal period, is an incomplete, relatively incompetent and inadequate organism; and that by a series of linear progressions, the infant becomes a complex, competent, and complete organism – as an adult. Such a view is a logical and emotional heritage of the supposedly discarded notion that the infant is a miniature adult with a *tabula rasa*, helpless and passive, dependent on an imprint from the mature caretaker who provides a model for imitation and a stimulus for learning adult modes of thinking and behaving.

Thoman (1979, p.446)

In the 1960s a revolution occurred largely in the understanding of infant perception. The revolution was largely as a result of innovative experiments in which infants were not only presented with stimuli to elicit their responses as in the past, but were also given opportunities, through mechanical and electronic devices, to express recognition, preferences and curiosity, and to change the way stimuli occurred (Thoman & Freese, 1982). Sucking and suppression, head turning and gaze avoidance, and movements of the infant's limbs are measured in response to novel and habituated stimuli to gauge the infant's motivational state, recognition and memory, and

learning capacities. The literature in this field is vast. Below is a brief summary of this work, extracted largely from the overview compiled by Colwyn Trevarthen and his colleagues in 1981.

Many movements of the newborn are well developed, and show rapid refinement during the early postnatal weeks and months. For example, neonates engage in what is called “prereaching” movements, spontaneously and with approximate aim to nearby and attractive objects to which they have been alerted through visual, auditory or tactile means. When infants are less than a month old, they reach with hands open and closed, flex their wrist, adjust their posture and coordinate their gaze.

parts as equivalent to those of the people they see and a capacity for coordination between their vision and motor action (Abranavel & Sigafos, 1984). Meltzoff and others argue that the imitation of human actions is the first bridge between the infant and others, and that imitation serves the dual functions of differentiating “others” and providing an early means of communication with them. Even more remarkable than neonatal

The imitation of human actions is the first bridge between the infant and others. It serves dual functions: differentiating “others” and providing an early means of communication with them.

imitation, Condon & Sander (1974) used time lapsed photography and frame-by-frame analyses of films of mothers and babies interacting to show that the infant’s movements match the rhythms of the adult’s voice in a kind of “entrainment”.

The perception of infants is selective from birth, allowing them to filter some features of the environment for attention and to shut out others. They orient specifically to complex visual stimuli, especially face-like configurations, and they react with attention to the eyes of a person speaking to them. Infants less than an hour old look in the direction of the voice of a person who is not visible

to them and to a loudspeaker emitting a soft call or saying “baby”. Changes in their heart rate and respiration show that newborns and infants distinguish and prefer speech sounds over the sounds made by non-human objects.

The results of these experiments provide strong evidence for an extraordinary sensitivity in newborns and young infants to the communicative output of other human beings, and the operation of inherent brain processes in the baby that distinguish human from non-human events. These findings suggest that the range of immaturities and precocities of infants is matched by a range of supportive behaviours provided by



A.N. MELTZOFF AND M.K. MOORE

Studies of neonates have shown that they can imitate a variety of mouth movements

Newborns make a variety of face movements, some of which, through the analysis of photographs and using facial coding systems (Ekman, Friesen & Ellsworth, 1972), show good correspondence with expressions of happiness, sadness, fear, worry, anger and discomfort. Apart from smiles, neonates show forms of speech-shaped mouth movements called “pre-speech”. Infants as young as 2 or 3 weeks of age imitate face and mouth movements, including opening the mouth and protruding the tongue (Meltzoff & Moore, 1977).

Neonatal imitation indicates the infant’s rudimentary mental representation of their body

Children's facial expressions of emotional states



JACQUELINE CIDERAC

intimate caregivers. They also suggest that the infant requires matching forms of responsiveness by caregivers for its biological and mental development (Trevarthen, Murray & Hubley, 1981).

Colwyn Trevarthen argues that emotions regulate interpersonal life. He is critical of those who think that the emotional responses of infants and their reactions to the emotions of others are undifferentiated. In support of his argument, he quotes Charles Darwin's careful observations of his four and a half month-old son: "An infant understands to a certain extent, and as I believe at a very early period, the meaning or feelings of those who tend him, by the expression of their features" (Trevarthen, Murray & Hubley, 1981, p.240).

Recent advances in understanding the neurobiology of early experience

Recent evidence suggests that children's neurological development occurs in response to, and with an impact on, social and interpersonal processes (Gottlieb, 1976; Nelson & Bloom, 1997). Three findings in the emerging neuroscience of child development have relevance for this paper: the special sensitivity of brain develop-

ment to supportive experiences with people; the dependence of the developing brain on social and emotional inputs for the establishment and retention of synaptic connections; and the "conditioning" of the brain by experiences in the nurturing relationship with caregivers, especially with regard to stress-reactivity.

The infant's brain has been described as being both experience-expectant and experience-dependent. New synaptic connections and the maintenance of existing connections occur in response to experiences (Als, 1977; Greenough & Black, 1992; Scarr, 1993; Wachs, 1992). That is, infants' neurological anatomy and physiology depend for their development and differentiation, according to an evolving timetable, on meaningful forms of sensory and motor stimulation from caregivers. This stimulation includes the kind of patterned activation that occurs during affective interactions with responsive caregivers.

As examples of evidence for these claims, Greenough and Black (1992) found that dendritic growth in rat pups is dependent on particular forms of tactile and emotional stimulation during nursing. In human infants, interpersonal encounters involving mutual gaze start to peak at about 2 months of age. They are associated with dramatic metabolic changes in the primary visual cortex, during which the infant's visual experiences modify synaptic connections in the occipital cortex (Katz, 1999). High-energy growth-spurts in the brain during early childhood are embedded in, and are regulated by, the emotional interchanges between infants and their caregivers (Siegel, 2001). Siegel argues that there is a great deal of agreement across a number of fields of research in different disciplines, in both animal and human studies, pointing to the cardinal importance of emotional communication to the development of the brain (2001, p. 71).

These early brain developments can be halted or distorted by an absence of experience-dependent neurochemical cues when expected experiences do not occur, as in an emotionally deficient caregiving environment. They can also be damaged by cues that are abnormal, as might

Effects of a secure attachment relationship on right brain development

...I have offered data that suggest that the inceptive stages of development represent a maturational period of specifically the early maturing right brain, which is dominant in the first three years of human life. The right brain is centrally involved in not only processing social-emotional information, facilitating attachment functions, and regulating bodily and affective states, but also in the control of vital functions supporting survival and enabling the organism to cope actively and passively with stress.

Schore (2001a, p.10)

occur in maltreatment. In the latter case, brain development is affected by the presence of high quantities of the hormone cortisol produced by the hypothalamic-pituitary-adrenal-cortical system during long periods of stress (Perry et al., 1995; Schore, 2001a).

Emotional communication is of cardinal importance in the development of the brain. Early development can be halted or distorted by an emotionally deficient caregiving environment or by cues that are abnormal, as might occur in maltreatment.

In rat studies, early experiences in mother-pup interactions have been found to permanently alter the stress-reactivity of the rat pup's brain. Removing the mother from her pups for regular periods each day disrupts the

mother's nurturant behaviour. This produces long-term changes in the stress-reactive hormonal and behavioural responses in her pups. In contrast, handling and tactile stimulation associated with comforting experiences, which the mother rat provides to the pup, induce permanent modifications in stress hormones in the hypothalamus (Schore, 2001a). Rat pups exposed to these supportive rearing conditions are less anxious and fearful and less stress-reactive in later life.

If the results of these animal studies can be extrapolated to human infants, and many people working in this field think the findings are relevant, it has to be concluded that the emotional and social qualities of early experiences are significant because they have permanent effects on the child's brain. The effects occur either through experiences that fulfil or don't fulfil the experience- and use-dependent development of

The emotional and social qualities of early experiences are significant: they have permanent effects on the child's brain.

the brain and its neuronal connections, or by conditioning the brain to respond to environmental conditions, especially stress, in ways that strongly program later behavioural responses. High stress-reactivity causes cognitive disruption

and high levels of emotionality, which interfere with intellectual and social functioning (Shonkoff & Phillips, 2000).

Phylogenetic perspectives on human capacities for social and cultural communication and cooperation

Advances in all the areas covered in the preceding chapters suggest that there is a strong evolutionary component to early child development and to the conditions under which human infants receive care (Bjorklund & Pellegrini, 2000; Harlow & Harlow, 1962, 1969). In recognition of this, Bowlby's original formulation of Attachment Theory was in terms of a phylogenetically determined system, involving both infant and caregiver, to ensure the protection of the infant (Bowlby, 1977). However, evolutionary parameters are more complex than implied by simplistic models of bonding between mother and baby immediately after birth, such as one based on imprinting shown by birds (Kennell & Klaus, 1983; Klaus & Kennell, 1976; Herbert, Sluckin & Sluckin, 1982; Myers, 1984).

Most early developments are species-typical, universal responses of human infants and young children to widely varying but functionally equivalent, culturally sanctioned, environmental opportunities to acquire species-normal behaviour.

Scarr (1993, p.1341)

Bischof-Kohler (1991) and others argue that as hunting required cooperation, socio-cognitive skills, particularly empathy, played an important role in developing particularly human characteristics. Interpersonal understanding gives us the capacity to detect the intentions of other people and to act in ways that complement what they are doing. This form of social cognition is discernible in infants at about one year of age and is expressed in the infant's interaction with caregivers in interactional activities involving gaze following, social referencing and vocal and gestural communication (Tomasello, 1999; 2001).

Many of the early expressed capacities of neonates and infants are considered to emerge from the organization of the functions of the brain, pre-set for the development of human interaction (Papoušek & Papoušek, 1981). These include alertness and receptivity to the human face and voice (de Chateau, 1980; Haith, 1981), and the propensities to engage in eye contact with other people and to be soothed by human holding and motion (Lewis & Ramsay, 1999). In addition, sensory and response systems are mutually

organized in relatively complex patterns that enable the infant to apprehend the actions of other people and to behave in ways that are recognizable by others as attempts at interaction and communication (Graves, 1989).

Sensory and response systems are mutually organized. They enable the infant to grasp the meaning of the actions of other people and to behave in ways that others recognize as attempts at interaction and communication.

The newborn and young infant also have a capacity to protect themselves from sensory overload by either attending to stimuli with narrowly determined properties, such as the human face, or by avoiding unwanted stimuli (Graves, 1989). Shortly after birth, this is a passive barrier to stimuli, created by mechanisms

such as non-nutritive sucking and withdrawal. For example, Brazelton (1974) found that neonates exposed to a repeated disturbing bright light showed cardiac, respiratory and electroencephalographic responses similar to sleep. On continued exposure, the bright light led to the infant awakening from this induced state of



ANTHONY DE CASPER

This study uses the sucking response to assess the infant's response to sounds

withdrawal, to scream and thrash. Non-nutritive sucking relaxes large muscle groups and reduces gut movements, as well as eye movements, in response to intrusive visual stimulation, thus assuring a moderate level of arousal (Kessen & Leutzendorff, 1963). As the infant develops, this physiological regulation is supplemented by the nurturing ministrations of a sensitive caregiver, and eventually by self-regulatory mechanisms.

By the same token, parents also seem to be prepared for interactions with young children, as many of their behaviours with neonates and young infants are performed without consciousness.

Caregiver-child interactions seem to be species-wide in that they occur, in one form or another, in all cultures (Papoušek & Papoušek, 1979; Papoušek, 2000; Rosenblatt, 1989). These behaviours include recognition of infant signals such as cries (Formby, 1967), ways of holding and rocking babies to calm them, imitation of the infant's facial and vocal expressions, and the special speech register used in interactions with infants, called "baby talk" (Fernald, 1992). The Papoušeks (1981) call these features *intuitive parenting*. Numerous studies show that being with infants evokes systematic adjustments in adult behaviour and speech (Stern et al., 1977; Tronick, 1979). The infant's unfolding interpersonal capacities stimulate "a particular diet or syllabus of supportive and instructive behaviours from caretakers" (Trevarthen, 1987b, p.37). Behaviours not adapted to infants in these ways are met by inattention and distress.

Even young children and older men adopt infant-directed speech when they talk to infants (Snow & Ferguson, 1977). Baby talk is slower, with higher pitch and specific pitch contours, and it is adjusted for intelligibility. Vocalisations to babies are very short, consisting of fewer than five morphemes¹ per utterance, with utterance durations of about 6 seconds. Baby talk is slow, simple and melodic. Adult utterances to babies occur in rhythmical bursts that include intonation. These recurring patterns, or envelopes, inserted into the flow of the caregiver's behaviour assist



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Mothers frequently imitate their children's expressions and behaviours to build the communication between them

¹ A morpheme is the smallest meaningful unit in the grammar of a language. For example, "baby" is a morpheme consisting of two syllables.

Across many dimensions of child and caregiver behaviour, unique adaptations in the behavioural systems of both people prepare them for a relationship on which the infant is dependent for her development.

language development because they enable the infant to isolate and recognize what will become meaningful units of information (Stern, Spieker & MacKain, 1982).

Across many dimensions of child and caregiver behaviour, unique adaptations in the behavioural systems of both people prepare them for a relationship on which the infant is dependent for her development (Melson, Fogel & Mistry, 1986).



WHO/CAH

Children can learn from adults through imitation

Chapter 4

The nature of caregiver-child relationships

Attachment, development and cultural adaptation

Attachment theory

The most influential current account of caregiver-child relationships and their effect on children's development and outcomes is attachment theory. John Bowlby (1958; 1969) first described parent-infant attachment as a system to ensure the caregiver and child's proximity to one another for the infant's protection. Infants have innate signalling capacities, such as crying, that bring and keep the caregiver close; and caregivers respond to these signals with greater or lesser urgency. Three criteria of an attachment relationship are that the child wants to be with the attachment figure, especially when she is under stress; that the child derives comfort from the attachment figure; and that the child protests

when the attachment figure is not available.

Several major modifications of Bowlby's original ethological-evolutionary theory have been undertaken, mainly by Mary Ainsworth and her students (Ainsworth, 1979; Waters et al., 1991). In 1964, Mary Ainsworth conducted longitudinal naturalistic observations of 28 Baganda babies between 2 and 15 months of age. She described a number of

behaviour patterns which, taken together, serve as criteria for judging whether an attachment has been formed. In a follow-up study, conducted in Baltimore a few years later amongst middle-class American babies, she described these *attachment behaviours* in detail (Ainsworth, Bell & Stayton, 1972a and b). Attachment behaviours include: crying, smiling and vocalization differentially towards the caregiver; orientation and attention towards the caregiver; following the caregiver; clambering over and exploration of the caregiver; and happiness when reunited with the caregiver

after a separation. Striking individual differences are apparent in the way that attachment behaviours are organized together and directed towards an attachment figure.¹

On the basis of the Baltimore study, Ainsworth inferred the existence of an underlying security-insecurity dimension to the quality of the attachment relationship. With colleagues, she designed a procedure, the Strange Situation, to assess the security-insecurity of the attachment relationship (Ainsworth & Bell, 1970; Richters, Waters & Vaughan, 1988). Other methods to assess the quality of attachment relationships include naturalistic observations of exploration, separation and reunion episodes between young children and their caregivers.

Ainsworth described four main overlapping phases in the development of attachment during the first year of life (1964; 1985):

Birth: The infant shows indiscriminating responsiveness to people through signalling.

8–12 weeks: The infant shows differential responsiveness to the mother-caregiver, with continuing responsiveness to other people.

6–7 months: The infant shows sharply defined attachment to mother, with a striking decline in friendliness to others. Protest at the mother's departure is more consistent. Ainsworth interpreted this as indicating that the infant had formed a mental representation of the mother. Exploratory behaviour, the counterpart of attachment, takes place from the secure base provided by the attachment figure.

12–14 months: The infant begins to show developing attachments to figures other than the primary caregiver.

Attachment and exploratory behaviour exist in balance. Securely attached infants use the care-

In an attachment relationship, the child:

■ wants to be with the attachment figure, especially when under stress;

■ derives comfort from the attachment figure; and

■ protests when the attachment figure is not available.

¹ The attachment figure need not be the natural mother, but can be anyone who plays the role of principal caregiver (Ainsworth, 1979).

The Strange Situation: Assessing the caregiver-infant attachment relationship

(Ainsworth et al., 1978)

This procedure is used to assess the security of the caregiver-infant attachment relationship primarily through the infant's reactions toward the mother during a series of brief controlled separations and reunions when the infant is between 9 and 12 months of age. The strange situation consists of eight episodes that each (with the exception of the first) last approximately 3 minutes. Through the episodes the infant is exposed to increasingly stressful events that culminate in the highest stress episode during which the child is left alone.

The procedure begins with the introduction of the caregiver and infant to an unfamiliar room (Episode 1). They are left alone for a few minutes (Episode 2), and then joined by an unfamiliar female stranger (Episode 3). The caregiver leaves the room and the stranger stays with the baby (Episode 4). The caregiver returns and the stranger leaves the caregiver and infant alone (Episode 5). Once the baby has satisfactorily recovered from the first separation, the caregiver again leaves the room, and the child is completely alone (Episode 6). After 3 minutes (or less if the infant becomes too distressed), the stranger returns (Episode 7), and later the caregiver comes back. The stranger leaves and the caregiver and baby are together again (Episode 8).

Both adults, the caregiver and the stranger, are instructed to respond to the infant as they would normally but to avoid initiating interaction with the child unless intervention is clearly necessary (e.g., the baby is distressed).

The scoring is done on two levels. One level identifies and rates, on 7-point scales, the occurrence of specific categories of infant behaviours, such as proximity-seeking, contact-seeking, resistance etc. At the second level, the child's behaviour is classified as secure, insecure-avoidant or insecure-resistant.

Goldsmith & Alansky (1987, p.805)

giver as a *secure base* from which to explore. They will experiment in an unfamiliar environment and with unfamiliar objects while the attachment figure is present. They move freely away from her, but keep track of her whereabouts with an occasional glance back at her. They move back to the caregiver to make brief contact with her from time to time, and they respond positively when

picked up. However, they do not want to be held for long and, as soon as they are put down, they move off to play happily. When the attachment figure is absent, there is little exploration and heightened attachment is expressed in calling and looking for the attachment figure (Ainsworth, Bell & Stayton, 1974; Waters & Cummings, 2000).

Bowlby proposed the development of an internal working model, a mental representation of the attachment relationship and eventually of the self, as the mechanism by which attachments became stable and by which they exert an influence on the child's future behaviour and relationships with other people (Bretherton, 1987b; Stern, 1985). Securely attached children have an internal representation of the caregiver as stable, responsive and caring. In contrast, the two categories of insecurely attached children – insecure-anxious and insecure-avoidant – have

Securely attached children have an internal representation of the caregiver as stable, responsive and caring. Insecurely attached children – insecure-anxious and insecure-avoidant – have representations of the caregiver as inconsistent and rejecting, respectively.



LINDA RICHTER

Securely attached infants explore objects in the safety of the mother's presence

representations of the caregiver as inconsistent and rejecting, respectively.

Mary Main and her colleagues have described a fourth attachment classification, disorganized-disoriented attachment, based on representations of disturbed and/or hostile interactions with the caregiver (Main & Solomon, 1986). Attachment between a child and a caregiver develop even in the face of mistreatment and fear, but these

attachments are called insecure (Rutter, 1979). Insecure attachments have been found to have a strong link to later social inadequacy and psychopathology, while secure attachments generally predict later social and behavioural competence (Ainsworth, 1985a; Sroufe, 1988).

There is a great deal of evidence to support the substance of attachment theory, in particular for the stability of attachment classifications (Weinfield, Strouf & Egeland, 2000; Waters et al., 2000); for the proposition that sensitive and responsive caregiving leads to secure attachments; and for the association between attachment classification in the first year and later peer relations and social adjustment.

Many individual studies and several meta-analyses have validated the responsiveness/sensitivity hypothesis (Bates, Maslin & Frankel, 1985; De Wolff & van Ijzendoorn, 1997; Goldsmith & Alansky, 1987; Isabella & Belsky, 1991; Lamb, 1977). For example, a longitudinal study of more

than a thousand families from 10 sites around the USA found that sensitive and responsive caregiving, as well as language stimulation, are positively related to early cognitive and language development (Allhusen et al., 2001; Brooks-Gunn, Han, & Waldfogel, 2002). Egeland and Farber (1984) followed 267 families from birth and confirmed, in a two-year study, that responsive-sensitive caregiving styles are associated with secure and insecure attachment classifications.

The relationship between sensitivity/responsivity and attachment classification has also been found in other cultural settings and under

Insecure attachments relate strongly to later social inadequacy and psychopathology. Secure attachments generally predict social and behavioural competence.

The relationship between the caregiver's sensitivity-responsiveness and the child's attachment classification has been found in different cultural settings, under both normal and stressful conditions.

Attachment classifications

1. Secure Infants use the mother effectively as a base for exploration. They may or may not be distressed at the caregiver's departure, but greet the caregiver positively when she returns, seek contact if distressed, and use the contact to settle and return to play and exploration.

About 55% of infants are classified as secure.

2. Insecure-avoidant Infants seem to be preoccupied with exploration though aware of the caregiver. They are unlikely to be distressed by caregiver departure, they may be friendlier to the stranger than to the caregiver, and they conspicuously ignore or avoid the caregiver on her return.

About 20% of infants are classified as insecure-avoidant.

3. Insecure-ambivalent, anxious or resistant These babies are reluctant to leave the caregiver to explore and may be fretful even before her departure. They are extremely distressed by her departure, but greet her return with a mixture of contact-seeking and rejection (resistance to comfort or contact). They seem unable to settle and return to play, and may be either angry at the caregiver or extremely passive.

About 15% of infants are classified as anxious.

4. Disorganised-disoriented Infants appear disoriented during interactions, sometimes appearing to be secure, sometimes avoidant and sometimes anxious. On reunion, infants may act anxiously, avoidant or in a disoriented way. Disorganised attachments are associated with threatening, frightening or dissociated caregiving.

Up to 8% of infants are classified as disorganized-disoriented.

both normal and stressful conditions. Posada et al. (1999) examined the responsiveness hypothesis in home and hospital observations of children from very poor families in Bogotá. They found that securely attached infants had caregivers who were rated highly on animation and cheerful

mood. These caregivers talked positively about their children, engaged playfully with them, and didn't scold their children in angry or resentful tones.

Attachment theory has been found to be predictive of later social competence and adjustment. Secure children are more autonomous, less dependent, more able to regulate their own negative emotions, less likely to have behaviour problems, and more able to form close, warm relationships with peers (Lamb, 1987a; Lieberman, 1977; Rothbaum et al.; 2000; van Ijzendoorn & Sagi, 1999). In contrast, a greater proportion of insecure children have behavioural problems, difficulties interacting with peers and poor problem-solving capacity and low self-esteem (Field, 1987a).

Although the basic tenets of attachment theory are widely accepted, criticism has been levelled at attachment theory and research as a narrow portrayal of the child's interpersonal world (Stacey, 1980) and as insufficiently taking into account child characteristics such as temperament (Mangelsdorf & Frosch, 1999). In addition, the Strange Situation is regarded by some as an overly rigid instrument for the measurement of attachment (Crockenberg, 1981; Field, 1987a). Other criticisms are that attachments are only stable when caregiving environments do not change (Frodi & Thompson, 1985; Lamb, 1987b), and that there is still insufficient evidence that specific dimensions of caregiving behaviour contribute to an attachment classification (Lamb et al., 1984).

Developmental changes in caregiver-child relationships

In Chapter 3, evidence indicated that the infant and caregiver form part of a biologically-based system, and that the infant has active sensory and information-seeking abilities, which are matched in the responsiveness of adult caregivers (Emde & Sorce, 1983). Neonates attend differentially to an array of complex stimuli emitted by other human beings, involving the face, gesture, voice and posture. In turn, the "babyiness",¹ cuddliness, sociability and focused attachment of the infant promote caregiving and reinforce the adult's

¹ "Babyiness" refers to the stimulus configuration of baby attractiveness – the disproportionately large head, with protruding forehead, eyes set below the midline, prominent cheeks, rounded body and short extremities (Eibl-Eibesfeldt, 1975)

emotional investment in the child. This unique match is fundamental to the engagement and learning that takes place during the first few years of the infant's life.

The infant and caregiver form a biologically-based system. The infant has active sensory and information-seeking abilities, which are matched by the responsiveness of adult caregivers.

Newborn infants are quite ignorant regarding the workings of the society into which they are born. By age three, however, children are socialized participants in their culture.
Rogoff, Malkin & Gilbride (1984, p.31)

Apart from developments in perceptual, motor and cognitive capacities, most of which are now fairly well known, there are specific developments during the child's first three years that are salient for this review. Self-regulation of the infant's arousal states, in particular, develops progressively during the first two to three years, starting with neurophysiological mechanisms such as non-nutritive sucking. Caregiver behaviour in early interactions with infants plays a very important role in neurophysiological regulation of the infant's arousal (Kopp, 1982; 1989). The modulating effect of the caregiver's stimulation or soothing, as appropriate, enables the baby to integrate their neurophysiological states and to synchronise their sensory, motor and arousal systems (Sandler and Rosenblatt, 1962).

These infant subsystems only gradually become coordinated. They need to be exposed to graded stimulation during development, and they also need protection from complex and demanding stimuli that can bombard and disorient the baby. The infant's neurophysiological stimulus barriers and the caregiver's modulating activities together play important roles in regulation that assist the infant to achieve appropriately heightened and lowered arousal states, appropriate to the external environment. The infant internalizes what he has learned socially and emotionally from encounters with the caregiver. These experiences contribute to

The infant internalizes what he has learned socially and emotionally from encounters with his caregiver. These experiences shape his capacity for self-regulating his emotions.

The regulation of newborn neurophysiological and arousal states

A typical sequence would consist of a mother receiving her sleeping baby...for the first time since delivery with the expectation to feed him. She would visually and tactilely inspect and groom the wrapped baby, then talk to him, calling his name, and urging him to open his eyes and wake up. If he did not comply, she would unwrap him, inspect his toes, legs and genitals. And then begin to circle his arms, at times pulling him to sit, picking him up and continuing to urge him, now more impatiently, to wake up and look at her. He might finally respond by building up to fussing, crying and moving agitatedly; this would be greeted with increased enthusiasm by the mother, as if any specific reaction was reassuring. She would now try to catch his attention within his crying. As he subsided and finally opened his eyes towards her, her whole display would change. She would brighten, raise her eyebrows, soften her cheeks, smile and with high pitched voice animatedly greet him: "Hi! There you are! That's right!" over and over again.

...Of great interest were the terminating behaviours in this attentional-affective cycle. If the baby responded with increasing brightness, in turn raising his eyebrows and softening his cheeks, widening his eyes and shaping his mouth into an "ooh", the mother might pull him close, and nuzzle and kiss him, thus resettling the attentional-intensity cycle. If the mother would continue to draw him out and expand on his alertness and attention more and more, pressing him with luring voice and animated face, he might break the intensity by averting his eyes momentarily or by a sneeze or a yawn, or in the less well-regulated baby, by going to fussing or motoric arousal, thus resettling the attentional cycle on his part. Both mother and infant are regulated to bring about the early mutual acknowledgement ... highlighted in the connection of the infant's attentional state with the mother's heightened affectively supportive envelope.

Als & Duffy (1983, p.156)

the infant's enduring capacities to self-regulate and thereby to generate and maintain his states of emotional stability or instability (Schore, 2001a).

Colwyn Trevarthen and others (Adamson &

Bakeman, 1984; Brazelton et al., 1975; Clarke-Stewart & Hevey, 1981; Lamb, Morrison & Malkin, 1987; Trevarthen, 1980; 1987b) have described systematic changes in the interactions of caregivers and infants during the first year of life. These changes correspond with major developments in the infant's capacity to engage in communicative and cooperative relationships with other people. During the first three to four months of age, infants show strong interest and pleasure in the caregiver and in direct face-to-face communication with her. The infant watches the caregiver with focused gaze and intense expression. The caregiver responds to this with speech, touching and emotional expressiveness. The caregiver frequently mimics what the infant does, behaviours called attunement or mirroring. The infant is excited and engaged by these overtures and replies with smiling, vocalization, and postural movements.

These caregiver-infant interactions occur in cycles of attention and non-attention, with a build-up of attention and emotional engagement, maintained by mutual gaze, smiling and vocalizations, followed by a recovery or turning-away phase, and then re-engagement. These exchanges have no apparent purpose other than the pleasure of being together and getting to know one another.

The caregiver's behaviour is largely unconscious and emanates from her strong empathic identification with the infant's perceived emotional states. Through her interactions with the infant, "an intricate mechanism for interpersonal understanding develops" in the infant, called *primary intersubjectivity* (Trevarthen, 1980; p.325). Trevarthen proposes that the infant's capacity for subjectivity is based on innate human motives.

Towards the fourth month of life, the infant becomes interested in features, objects and events in the world beyond the dyad. The baby increasingly breaks visual contact with the caregiver to explore, handle or mouth objects. The infant slowly begins to combine and coordinate awareness and interchange with the caregiver, with awareness and exploration of the non-personal world.

One adaptation to this development in the caregiver-child relationship is the emergence of

Early communication exchanges between the caregiver and her infant have no apparent purpose other than the pleasure of being together and getting to know one another.

Proposed innate motives underlying intersubjectivity, a mechanism for developing interpersonal understanding of the motives and intent of the other

1. To coordinate closely with holding, feeding and cleaning movements of the mother and to obtain her presence in threatening circumstances by expressing alarm, hunger, pain. To learn to sense her identity (to know her from others).
2. To seek proximity and face-to-face confrontation with persons, to watch, listen to, feel the pattern of expression and become engaged especially with movements of face and hands.
3. To respond with expressions of pleasure, then with manifestations of special human expression such as gestures and utterances, these being coordinated from the start with concurrent or intervening interests toward impersonal surroundings and objects that might be commented on or used cooperatively. Some forms of expression are clearly preadaptive to the later acquisition of cultivated forms of communication, including a true language. Most important of these are prespeech movements of lips and tongue, cooing vocalizations associated with prespeech, and gestures of the hands. These signs of expressive motivation lack mental representation of conventional topics.
4. To exhibit emotions in relation to one's cognitive and praxic performances such as "deep serious intent" or "pleasure in mastery", so that others may know one's state and direction of mind.
5. To engage in reciprocal give and take of communicative initiative, seeking to complement the expressed psychological state of the partner. This may involve both synchronization of motives or states of excitement and alternation in address and reply. Both partners must adjust to the actions of the other.
6. To express clear signs of confusion or distress if the actions of the partner become incomprehensible or threatening.
7. To avoid excessive, insensitive or unwanted attempts by others to communicate, thus to retain a measure of personal control over one's state of expression to others.

Trevarthen (1980, p.326-7)

repetitive play routines around this time. Caregivers frequently become playful at this stage, using their face, voice, touching and predictably played out "surprises" (such as "round and round the garden" games) to elicit the infant's attention (Emde, 1994). The infant is amused by these routines and laughs, stimulating the caregiver to become more playful and to laugh more herself.

Caregivers with infants of this age, in all cultures, repeat simple, lively nursery songs or rhymes over and over again as part of these humorous interchanges. It is believed that this early form of play, as a symbolic activity, is profoundly significant for the emergence of language several months later (Ratner & Bruner, 1978). As the child grows older, she participates in household structures and family routines. The child derives pleasure from familiarity with and mastery of these routines. They create a stable environment for the child and assist the child to regulate their own behaviours.

By about the ninth month of age it is clear that the infant has developed a new form of awareness, called *secondary intersubjectivity*. This is the capacity to combine communication about action on objects with direct dyadic interaction (Trevarthen & Hubley, 1978). The caregiver and child begin to engage in cooperative activities with objects, during which the infant appears to accept the caregiver as a teacher and is able to learn from her example. Joint actions, such as "waving goodbye" and "clapping hands", become conventionalized. Caregivers begin to label objects and actions for infants (Hubley & Trevarthen, 1979). Infants demonstrate understanding in their receptive language by their response to questions such as "Where is dada?"

Towards the beginning of the second year, the exchanges between adults and caregivers involve spoken language, which expands their potential for cooperation. "Attentive pupil-like activity in the child encourages instructive teacher-like behaviours in companions" (Trevarthen, 1987b, p.54). The child increasingly becomes interested in the use and shared meaning of everyday objects and actions. This indicates the outcome, from earlier caregiver-child interactions, of the beginnings of cultural awareness and participation. At this time, the child has a

The infant is amused by the caregiver's attempts to play and laughs, which stimulates the caregiver to become more playful and to laugh more herself.

considerable repertoire of non-verbal, partly verbalized, and verbal ideas that have developed through exchanges with intimate caregivers. Children refer, in their interchanges, to people and objects that are not present. They engage in imaginary activities, such as pretending to eat, feed others, clean up, answer the telephone, chop wood, and other actions that are routinely part of the activities of the people in their household.

Attentive pupil-like activity in the child encourages instructive teacher-like behaviours in others.

One of the symbolic behaviours over which children gain mastery around this time, and which is also strongly related to the course and quality of their earlier relationships with caregivers, is their image of themselves in relation to

others. Around their second birthday, children show increasing awareness of parental standards of good and bad conduct, a sense of their own competence when they do things well, and shame and embarrassment when they perceive that they have failed or not performed adequately (Kagan, 1982; Trevarthen, 1987b).

Heckhausen (1988) videotaped 12 mother-child pairs twice a month from 14 to 22 months of age to chart the onset of pride reactions to success, reactions to failure and requests or refusals of help. She shows that these developments have their basis in caregiver-child interactions, such as exaggerated praise by caregivers of infant actions. These accomplishments in self-development show that children begin to see themselves as originators of action, and that they recognize and are prepared to learn from the superior competence of adults (Kaye, 1982).

In studies of language acquisition it has been recognized that the infant's grasp of the purpose of communication, in obtaining help, giving signs of interest in events, or surprise, preventing actions being made, etc. may become strongly evident after nine months in the expressions, vocalizations, and gestures with which infants influence their caretakers' behaviour. This ushers in the dramatic developments towards use of words in the second year.

Trevarthen, Murray & Hubley (1981, p.260)

Features of supportive and facilitative caregiver-child interactions

A number of component features of caregiver-infant interactions have been identified as being associated with later social and cognitive development in the child, including those that determine attachment classifications. These features include sensitivity and responsiveness, interactional synchrony, contingency and social referencing (Belsky, Taylor & Rovine, 1984; Clarke-Stewart, 1988; Isabella, Belsky & von Eye, 1989; Maccoby & Martin, 1983; Schölmerich et al., 1995; Wachs & Gruen, 1982).

Studies of these features usually take place during naturalistic home or laboratory observations, using coding or rating instruments to categorize the behaviour of the dyad as well as of the caregiver and the child individually. One example of such an instrument is the AMIS Scale for the assessment of caregiver sensitivity. Some of the features of caregiver-child interactions are discussed briefly below.

Mutuality, synchronicity, emotional availability, and social referencing

Gaze, attention, vocalization and emotional expressiveness occur in caregiver and baby in "packages" of coordinated activity. That is, they occur together and are either synchronized or alternated with the behaviour of the other person to produce a state of mutual engagement (Messer & Vietze, 1988; Moore & Dunham, 1995). These states are differentiated and specific, so that caregivers tend to respond to infant vocalization with increased vocalizations if the infant's affect is positive, but with postural adjustments and soothing vocalizations if the infant's affect state is fretful (Keller & Schölmerich, 1987).

Experimental studies indicate that during the first six months of life, babies' positive mood and engagement is synchronized with or follows that of the caregiver with significant probability (Cohn & Tronick, 1989). Reductions in the caregiver's level of affect expression and positive tone are followed by reductions in the infant's engagement and level of positive emotional responsiveness. Infants become disengaged, negative and fretful when their mothers simulate a depressive demeanour, as well as perturbations of "still face" and video replay,

Infants become disengaged, negative and fretful when their mothers simulate a depressive demeanour.

described before. The capacity of the infant to respond to the caregiver in this way depends, to a considerable extent, on a pre-established pattern of contingency between the behaviours of the caregiver and infant (Tarabulsy, Tessier & Kappas, 1996). This experimental work indicates one of the possible mechanisms for the effects of maternal depression on young children.

... emotions are apt to be a sensitive barometer of early developmental functioning in the child-parent system ... If the relationship is going well, there should be some indication of sustained pleasure and mutual interest, as well as a well-modulated range of emotional expressions, both negative and positive. One expects to see evidence of this in the child, in the parents and in their interaction. If the system is not functioning well, one often sees that there is little pleasure, and the range of emotional expression is restricted; instead of interest, there may be evidence of a "turning off" or apathy. In more extreme circumstances, there may be sadness and depression.

Emde & Easterbrooks (1985, p.80)

Emotional availability describes the caregiver's supportiveness and encouragement of the infant (Biringen & Robinson, 1991). A related term, emotional unavailability, has been used by Egeland and Erickson (1987) in their work with abusive mothers. Emotional unavailability describes the caregiver's unresponsiveness to infant distress and attempts to elicit interaction, and a detachment and lack of pleasure during interactions with the child. Emotional unavailability can also describe depressed caregivers, an issue taken up in more detail later (Cohn et al., 1986).

Towards the end of the first year, infants have been observed to "check back" to caregivers when confronted with novel situations or uncertain conditions, a process called "social referencing". Infants specifically assess the caregiver's emotional appraisal of the situation as a guide to their own

behaviour (Klinnert et al., 1983). The way in which the caregiver responds has been found to directly influence child behaviour (Ainsworth, 1992).

Infants assess the caregiver's emotional appraisal of the situation as a guide to their own behaviour.

Social referencing: Experiments on how the infant uses clues from the caregiver

Social referencing was first demonstrated on a piece of equipment called a *visual cliff*. This is made up of a flat glass surface on top of a deep end and a shallow end, with the two different depths separated by a narrow strip. Both the deep end and the shallow end are covered with a patterned surface, such as a checked fabric. Babies are put on the shallow side and encouraged to cross over to the deep side by offering an attractive toy. One-year-old infants immediately apprehend the drop-off and look to the mother's face before crossing the border and "going off the cliff" to reach the



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Social referencing can be demonstrated using a visual cliff

toy. In an experiment in which trained mothers displayed an expression of joy or interest, 75% of the infant's crossed the deep side to the toy. However, if the mother displayed an expression of fear or anger, less than 10% of the infants crossed the visual cliff.

Sorce et al. (1981)

Sensitivity

Mary Ainsworth originally identified four dimensions of maternal behaviour that appeared to be related to security of attachment: sensitivity, acceptance, cooperation, and acceptability (Meins et al., 2001). Sensitivity was found to be a common factor relating to the other three dimensions and strongly associated with a classification of attachment (Goldberg et al., 1989; Isabella, 1993). This finding has been replicated in other cultural groups (Grossman et al., 1985), as well as in high risk populations (Crittenden &

**Sensitivity in mother-infant interactions:
The AMIS Scale**

1. The scale consists of 25 items each with a possible score of 1–5, with higher values indicating higher sensitivity.
2. Fifteen of the items evaluate maternal behaviours (for example, predominant maternal mood/affect; holding style; maternal visual interactive behaviour).
3. Seven of the items evaluate infant behaviours (for example, predominant infant mood/affect; infant vocalization; infant posture).
4. Three of the items evaluate dyadic behaviours (for example, regulation of feeding; initiation; synchrony in response to pleasurable affect).
5. Ratings are made from observation of complete 15- to 30-minute videotapes of mother-infant interaction, and total scores are computed.

The scale has been shown to have acceptable levels of internal consistency and inter-observer reliability.

Price (1983)

Claussen, 2000; Egeland & Farber, 1984; Goldberg, 1988; Goldberg et al., 1986). To Ainsworth, sensitivity entailed regarding the child “as a separate person” and being “capable of seeing things from the child’s point of view”. This goes beyond a basic ability to recognize and respond to the child’s physical states such as hunger and distress, to a capacity to be able to “read” the babies’ behaviour. Meins et al. (2001) call this “mind-mindedness”, or the inclination to treat the baby as a person with feelings and wishes. Caregivers frequently demonstrate mind-

mindedness in their talk to infants, in comments such as “you like that, don’t you”, “oh, that’s a big talk!”, “you’re teasing me”, and so on.

Ainsworth and colleagues (Ainsworth, Bell & Stayton, 1974) described four

components of the ability of caregivers to perceive, accurately interpret and respond to their infant’s behaviour:

1. *Awareness of the infant’s signals.* That is, the caregiver must be reasonably accessible to the infant’s signals and to the threshold, even if muted, of the infant’s cues.
2. *An accurate interpretation of signals.* That is, the caregiver must be free of distortions resulting from projection, interference or denial, as might occur when the caregiver is hurried during a feed and prematurely interprets the baby’s restlessness as a sign of satiation. In addition, the caregiver needs to be empathic, not detached, so that her emotions are available to be engaged by the infant.
3. *An appropriate response to the infant’s communications.* For example, to pick the infant up when she is distressed, or to put her down when she wants to explore. Towards the end of the first year, what is appropriate is tempered by other socialization goals, for example, not to touch things that might break, and these interventions too, must be achieved with sensitivity.
4. *A prompt response to the infant,* so that the caregiver’s reaction is perceived to be contingent on the child’s communication and a satisfaction of his needs.

Sensitivity is not a characteristic only of a caregiver. It is a relationship construct and thus also a function of the infant’s capacity and skill to signal behaviour states in clear and consistent ways. This capacity is sometimes underdeveloped in vulnerable infants, such as those born at very low birth weight, or with neurological difficulties (Als & Duffy, 1983; Crnic & Greenberg, 1987; Field, 1981). Babies with immature neurophysiological

The sensitive caregiver regards the child as a separate person, and sees things from the child’s point of view.



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Attuned caregivers are sensitive to infants and responsive to their emotional state

systems may have unstable and erratic motivational states and less synchronized sensory and motor systems. This makes it more difficult for caregivers to “understand” the infant’s needs. For example, active smiling with smooth movements may give way quite unexpectedly in such infants to fretfulness and uncoordinated jerkiness.

Responsiveness

Like sensitivity, responsiveness is a fuzzy construct, a widely understood and commonplace term whose precise meaning is difficult to articulate (Martin, 1989). Responsiveness generally refers to prompt and appropriate behaviour of the caregiver to infant signals (Beckwith & Cohen, 1989). It is frequently operationalised in experimental and observational studies as either the proportion of infant bids to which the caregiver responds (Clarke-Stewart, 1973) or as a probability statement of the contingency of the caregiver’s response to infant behaviours (Martin, 1981).

Responsiveness is also both a person and a relationship variable. In relationships, it refers to attunement, interactive matching and synchrony at a molecular or micro level. At a more molar level, it is expressed in reciprocity and complementarity. As a person variable, responsiveness refers to, amongst others, sensitivity and empathic awareness, predictability and contingency, non-intrusiveness, emotional availability, engagement,

positive emotional tone and, adds Martin (1989), devotion. Devotion refers to an experience of a relationship in which the welfare and happiness of the partner is fundamentally important. Many parents experience and talk about their devotion towards their children.

Caregiver responsiveness strengthens the affective bond between the adult and child, and increases the child’s sense of security,

including a willingness to engage in exploratory behaviour (Bornstein & Tamis-LeMonda, 1989). There is a substantial literature linking caregiver responsiveness to positive child outcomes, including reduction in the frequency and duration of infant crying (Bell & Ainsworth, 1972).

Our data indicate that maternal responsiveness was embedded in a relationship that began in early infancy and continued into toddlerhood. Mothers who promptly responded to the fussing and crying of their young infants were also more responsive to the nondistress vocalizations of their toddlers. Their toddlers, in turn, were more vocal and more competent. Responsiveness appears to be a consistent maternal characteristic that existed before the infant’s competence was manifest. But by two years, there was increased relative competence in the child and increased mutual responsiveness.

Beckwith & Cohen (1989, p.86)

Caregiver responsiveness has also been linked to a sense of competence and self-worth (Bretherton, 1987b; Denham, 2002; Stern, 1985; Watson, 1979), greater security and more interest in environmental exploration (Ainsworth et al., 1978; Pridham, Becker & Brown, 2000), enhanced communicative abilities (Bell & Ainsworth, 1972), more advanced cognitive activity (Lewis & Goldberg, 1969), and greater assertiveness and peer competence (Sroufe & Fleeson, 1984).

Applicability of caregiver-child dimensions across cultures

Some researchers have questioned the cross-cultural applicability of concepts such as caregiver sensitivity and responsiveness, and have called for more ethnographic studies and an emic¹ approach to the field of caregiver-child interaction (Jackson, 1993). While there is a dearth of studies of non-Western cultures, it should not be forgotten that Mary Ainsworth did the first systematic observational study of attachment in Uganda. In reporting on her work, and with concern for how her results might be taken up in the United States and Europe, she wrote: “But for our purposes here, I urge you to consider my sample as merely one of human infants and disregard the fact that they were African (for I believe the same principles of

¹ Kenneth Pike coined the terms etic and emic in 1954. They first appeared in his book *Language in Relation to a Unified Theory of the Structure of Human Behavior*. Etic refers to a trained observer’s perception of the uninterpreted “raw” data. Emic refers to how that data is interpreted by an “insider” to the system.

The responsive caregiver behaves promptly and appropriately to the infant’s signals. Responsiveness strengthens the affective bond between the adult and child, and increases the child’s sense of security.



WHO/S. SPRAGUE

Child care varies around the world, but all children learn from adults in close relationships with them

development apply for infants regardless of specific racial or cultural influences)” (1964, p.51).

There is no doubt that child care practices vary widely, and cultural scripts influence caregiver-child contact and communication through practices of carrying, co-sleeping, conditions and conventions for interaction, and so on (Goldberg, 1972; Greenfield, 1994; Hess et al., 1980; Hopkins & Westra, 1989; Kilbride & Kilbride, 1974; Ogbu, 1981, 1994; Winn, Tronick & Morelli, 1991; Zaslow & Rogoff, 1981). However, all child-rearing environments for infants, so far identified, conform to what Bowlby called the “average expectable environment” or what Winnicott refers to as “good enough mothering” (Abel et al., 2001; Konner, 1977; Richter, 1995; Trevarthen, 1987b; Werner, 1988).

Much of the available literature has been collected in environments in which young children are cared for by only one or two caregivers. In many African and other societies, in contrast, a number of family members hold, carry and play with infants. However, even in these polymatric rearing conditions, infants spend proportionally more time with their mother because they breastfeed on demand. Studies of attachment in polymatric as opposed to mono-

matric societies suggest that the development of attachment follows the same sequence in both environments (Kermoian & Leiderman, 1986; Reed & Leiderman, 1981).

Three kinds of studies have examined the generalizability of caregiver-child interactions in settings other than the Western middle-class. The first kind show that in all groups assessed, systematic variations in parental behaviour and child outcomes have been observed, whether the studies have been conducted in non-Western cultures or in low socio-economic and poverty environments (Richter, Grieve & Austin, 1988). Most of these studies have used the HOME¹ Inventory and found that caregivers who provide more responsive and stimulating care have children who perform better on cognitive measures, regardless of the absolute level of advantage or deprivation in the group (Bradley et al., 1989). For example, in a very poor Black South African community, where the level of household facilities for the stimulation of children is generally low, Richter and Grieve (1990) found that caregivers who facilitated their children’s learning and were responsive to their needs had children who performed significantly better on the Bayley Scales of Infant Development.

The second set of studies examines the cross-cultural applicability of attachment theory, measurement and classification. Up to 1999, 14 studies had been identified that examined specific tenets of attachment theory across cultures. A meta-analysis of these studies indicated that culture played a minor role in influencing determinants, expression and outcomes of attachments in the first year of life (van Ijzendoorn & Sagi, 1999). Similar conclusions have been reached from long-term attachment research in Germany, Israel and Japan (Grossman & Grossman, 1990; Rothbaum et al., 2000; Sagi, 1990). All indications from available systematic reviews and meta-analyses suggest that intracountry variability in proportions of attachment classifications, itself not a fundamental

¹ Home Observation for the Measurement of the Environment is completed on the basis of home observation and an interview with the child’s caregiver. It consists of six scales: 1) Emotional and verbal responsivity of the caregiver; 2) Avoidance of restriction and punishment; 3) Organisation of the physical and temporal environment; 4) Provision of appropriate play materials; 5) Caregiver’s involvement with the child, and 6) Opportunities for variety in daily stimulation (Bradley & Caldwell, 1976; Caldwell & Bradley, 1984).

aspect of the theory, exceeds inter-country variation (Main, 1990; van Ijzendoorn & Kroonenberg, 1988).

The final set of studies has examined caregiver-child interactions through microanalysis of recorded observations among a variety of cultural groups around the world. For example, Keller, Schölmerich & Ebil-Eibelsfeldt (1988) observed caregiver-child dyads between 2 and 6 months of age from two Western (German and Greek) and two non-Western cultural groups (Yanomami Indians in Venezuela and Tobrian Islanders in New Guinea). Martini and Kirkpatrick (1981) analysed videotapes of infants and mothers in the Marquesas Islands in French Polynesia. Hausa dyads have been studied in Nigeria (Marvin et al., 1977), as have African mother-infant pairs in South Africa (Richter, Grieve & Austin, 1988), Japanese infants with their mothers (Caudill & Weinstein, 1969; Bornstein, 1989b), Yoruba infants and their mothers in Lagos (Mundy-Castle, 1980; Trevarthen, 1987b), and mother-infant dyads amongst the Gusii in Kenya (Dixon et al., 1981; 1984). All these studies have concluded that emotionally expressive interactions with a

fundamentally common dialogue structure take place between infants and their primary caregivers.

Suzanne Dixon and her colleagues (1981) in Kenya undertook an African-American comparison of 18 Gusii infants with their mothers, and 18 mother-infant pairs in Boston, in

three cohorts from 6 to 36 months of age. They recorded caregivers and children in free play and engaged in a structured teaching task. The researchers conducted analyses of the data based on both micro- and macro- coding systems. They found distinct variations in style between the two groups, with Gusii mothers touching their babies more than American mothers. This finding was also reported amongst a Yoruba sample (Mundy-Castle, 1980), and in a South African study (Richter, Grieve & Austin, 1988). However, Dixon et al. concluded that:

“Gusii mother-infant face-to-face interaction was seen to be organized in a cyclic flow of affective behaviours similar to interactions described in our own culture... This organization suggests an underlying universal form... The range and quality of affective behaviours

were similar across the different cultures, but were used differently. The emergence of play and talk episodes, with the modulation of voice effective for sustaining infant attention, were seen in this cultural setting as well as our own. Adult behavior, including speech in all cultures described to date, had an infantilized form when interacting with young infants. This seems to reflect the universal awareness of the capabilities of the young infant. The infants displayed a full range of behaviours within our system in spite of very different social experience” (Dixon et al., 1981, p.163).

Models of caregiving and parenting

Caregiver-child interactions occur within a framework of caregiving and parenting, which, as we have seen from the above, are influenced by both cultural and sub-cultural beliefs and practices. Nonetheless, common dimensions of caregiving are manifest in all situations as a result of the infant’s universal needs and developmental programme. At the same time, the infant’s “individual development occurs in a family zone where internal and external systems overlap and interact” (Balbernie, 2002, p. 330), and “where factors found outside of the mother-baby relationship are being titrated into the developing psyche of the child” (p.335).

Bradley and Caldwell (1995) see caregiving functions as a mutual regulator of human behaviour and development in a transactional system (Sameroff & Fiese, 2000). They classify caregiving in terms of five primary caregiving functions that cannot be separated from one another:

- Sustenance: to promote biological integrity through the provision of food and shelter.
- Stimulation: to engage attention and provide experience and information that is neither incomplete nor excessive or disorganized (Wohlwill & Heft, 1977). The deleterious effects of understimulation on children were brought to light a long time ago in studies of institutionalized children (Skeels & Dye, 1939).
- Support: to meet social and emotional needs and to reinforce goal-directed behaviour.
- Structure: to differentiate inputs to the child

Across cultures, emotionally expressive interactions between infants and their primary caregivers have a common dialogue structure.

The common dimensions of caregiving across all situations are a result of the universal needs of infants.



LINDA RICHTER

Through their caregiving, adults simultaneously teach, guide and restrain children

according to the child's needs and capabilities. Both support and structure have a great deal in common with regulation and scaffolding.

- Surveillance: to keep track and to monitor child activity. Lozoff (1989) claims that this is such a self-evidently important function for children's health and development that it is surprising that so little research has been done to describe parental surveillance activities and their effects on children. For example, caregiver failure to provide adequate supervision in dangerous environments contributes to the majority of all childhood injuries (Garbarino, 1988).

In addition, any particular caregiving activity may serve one or more of the regulatory functions; for example, all five functions may be evident in a

feeding episode with a young child. Similarly, a feeding situation provides opportunities to meet sustenance, stimulation, support, structure and surveillance functions.

In another attempt to put caregiver-child interactions

in perspective, Galler et al. (1984) provide a multi-levelled model in which caregiver-child interactions are placed in the context of infant

Surveillance by a caregiver is an important function for a child's health and development.

care and general characteristics of the care relationship.

Such models help us to see that caregiver-child interactions are determined both by external conditions as well as by internal parental motivations and infant capacity. For example, Engle & Ricciuti (1995) describe children's home environments in terms of structural characteristics, such as family size and household income; features of the home environment (for example, the presence of books, crowding and

A model of characteristics of the care relationship

Level 1 – Infant care

- Protection, nutrition, stimulation, affection

Level 2 – General characteristics of relationships

- Continuum of acceptance from warm and affection to rejection, hostility
- Continuum of involvement from involved to detached and indifferent
- Continuum from sensitivity to insensitivity
- Continuum from contingent (i.e. tuned, regular, predictable) responsiveness to unresponsiveness
- Continuum from encouragement of exploration, independence and learning to restriction and interference

Level 3 – Specific behaviours of caregiver and infant

(which may contribute to the general characteristics on Level 2)

- Caregiver behaviors towards the infant – gaze, touch, postural adjustment, emotional expressiveness, vocalization, imitation, adaptations to the infant
- Infant behaviours towards the caregiver – gaze, touch, postural adjustment, emotional expressiveness, vocalization, imitation, adaptations to the caregiver

Level 4 – Characteristics of the caregiver-infant pair as a dyad

- Reciprocity – dyadic gaze, mutual smiling, imitation, reciprocal play
- Synchrony – adjustment in mutually adaptive ways

Galler et al. (1984)

noise); caregiver characteristics (such as age, physical health and knowledge); and child characteristics (such as temperament, health and developmental status). These factors, together with resource constraints and support systems, are all inter-related to some degree and affect the

extent to which the caregiver and child can engage in mutually rewarding, developmentally appropriate, reciprocal interactions.

Theodore Dix (1991) sees responsive parenting as emanating from empathic motivation in the caregiver towards the child. Responsive parenting comes about, he says, because “parents

develop affectional ties that make outcomes in children’s wellbeing critically important to them. When children’s wellbeing is important, parents

organise interactions with children so that empathic goals and concerns are achieved” (Dix, 1992, p.320). However, the arousal and maintenance of empathic motivations in caregivers depend to some degree on supportive environmental conditions and caregiver characteristics, both of which may need to be addressed in intervention programmes.

Responsive parenting comes about because parents develop affectional ties that make their child’s wellbeing critically important to them.

How is it that some children become sad, withdrawn and lacking in self-esteem, whereas others become angry, unfocused and brittlely self-assertive, whereas still others become happy, curious affectionate and self-confident? ... Although the nature of these processes is not known, an answer is taking shape on the basis of recent work on the nature of infant-caregiver emotional communication.

Tronick (1989, p.112)

Chapter 5

The impact of caregiver-child interactions on the development and health of children

The available knowledge, reviewed in preceding chapters, indicates that early caregiver-child interactions play a profound role in the development of children's self-regulation, cognitive development, language acquisition, and socio-emotional adjustment. There is an enormous body of literature that indicates that the quality of the infant-caregiver relationship is a major determinant of psychological adjustment and subsequent personality development (O'Connor, 2002).

Early caregiver-child interactions play a profound role in the development of self-regulation, cognitive development, language acquisition, and socio-emotional adjustment.

The quality of psychosocial care provided the young child is reflected in the caregiver's responsiveness, warmth and affection, involvement with the child, and encouragement of autonomy and exploration...There is considerable correlational and some experiment evidence [for the link between] the quality of psychosocial care to a child's development of mental abilities, and to his or her growth and nutritional status.

Engle & Ricciuti (1995)

As the determinants involved are complex and transactional, it is difficult to attribute causes of particular outcomes to highly specific antecedents. It is not possible given the dynamic feedback systems involved, therefore, to generate empirical evidence of simplistic associations between caregiver-child interactions and particular health or development outcomes. For example, one cannot say that parental divorce causes child psychopathology.

However, probabilistic assertions about associations can be made on the strength of the theoretical arguments and the correlative evidence linking outcomes to caregiver-child interactions.

Further corroboration of the role of caregiver-child interactions in determining health and developmental outcomes for children is likely to come from intervention studies still to be conducted.

... (we) need to recognise the importance of indirect chain and strand effects in the development process, as well as direct influences. In other words, the impact of some factor in childhood may lie less in immediate behavioural changes it brings about than in the fact that it sets in motion a chain reaction in which one thing leads to another.

Rutter (1981, p.27)

Three likely mechanisms involved in carrying forward effects from caregiver-child interactions to later competence and adjustment involve priming, the consolidation of internal working models, and repetitive or enduring experiences.

■ The *priming* of the child's responses to the environment occurs through neurophysiological and psychological adaptations to the quality of regulation experienced in very early caregiver-child interactions. Cohn and Tronick (1989) argue that negative or disruptive interactions force the infant to self-regulate their own negative emotional states in an attempt to reduce the effects of their caregiver's inappropriate behaviour. "It is expected that the accumulation of such interactive experience has a structuring effect on infants such that a self-directed regulatory style comes to dominate all interpersonal exchanges" (p.247). Excessive needs for self-regulation are likely to limit exploration and learning, and reduce a child's competence in interactions with others, including peers.

■ *Internal working models* or mental representations of the self and other people determine subsequent behaviour. These can have a knock-on effect because the child may avoid experiences

that have the potential to alter negative representations (Bretherton, 1987b; Main, Kaplan & Cassidy, 1985; Zeanah & Anders, 1987). For example, if a child expects adults to be uncaring, she may stop seeking assistance and comfort from adults, even though some adults in her environment would respond warmly if she approached them.

■ *Repetitive or enduring interactional failures* may become part of a cycle of determinants that are linked to poor outcomes. In themselves, “they may seemingly be of little clinical significance and yet cause major problems because they may function as starting points for chains of reciprocal consequences, becoming vicious circles that hinder development” (Papoušek & Papoušek, 1983, p.35). In addition, enduring conditions of impoverished or neglectful interactions with caregivers often reduce the likelihood of positive interactions with other adults in the child’s environment. This minimises the exposure of the child to compensatory experiences.

If a child expects adults to be uncaring, she may stop seeking assistance and comfort from adults, even though some adults in her environment would respond warmly.

Child development outcomes

The evidence linking caregiver-child interactions during the first three years of life to child development outcomes can be categorized into: follow-up studies from early interaction; studies that examine particular outcomes such as psychopathology and child abuse; and studies of alternative care, especially institutionalization.

Follow-up studies from early interactions

A variety of studies involve assessments of infants or young children, either in terms of the quality of caregiver-child interactions, attachment status, or HOME scores, with follow-up into the preschool and school age groups and early adulthood (Arend, Gove & Sroufe, 1979). Outcomes commonly measured include intellectual functioning, adjustment, social competence, self-esteem, and social relationships (Matas, Arend & Sroufe, 1978). A few studies, cited as examples, are described below.

Quality of caregiver-child interactions. Clarke-Stewart, VanderStoep & Killian (1979) report results from a panel study of 14 children and a

replication study with 96 children in New Haven across the first two years of life. Methods included naturalistic observations, standardized tests, semi-structured situations and interviews. Measures of child social competence across a number of developmental domains – cognition, language and social relations – were found to be intercorrelated and associated with a cluster of stimulating interactive maternal behaviours, including positive interaction with the child. These associations were not attributable to socio-economic status or to maternal intelligence.

Olson, Bates & Kaskie (1992) assessed 79 infants at 6, 13 and 24 months and then again at 6 years. Nonrestrictiveness and verbal stimulation predicted cognitive functioning at 6 years; and it was established that the association was not confounded by family socio-economic status, child temperament or developmental level.

Carlson (1998) reported a study of 157 mixed ethnic infants in Minneapolis who were assessed on a large number of biological, social and psychological measures in early childhood. The measures included mother-child interaction at 24 and 42 months, preschool adjustment at 4 to 5 years, teacher reports in grades 2, 3, 4, 6 and in high school, ratings of self-esteem, as well as aspects of parent-child relationships at 13 years. Outcomes were assessed at 17 and 19 years of age. The results confirmed that ratings of the quality of caregiving determined attachment status, and that both early interactions and attachment were related to outcomes in socio-emotional functioning and behaviour problems at all subsequent ages.

Attachment status. In a follow-up study, from 18 months to 5 years, of infants from 62 low income families, Lyons-Ruth, Aspen & Repacholi (1993) found that attachment status predicted aggressive behaviour rated by preschool teachers. Similarly, Pierrehumbert et al. (1989) examined 49 children at 2 and 5 years and found that attachment at 2 years predicted competence in peer relations at 5 years. In a longitudinal study in Uppsala, which followed 96 children from 15 months to 9 years, attachment status predicted a number of social and psychological outcomes. Secure children were reported to be more popular, socially active and confident (Bohlin, Hagekull & Rydell, 2000).

In a review of longitudinal and concurrent studies, Cohn, Patterson & Christopoulos (1991) found that attachment status was generally found to be associated with peer relationships and popularity ratings in preschool and school

The most compelling evidence for the impact of attachment status on the child is with respect to peer relations. Poor peer relations, in turn, have been shown to be related to behaviour problems, including disruptiveness, aggression and delinquency, especially in boys.

settings. Sroufe and Fleeson (1986) concur that the most compelling evidence for the impact of attachment status on child outcomes is with respect to peer relations. Poor peer relations are important because they, in turn, have been shown to be related to behaviour problems, including disruptiveness, aggression and delinquency, especially in boys.

HOME scores. Many studies in the USA report associations between early psychosocial care, as assessed on the HOME scale, and later cognitive, social and emotional development assessed through interviews, observations and rating scales (Bee et al., 1982; Bradley & Caldwell, 1984; Bradley et al., 1989). For example, McGowan & Johnson (1984) examined parental teaching styles, warmth and affection, and HOME scores on the 8-year cognitive performance of 60 low income Mexican-American children in Houston. Although maternal education was a powerful predictor of children's intellectual functioning at school age, maternal attitudes of encouragement and reciprocity were also related to cognitive outcomes.

A panel study of income dynamics used a randomized control design in eight sites to examine education and support services in the Infant Health and Development Program. It found that HOME scores were a highly significant predictor of children's IQ at 5 years, accounting for more than 30% of family income effects on children's cognitive functioning (Duncan, Brooks-Gunn & Kiebanov, 1994).

Relationships between HOME scores rated in infancy and later cognitive level have been found to hold in high-risk settings, for example, in studies of low birth weight infants and low socio-economic status families (Bakeman & Brown, 1981) and amongst malnourished children in Jamaica (Grantham-McGregor, Schonfield & Powell, 1987; Grantham-McGregor et al., 1991). These relationships have also been established in a variety of disadvantaged settings, for example, in a Mexican village (DeLicardie & Cravioto, 1974), in India (Argawal et al., 1992), in the Philippines (Church & Katigbak, 1991), in rural Kenya (Sigman et al., 1988) and in an Egyptian village environment (Wachs et al., 1993).



JANE LUCAS

Children want to share interests and information about the world with adults

Psychopathology and child abuse

Positive and stable caregiver-child relationships in the early years have been found to be associated with better social adjustment and protection from psychopathology in long-term studies of child outcomes (Garmezy, 1985; 1988; Werner, 1989; Werner & Smith, 1992; Zuravin, 1989). For example, Osborn (1990) reported, from the 5 and 10 year follow up in the Child Health and Education Study of more than 13 000 children in the UK, that children whose parents were child-centred, as expressed in reading to children and spending time with them, were 2.5 times more likely to be rated as competent than their peers.

Keren, Feldman & Tyano (2001) assessed 113 referred infants from well-baby centres in Israel, from which they selected 30 cases and matched them with control families. Referrals were mainly for eating and sleeping problems, aggressive behaviour and irritability. The most common diagnoses were primary infant disorder and parent-child relationship disorder. Mothers of referred children were found to have lower levels of sensitivity, support and structure in their relationships with their infants than control mothers.

Chronically disturbed and or interrupted caregiver-child interactions, as well as disorganized attachments, have been found to occur

Positive and stable caregiver-child relationships in the early years are associated with protection from later psychopathology.

disproportionately amongst very young children with anxiety, depressive disorders and behaviour problems (Crittenden, 1995; Egeland & Sroufe, 1981a and b; Lewis et al., 1984; Lyons-Ruth, Esterbrooks & Cibelli, 1997; Zeanah, Boris, & Larrieu, 1997).

Disturbed caregiver-child interactions occur in neglect and child abuse, conditions frequently associated with insecure attachments. Several studies show a relationship between conditions that disrupt caregiver-child relationships, such as hospitalization, alcohol abuse, and the like, and the risk of child abuse (for example, Klein and Stern, 1981). In addition, parental stress, impaired parent-child interactions, and poor quality of the home environment have been identified as specific risk factors for physical abuse of children (Whipple, 1999), as has the caregiver's own insecure adult attachment style (Montcher, 1996). The effects of these conditions sometimes persist across generations (Bousha & Twentyman, 1984; Crittenden, 1993; Giovannoni & Billingsley, 1970; Kaufman & Zigler, 1989; Main & Goldwyn, 1984; Ricks, 1985).

Institutional care

The earliest reports of the negative effects of maternal deprivation came from studies of children institutionalized in their first year of life (Provence & Lipton, 1962). Studies of young children in institutions still provide the most robust evidence for the importance of nurturant caregiver-child interactions for children's healthy development.

In one of the first intervention studies for children in institutions, Skeels and Dye (1939; Skeels, 1966) placed 13 institutionalized infants in the care of older girls, who "adopted" them and provided them with consistent care from 6 months of age. At 2 years, these children were found to have made dramatic gains in IQ (an

In 1977 a World Health Organization expert committee concluded that continuity of relationships to parental figures is especially important in the first few years of life ... children most at risk are those who experience multiple changes of parent figures or who are reared in institutions with many attendants who have no special responsibility for individual children.

(WHO, 1977, p.22)

average of 28 points), while the matched control group dropped an average of 26 points over the same period. A 21-year follow-up of the two groups showed that the divergent pattern was maintained. All the experimental children were self-supporting, while five of the control children remained in institutions for mentally handicapped individuals.

Even recent studies, mostly of children adopted out of Eastern European orphanages into homes in the United States, Canada and Britain, indicate that early age of institutionalization and length of time spent in an institution are strong determinants of later psychopathology (Marcovitch et al., 1997; Rutter, 1972). This is the case even though in most contemporary institutions, including in resource-poor countries, an effort is made to ensure that children receive adequate mental stimulation and at least some individual care.

Follow-up studies of children reared in institutions in their first year of life, and thus deprived of an intense and stable nurturant relationship, have found that the children are insecurely attached (Chisholm, 1998; Landau, 1989; O'Connor, Bredenkamp & Rutter, 1999) and that they manifest socio-emotional disorders and personality dysfunctions (Lis, 2000). Long-term studies into adulthood, for example by Rutter and Quinton (1984), show that institutionalization in the first five years of life jeopardizes adult emotional and social adjustment.

Institution-reared children tend to show indiscriminate attachment and friendliness, and they are clinging and attention seeking. Their needs for physical and psychological contact with attachment figures, even in the stable care provided by "substitute mothers", are constantly frustrated. Their daily contacts with caregivers are short, and they are frequently separated from caregivers as institutional staff are called to other activities or go off duty (Lis, 2000). In a recent review, Frank et al. (1996) concluded that:

"...infants and young children are uniquely vulnerable to the medical and psychosocial hazards of institutional care, negative effects

Children reared in institutions in their first year of life are insecurely attached. They are more likely to manifest socio-emotional disorders and personality dysfunctions. They tend to show indiscriminate attachment and friendliness, and are clinging and attention seeking.

that cannot be reduced to a tolerable level even with massive expenditure. Scientific experience consistently shows that, in the short term, orphanage placement puts young children at risk of serious infectious illness, and delayed language development. In the long term, institutionalization in early childhood increases the likelihood that impoverished children will grow into psychiatrically impaired and economically unproductive adults” (p.569).

Child health outcomes

Parents and other caregivers are the primary gatekeepers of children’s health. They determine the amount and quality of the food their children eat, the health care their children receive and the amount of emotional support and assistance they provide for their children in daily life and during stress, such as illness. What parents do is conditioned by their material resources, their knowledge, their access to services, and the characteristics of the communities in which they live (Case & Paxson, 2002; McCarthy et al., 1991).

In addition to practices relating exclusively to feeding, health care, and sanitation, other modes of mother-child interaction have also been consistently related to the nutritional status of infants and young children. The mother’s affect – whether she smiles and enjoys the baby – and the frequency with which she interacts with her child, verbally and non-verbally, can be used as examples.

Zeitlin, Ghassemi & Mansour (1990, p.1)

Several reviews, specifically from developing countries, indicate that psychological and social factors, including relationships between caregivers and children, have received insufficient attention in efforts to improve the survival and healthy development of young children (Zeitlin, Ghassemi & Mansour, 1990). Writing on the basis of his experience in Peru, Lanata (2001) argues that recurrent infections, poor growth and increased mortality amongst young children cluster in families where the child is not wanted and where the child experiences neglect and even abuse (Das Gupta, 1990; Schellenberg et al., 2002). Nancy Scheper-Hughes (1992), also working in Brazil, speaks of child rearing strategies that prejudice the life chances of children who are either not wanted or who are considered too weak to survive the hardships of poverty.

Lanata portrays some families in poor communities in Peru as selectively neglecting certain children in ways that directly affect the child’s nutrition, growth, health, and access to and uptake of treatment. He sees these problems as resulting from social marginalisation of the family, children not being wanted, lack of support for women by the child’s father, and caregiver depression and poor self-esteem. “It is possible that children born in these high-risk families are neglected and exposed to psychological distress, a factor that has been associated with a greater risk of developing diseases and death in adults” (Lanata, 2001, p.142). Compelling as this account is, little systematic research has been done to understand these pathways of ill-health, poor growth and compromised psychological development among children in affected families. “We suggest that the capacity to care for and nurture children in the adverse social conditions prevailing in many poor communities in developing countries is a neglected issue...” (p.139).

In this review, prematurity, low birth weight, growth, failure to thrive, and protein-energy malnutrition are used as examples to illustrate how caregiver-child relationships affect children’s survival and healthy development.

Prematurity and low birth weight

It is now generally accepted that the impact of biological risks on children, including prematurity and low birth weight, are mediated by the quality of the post-natal environment. This has been identified by Sameroff and Chandler (1975) as the *continuum of caretaking casualty* (Sigman et al., 1981; Werner & Smith, 1992). In the early years, the social environment of the child is constituted chiefly by the caregiver-child relationship. The nervous systems of premature and low birth weight babies are not developed to the level necessary to deal with an extra-uterine environ-

Social and psychological factors – including the relationship between caregivers and children – have received insufficient attention in efforts to improve the survival and healthy development of young children, especially in resource-poor countries.

A neglected issue: the capacity to care for and nurture children in the adverse social conditions prevailing in many poor communities in developing countries.

ment without specific support. As a result, they are less organized than full-term infants. They are fussier, cry more, are more difficult to soothe. Their emotional states change more frequently and more unpredictably than full-term infants (Crnic et al., 1983; Friedman, Jacobs & Werthman, 1982). These infants are also generally less responsive to handling.

Caregivers of preterm babies have been observed to interact with their infants differently from full-terms. Goldberg's review (1978) concluded that mothers of atypical babies, including premature and low birth weight infants, seem to work harder and carry more of the "interactive burden" than mothers of normal, healthy, full-term babies. Some caregivers compensate by becoming highly active in their interactions, a reaction that tends, in the homeostatic system of caregiver and child interaction, to result in reduced responsiveness from the baby (Macy, Harmon & Easterbrooks, 1987). Infants are reported to become inattentive to these excessive overtures and to avoid their caregiver's gaze. Caregiver satisfaction with parenting is frequently reported to drop under these conditions (Crnic et al., 1983).



WHO/ARMANDO WAAK

Caring for very small or premature babies is challenging because their emotional and behavioural responses are undeveloped

Studies of preterm and low birth weight infants indicate that difficulties in establishing synchronous caregiver-child interactions may play a role in the child's later social and emotional problems (Beckwith & Rodning, 1996). Cohen and Beckwith (1979) examined 50 preterm infants

through naturalistic observations at 1, 3 and 8 months age, with follow-up to two years. They found that interactional features at one month of infant age predicted later competence on developmental scales, a finding they attributed to cumulative interactional effects.

Beckwith and Rodning (1996) followed up 51 preterm babies born into low-income families from birth to five years of age. The infants were assessed on the Bayley Scales of Infant Development, The Reynell Language Scales, the McCarthy Scales of Children's Abilities, and other measures of child performance and competence. The researchers found that caregiver responsiveness to infant vocalizations and infant irritability were significant predictors of later competence, taking into account the potential confounders. They also found that maternal responsiveness had a modifying effect on infant irritability, thus diminishing the potential impact of a child risk characteristic.



JANE LUCAS

Social interactions with infants frequently take place during care routines

Growth and failure to thrive

In a studio of a Peruvian village, Gambirazo identified the best predictor of growth, after socio-economic variables, was the love and affection the caregiver gave to the child (Lanata, 2001). Several studies support Gambirazo's observation. For example, Lamontagne, Engle & Zeitlin (1998) found that poor growth of children from 12 to 18

As part of a longitudinal, community-based study of children in peri-urban areas of Puno, a Peruvian city located at the edge of Lake Titicaca at 4100 metres above sea level, several variables were measured at baseline in a group of children who were followed to identify risk factors for poor nutritional growth. The best predictor of better growth in this poor community, after controlling for socio-economic and other variables measured in the study, was the presence in the home of the mother or a mother-substitute who was classified as a good care-provider at baseline, based on the love and affection given to the child as observed by a study psychologist.

C. Gambirazo, personal communication (in Lanata, 2001, p.139)

months of age in 80 households drawn from 10 low-income neighbourhoods in Nicaragua was predicted by inadequate child care, even when the households experienced increased income as a result of the mother working outside of the home.

Similarly, Bégin, Frongillo & Delisle (1999) assessed 98 children aged 12 to 71 months from 64 households in a rural Sahelian town in Chad. The researchers measured caregiver behaviours suggested by the UNICEF model of care (1990), as well as household food security, food and economic resources. Caregiver decisions about child feeding, level of satisfaction with life, and willingness to seek advice during child illnesses, as well as the number of individuals available to assist with domestic tasks, were caregiving characteristics associated with children's height-for-age. When the economic and food resource data were added, the results indicated that caregiver characteristics influence children's nutritional status even when socio-economic status is controlled. The review by Zeitlin, Ghassemi & Mansour (1990) similarly concluded that the psychological adjustment of caregivers and a positive attitude to the child are important variables influencing child growth, especially in low-income families living in deprived conditions.

Non-organic failure-to-thrive (NOFTT), or growth retardation with no clear organic aetiology, makes up about 5% of paediatric ad-

missions in the United States (Alfasi, 1982; Berwick, 1980). The syndrome may include, apart from growth deficits, diminished physical activity, depressed cognitive performance, decreased immunologic resistance, and long-term behavioural problems and developmental delays (Black et al., 1995). NOFTT infants and young children appear emaciated and listless, with reduced vocalizations, minimal smiling, and little cuddliness; and they are unusually watchful (Alfasi, 1982).

The syndrome, first described in institutionalized infants (Provence & Lipton, 1962), occurs in a very large number of poor children in developing countries, even if they are not diagnosed with moderate to severe malnutrition (Guedeney, 1995).

The problems of NOFTT become particularly severe when they are superimposed on the health and development problems of children growing up in poverty (Black et al., 1995).

In addition to growth deficits, the syndrome NOFTT may include diminished physical activity, depressed cognitive performance, decreased immunologic resistance, and long-term behavioural problems and developmental delays – with even more severe consequences when they are superimposed on the problems of growing up in poverty.

In considering the potential linkages between psychosocial and nutritional care, one of the principal assumptions would be that caregivers who are minimally involved and show little affection for the baby, who are insensitive in responding to the child's needs and signals, and who fail to encourage exploration and learning, are also likely to provide relatively poor nutrition, feeding and physical care.

Engle & Ricciuti (1995, p.362)

NOFTT is now generally approached from an interactional point of view, since a large number of studies indicate that caregiver-child relationships in NOFTT appear to be disturbed (Benoit, Zeanah & Barton, 1989; Black & Dubowitz, 1991; Bradley, Casey & Wortham, 1984; Breunlin et al., 1983; Drotar, 1985; Leonard, Rhymes & Solnit, 1966; Pollitt, 1975; Ward, Kessler & Altman, 1993). Although some researchers attribute NOFTT to a psychologically-induced deficit in absorption or metabolism, it is

Caregiver characteristics influence the child's nutritional status, even when socio-economic status is controlled.

Poor eating in non-organic failure-to-thrive children is frequently associated with disturbances in the caregiver-child relationship.

quite clearly mainly a disorder due to under eating as a result of not being offered enough food, or not eating the food that is offered. Poor eating in NOFTT is frequently associated with disturbances in the caregiver-child relationship.

Pollitt, Eicher & Chan (1975) compared 19 NOFTT infants and 19 controls, between 12 and 60 months of age, and found striking differences in the interpersonal behaviours of the mothers in the two groups. These differences, including warmth, physical contact and verbalizations, appeared to stem from the very stressful and disrupted backgrounds of the NOFTT mothers. "The mothers of failure-to-thrive children relate less often to their children, are less affectionate, and more prone to use physical punishment. These behaviours, which may interfere with the synchrony of the relationship with the child, may be triggered by the child's idiosyncratic behavioural characteristics, and aspects of the mother's personality that were influenced by her own stressful childhood" (p.536).

Based on an extensive review, Zeitlin, Ghassemi & Mansour (1990) developed a model to illustrate how close and affectionate interactions between caregivers and children may promote growth. This occurs as a result of both greater maternal responsiveness to the child's needs and direct physiological effects on the child (Polan & Ward, 1994). They argue that physically close, attentive, reciprocally stimulating and mutually pleasurable caregiver-child interactions encourage:

- High maternal responsiveness to a child's cues communicating needs for food, comfort, stimulation, warmth etc, and this leads to more food for the child, more positive reinforcement, more psychosocial stimulation and less exposure to infection and danger.

Close and affectionate interactions between caregivers and children may promote growth. They encourage the caregiver's responsiveness to the child's cues and the child's positive affect, which in turn directly stimulates growth, immune function, and exploratory behaviour.

- Children's positive affect, which in turn directly stimulates growth, immune function, and exploratory behaviour.

These two processes interact to reinforce one another, and to promote better child growth and development (Bentley et al., 1991; Puckering, 1995).

Malnutrition

Ever since Cecily Williams related kwashiorkor to displacement of the child by a younger sibling (1933), protein-energy malnutrition in developing countries has been associated with dysfunctions in caregiving (Chase & Martin, 1970; Richter & Griesel, 1994). For example, Goodall (1979) spoke about "the look in the child's eyes" as indicating sadness resulting from deprivation of loving care due to social and familial upheaval. Antoine Guedeney (1995) argues that descriptions of the psychological changes accompanying kwashiorkor in children meet many of the criteria for the diagnosis of severe infant depression: withdrawal, heightened emotionality and irritability, somatic disorders, anorexia, apathy, lack of social responsiveness, poor response to soothing and slow recovery from crying, and attachment and separation problems.

The psychological changes accompanying kwashiorkor in children meet many of the criteria for the diagnosis of severe infant depression.

There are parallels between failure-to-thrive and moderate-severe malnutrition. The breakdown in the mother-child interactions that characterizes failure-to-thrive in developed regions of the world may also be seen in cases of malnutrition in developing regions where poverty is endemic and food supplies are already limited. Under such extreme conditions of poverty and chronic stress, a dysfunctional mother-child relationship may be even more damaging, resulting in severe malnutrition of the offspring.

Galler et al. (1984, p.291)

A large number of studies have shown that malnourished children come from less adequate home environments than comparable groups of children (Doan & Bisharat, 1990). The caregivers of malnourished children have been found to be

more socially isolated, passive, and less sensitive and responsive to their child's needs than caregivers in control groups (Arya, 1989; Chavez, Martinez & Yaschine, 1975; de Miranda et al., 1996; Dixon, LeVine & Brazelton, 1982; Galler & Ramsay, 1985; Graves, 1976, 1978; Kerr, Bogues & Kerr, 1978).

On the basis of these findings, Galler et al. (1984) concluded, "It is increasingly clear that unfavourable or dysfunctional patterns of early infant care or mother-infant interaction may be significantly involved in the aetiology of malnutrition" (p.270). However, in the absence of longitudinal studies, it is also likely that the onset of early undernutrition could impair the infant's ability to elicit and engage in positive social interactions (Brazelton et al., 1977). Through transactional influences, the caregiver-child dyad

could get locked into maladaptive interactions, especially if the caregiver is unable to adapt and respond sensitively to an irritable and unresponsive infant (Richter, Bac & Hay, 1990; Rossetti-Ferreira, 1978).

What is clear is that the caregiving of malnourished children is frequently

dysfunctional, whether antecedent to or consequent upon malnutrition (ACC/SCN, 2000; Ricciuti, 1981). In a follow-up study of 9-month-old infants hospitalized for illnesses associated with malnutrition, Richter, Bac & Hay (1990) found that the rate and amount of catch-up growth of the children at 2 years of age was predicted by ratings of maternal warmth and responsiveness. The authors speculate that good caregiver-child relationships reduce the impact of malnutrition on children and promote speedy recovery from illness.

It is well known that nutrition and caregiving factors cannot be separated in malnutrition, even in highly controlled animal studies. This has been clearly illustrated in studies of malnutrition in rats. All methods of inducing malnutrition in rat pups, whether through malnourishing the dam, increasing the litter size, or mammectomising the dam, result in mother rats compensating for the rat pup's undernutrition by providing additional care. Rat dams respond to their pup's small size and delayed maturation with additional nursing, licking and physical contact. Except under extreme conditions, this heightened maternal behaviour compensates for decreases in food

intake with little impairment on the offspring (Galler et al., 1984).

Several studies report disturbed relationships between malnourished children and their caregivers. Hepner and Maiden (1971), in a study of 9 000 disadvantaged urban children in Baltimore, used a matched control design and assessed caregiving on Polansky et al.'s Childhood Level of Living Scale (1972). They concluded that *nurturant mothering* protects children from the combined stresses of rapid growth and low quality nutritional intake, and that *inadequate mothering* precipitates malnutrition even in the presence of more adequate and balanced nutritional intake. They observed, "A mother may have the best intentions and desire to perform adequately, but her priority for this effort may be deflected by inundating life circumstances beyond her control. Thus, the pathology of social and economic

Nurturant mothering protects children from the combined stresses of rapid growth and low quality nutritional intake. Inadequate mothering precipitates malnutrition, even in the presence of more adequate and balanced nutritional intake.

Dysfunctional patterns of early infant care or mother-infant interaction may contribute significantly to malnutrition.



WHO/L. TAYLOR

Malnourished children need care to break their cycle of withdrawal and inactivity

inadequacy may disrupt the maternal-child relationship required for successful child nurture” (p.221).

Cravioto & DeLicardie (1976) examined the home environments of 334 children in Mexico in a prospective community study. They found that children who later became malnourished had, on average, lower home environment scores than control children before the episode of malnutrition. The mothers of the 22 children who became malnourished were less sensitive to their child’s needs, less responsive, less emotionally involved, less verbally communicative and less interested in their children’s performance. On the basis of these findings, the authors concluded, “A low level of home stimulation and a passive, traditional mother, unaware of the needs of her child, and responding to him in a minimal way,

as if unable to decide the infant’s signals, are two characteristic features of this poor microenvironment that leads to severe clinical malnutrition in children of poor families” (p.34).

Alvarez, Wurgaff & Wider (1982), working in Santiago, measured maternal non-verbal language to 20

malnourished and 20 matched control children during three home visits. They found significant differences in non-verbal expressiveness, especially during feeding. The authors suggest that malnourished children are less attractive than healthy children – they may cry more and more monotonously, and they elicit less positive feedback from their caregivers.

Similar findings were reported by Galler and Ramsey (1985) in Barbados, in a study of 129 5- to 11-year-old children who had suffered moderate to severe protein-energy malnutrition in their first year, matched with 129 controls. Galler and Ramsey (1985) argued that many of the poorer micro-environmental conditions of previously malnourished children were long-standing in the

home environment, and were probably instrumental in causing the episode of malnutrition. Grantham-McGregor and her colleagues (1987; 1994; 1997) also found that home environments of malnourished children were less adequate than those of control children. Among toddlers in Chile, Valenzuela (1990) found that significantly more of the 42 malnourished children she observed were classified as insecurely attached to their mothers as compared to the control children. The classification of insecure attachment suggests a less responsive and nurturing caregiver-child relationship.

Reviews of the impact of caregiver-child interactions on children’s psychological development and health indicate that children’s health and development are affected by unstable or inadequately nurturant caregiver-child relationships. In addition, children’s health status, especially if atypical, presents a challenge to caregivers and threatens the establishment of warm and responsive interactions.

An unstable or inadequately nurturant caregiver-child relationship affects the child’s health and development. In addition, the poor health of a child presents a challenge to the caregiver and threatens the establishment of warm and responsive interactions.

Poor social and economic circumstances beyond the caregiver’s control may disrupt the caregiver-child relationship.

Young children who do not have a relationship with at least one emotionally invested, predictably available caregiver – even in the presence of adequate physical care and cognitive stimulation – display an array of development deficits that endure over time. Some children develop intense emotional ties to parents and other caregivers who are unresponsive, rejecting, highly erratic or frankly abusive, and these relationships can also be a source of serious childhood impairment.

Shonkoff & Phillips (2000, p.389)

Social and personal determinants of the quality of caregiver-child interactions

A number of factors influence the establishment, maintenance and quality of caregiver-child interactions. These include factors in the wider social environment, such as resource constraints and social support; factors associated with child characteristics such as physical disability; and factors associated with caregiver characteristics, such as mental and physical health (Belsky & Isabella, 1988; Engle & Ricciuti, 1995; Rutter, 1979).

Belsky (1984), for example, identified three kinds of determinants of the quality of parenting:

- Contextual sources of stress and support, of which the quality of the marital relationship is an important element;
- Characteristics of the child, such as difficult temperament;
- Psychological resources of the caregiver, with a focus on depression, which depletes emotional and coping resources.

There is a very large literature on all of these factors, usually discussed under the general heading of developmental risk (Crittenden & Bonvillian, 1984; Emde & Easterbrooks, 1985; Engle & Ricciuti, 1995; Sameroff & Chandler, 1975).

Only selected, illustrative determinants are discussed in the following section. It should be noted that considerably more research has been done on caregiver factors affecting the quality of relationships with children, than the reverse; that is, the impact of child characteristics on caregiver-child interactions is a relatively less developed area of study.

The positive correlation between socio-economic status and children's psychological development and adjustment is consistent in all societies.

Socio-economic conditions

A large amount of work has been done in developed countries on the impact of poverty on children's development. The positive correlation found between socio-economic status and children's psychological development and adjustment is consistent (Aber, Jones & Cohen, 1999; Fitzgerald, Lester & Zuckerman, 1995; Garmezzy, 1991; Halpern, 1990; McLoyd, 1990; McLoyd & Flanagan, 1990; Rahmanifar et al., 1993; Richter, 1994a; 1999; Skinner, 1985).

While many causes underlie the developmental problems of the young, the most profound and pervasive exacerbating factor is poverty. Poverty does not harm all children, but it does put them at greater developmental risk, through the direct physical consequences of deprivation, the indirect consequences of severe stress on the parent-child relationship, and the overhanging pall of having a depreciated status in the social environment.

David Hamburg (in Halpern, 1990, p.14)

Poverty is not a distinct episode or state. Especially in developing countries, poverty is a conglomerate of conditions and events that create pervasive hardship and stress (Huston, McLoyd & Garcia-Coll, 1994). Similarly, there is no single mechanism by which poverty affects children. Rather, says Robert Halpern (1990), "poverty increases the likelihood that numerous risk factors will be present simultaneously – in the child, the parents, the family's informal support system, and the neighbourhood; as a corollary, poverty reduces the likelihood that protective factors will be present" (p.9). In addition, risk factors accumulate and concentrate over time, and few opportunities are available for children in poverty, especially in underdeveloped communities, to escape from these cumulative effects or to benefit from interventions that might ameliorate their impact.

Risk factors accumulate and concentrate over time. Few opportunities are available for children in poverty, especially in underdeveloped communities, to escape from these cumulative effects or to benefit from interventions that might ameliorate their impact.

One of the important ways in which poverty affects children is through its impact on home environments, family life, child care and parenting. For many people, life is chronically stressful as events outside of their control, relating to work, housing, family, and other matters, impinge on them in continuous ways, depleting their capacity to cope. The World Bank publication, *Voices of the Poor: From Many Lands*,

contains accounts of “people who are worn down by persistent deprivation, and buffeted by severe shocks they feel ill equipped to overcome” (Narayan & Petesch, 2002, p.1), “childhoods lived struggling against the pain of hunger, humiliation and violence” (p.486), communities exploited by corruption and crime, and people who are disregarded and disrespected by those institutions in society that are meant to provide them with assistance – health services, welfare offices, agricultural extension workers, and so on.

It is clear that the stressors occasioned by these conditions make it difficult to provide sensitive, responsive and stimulating care for young children (McLoyd, 1995). Balbernie (2002) suggests that children may place additional burdens on caregivers stressed by material concerns: “Babies broadcast their demands to the exclusion of everybody else’s. If parents feel depleted, carry a history of unmet needs and on top of that are struggling to simply get by, then the baby is not just an additional burden, but may also trigger envy and be unconsciously cast as scapegoat” (p.332). Certainly, several studies have demonstrated a relationship between adversity and the quality of caregiver-child relationships (Shaw & Vondra, 1993).

Child characteristics

A number of child characteristics have been found to negatively affect caregiver-child interaction, including prematurity and congenital malformations. For example, Bennett and Slade (1991) followed 53 mothers of infants with a range of neonatal conditions. Mothers of higher risk infants reported higher levels of emotional distress and depressive symptomatology, more

concerns about their baby and less satisfaction with the social support available to them. These mothers reported feeling overwhelmed by the challenges of caring for a vulnerable child.

Infant temperament, particularly infant difficulty, has been found to be associated with caregiver-child interaction (Bates, Bennett Freeland, & Lounsbury, 1979; Campbell, 1979). Sometimes also called behavioural style, temperament is believed to have constitutional origins.

Difficult children are described as fussy, labile, hard to soothe, with frequently negative affect, irregularity in eating and sleeping, intense reactions to stimuli, and slow adaptation to changes in the environment. Children with these characteristics clearly present challenges to sensitive care (Belsky & Isabella, 1988).

Difficult temperament, however, may be an advantage in some circumstances. De Vries (1984) tracked Masai children in Kenya from one season to another, during which time a severe drought occurred that reduced the availability of food. The growth of children who were rated as irritable, difficult and demanding before the season was not as adversely affected as the growth of easier, less demanding children. DeVries speculated that the “difficult” behaviour of these children might have led to them receive more attention and nutrition than easier, less demanding children. Health workers in developing countries report a similar effect among hospitalized children. Infants who cry vigorously and persistently are more likely to receive attention than passive, quiet babies. In resource-constrained environments, the caregiving a child receives as a result of these temperamental variations may mean the difference between life and death.

Caregiver characteristics

Characteristics of caregivers that are associated with caregiver-child relationships include age, knowledge and mental state, situational factors in the home, marital relations and autonomy, and circumstances beyond the home, such as community resources and supports (Badger, Burns & Vietze, 1981; Cochran & Brassard, 1979; Engle & Ricciuti, 1995; Lyons-Ruth et al., 1984; Okagaki & Divecha, 1993; Ragozin et al., 1982; Spieker & Booth, 1988).

Social support is usually conceptualised in

Mothers report feeling overwhelmed by the challenges of caring for a vulnerable child.

terms of informational support, emotional support and physical or material support (Barrera & Ainlay, 1983). Social support emerges in many studies as a broad parameter that promotes adaptive coping and moderates the effects of stress. Coping and stress reduction have direct effects on caregiver-child relationships (Adamakos et al., 1986; Mitchell & Trickett, 1980), particularly among vulnerable groups such as teen mothers (Cooper, Dunst & Vance, 1990). Caregiver social support can affect young children directly, for example, by providing help that frees up the child's primary caregiver to spend more quality time with the child. It can also affect children indirectly by reducing caregiver stress and enabling more positive caregiver-child interactions. A very large number of studies have demonstrated a relationship between social support and attachment (Jacobson & Frye, 1991), as well as between social support and maternal sensitivity and quality of interactions with young children (Crnic et al., 1984; Pascoe et al., 1981).

It is also well known that caregiver knowledge about child development, and parental beliefs about children (Benasich & Brookes-Gunn, 1996; Goodnow, 1988; Sigel, 1985) and their expected milestones of development, affect how caregivers behave with young children (McGillicuddy-DeLisi, 1982; Sigel, 1985). If parents do not realize that their interactions with their children are important for their child's development, or they are not aware of the need to support their child's

emerging capacities, they are less likely to provide appropriately stimulating and responsive caregiving (Reis, 1988).

A great deal of attention in caregiving studies has recently turned to factors which affect the emotional availability of the caregiver to the child. This refers to the extent that the caregiver is focused and attentive to the child, the child's activities and responses to her (Tronick & Gianino,

1986b). Dix (1991; 1992), for example, argues that responsive caregiving for a young child is strongly affected by caregiver motivation and mood. In order for the caregiver to be sensitive and responsive, the proximal cues from the child should exert a maximal influence on caregiver actions, and she should not be distracted by

Parents are less likely to provide stimulating and responsive caregiving if they do not realize that their interactions are important for their child's development, or if they are not aware of the need to support their child's emerging capacities.



BOB DAEMIRICH (THE IMAGE WORKS)

Families can be powerful sources of support for women looking after young children

internal concerns arising from personal preoccupations or by external concerns that cause her stress and anxiety (Wahler & Dumas, 1989).

A leading idea in Sigmund Freud's theory is that the conscious and unconscious experiences a person has in their relationships with their parents during infancy and early childhood have a decisive influence on their subsequent relationships, including with their own children. This hypothesis is central also to Bowlby's theory of internal working models. The general proposition has received substantial support during the last two decades from the results of long-term follow-up and prospective attachment studies. These studies use the Adult Attachment Interview and other similar instruments that tap the caregiver's representation of his or her own childhood (George, Kaplan & Main, 1985; Main, Kaplan & Cassidy, 1985; van Ijzendoorn, 1995). The results of these studies show that caregivers who are rated as secure before the birth of their own child are more sensitive and responsive in caregiving than caregivers who are rated as insecure.

Parental working models, or caregiver representations of a child, have been found to be present even before a child's birth (Zeanah & Anders, 1987). These representations of the baby as either tough, loving, or punitive, for example, are partly or wholly outside of conscious awareness. However, they are transmitted to babies in the course of the minutiae of everyday interactions, through the caregiver's actions, tone of voice, patterns of interaction, and so on (Haft & Slade, 1989). Sayre et al. (2001) observed 58 cerebral palsied children in a follow-up study from 16 to 52 months. They found that maternal representations of their relationships with their children correlated with specific caregiving behaviours during feeding interactions. For example, mothers who thought that their children

were defiant and rebellious were far less sensitive to their child's pattern of feeding than mothers who did not attribute such negative characteristics to their children.

Depression amongst mothers and other primary caregivers is currently of great concern in studies of the early development of the child and the quality of the caregiver-child relationship. Depression frequently manifests as self-preoccupation, irritability, diminished emotional involvement, increased hostility and resentment, fatigue and helplessness (Weissman, Paykel & Klerman, 1972). A very large number of studies demonstrate that depressed mothers are withdrawn and/or intrusively insensitive in their interactions with their infants and young children (Cohn et al., 1986; Cooper et al., 1999; Donovan, Leavill & Walsh, 1998; Hart, Field & Roitfarb, 1999) and that, from a very early age, infants show a disturbed reaction to such behaviour (Field, 1984, 2000; Lyons-Ruth et al., 1986; Martins & Gaffan, 2000). Effects of maternal depression on infants may persist well into childhood and early adolescence in the form of behaviour disorders, anxiety, depression and attentional problems (Cox et al., 1987; Galler et al., 2000; Goodman et al., 1993; Kurstjens & Wolke, 2001; Murray, 1992; Murray et al., 1999; Petterson & Albers, 2001).

As a result of these studies, there is a general consensus that caregiver depression during the early years of children's lives has long-term effects on their development. The effects are compounded with other risks, such as extended duration of the depressive

episode, low socio-economic status and being a male child (Field, 1994; McLennan, Kotelchuck & Cho, 2001; Murray, Hyswell & Hooper, 1996; Rutter, 1990b).

It is not yet clear what accounts for the risk of psychopathology in children of depressed mothers. The heritability of depression is a factor; as are potentially dysfunctional neuroregulatory mechanisms arising innately or through lack of contingent support from caregivers; exposure to negative caregiver cognitions and erratic behaviour; and the stressful context of the children's lives brought about by having an emotionally disturbed caregiver (Dodge, 1990; Goodman & Gottlib, 1999).

The negative effects of the caregiver's depression on an infant may persist well into childhood and early adolescence – in behaviour disorders, anxiety, depression and problems with attention.



WHO/D. WHITNEY

Many people in the home environment can provide a child with supportive care

Apart from its effect on children's adjustment and attention, caregiver depression may threaten the survival and health of children through a number of mechanisms, including lack of adequate care and decreased surveillance of the child's safety (Bagedahl-Strindlund, Tunnell & Nillson, 1988; Rutter, 1990a; Webb, Sanson-Fisher & Bowman, 1988). For example, McLennan & Kotelchuck (2000), using data from more than 8 000 women from the National Maternal and Infant Health Survey in the United States, found that depressed women were less likely to engage in a number of child health and development preventive practices, including the use of child car seats or restraints, electrical plug covers, and reading to children to encourage literacy. Similarly, Rahman, Harrington & Bunn (2002) and others (Zeitlin, Ghassemi & Mansour, 1990) have suggested that there are grounds to think that maternal depression plays a role in the risk of infant illness and growth impairment in developing countries through decreased child surveillance and inattention to simple health promotional activities. They suggest that an appreciation of the relationship between maternal depression and child health will have significant effects on child health programmes in developing countries.

Depression amongst women with young children is very high, reaching up to 40% among non-working poor mothers of preschool children (Chakraborty, 1991; Puckering, 1989; Sartorius, 1974). For example, Cooper et al. (1999) found a prevalence in

Maternal depression plays a role in the risk of infant illness and impaired growth through decreased child surveillance and inattention to simple health promotional activities.

excess of 30% among 147 women of 2-month-old babies in a poor peri-urban settlement in South Africa. Similarly, Patel (2002) found depressive disorders in 23% of the women they examined in Goa, 6 to 8 weeks after childbirth. These authors conclude that maternal and child health policies, which are a priority in low-income countries, need to integrate caregiver depression as a disorder of public health significance. Alvarez, Wurgaft & Wilder (1982) made an analogous point with respect to interventions for mal-nourished children. They concluded, “A depressed, emotionally depleted mother will not be able to utilize educational input. Interventions will have to be broad yet specific enough to address and ameliorate the dynamics underlying the detrimental patterns, and will have to go well beyond content teaching” (p.1369).

Preventive strategies such as infant feeding advice, sanitation, immunization, health education and health-seeking behaviours are mostly directed at the mother. The impact of these programmes is related, therefore, to the functional capacity of this group, their receptivity to the message and uptake of the intervention offered. The mother’s psychological well-being is probably key to the success of these programmes.

Rahman, Harrington & Bunn (2002, p.54)

McLennan and Offord (2002) have looked at a number of criteria for incorporating programmes addressing maternal depression as part of public health efforts to promote children’s mental health. These include:

- The plausibility for causation of caregiver depression for child mental health;
- High attributable risk of caregiver depression for child mental health;
- Alterability of the relationship between caregiver depression and child mental health;
- Caregiver depression being detectable through screening;
- Feasible dissemination of interventions for targeting maternal depression;
- Low adverse risk of interventions for maternal depression; and
- Acceptability of child mental health and intervention by key stakeholders.

In their review, McLennan and Offord found mixed support for programmes on the seven criteria. The authors urge that further research is needed on the preventive implications of programmes to ameliorate the impact of caregiver depression on children’s mental health.

Chapter 7

Improving caregiver-child interactions Implications for intervention

This paper reviewed evidence that shows that sensitive and responsive caregiving is a requirement for the healthy neurophysiological, physical and psychological development of young children. Caregiving affects the cognitive functioning, language development, social adjustment, growth and health of young children.

While it is beyond the scope of this paper to review specific interventions, the evidence here has implications for designing and supporting appropriate and effective interventions to improve caregiver-child relationships.¹

■ **Interventions to improve caregiver-child interactions may be targeted at one or more of the factors that affect sensitive and responsive caregiving.** These include socio-economic conditions, social support, knowledge about children's health and development, caregiver emotional states, caregiver skills and characteristics of the child (McCollum, 1984; Wendland-Carro, Piccinini & Millar, 1999).

Programmes may include increased resources and social support for socially isolated or vulnerable caregivers; efforts to draw male caregivers, who are frequently household decision makers, into interventions for women that address children's health and development (Lanata, 2001); and interventions to combat caregiver depression and low morale. Efforts to improve caregiver-child relationships by improving the basic caregiving skills and the interactions between the caregiver and child can be inserted into primary health care (Halfon, 2001; Regalado & Halfon, 2001), early child care and development programmes (Myers, 1992), nutritional programmes (Engle & Lhotska, 1991) and community development (Young, 2002).

¹ An overview of interventions to promote the development of especially low-income, nutritionally-at-risk children is the subject of a separate paper.

■ **Interventions need to be directed at especially vulnerable children living in poor communities in developing countries.** Improvements in caregiver-child interactions among these groups of children benefit the child by stimulating health and development. They are also likely to improve the impact of complementary interventions to reduce childhood malnutrition, low birth weight and other limiting conditions on the child.

Messages conveyed to mothers encouraging them to hold, hug, play with, talk to, and kiss their babies frequently are important. Such advice may seem to some policy makers to be too obvious or simplistic or to insult the natural mothering abilities of their constituents.

Zeitlin, Ghassemi & Mansour (1990, p.52)

It is important to note that a number of randomized control trials of interventions targeted at caregiver-child relationships have already been undertaken, and that the findings support the potential effectiveness of interventions to improve caregivers' sensitivity and responsiveness to the needs of young children (Armstrong & Morris, 2000; Broberg, 2000). Many of these interventions use demonstration, instructional materials, modelling, interaction guidance, reinforcement of positive parenting attitudes and behaviours, and education to sensitize caregivers to infant capacities. They also promote caregiver self-confidence, and facilitate caregiver responsiveness through support for overburdened caregivers (Barnard, Morisset & Spieker, 1993; Barrera & Rosenbaum, 1986; 1993; McDonough, 1995).

A number of existing programmes in the United States have been adapted for use in low-income countries; and some programmes to support children's health and development by strengthening caregiver-child relationships have been specifically designed for resource-poor settings (Hundeide, 1991; Klein, 2001).

Improved caregiver-child interactions promote the health and development of vulnerable children. They also increase the resilience of young children to the damaging effects of poverty and deprivation.

It is urgent that programmes to enhance caregiver-child relationships in developing countries are designed and tested. Improved caregiver-child interactions promote the health and development of vulnerable children and increase the resilience of young children to the damaging effects of poverty and deprivation.

Conclusion

Children who live in difficult conditions are additionally dependent on the nurture of primary caregivers to shield them from the most threatening features of their environment. Warm and responsive caregiving extends protection to children in otherwise adverse conditions.

Conditions of chronic and worsening poverty prevail in many parts of the world. There are countless communities fraught with violence and instability. Thousands of people flee their homes each year in search of food, safety and a better

life. The impact of the HIV/AIDS epidemic, like the homelessness of children following the Second World War, is a crisis of human development whose effects will endure for several generations through its impact on young children.

It is urgent that the knowledge gained about the importance of caring relationships between adults and children be applied to benefit children and caregivers in all of these situations.

Early child development (ECD) programs that comprehensively address children's basic needs – health, nutrition, and emotional and intellectual development – foster development of capable and productive adults. And early interventions can alter the lifetime trajectories of children who are born poor or are deprived of the opportunities for growth and development available to those more fortunate. These facts are well known today and are founded on evidence from the neurological, behavioral and social sciences, and the evaluation of model interventions and large, publicly funded programs.

Mary Eming Young (2002, p.1)

Glossary

Affectionless, psychopathic character: A person incapable of intimate one-to-one relationships because of a lack of empathy for others. John Bowlby argued that maternal deprivation resulted in an 'affectionless personality'.

Anaclitic depression: First described by Rene Spitz in 1945 as an emotional response in securely attached infants who are separated from their regular caregivers for extended periods of time. The infant may become listless, withdrawn, lose their appetite and interest in their surroundings, and become hyper-vigilant with widened, unblinking gaze and immobility. The result may be death.

Attachment: An emotional bond between infant and one or more adults. The infant will approach these individuals in times of distress, particularly during the phase of infant development when the presence of strangers induces anxiety. In addition, the infant is distressed if separated from attachment figures.

Attachment status: A description of an infant's attachment as being either secure or insecure.

- **Secure attachment:** A child who is securely attached actively explores the environment in the presence of the caregiver, is visibly upset by separation, and greets the mother warmly when they are reunited.

- **Insecure attachment:** Attachment that takes one of three forms: avoidant attachment, anxious-resistant attachment and disorganized/disoriented attachment.

- **Avoidant attachment:** A child who displays avoidant attachment shows little distress when separated from the caregiver and may turn away to avoid contact or to ignore her when they are reunited.

- **Anxious-resistant attachment:** A child whose attachment classification is of the anxious-resistant type tries to stay close to the caregiver, explores very little while she is present, is very distressed when the caregiver leaves but ambivalent when she

returns. The child clings to the caregiver when they are reunited, but seems little comforted by the caregiver's presence.

- **Disorganized/disoriented attachment:** Infants with 'disorganized' attachment, on the other hand, appear disoriented during interactions or behave in a manner that suggests anxiety. A child with a classification of disorganized attachment displays a combination of resistant and avoidant patterns that reflects confusion about whether to approach or avoid the caregiver, sometimes appears afraid of the caregiver, and may show different patterns in different episodes.

Attunement: An empathic responsiveness between two individuals, described by Daniel Stern as the "performance of behaviours that express the quality of feeling of a shared affect state" (1985, p.142). Attunement is different from imitation.

Behavioural paediatrics: A field of study that concentrates on the diagnosis, aetiology and management of common behavioural problems and the recognition of serious mental illness in childhood.

Behaviourism: A school of psychological thought that studies only unambiguously observable and preferably measurable behaviour.

Coding scheme: A set of descriptors according to which observed behaviour is classified. Coding schemes can be hierarchical with sub-categories.

Contingency: In the context of early caregiver-infant interaction, contingency refers to a behaviour on the part of one individual of the dyad that depends for its occurrence on a particular behaviour on the part of the other individual. The caregiver's behaviour is contingent on the behaviour of the infant if the caregiver's behaviour occurs specifically, immediately and appropriately in response to the infant's behaviour.

Cross-cultural validity: A characteristic or evaluation that confirms that a construct or observation pertains equally to more than one cultural group.

Cybernetic theory: The study of regulation and control in systems by feedback, used to explain aspects of the purposeful behaviour of human beings. Norbet Weiner, an American mathematician during World War II, originated the theory to describe and design mechanisms that rely on feedback to change direction.

Depression: An affective disorder characterised by a sense of inadequacy, feelings of despondency or hopelessness, a decrease in activity and/or reactivity, pessimism, sadness, irritability, changes in appetite and sleep patterns, and poor concentration.

Developmental psychology: The field of psychology concerned with the processes of change across the lifespan. Developmental psychologists focus predominantly on childhood development, and developmental psychology has become synonymous with child psychology.

Drive reduction: The satisfaction of an internal state of tension build-up. For example, eating food reduces the hunger drive.

EBSCOhost: An electronic journal service (EJS) containing a very large number of articles from journals in a number of fields.

Entrainment: A synchrony of movement between two or more persons, seen especially in newborn infants reacting to their mother's voice and movements. In very slow moving films, infants have been observed to move in precise rhythm and response to the mother's speech.

Expanded Academic (ASAP): A service on InfoTrac Web which provides a combination of indexing, abstracts, images, and full text for scholarly and general interest journals embracing all academic disciplines.

HOME scores: Scores acquired using the HOME Inventory, a measure of social and physical aspects of the home environment, including parental behaviour.

Identification: The tendency of individuals to emulate or adopt the behaviours and attitudes of another person.

Interactional tempo: The rate and rhythm at which a caregiver and infant respond to one another.

Inter-observer reliability: The agreement between the assignment of codes or classifications by two or more observers watching the same behaviour.

Intersensory coordination: The integration of information from different senses in such a way as to form a unitary experience. For example, the baby experiences sensations of sight, smell and touch when held by the caregiver.

Intersubjectivity – primary and secondary: Subjectivity refers to consciousness and intentionality. Intersubjectivity is the mutual recognition between two people of the consciousness and intentionality of each other. Subjectivity and intersubjectivity grow through two stages in the infant.

- **Primary intersubjectivity:** The sharing of consciousness between the infant and the adult.

- **Secondary intersubjectivity:** The sharing of consciousness between the infant and the adult with respect to objects and events.

Internal working model: A cognitive structure, or mental schema, developed as a result of, and representing, the infant's early relationships with primary caregivers.

Interventions: Attempts to influence or change the course of events by providing care or information or otherwise manipulating a situation.

Intra-observer reliability: The ability of an individual observer to collect results consistently on different occasions (e.g. over time or over conditions). Observer motivation and mood on a particular day, poorly described codes and inconsistent coding of behaviours threaten the reliability of findings.

Maternal deprivation: The condition of lacking the experience of having been mothered. Socially deprived infants are believed to develop abnormally because they have failed to establish attachments to a primary caregiver; they have been deprived of the experience of being mothered.

Medline: An electronic database of medical literature kept by the National Institutes for Health in Bethesda, Maryland.

Mentalism: A doctrine that maintains that an adequate characterization of human behaviour is not possible without invoking mental phenomena as explanations.

Micro-, macro- and molecular codes: Behaviour can be coded on different levels. Micro and

molecular codes refer to the smallest units of meaningful behaviour that can be observed, for example, infant looks at mother. Macro-codes refer to processes or states that are made up of several behavioural components, for example, baby is fretful. The micro-codes for fretfulness could be made up from mouth down turned, arm waving, back arching, crying, etc.

Non-clinical samples: Persons included in a study but who do not form part of a particular group characterised by some or other medical or psychological background.

Observational study: A study which derives its information from observing situations, behaviours and responses on the part of particular individuals or groups.

Object Relations School: A group of psychoanalysts who attempt to understand interpersonal relationships by focusing on people as internalised “objects” that can have conflicting properties.

Phylogenetic: The origin and evolution of a species of animal or plant (as opposed to ontogenetic, the origin of an individual organism).

Priming: In learning theory, priming refers to the preparation of a subject (human or animal) by presenting a specific experience that makes the subject more sensitive or responsive to a wide range of stimuli.

Proprioceptively organized action: Behaviour which relies primarily on sensory information from the muscles, tendons, and joints that helps one to locate the position of one's body or body parts in space.

PsychLIT: A database of psychological literature held by the American Psychological Association. Formerly published in book form as ‘Psychological Abstracts’, the current database is electronic in form and is also available through the World Wide Web.

Psychoanalytic theory: Generally refers to Freudian theory but also describes clinical or therapeutic procedures based on Freudian ideas, especially those related to the unconscious.

Psychological holding: Donald Winnicott's conception of the psychic space between the mother and infant, which he held was neither wholly psychological nor physical, and which allows for the child's transition to being more autonomous.

Psychosocial care: Psychological nurturance provided by persons in an individual's social environment.

Reciprocity: The situation where an action by one individual is returned by an action by the recipient. This ‘give and take’ arrangement is usually mutually agreed upon, implicitly if not explicitly.

Regression: A return to an earlier, more immature, level of functioning.

Reinforcement: Any action, event or experience that increases the probability of a response recurring.

Responsiveness: The capacity of the caregiver to respond contingently and appropriately to the infant's signals.

Scaffolding: A concept derived from Vygotsky's theory of mediated learning, scaffolding is the process by which someone organizes an event that is unfamiliar or beyond a learner's ability in order to assist the learner in carry out that event.

ScienceDirect: A digital library that began as a database of Elsevier Science journals and is now one of the largest providers of scientific, technical and medical (STM) literature.

Self-regulation: The act of soothing or calming oneself at times of high physiological and/or emotional arousal.

Sensitivity: The capacity of the caregiver to be aware of the infant and aware of the infant's acts and vocalizations as signals communicating needs and wants. Ainsworth described sensitivity as regarding the child as a separate person, and being capable of seeing things from the child's point of view.

Separation effects: When a child has formed an attachment, she will display any of a range of distress behaviours when separated from the attachment figure, including protest, fearfulness, and despair. Prolonged separation produces additional effects such as despair, protest, withdrawal, weeping.

Social mediation: Assistance and/or guidance given by other members of an individual's group. In Vygotsky's theory, social mediation refers to the acquisition of meaning by the child through his familiarity with the way in which words are used or things are done. For example, the infant's learning how to use a spoon is socially mediated.

Social referencing: The use of information from the responses of others as clues to the meaning of otherwise ambiguous situations and/or as a guide for one's own reactions.

Symbolic medium: Representational facility whereby words, images or actions are used as symbols to represent or stand for objects and experiences.

Tabula rasa: The notion that the mind of a human being is a blank slate at birth and that all behaviour and knowledge is acquired through experience.

Taxonomic systems: A collection of procedures whereby names or descriptions are allocated according to an agreed upon logical procedure for a particular set of objects.

Temperament: An individual's characteristic mode of responding emotionally and behaviourally to environmental events. Temperament includes the dimensions of irritability, activity level, fearfulness and sociability.

Withdrawal: The emotional state and demeanour of a depressed adult or child. Such individuals show little interest in their surroundings, they lack enthusiasm, appear sad and are relatively inactive and unreactive.

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