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EARLY CHILDHOOD DEVELOPMENTAL DISABILITIES AND INTERVENTION IN LANGUAGE, COMMUNICATION AND SOCIAL RELATIONSHIPS*

Colin J. Gibbs
Teachers College
Hamilton

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PREFACE

Horoia nua kapua
Tukua kia tu torotika te kahikatea
A kia whanui te tinana o te kahikatea hou
A kia kitea te ra marama

Wipe away the clouds
Let the kahikatea stand tall
So that the young kahikatea may stretch its bough
And seek the sunlight

Colin J. Gibbs

EARLY CHILDHOOD DEVELOPMENTAL DISABILITIES AND INTERVENTION IN LANGUAGE, COMMUNICATION AND SOCIAL RELATIONSHIPS

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CHAPTER ONE : EARLY INTERVENTION AND DEVELOPMENTAL DISABILITY

THE ECOLOGY OF CHILD DEVELOPMENT AND INTERVENTION

The ecological perspective of child development is receiving increasing attention from researchers and interventionists in recent times. Such a perspective of child development

> *"...involves the scientific study of the progressive, mutual accommodation between an active, growing human being and the changing properties of the immediate settings in which the developing person lives, as this process is affected by relations between these settings, and by the larger contexts in which these settings are embedded."*
>
> (Bronfenbrenner 1979, p.21)

Three important issues arise from this viewpoint and have implications in terms of intervention strategies. First, the child is viewed as a growing and active organism who progressively enters into and restructures his environment. Secondly, there exists a reciprocal interaction between the person and the environment. Thirdly, the developmental importance of the environment is not restricted to a single setting, but encompasses interconnections between settings as well as in the larger ecological environment (Bronfenbrenner, 1974,1979).

Accumulating evidence seems to suggest that for the most deprived groups, intervention will tend to be ineffective if it focuses solely on the child, or on the parent-child relationship. The ecological approach views human development as being 'in-context', and that person and environmental variables,

the construct of settings, and the processes occurring within and between them must be considered as interdependent systems (Bronfenbrenner,1979). The developmental potential of any given setting is enriched to the extent to which its social and physical environment allows for and encourages the growing child to participate in increasingly more complex but meaningful activities, and reciprocal interactions (Bronfenbrenner,1979).

Thus, intervention at the child level or at the parent-child interaction level, may be ineffective in the long-term for it fails to account for possible destructive ecological circumstances that may mitigate against the child's successful functioning and development.

Intervention may well mean changing the ecological circumstances. Heber's et al (1972), study found that severely disadvantaged children of low IQ mothers can make positive developmental advances and that cultural-familial retardation can be mitigated through early detection and appropriate early intervention (Heber and Garber,1975). Positive developmental gains may result from major environmental changes that include both the child and the caregiver, and these gains tend to be more long-lasting than those attained by programmes that emphasise the home as a significant intervention setting (Skeels,1966; Skodak and Skeels,1949).

The ecological approach to human development draws attention to the complexity of inter-relationships and interactions between the individual and others, and between and within different settings.

> *"...The most effective intervention programs for preschool children that could possibly be conceived cannot be considered a form of innoculation... Certainly, the evidence on human performance is overwhelming in indicating that such performance results from the continual interaction of the organism with its environment. Intervention programs, well conceived and executed, may be expected to make some relatively lasting changes. Such programs, however, cannot be expected to carry the whole burden of providing adequate schooling for children from deprived circumstances; they can provide only a basis for future progress in schools and homes that can build upon that early intervention."*
>
> (Klaus and Gray,1968)

An essential and first consideration if ecological intervention is to be successful is to provide those conditions that will enhance the effectiveness of the family to function as a child-rearing system (Bronfenbrenner,1972). This may well imply the need to include the provision of adequate health, housing, and parenthood status (Bronfenbrenner,1974) though there is considerable evidence also which suggests that material intervention alone is unlikely to be effective (Clarke and Clarke,1978).

Secondly, the path of personal developmental changes tends to move in the direction of environmental shift. Individual differences, which manifest in the amounts of personal changes, need not be related to the age of the child. Early experience does not necessarily prescribe irreversible developmental pathways for the child (Clarke and Clarke,1977). However, continuous intervention programmes instigated at earlier ages (one and two years of age) will tend to be more effective than those begun at later ages (Stedman,1977), as the gains are likely to be cumulative (Bronfenbrenner,1974).

Furthermore, Clarke and Clarke (1978), argue that any social or educational intervention programme which does not have its major focus the environmental circumstances of middle and late childhood is likely to be ineffective in the long-term.

Fourthly, Bronfenbrenner's (1974), review suggests that intra-family social, process intervention may stimulate new patterns of subsequent events (Clarke and Clarke,1978), and this strengthens the notion of the importance and inter-dependence of the child's ecological environment upon her/his subsequent development.

Bronfenbrenner (1974), argues for a fundamental sequential strategy of intervention which incorporates five stages from preparation for parenthood through to the stage of age six through to twelve years. Clearly the emphasis of such an ecological conception of human development reflects the historical shift of emphasis from intervention programmes that stressed child-centred approaches to those that are family-centred, from time-boundedness to those that have continuity through time, from trained professionals to those that utilise the primary caregivers and significant others in the family and neighbourhood, and from programmes confined to single settings to those that enhance development through multiple settings.

Essentially, therefore, the gains from early intervention programmes will inevitably be dependent upon the quality and appropriateness of the programme (Bronfenbrenner,1974; Caldwell et al,1975), and this necessitates thorough research

into the ecological circumstances of the child and the family concerned, and into the relative effectiveness of instructional strategies and activities (Wilton,1980).

RESEARCH ON EARLY INTERVENTION - AN OVERVIEW

Accumulating evidence from research studies is providing clearer insights and raising fresh considerations in the application and effectiveness of early intervention programmes for less developmentally advanced preschool children. These intervention programmes have been applied to a variety of children with special needs such as socio-economically disadvantaged children and cultural-familial retardation (Heber and Garber,1975), Down's Syndrome (Hayden,1976), and for a wide range of difficulties such as brain-damaged children (Salzinger, Feldman and Portney,1970), cerebral palsied or spina bifida children (Shontz and Wright,1968), deaf children (Mira,1972), and emotionally disturbed children (Christopherson and Arnold,1971).

Bronfenbrenner (1974), considered the effectiveness of twelve studies of intervention with children between the ages of one and six years. With few exceptions, children showed considerable gains on cognitive measures during the first year of entry to the programme. These gains were greater for programmes that incorporated a cognitively-structured curricula as contrasted to play-orientated nursery programmes.

Intervention at any age prior to school has been shown to benefit the child (Palmer and Anderson,1979). Some researchers argue that 'the more intervention, the better',

(Beller,1974; Gordon,1977; Levenstein,1977). However Gray (1974), showed that there were no stronger effects with longer intervention over three as compared with two years. Thus, neither the age of entry into an intervention programme, nor the length of enrolment in the programme, necessarily contributed to greater long-term cognitive gains.

Follow-through data seems to indicate that children began to show a progressive decline by the third or fourth year and that this became most acute after school entry. Continuation with the intervention programme coupled with the involvement of parents, may serve to restrain this decline of cognitive gains in the early school years (Bronfenbrenner, 1974). Thus, the effects of early intervention programmes appear to last for as long as the programme is part of the child's ecological setting, and the 'wash-out' effect soon appears at the termination of intervention.

Factors both within the home-realm setting and outside the preschool-school setting have been cited by some researchers as being critical in determining the extent to which a child will profit from group programmes. The greatest 'wash-out' of cognitive performance for disadvantaged children took place not during school, but over the summer months. Maintenance of cognitive gains by similarly disadvantaged children was achieved by alleviating their unfavourable economic circumstances (Bronfenbrenner,1974).

This measurable loss of initial gains is difficult to explain but it may be attributable, in part, to failures in the programmes themselves, measurement problems, inadequate

criterion measures, or the interfering effects of possibly incompatible and competing environments such as the home and school (Stedman,1977).

PARENTAL INVOLVEMENT IN EARLY INTERVENTION PROGRAMMES

A. Early intervention programmes for preschool children are strengthened by the involvement of the child's parent(s) and family

Parental involvement in the high-risk infant's educational programme is an important early intervention issue (Bricker and Bricker,1976).

Substantial IQ gains were still evidenced three or four years after the termination of some parent-child intervention programmes (Gordon,1972,1973; Levenstein,1972). The greatest IQ gains, in general, tended to be made by children who entered the programme at one or two years of age (Gilmour, Miller and Gray,1970; Karnes et al,1968, 1969,1970; Radin,1972; Stanford Research Institute,1971).

Klaus and Gray (1968), suggest that there may indeed be a 'vertical diffusion' process operating also, such that there is a spread of effect down the family from the mother and possibly the target-age child to a younger child. Thus, parent intervention was beneficial not only for the target child but also for other family members. These writers also suggest that a 'horizontal diffusion' process spread the effects from one family to another. Younger siblings in their local control group showed themselves to be superior to the distal control group (Gray and Klaus, 1970).

Furthermore, parent intervention and responsibility in the child's development affected the attitudes and behaviours of the mother, both in regards to the child and towards herself as an effective and positive agent in the child's development (Karnes et al,1970). Thus, parent-centred, as contrasted to child-centred, early intervention programmes have

> *"...equal immediate effectiveness, greater long-term effectiveness, are less expensive, and produce vertical and horizontal diffusion through the family and community."*
>
> (Schaefer,1972)

However, gains from parent-intervention programmes during the preschool years appear to 'wash-out' as responsibility for the child's development transfers from parent(s) to staff (Gilmour, Miller, and Gray,1970). Both the quality and motivation of the staff in the programme, in turn, are directly related to the success of the programme (Stedman, 1977).

In situations where families are disorganised to the extent that the provision of a supportive environment becomes a major obstacle, an external supportive environment and support services may, at least in part, contribute to the child's development (Stedman,1977). At the lower levels of the disadvantaged population, families may be so committed to the business of survival that the imposition of and commitment to an intervention programme is seen as both unnecessary in their circumstances and burdensome (Klaus and Gray,1968; Radin and Weikart,1967).

However, it is important that this does not de-emphasise

the fact that many parents of preschool mentally handicapped children are aware of the importance of early years in the child's social, cognitive, and physical development. What often is lacking is the confidence in their own expertise as educators, but there is an eagerness to take advantage of further guidance opportunities (Cunningham and Jeffree,1971,1975; Jeffree and Cunningham,1975). Parent involvement programmes have been successfully designed and executed to meet this need (Bricker and Bricker, 1976; Hayden,1976; Irwin,1980; Jeffree, McConkey, Hewson,1977; Karnes,1969; Mitchell,1980; Pook and Singh,1978).

In summary, therefore, Bronfenbrenner (1968a,1968b,1972a), suggests three key elements in the parent-child interaction that he considers contribute to the child's psychological development. First, he stresses the importance of the involvement of the parent and child in the early years in verbal interactions round a cognitively challenging task. Secondly, he suggests, that not only does the mother train the child but also the child trains the mother. And thirdly, there is present important enduring emotional relationships between the mother and child, and between the child and mother. It is through the combination of these three key aspects, Bronfenbrenner suggests, that parent-child intervention becomes effective.

B. Parent training procedures

Behaviourally-based parent training procedures have been extensively reviewed (Berkowitz and Graziano,1972; Gardner, 1976; Graziano,1977; O'Dell, Flynn and Benlolo,1977; Parker

and Mitchell,1980). Training of parents has been conducted on a therapist-parent basis (Arnold, Sturgis and Forehand,1977; Roberts,1978), in small groups (Glogower and Sloop,1976; O'Dell et al,1977; Peed et al, 1975), and in combinations of group and individual settings (Patterson,1974; Salzinger et al,1970). Excellent guidelines for implementing group training procedures are available also (e.g. Auenback,1968; Baker and Heifetz,1976; Cansler et al,1975; Heward, Dardig and Rosett,1979).

A continuing quality intervention programme which involves parents is becoming increasingly recognised as being more likely to bring about maintenance of developmental gains, and has led to an increased emphasis on training parents as educators for the home setting (Gath,1979; Johnson, Whitman and Barloon-Noble,1978; Shearer and Shearer,1976), and in home and educational institution combination settings (Fredericks et al,1971; Peed et al,1975).

Gardner (1976), reports that 'better educated' and middle class parents tend to respond more effectively to group training procedures than do less educated working class parents, and that this difference becomes more acute at higher levels of training. However, Rose (1974), reported that welfare (working class) parents responded more effectively to group training when they were grouped with middle-class parents rather than treated as a separate training entity. These 'social class' features of group training may reflect the comprehension difficulty some parents have in verbal aspects of these programmes. Indeed, some writers suggest that insufficient research has been directed

at ascertaining readability suitability of programme texts and manuals (Arkell, Kubo and Meunier,1976). Furthermore, the academic content, instructional manner, and the training setting for the group may be aversive for those parents who experienced unpleasant schooling in their own childhood. Clearly, more serious research needs to give account to the nature of optimal group size and composition and efficient training strategies if the benefits of effective training and quality intervention are to also harmonise with concerns such as public accountability and cost-effectiveness.

Research indicates that more-structured individual training has greater effectiveness than group training methods (Gardner,1972; Nay,1975; Panyon and Patterson,1974). Nevertheless, such individual methods should not be at the expense of depriving parent contact with other parents of children with similar handicaps, as Mitchell (1980), reports that a high proportion of his interview sample perceived value in such encounters. Three commonly reported techniques have evolved, however, which may be used individually or concurrently. They include modelling (Doherty, 1975; Forehand, Cheney and Yoder,1974; Nay1975), role playing (Doherty,1975; Gardner,1972; Nay,1975), and devices used for signalling or feedback. The latter devices are operated while the parent is working with the child and may be visual, for example, hand-cueing (Hawkins, Petterson, Schweid and Bijou,1966), or coloured lights (Johnson and Brown,1969; Wahler, Winkel, Peterson and Morrison,1965). Auditory devices include ear plug receivers (Forehand et al,

1974; Krapfl, Bry and Nawas,1969), or buzzers or alarms (Bernal, Williams, Miller and Reagor,1972). Audio-visual possibilities such as videotape have also been investigated (Bernal et al,1972).

Books and instructional manuals are increasingly being used as alternative as well as supplementary sources of parent training (Becker,1971; Dickerson et al,1973; Hart, 1980; Masden and Masden,1972; Ora,1971; Patterson,1971; Patterson and Gullion,1971; Roecker,1973). The manual, Your Child is Different (Mitchell et al,1979), successfully provides practical suggestions, guidance and teaching techniques in a comprehensible and attractive format. However, a "cook-book application only works while all is going well", (Straton,1977, p.133), and adequate support provisions and specific training designed to increase the trainer's understanding of child development, teaching techniques and appropriateness, and so on, are essential co-requisites.

Clement (1971), suggests that if parent training in the analysis and contingent management of behaviour is to be effective, then therapeutic training and the modelling of specific therapeutic intervention should not only be reviewed continually in terms of behavioural principles, but there should also be some sort of reliability check-out by the consultant. Furthermore, provision needs to be made to ensure maintenance not only of the child's newly acquired behaviour but also the parent's or therapist's, behavioural intervention techniques.

Theoretical sessions in behaviour analysis and modification

by themselves appear insufficient to bring about and maintain behaviour change (Cossairt et al,1973; Goodwin, 1966). Theoretical lessons need to be coupled with practice in the analysis and the management of behaviour, and adequate feedback of both the child and the therapist (parent or otherwise), (Johnson,1978).

Despite some conflicting results on the relative effectiveness of different techniques (Glogower and Sloop,1976; O;Dell et al,1977), effective parent training programmes require carefully structured teaching, parental involvement and rehearsal of newly acquired skills, therapist support and modelling, and some procedure of evaluation of the parent's ability to apply these newly learned teaching skills (Parker and Mitchell,1980). Furthermore, there needs to be an emphasis on skills in observing children's behaviour, skills in operationalising task analysis, and operational skills such as those involved in operant techniques for the management of behavioural change. Finally, realistic levels of training need to be established and maintained through supportive supervision and the provision of back-up services.

C. Non-handicapped peers and siblings as educational intervention agents and resources for handicapped children

The significance of peer influence, especially as a socialising agent has been generally accepted (Hartup, 1980). A more recent realisation, however, is that in conjunction with interventionists, peers can act systematically as agents of change for less-well developed peers (Guralnick,1977). Wolfensberger (1972), suggests that

normal preschool peers appear less-threatening to handicapped children and are more effective learning models for developmentally-delayed children, than are similarly impaired peers. Some writers (Bricker and Bricker,1971), report that non-handicapped peers may well perform more effectively than teachers, as social play models for delayed children. Evidence supports this suggestion (Devoney, Guralnick, and Rubin,1974; Guralnick,1976). Furthermore, Guralnick (1976), reports that non-handicapped peers' speech can also have a positive effect on the speech of handicapped children.

The evidence seems to suggest that non-handicapped peers can have a positive and potent influence on handicapped peers' growth and development. It is essential, however, that carefully planned interactions are arranged, for modelling alone appears to be inadequate in producing behavioural change in children with severe deficits (Guralnick,1976).

D. <u>The child as the "ultimate self-therapist"</u> (Clement,1974)

The ultimate child therapist is the child herself. Programmes have been initiated whereby the child is an active monitor of behaviour (Johnson and Katz,1973), and as an active mediator in self-control behaviour (Meichenbaum and Goodman,1971). It appears that children can take a more active responsibility in their own behaviour change through learning self-recording and self-monitoring techniques and by engaging in negotiated parent-child contracts. These may typically be incorporated into parent training

programmes (Thoreson and Mahoney,1974).

Whether this can also be extended into the programming of participation with young children is perhaps debatable but yet there is an increasing awareness that both handicapped and non-handicapped are capable of assuming more responsibility for their own learning, and are capable of learning more than was previously thought, given that the arrangements of such contracts are adapted to be both reinforcing and suitable for the current status and interest of each child.

DEVELOPMENTAL DELAY

Developmental outcomes must be seen as the consequences of the characteristics of the child, her/his material environment, and her/his social milieu. Developmental disorders are frequently attributed to constitutional or environmental variables that have their onset at an early stage. There is little evidence, however, to attribute developmental effects to single causes. Closer examination of both constitutional and environmental factors leads to the realisation that complex and reciprocal transactions can be identified, and that the variety of modal points thus produced, provide a variety of intervention combinations and possibilities (Sameroff,1975).

Development is a dynamic, continuous process of changes and readjustments as the individual grows, develops, matures, and ages. Research indicates that neurophysiological maturation, psychosexual development, and growth are inter-

dependent and interrelated processes (O'Neil et al,1977). Although the sequence of development is generally the same for all children, individual differences are nevertheless reflected in each child's rate, pattern, style of acquisition, and ultimate level of development (O'Neil et al,1977). Some writers therefore argue that mentally handicapped children, for example, can consequently be regarded as very slow developers who achieve the same milestones as normal children and in the same sequence (Stayton,1977; Yule and Carr,1980).

Various descriptions of these milestones have been sequenced and can be used in the construction of instructional sequences for developmentally-delayed as well as for normal children. Stephens (1971,1977), presents an appraisal of the Piagetian developmental approach with specific regard to the severely, profoundly and multiply handicapped, and Gunzburg (1965), for example, provides developmental charts that may help isolate and select appropriate instructional goals.

Systematic instruction towards teaching objectives derived from descriptions of developmental milestones are becoming commonplace in manuals (Koontz,1978; McCormack and Chalmers,1978; Miller,1975; Tilton, Liska and Bourland,1977; Watson,1973; Williams and Jaffa,1971).

Developmental delay exists when there is discontinuity between the chronological and the functional developmental ages. However, in using the developmental approach, a child's performance is better compared on a specific task in relation to more difficult subsequent tasks than

compared to the developmental performance level of other individuals (Carrow,1973). It is the differences within a child rather than the differences among children that are instructionally important.

Because of the essentially sequential and interdependent nature of developmental tasks, earlier intervention is assumed to be more likely to maintain continuity between the chronological and functional developmental ages of a child (Banus,1971). However, the traditional practice has been to wait until a significant delay is evident before intervention is introduced. Unfortunately, because behavioural repertoires are interdependent as we have discussed, delays in one area inevitably influence development in other areas. Developmental delay may be compounded by problems, for instance, which may introduce or magnify existing inhibiting emotional and behavioural patterns. Early intervention programmes may well serve both a corrective as well as a preventative function (Bricker and Bricker, 1974), because early stimulation and sensory training may well prevent the severe language delay typical of older developmentally-disabled individuals (Heber et al,1972).

Developmental delays may be manifested in any developmental area. It is not uncommon for mentally retarded children, for instance, to evidence developmental delay in the area of functional motor skills. This frequently involves body management skills such as general body awareness and body image, awareness and control of body postures and behaviours, and the development of spatial concepts and self-help skills. Furthermore, inefficient locomotor

sequencing (e.g. skipping), and fine manipulative motor skills (e.g. drawing), amplify functional motor difficulties. Bunker (1978), contends that lack of participation in activities that may utilise these skills further mitigates against the development of basic physical fitness components such as strength, endurance, agility, and balance. Intervention may well be directed at increasing these children's active participation in such vigorous activities.

Developmental delays in motor functioning are frequently the consequence of restrictive physical environments that limit the type of experiences available to the child (e.g. playpen confinements, clothing and footwear), and of the limiting effects imposed by the social constraints of overcautious and overprotective parents, friends and peers (Bunker,1978). Environmental change, either through modification of the existing environment or through exchange of an inadequate setting for a more stimulating and appropriate setting for the child, frequently absorbs such developmental delay.

Developmental disability may arise through the combination of different sources, either constitutional or environmental. Birth stigmata of congenital or genetic defects, while essentially constitutional in nature, nevertheless rapidly assume compounding complications through interaction with the environment.

Other infants who have suffered prenatal, intrapartum, or neonatal biological adversities are considered at risk for subsequent developmental disability (Parmelee,1977),

although the extent of possible developmental disability for infants experiencing any of these single events is currently unpredictable (Broman, Nichols, and Kennedy,1975; Hunt,1976; Parmelee and Haber 1973; Sameroff and Chandler, 1975). It remains questionable whether a child who has experienced perinatal trauma, but shows no obvious physical damage, is of greater neurological, intellectual, or perceptual risk than a child who has not suffered such trauma. Socio-economic status seems to have a much greater influence on developmental progress than perinatal history (Sameroff,1975). This does not discount the importance of perinatal factors in themselves, but rather suggests that there is an interactional effect with the environment and that this alters the functionality of the disabling behaviour (Beckwith,1976; Sameroff and Chandler, 1975).

Central nervous system disorders place some children at greater risk of subsequent developmental delay but there is some evidence that "the structure and functional organisation of parts of the central nervous system may be modified by changes in the internal and external environment". Such chemical alterations between neurons brought about by experience, seems to represent "a type of learning" (Bronfenbrenner,1968b). The critical amounts and kinds of stimulation necessary for effective social, affective, and cognitive development require further research (Lorenzo,1977).

Animal studies lend support to the notion that enriched experience can modify and strengthen most measurable

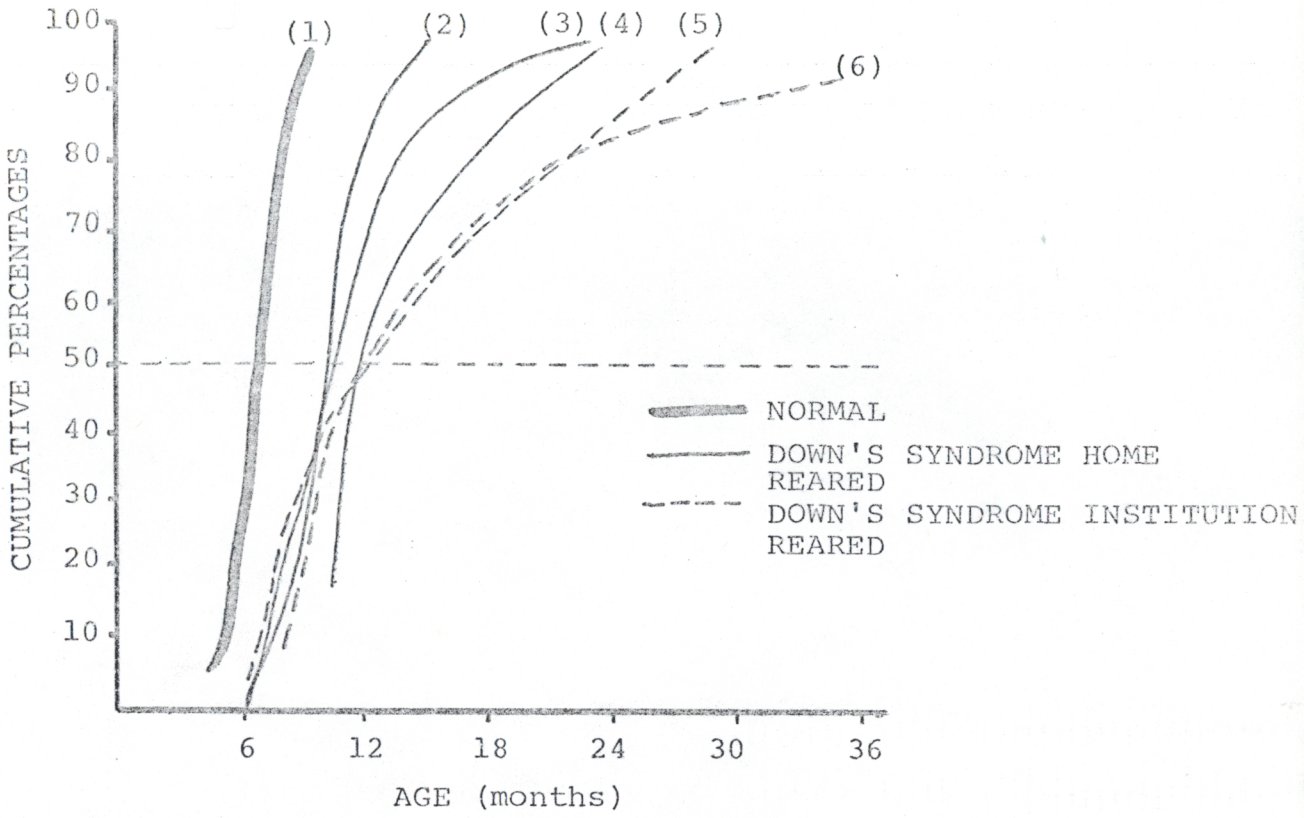
structures and physiological functions and must thereby be able to modify their associated behaviours (Calloway,1970). Caution must be exercised, however, in generalising animal studies to that of the human condition, but the accumulating evidence forecasts exciting prospects in future research and intervention.

Primary and secondary handicaps

Constitutional and environmental conditions produce developmental restrictions on the handicapped child. Primary conditions such as blindness, deafness, severe brain damage, or chromosomal anomaly, generate primary handicaps. Inadequate treatment of these primary conditions results in secondary conditions which in turn create secondary handicaps. Secondary handicaps may also be attributed to conditions such as parental behaviour and environmental circumstances.

Cunningham (1979), clearly illustrates the interrelationship between primary and secondary handicapping factors, by comparing measures from different studies on the attainment of unsupported sitting behaviour by Down's syndrome children (fig.1). The data from the Neligan and Prudham (1969), study represents the maturational development of unsupported sitting by normal children. Approximation to this 'normal' curve reflects the extent to which the comparative studies provided treatment to facilitate the development of unsupported sitting behaviour.

Figure 1 AGE FOR SITTING WITHOUT SUPPORT



1. Neligan & Prudham (1969). Normal infants n = 3,831. Born 1960-1962 City of Newcastle. Data collected by health visitors from parent reports and direct observation.
2. Cunningham. Down's Syndrome infants n = 67 home reared. Born 1973-77. Manchester Area. Data collected by researchers at six weekly assessments in home.
3. Share & Veale (1974). Down's Syndrome infants n = 123 home reared. Born 1960-65. New Zealand. Data obtained from parent recollections.
4. Carr (1975). Down's Syndrome infants n = 47 (40 home reared, 7 institution reared). Born 1963-1964. London Area. Data obtained by researcher at six monthly assessments in home.
5. Taken from several studies noted in Penrose and Smith (1966) indicating range and means and including both institutional and home reared infants.
6. Share & Veale (Op Cit). Down's Syndrome infants n = 26 institution reared.

The data from the Carr (1973) and Cunningham study is for the item 'sits alone steadily' from the Bayley Scales of Infant Development which quote a range of 5 to 9 months, mean of 6.6 months for this item. The remaining studies use the Gosell definition, 'sits unsupported and erect for one minute' (which includes no support by the arms). The range quoted from the Bayley standardisation and that of the Neligan and Prudham (1965) survey are very similar. The Neligan and Prudham and the Share and Veal survey are both base upon parent recollections of the age when the behaviour was attaine whilst the Cunningham and Carr studies are based upon assessments by qualified personnel. Thus the former studies may have some erro erring toward a slightly earlier age than the latter. Given the discrepancies the studies are still quite consistent.

Source: Cunningham, C.C. 1979, p.8

Some concluding remarks can thus be summarised

1. The potential of mentally handicapped children has been seriously underestimated (Banus,1971; Cunningham,1979; Erickson,1976). Systematic training and procedures indicate that developmentally-delayed children can achieve higher levels of learning and performance than was previously realised. Furthermore, such levels of performance are relatively independent of IQ or initial performance (Clarke and Clarke,1974).
2. Interaction between primary handicaps may produce a greater handicap than the sum of the separate disabilities (Cunningham,1979). The primary condition and the degree of resulting handicap are not directly and systematically related, for each individual, to a greater or lesser extent, may compensate for the loss.
3. Developmental delay due to secondary handicap may be greater for some infants than that lag attributable to the primary handicap for this behaviour (Cunningham,1979). Developmental delay tends to be cumulative (Bronfenbrenner, 1974), due to the hierarchical nature of development, and this widening discontinuity between the chronological and functional development attributable to secondary conditions can be largely averted through early intervention programmes (Hayden and Dmitriev,1975; Hayden and Haring,1977; Mitchell,1981; Rynders and Horribin,1975).
4. The extent to which developmental delay can be averted seems to be related to the quality and the appropriateness of the programme (Bronfenbrenner,1974; Caldwell et al, 1975). The extent to which treatment to facilitate

target behaviours is provided for Down's Syndrome children will reflect the extent of approximation of that given behaviour to the curve for a normal child.

5. The mentally-handicapped child may be deprived of experiences as a result of primary handicaps (e.g. reduced range of social interactive skills may affect the mother-child interaction thereby modifying the types of experiences and opportunities available for the child to respond to and to learn from (Hess and Shipman,1965).

   Furthermore, parents may provide different levels of stimulation for a mentally-handicapped child than for a normal child for a variety of reasons (e.g. fear of 'doing something wrong', accepting the inevitability of the handicap and feeling the futility in providing extra stimulation, low parental expectation, feelings of embarrassment and inconvenience in public with the child). Such reduced stimulation levels for handicapped infants deprives them of valuable learning experiences.

6. To ensure these infants receive appropriate stimulation, it becomes increasingly important that parents become aware that developmental deprivations may exist and that they may compound, and to what extent they have control over these experiences. Furthermore, parents can be trained in methods to compensate to developmental deficits (Cunningham,1979; Parker and Mitchell,1980).

7. Assessment requires that due consideration is given to the child's primary handicap and the nature of that child's environmental circumstances which allow for emotional, cognitive, and physical development (Bronfenbrenner,1974;

Cunningham,1979). Therefore, diagnosis should be on the basis of demonstrated behaviour, rather than on the basis of characteristics which the diagnostician may be unable to find (Harwood,1969).

ETHICAL ISSUES AND RELATED CONSIDERATIONS

Methodological considerations may often be compounded by the ethical issues related to the provision of early intervention for developmentally disabled children.

Mitchell (1981), recognises that such research cannot employ an "untreated" control group as such for two major reasons. First, on ethical grounds there are the issues of denial of services and benefits that may accrue as a consequence of a programme and that may ultimately assist children of special needs. Rights of admission and rights of exclusion of children with special needs becomes a difficult ethical concern that researchers must attend to. Secondly, parents of special needs children would undoubtedly solicit alternative programmes for the treatment of their child, and thus mitigating against these children being used as an "untreated" control. However, there are some longitudinal developmental studies providing useful comparative data, for example, on Down's Syndrome children (Carr,1976; Cunningham and Sloper, 1977; Dicks-Mireaux,1972; Fishler,1975), and methodological modifications can be made to accommodate this into the research design (Mitchell,1981).

Behaviour modification, perhaps because of its explicitness and success at achieving behavioural change, has been subject to ethical and legal questioning. However, other

techniques may equally be as intrusive on the individual's autonomy in the desire for behavioural change, but vagueness and often less objectifiable success have perhaps shielded these procedures from the full force of criticism. Nevertheless, any technique that uses aversive consequences, for instance, raises ethical and legal concerns, as does any procedure aimed towards changing human behaviour (Roos, 1977), and researchers engaging in intervention research must account for these concerns.

Aversive treatments as employed by some researchers (Lovaas et al,1969,1978), require cautious monitoring and serious, continuous reappraisal to ensure that the ethical responsibility of the research profession, and the rights of people remain accountable.

Furthermore, recent biological and medical science developments raise new ethical problems concerning prevention, intervention and treatment of concerns such as birth defects (Motulsky,1977).

A new ethical scrupulousness is becoming increasingly necessary in child development research. This is perhaps more so in the field of early intervention studies where there is a danger in accepting the belief that any intervention is better than none, and that children lack maturity to make decisions of consent to participate in such programmes. Surely the ethical demand should be for quality intervention at the very least, designed and operated around and with those people who give their continuous, informed consent. This consent of course, must be subject to modification and perhaps even withdrawal depending upon the changes and

circumstances of the subject and the research (Lewis et al, 1977).

> *"...parental consent...cannot be regarded as 'informed' until parents have had time and opportunity to understand the nature of the proposed research, their feelings and attitudes about it and its physical and psychological risks in relation to their child's stage of development and personality structure; and to consider alternative sources of appropriate... (treatment)..."*
>
> (Lewis et al,1977)

Two further issues need to be highlighted. Broadly defined they may be termed 'labelling' and 'reporting'. Children have the right to be treated as "...multidimensional human beings..." (Mercer,1974), and as people who act and interact in a complex ecological system. The evidence of disability labels on the attitudes and expectancies of teachers (Rosenthal and Jacobson,1966), and of disability labels effects on pupils themselves (Goffman,1961; Meyerowitz,1965,1967), is well documented and highlight the possible destructive, self-fulfilling prophecy that may eventuate with the continued use of traditional diagnostic practices and disability labels.

However, more recent investigations have failed to support Rosenthal and Jacobson's paradigm (Braun,1976; Brody and Good,1974; Dusek,1975). Results are tending to be inconsistent depending upon the information the observer has other than the label itself. Hence, Yoshida and Meyers (1975), and Gottlieb (1974), found labels ineffective on academic competence, and Gottlieb (1975), reported that the retarded label influenced child judgements only when aggressive rather than non-aggressive behaviour was observed.

The inconclusiveness of data at this stage, however, is sufficient to reiterate the caution necessary in dealing with such concerns.

The problem with the 'deficit' model of human functioning and development, for instance, is that one begins to look for signs of dysfunction and disability within the individual, and in the drive for a diagnosis one may see what really isn't observable, or conversely be lead to place the blame on the family functioning, social class or race. Bronfenbrenner contends that this view presumes

> *"...there must be something wrong with somebody, and somebody usually turns out to be the person or group having the problem in the first place."*
>
> (Bronfenbrenner,1978, p.290)

It is, furthermore, insufficient to demonstrate intervention programme treatment effectiveness through an experimental analysis. Accountability must include the communication of results in a manner that is both ethical and understandable to clients, advocates, and consumers (Sulzer-Azahoff et al,1977). This requires the use of appropriate language and reporting, the respect and understanding of privacy and confidentiality both in formal and informal settings, and the freedom of access to information for those for whom, and about whom, the confidence is entrusted.

Three final concerns will be considered in relation to pre-intervention and post-intervention situations. Many would aruge that earlier intervention will be more effective than those began at later ages (Stedman,1977), as the gains

are likely to be cumulative (Bronfenbrenner,1974). Counsellors may therefore be eager to intervene at the advent of the new-born retarded child. Behavioural counselling of parents of retarded children has been documented (Egg,1964; Johnson,1972; Kanner,1953; MacDonald, 1962; Wolfensberger,1967). However, Thompson and Young (1977), forewarn that at this time parents are rarely emotionally ready to make use of interventionist strategies which stress long-term parental involvement in their child's development. The interventionist needs to be aware of and sensitive to the developmental needs of both the parent and the child and this applies equally so at the time of retardation identification and communication of this information to the parents.

Mitchell (1979), remarks that parents may be unduly pressured to participate in an intervention programme, and then to become committed to unreasonable demands both in time and direct teaching. Inevitably, this may serve to be counterproductive (Parker and Mitchell,1980), and the researcher is cautioned in over-zealousness in pursuing research goals at the expense of people's sensitivities and autonomy.

A second concern is that in the dedicated effort to maximise the delayed child's development, detrimental effects may accrue for the family as an interactive and functioning system, and on the development, growth and functioning of all other members in that system.

The final consideration concerns the ethical responsibility of the researcher to make clear at the outset and at

subsequent occasions throughout the treatment period, the expected duration of the intervention programme and the nature of the post-intervention provision, if any. While it is not the researcher's prime responsibility to provide social services for children and families with special needs children, nevertheless the implementation of an intervention programme in itself, is often viewed by parents and others as a necessary service and one in which they rely to meet their special needs.

The long and the short of it is that intervention involves people.

CHAPTER TWO : LANGUAGE AND COMMUNICATION

Introduction

Fristoe (1977), likens language to love. This writer sees love and language as being experienced almost universally. A human can survive without it, but inevitably the quality of life is diminished. It is difficult to define and to measure but nevertheless we are aware when we experience it. If we have not experienced it then we do not know what it is like. Our curiosity seeks to understand what triggers it off and how its development can be enhanced. It had been cited somewhere that humans can rationalise most things excepting love which should be left to lovers*. But the process of language development has received attention from researchers for many decades, and those attempts to rationalise it have been fraught with difficulties and theoretical conflicts. Nevertheless, progress has been made such that Schiefelbusch (1978), boldly concludes that

> *"...the state of the art (of language intervention) seems to anticipate the significance of things to come."*
>
> (p.405)

This proceeding chapter focuses on language and communication disorders which, as a set of difficulties, are frequently cited as major disabling conditions for many

*The writer recalls that this comment may be accredited to the philosopher Bertrand Russell although the source has not been located.

children. These disabling conditions encompass a wide range of difficulties including developmental delay, communication disorders, and speech and articulatory problems. It is stressed that whereas these problems can be theoretically conceptualised as separate entities, they nevertheless frequently interact such that one problem in language and communication may compound problems in other areas of language and social functioning.

The relevance of developmental approaches to language intervention and development are discussed along with the emphasis that increasing numbers of programmes are placing on operant techniques. It is argued that specific targets for language intervention should be based on the belief that functionality and adaptation are of primary importance. This necessitates that language be presented to children in meaningful contexts which stress simplicity and stability. Strategies therefore should proceed from the simple to the complex while retaining this essential foundation of meaningfulness.

It is proposed that the ecological circumstances in which the child functions provides a natural learning environment within which structured, formal and informal language learning can occur. Parents, teachers, peers and siblings can be both positive and effective agents in the intervention process both within preschool and home settings. Play, furthermore, can be utilised as a fundamental mode through which language intervention can proceed.

Techniques that combine various approaches to language

and communication development are viewed as offering exciting possibilities worthy of future exploration by researchers and educators. Combinations of speech and non-speech systems for some multiply-handicapped children provide interesting insights into the positive possibilities offered by these approaches.

The intention, therefore, of this chapter is to synthesise important aspects of language and communication problems and intervention procedures and attempt to provide an insight into positive approaches to language and communication development for those children who, for various reasons, are experiencing such disabling handicaps.

LANGUAGE DIFFICULTIES

Schiefelbusch (1978), specifies three general areas of language difficulty that may benefit from language intervention training. First he considers delayed language. This includes language forms that range from severe deficit such as in the case of the non-verbal child, and children who have substituted the conventional language system with a gestural and primitive vocal system, to those who use incomprehensible modes of expressive speech. The child's limited repertoire and skill in language expression inevitably affects the success and range of language encounters with adults and peers. As with most handicapping conditions, there is a common tendency for these detrimental factors to have a compounding effect such that the functionality of the child is further handicapped.

Secondly, Schiefelbusch isolates the child with communication difficulties. Such children may have an adequate understanding of language and an ability to express language under optimal conditions but nevertheless are ineffective communicators in that they have difficulty adapting these to normal social and learning demands. Successful communication is viewed as an important feature in our adaptation process, and individuals who have developed adaptive behaviour skills are able to enter into transactional relationships with their environment such that they can cope through adapting and exerting control over the changing demands originating from their environment (Sanders,1977).

Thirdly, speech behaviours including articulation problems, voice disorders, and stuttering may interfere with communication. In this sense, speech disorders may in turn become a communication disorder as well. Articulatory problems are frequently reported in Down's Syndrome children (Blanchard, 1964; Dodd,1975,1976; Karlin and Strazulla,1952; Lenneberg, Nichols and Rosenberger,1964). The implications arising from difficulties in articulation, such as those highlighted in the Stoel-Gammon (1980), study of Down's Syndrome phonological development, are discussed later.

Clearly, therefore, the parameters of language difficulties cannot be confined in any narrow sense. Individual differences between children serve to magnify linguistic developmental disparities and to reinforce the notion that intervention programmes must account for the wide range and the levels of differences between children. Furthermore,

in order to encompass this wide range of language delay and dysfunction, a language programme must be extremely functional (Schiefelbush,1978).

Language intervention

Chapter one clearly outlined the rationale for early intervention in general, and similar data are available for such intervention in language. Bricker and Bricker (1974), implemented a five stage individualised programme which progressed from assessing infants' entry behaviour repertoires, determining and training prerequisite behaviours, selecting and designing stimuli for training, arranging circumstances for generalised associations between agents, objects and actions, and arranging small social groups. Verbal imitation, comprehension, and production training were hierarchically progressed through. The actual progression is questioned as to whether it represents the most efficient order of presentation later in the chapter. However, an interesting feature of the Bricker and Bricker article is their insistence on providing a social mix of normal and handicapped children and that this should come about as early as six months of age.

The significance of peer influence, especially as socialising agents, has been generally accepted (Hartup,1970), and evidence now suggests that peers can act systematically in conjunction with interventionists as agents of change for less well developed peers (Guralnick,1977). These ideas are highlighted in the preceding chapter. The importance of the parent as a participant in the child's programme is

also viewed as an important variable (Parker and Mitchell, 1980; Schumaker and Sherman,1978).

Some programmes have focussed on the functional aspect of language intervention. Guess, Sailor and Baer (1976, 1978), for example, implemented strategies to teach functional language to children who had little or no language. They treated dimensions such as reference, control, self-tended control, integration and reception as function concepts to be applied with the child. The overall intention of the programme was to make functional communication possible beyond the training setting.

Although the commonly held view that 'man was born to talk' (Hebb et al,1971), may be questionable, nevertheless some children fail to acquire language by way of the hearing and speech modes. Alternative forms through non-speech intervention are becoming increasingly available for such children. These include manual, lexical, and plastic form systems of language instruction (Lloyd,1976; Schiefelbusch, 1978). Combinations of speech and non-speech systems such as in total communication (Schlesinger and Meadow,1972), are providing effective alternative and supplementary communication systems for some language-handicapped children for whom oral language training may either be ineffective or at best only minimally effective. These ideas are explored later in this section.

Some programmes have been developed specifically for the language training of moderately and severely handicapped children (Stremel and Waryas,1974). Most of these

programmes feature the use of developmental sequencing and systematic training procedures. These structured language intervention programmes place an emphasis on the functionality of communication as it relates to the linguistic component of language, such that the structure becomes secondary to function. There is nevertheless a complex interaction between language structure and its function and the challenge for interventionists is to make language concepts real and functional in the language setting (Waryas et al,1978).

The milieu approach to intervention attempts to integrate components from the structured training situations and the natural language settings. It emphasises increasing the frequency and complexity of the language used by the child through such techniques as differential reinforcement procedures and imitation. A feature of such programmes is the structuring of the linguistic environment to include a variety of stimuli for the eliciting of language, and this setting can be rearranged to support language learning (Hart and Rogers-Warren,1978). Such environmental manipulations provide instructional opportunities within a seemingly natural setting, and would appear to lend itself as an efficient way to ensure generalisation of learning. Such a strategy of language intervention employs incidental teaching procedures (Hart and Risley,1975), as well as environmental strategies such as those used by MacDonald and Blott (1974).

LANGUAGE DEVELOPMENT: ENVIRONMENTAL AND HEREDITARY INTERACTION

Chomsky (1957), has largely played down the importance of environmental factors in speech acquisition. This is in sharp contrast to the extreme empiricism of Skinner (1957), who conceives language as a learned skill acquired through stimulus-response conditioning which is dependent upon environmental factors. Chomsky (1965), rejects this and argues that all languages are deeply seated in linguistic universals which determine both the organisation and structure of language. He assumes that these linguistic universals are cemented in an innate and specific mechanism which he refers to as 'language acquisition device' (LAD). The problem with such nativistic positions on language development is that they remain largely untestable and that the label 'innateness' is simply used to explain away behaviour we do not yet understand. The more general aspects of the nativist position such as the view that language is an abstract system of rules which are not necessarily learned by way of traditional learning principles, however, has received wider acceptance than the extreme nativistic stances.

The implication of nativistic views in delayed speech acquisition is that these must be based in structural, neurological deficits (Fundudis et al,1979). Neurological evidence has been given to support this (Lenneberg,1966). Lenneberg contends that speech development can be attributable to maturational changes which are resilient to abnormal environmental conditions. Speech development and motor milestones for both normal and defective children appear

remarkably synchronised, leading Lenneberg and others to speculate that language acquisition is regulated by maturational phenomena. Lenneberg and others therefore contend that in cases where maturation is abnormally slow, such as in Down's Syndrome, the language milestones develop in the same order as in normal children but correspond to the slower overall maturation of the child.

An often unforeseen difficulty is that biological bases of language may also be socially conditioned, producing a methodological problem of separating social and biological factors (Blout,1979). Although the child is probably biologically prepared for learning language, it is unlikely that biological principles in themselves will account for all aspects of language development.

In contrast, some theorists have adopted the extreme view that language can be accounted for by traditional learning principles. Thus, some theorists stress reinforcement principles (Skinner,1957), while others give more weight to the importance of imitation (Bijou,1976). Skinner would argue that according to the operant reinforcement paradigm, parents selectively reinforce those aspects of the infant's babbling behaviour that most closely represents adult speech, thereby increasing the frequency of these vocalisations by the baby. Shaping procedures adopted by the parent bring these vocal approximations closer to the adult form of speech. Bijou contends that the child picks up words, phrases and sentences directly through imitation, and then through reinforcement and generalisation the child

learns when it is appropriate to use and combine these responses.

The learning theory account of language development however, has difficulty in explaining how the child comes to experience such an enormous range of stimulus response situations that would be necessary for language to proceed at the rate of acquisition that is typical for normally-developing infants. Furthermore, it is doubtful whether the learning theory model is completely plausible in that it is difficult to see how adult reinforcement can easily explain the child's learning of correct grammar (Brown, 1973). The extent to which adults' language is imitated by children is questionable. Children appear to be active participants in generating language by applying and experimenting with the rules and grammar of language. Nevertheless, learning principles appear to play some part in language learning and in shaping subsequent language behaviour as well (Rosenthal, Zimmerman and Durning,1970). Although learning principles are important in modifying language usage and in overcoming language deficits in children, it is doubtful whether these principles alone can adequately account for language acquisition.

Current thinking would favour an interactionist position, which views children as being biologically prepared for language, but who require extensive experience with expressed language for adequate language development. In this sense, there is an emphasis upon the interaction between environmental and innate factors. Hence Piaget contends that the

infant's innate tendency to exercise his/her reflexes and to organise his/her actions to adapt to the environment, promotes cognitive abilities during the sensorimotor period and that this is prerequisite for language development. Likewise, Bruner's (1975), theories attribute language development to an interactional position and both Piaget and Bruner could be termed as holding theories of accretion. Hebb et al (1971), argue that 'learning co-operates with heredity' and their theory highlights the importance of latent learning involving perceptual learning, sensory pre-conditioning, and one-trial learning (Fundudis et al, 1979). Piaget, Bruner and Hebb's theories are all essentially different but their underlying premise is that language development manifests through an interaction between environmental and hereditary factors.

From the interventionist's and the educator's point of view, therefore, the environmental aspect of language development becomes an important practical focus for the manipulation of variables in order to bring about increased competencies in language skills.

Environmental factors

There is compelling evidence that environmental influences affect vocal abilities, from babbling to the mastery of adult speech. Furthermore, evidence seems to suggest also that environmental deprivation leads to less than full development of potential. Some evidence, nevertheless, suggests that certain speech milestones are relatively independent of environmental factors. This is apparent

with the onset of babbling with even the congenitally deaf child (Lenneberg,1966). The differences that are apparent in terms of the age of beginning to speak are largely accounted for through social class variables (Butler et al,1973).

Communication interaction seems to occur between mother and child at a very early age. Bateson (1971), describes this interaction pattern as one of vocalisation, listening, and answering and further vocalisation especially on the part of the mother to elicit responses. These alternating interacting sequences between the 49 to 105 day old infant and its mother were not random vocalisations. This seems to indicate that communicative interaction in the non-cry situation appears to occur at a very early age.

Initial movements of the relatively new-born infant may therefore appear to be random, and the responses that adults make to these movements probably include little expectation of a reciprocated response by the infant. Yet, the new-born's repertoire of responses indicates a variety of adaptive functions. Franz (1963), reported that the relatively new-born's ability to discriminate forms, and a perceptual preference for increasingly complex and interesting stimuli such as people, discredits the notion of passivity in responding by the child.

But it is with the appearance of the smile that the adult appears to become more conscious of the responsiveness of the child and this smiling behaviour does not usually occur much earlier than about one month of age (Ambrose,1961). However,

from that point onwards, there is a noticeable increase in the smiling response and in the variety of stimuli associated with the eliciting of smiling. It is clear that by about the age of three months, the child is actively searching the environment for stimulation (Rheingold,1961), and in all probability this may even be occurring prior to this age. Evidence suggests that the infant's vocalisations in response to adults can be conditioned as early as three months and that the social response of an adult can be utilised as a powerful reinforcing stimulus (Rheingold et al,1959; Weisberg,1963).

The amount and nature of the interaction of the child with its parents has been shown to facilitate the development of certain aspects of language ability in early childhood (Ainsworth and Bell,1974; Beckwith,1971; Rheingold,1960).

Pre-babbling behaviour appears also to be vulnerable to environmental stimulation. Trevarthen et al (1975), analysed mother-infant interactions and found that very young babies made specific mouth movements in response to their mother's voices. Equally as important, however, was that the mothers also spontaneously initiated vocalisations and movements of their infant's mouths.

Rutter and Mittler (1972), report studies which note that the verbal and social reinforcements which occur after babbling has commenced tend to increase vocalisations (Todd and Palmer,1968). The reinforcement brought about through appropriate verbal responses affects both the quantity and type of vocalisation made by the infant (Routh,1969; Rutter

and Mittler, 1972).

The quality of the linguistic environment

Institutional studies have highlighted the importance of appropriate verbal enrichment, stimulation, and social reinforcement. Prolonged institutional experience which provides the child with insufficient quality and quantity of satisfactory stimulation adversely affects language development of infants (Haywood,1967; Provence and Lipton, 1962). An earlier study by Weisberg (1963), which involved manipulating the social environment of three-month old institutionalised babies, indicated that the responsiveness of the adult was important in terms of the child's vocal behaviour. When the adult smiled and touched the child's face while 'talking' to him/her, the infant's vocal behaviour increased.

However, extreme inadequate verbal stimulation may also be found in situations where the child remains in the home with the parents or parent (Jones,1954), and so one must conclude that it is the quality of care that is important (Haywood,1967; McDonald,1977; Rutter and Mittler,1972; Tizard, 1979). The nature and quality of the adult-child interactions within a stimulating and supportive environmental setting are therefore argued to be important on the successful development of language and communication (Friedlander,1971; Rutter and Mittler,1972). Attachment behaviour seems likewise important in that the child's social attachment to the caregiver seems to influence his/her responses to the social stimuli provided by this person. Schaefer (1963), argues

that during the period of attachment children differ in the amount of stimulation that they seek from the environment. This becomes evidenced in the observations of different babies' responses to stimulation; some babies appear to engage in a social experience in a relaxed and contented manner whereas others may show a tendency to cry if they miss out on an experience (Schiefelbusch,1967). The notions of attachment are developed in chapter three and can be visited as an important variable in the nature and type of interaction experience that is made available to the developing infant.

The importance of the linguistic environment has been stressed in this section. If we are to accept that linguistically less-advanced children progress through developmental stages of language development as do normal children, then it is possible to view difficulties in language as representating developmental delay rather than specific language deficit (lenneberg,1967). Such a view would therefore propose that children should be exposed to linguistically-rich and stimulating environments so that language is facilitated. Many argue against this rationale (Mittler,1972), and suggest that more precise attention should be directed at designing the content of language training programmes. However, the importance of the environment as a source of linguistic stimulation and facilitation is not discredited, and indeed can be argued to have important implications for the development of language. But the essential issue is how this rich and stimulating environment is capitalised upon and structured into the training programme. Rather than treating the

environment as a potential source of distraction, therefore, interventionists need to attend to integrating and arranging the conditions in the environment such that positive language gain can be elicited and maintained.

Adult-child discourse

There are few studies reported concerning adult and children's patterns of discourse under the age of five years. Bloom et al (1976), considered adult speech in relation to the description of children's utterances as determined by responses to adults' questions or non-questions. The nature of expansions and imitation within mother-child verbal encounters has been investigated in a limited manner (Reiche et al,1976), but more detailed studies have focussed on older children within the classroom setting (Bellack et al,1968; Sinclair and Coulthard,1975). This interchange of the speaker and listener role is reflected in the language used by caretakers and children engaged in dyadic play situations and analysis of these interactions reveal the type of social and didactic control strategies employed by the mother (Martlew, 1980).

Parents who operate very strong discourse control, for instance, tend to have children with more advanced language skills than those of the peer group, but who likewise may have difficulties in initiating and sustaining discourse with other children (Martlew,1980). These features may be even more significantly revealed in the discourse interactions between mothers of language handicapped children and their parents.

These interaction features are worthy of further exploration especially in the light of children with language difficulties, for inasmuch as they are powerful variables they still remain a largely untapped possibility for intervention programme strategies. These are further discussed in chapter three.

Children's language is essentially different to adult language. A parent motivated to communicate with a child learns that child's language, and through doing so gains a knowledge which that adult can apply to modify his/her own utterances to that child. Such modifications are likely to engender more comprehensible discourse and can be conceived as being likely to facilitate children's language development (Weist and Kruppe,1977). Studies of mother-child interactions involving language-delayed children are currently lending support to this notion (Snow,1972; Wulbert et al, 1975).

The suitability of the mother's language input to her child's language learning is extensively reviewed (see Mahoney and Seely,1976). Correlational studies, for instance, have been reported for various measures of mother and child language (Abrams, Chiarello, Gress, Green and Ellet,1976; Ganzer and Dodd,1975; Moerk,1975; Nelson,1973; Newport, Gleitman and Gleitman,1977; Vorster,1975). Rondal (1978), similarly reported on correlations of mother-child language from a conversational speech in the linguistic environment of normal and Down's Syndrome children. The similarity of speech of the mothers for normal and for Down's Syndrome children of different ages strengthens the argument that

maternal speech is adapted to the linguistic competency of the child to whom it is directed.

Such data indicate that adaptability of language in the mother-child discourse needs to receive greater consideration by researchers and by interventionists in the designing and implementation of language programmes. Such evidence of the adaptability of the mother's speech suggests the possibility of modifications directed towards target behaviours such as the lengthening in the child's and the child-directed mother's speech with time (Vorster,1975).

Operant techniques in language remediation

Various operant techniques have been reported on the remediation of language deficits and highlight the nature of the interactions that transpire between the language trainer and the child. Rigley and Wolf (1967), ignored inappropriate echolalic speech in young children such that these behaviours reduced in frequency. Sloane, Johnson and Harris (1968), used similar techniques to reduce the number of incorrect responses during structured language sessions. Speech disruptions have been frequently reduced by the use of contingent stimuli such as delayed auditory feedback and negative social interaction (Siegel, Linske and Breen,1969). However, an important finding by Reynolds and Risley (1968), suggests that social interaction in itself may not be sufficient in increasing culturally-deprived preschool children's verbalisations. What appears essential, therefore, in language intervention programmes, is the nature of the interaction and the feedback between the language instructor and the child

(Baer and Sherman,1964; Fredericks et al,1978; Hewitt,1964; Sherman,1965).

The developmental aspect of play

Increasing attention is being directed at the developmental aspect of play. Play has been cited as a medium for cognitive concept development (Vygotsky,1976), and as a foundation setting for language development (Caplin and Caplin,1973). Piaget (1962), proposes that play reflects the young child's cognitive development and this notion has been supported by subsequent studies (Rubin and Maioni,1975; Watson and Fisher,1977). Training procedures designed to increase socio-dramatic play have brought about measurable increases in intelligence scores (Rosen,1974; Saltz, Dixon and Johnson,1977; Saltz and Dixon,1974). Millar (1974), contends that the play of retarded children may differ from that of normally developing children of a similar chronological age, but that there may be a positive relationship between the level of play and the developmental status of mentally retarded children (Wehman,1977). Odom (1981), produces evidence to support this proposition. An important feature and consequence of play activity is that it provides opportunities to practise and experiment with language and as such can be considered potential intervention settings.

Lombardino et al (1981), suggests that structured training sessions should be followed by a play session designed to facilitate the learner's generalisation of targeted language responses into a more natural play setting. However, perhaps play in itself can be effectively utilised as an instructional

mode as well as a mode for generalisation, and training procedures may be more naturally developed and initiated through play situations. Teece (1976), investigated the play activity of young children, and her results reinforce the value of play activities for language development. She reiterates the importance of providing time and opportunity for play to occur and cautions against the over-use of new technological devices and language programmes at the expense of that valuable time now devoted to play activity. Play provides a setting through which discourse can occur and Teece's study reaffirms that children learn language through their interactions with other children as well as adults.

The implication of this in terms of intervention studies is that it calls upon interventionists to re-evaluate the significance that is attributed to play and language learning through play, and to direct attention, should this be necessary, towards developing programmes that provide structured opportunities and materials within a child-play setting.

Secondly, there is a need to reflect upon the nature of the interactions between the child and his/her contacts, whether these be other children (handicapped or otherwise), or adults, and to bring about modifications that maintain the naturalness of the activity and yet serve to facilitate language comprehension and production.

LANGUAGE LEARNING: A NATURAL PROCESS

There are common features within most systematic language training programmes for children who have minimal language. These tend to favour the traditional learning processes of

imitation and reinforcement. Furthermore, there is an attempt generally made to segment the language system down into component parts and for instruction to occur on these parts in the belief that they can be reconstructed into some meaningful, functional language system.

However, this procedure of subskill teaching and building is in contrast to the normal language learning process of the child. Normal language learning occurs on a whole-task basis. This is not to discredit the notion that for children with minimal language skills some such component approaches may be useful in stimulating language competence improvement. Guess, Sailor, Rutherford and Baer (1968), taught plurality using such techniques. Likewise, comparative and superlative forms of adjectives (Baer and Guess,1971), verb inflections (Schumaker and Sherman,1970), and other combinations have been reported and the evidence seems to suggest that some of this language skill learning is transferring to other and new situations (Snyder, Lovitt and Smith,1975).

The essential point here is that these language skills may have arisen through the systematic teaching of them in a process that was contrary to natural language learning. Two observations need to preface some final comment. First, children who have learned language skills from sequential and systematic skill teaching processes may lack the spontaneity that would typify a normal speaker in a situation beyond the learning setting (Lovaas,1968). Secondly, there is a suggestion that children who acquire language through systematic teaching often sound more mechanical and that their speech

lacks intonation (Ingalls,1978).

Thus, it can be contended that whereas sequential and systematic training procedures of language skills may have given a previously language limited child increased communicative and adaptive possibilities, there needs to be an awareness that language learning should proceed from the natural. Where normal processes may have appeared to have failed, alternative systems may be conceived to give the support necessary for the child to be able to communicate and adapt to their environment. But these support systems are supplementary and should essentially complement the natural process of language learning, as much as is possible and with due regard to the individuality of the children involved. Children do not learn nonsense in order to make sense. Rather they focus on making more sense by increasing meaningfulnes

Communication as adaptive behaviour

There is an underlying assumption made that the purpose of intervention in the management of the behaviour of communication disabled children is to bring about positive change in adaptive behaviour. The child's relationship with his/her environment is never stable, but reflects constant change and thereby necessitates adaptive behaviour. The child must adapt to changes in the demands that arise from their physical environment, and ultimate survival is dependent upon successful adaptation. The constantly changing nature of the relationships between the child and his/her environment thereby enables the child to enter into transactional relationships with the environment. Communication makes adaptation to society possible, and the inherent possibilities of the language

system allows humans to adapt to their environment, and to exert control over it. The function of language, therefore, is to provide the means for greater control through more behavioural alternative possibilities in the quest for successful gratification of human needs. Intervention programmes therefore need to be planned around those activities associated with naturally arising needs, either through their gratification through appropriate behavioural responding or through their circumstantial arrangement that creates a need for the child to adapt.

The Developmental Aspect of Adaptation: The developmental aspect of language and communication is bounded on the notion that as the child matures his/her sensory capability increases. Two developmental forces operate to bring the child into closer contact with his/her environment. First, the child's increasing mobility brought about through physical growth expands the child's exploration range and environmental contact possibilities. She/he moves more, and in doing so increases the environmental experiential possibilities that she/he can be exposed to and must form some adaptive response to. Secondly, the child's sensory-perceptual system becomes increasingly sophisticated. The increasing demands brought about through increased mobility and other variables, further demands more complex processing strategies, if the child is to make successful adaptation.

Lenneberg (1967), argues for a third aspect. He proposes that optimal learning periods are shaped by the organism's lack of maturation at the lower levels and by the loss of adaptability in the brain at higher levels.

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He concluded from studies of the effects of traumatic cerebral lesions on language learning, that

> *"...language learning can take place, at least in the right hemisphere, only between the ages of two to about thirteen."*
>
> (p.153)

However, the adaptive potential and functioning of the human brain is generally overlooked in studies that involve cases of traumatic cerebral lesions. Furthermore, recent evidence casts some reservations on Lenneberg's postulation of a critical period. It seems that notions of critical periods seem to apply to phonology more than to other levels of language (Cruttenden,1979). Likewise, Menyuk (1977), outlines weaknesses in Lenneberg's argument that there are neural structures specialised for language processing, and she further reports difficulties in demonstrating the notion of critical periods in language learning.

The arguments concerning intervention and early experience as developed in chapter one, would suggest that the promotion of language development through intervention strategies can be effective at least within this maturational range. Others suggest that the first two years are critical for hearing-impaired children to determine their ultimate potential for the development of speech communication skills (Fry,1966; Horton,1974; Lloyd,1976; McConnell,1970; Sanders,1977; Schiefelbusch and Lloyd,1974). These writers suggest that early exposure to spoken language is of crucial importance in the language development of hearing-impaired children and it seems therefore that intervention needs to become matched not only to the

developmental circumstances of each child but also that this occur at the earliest stage possible. Despite productive programmes that have been managed at later years (e.g. Carrier,1977; Carrier and Peak,1975), the amount and the speed of spoken language acquisition appears to be inversely related to the age of intervention commencement.

Speech, Language and Cognition: Language constitutes an underlying system of symbols and rules that becomes manifest through such functions as speech. The language system stems from the child's own theory in his/her head which has been constructed through his/her knowledge and experience of the world. Initial utterances may be reinforced through the presentation of satisfying consequences, in a similar manner perhaps to paired associate learning in the laboratory. The child utters 'mu' and receives a smile and milk. However, the 'template' theory of language acquisition cannot fully account for the rate, variety, and innumerable ambiguities that typify the language of humans. Language is essentially a complex symbolic system which is founded in the nature of meaningfulness, and meaningfulness resides in the repertoire of the child's experience. Piaget (1951), and Inhelder (1966), argue that representational stages in cognition must precede any symbolic communication system, and that the child therefore first constructs a 'reality as known'. This 'reality as known' emerges from the child's concrete sensorimotor encounters with the world and becomes successively modified and re-defined through

the interplay of interactions between the organism with the person, object, or event. Through such arrangements the organism develops from 'reality as known' to more representational stages. This representational stage is less bound to the sensorimotor experience than the 'reality as known' though it is important to note that the pathway to representational levels is through the sensorimotor interactions for the young child.

Intervention programmes need to account therefore for the provision of materials and ideas that create opportunities for meaningful exploration in sensorimotor experiences and that this be considered prerequisite to higher representational development. In itself, this must appear an obvious insight but its consideration leads to two important and fundamental considerations in language development (Smith,1975).

Two Fundamental Considerations in Language Development: The procedures by which the child masters the rules that make it possible for him/her to generate meaningful utterances, for instance, is well researched (Brown,1973; McNeill,1970; Smith,1978), and yet the specification of these rules in terms of instructional possibilities is a dauntless and possibly fruitless task. Essentially, the child 'invents grammar' through hypothesising the rules and testing these hypotheses as and when they require to use them to represent a meaning. Adults provide a meaningful source of hypothesis-testing and allow the child to modify and elaborate his/her attempts at hypothesising rules. It is the child who works at how the deep and surface structure of language are

related. In this sense the first fundamental proposition can be cited that grammar is always preceded by meaning or by the deep structure.

(a) Grammar is Preceded by Meaning. Some theorists (Brown,1973; Clark,1973; MacNamara,1972), contend that children's semantic, or deep structure, capabilities always exceed their linguistic capacity to express these underlying conceptual structures (Smith,1975). Essentially therefore, the child must comprehend the nature of relations between actions, objects and so on before she/he can construct or comprehend sentences about them. Meaning, in this sense, therefore must precede grammar, and the interventionist's responsibility is to provide the structured circumstances and feedback that enable a child to form and test his/her hypotheses in his/her attempts to resolve uncertainty.

Recent research data suggest that initial imitation training may interfere with the acquisition of comprehension and verbal production and it has been suggested that a more preferable training sequence is one which initially focuses on comprehension and follows this with verbal imitation (Ruder et al,1977). This would concur with Ruder's earlier study (1974), with language-delayed children in which comprehension training accompanied by appropriate verbal rehearsal resulted in verbal production of syntax, whereas comprehension training without appropriate verbal rehearsal resulted in unstable verbal production. These data would suggest that language-training programmes which include an

initial component of imitation such as Bricker's (1972), imitation followed by comprehension approach, may not be the most efficient method of training (Ruder et al, 1977).

Whitehurst and Vasta (1975), examined the role of imitation in language acquisition with more specific attention to the process rather than the product. They determined from their review of psycholinguistic, operant and social learning contributions that selective imitation may be a more precise way of delineating the process of imitation in language acquisition. Selective imitation is specified as a 'functional relationship involving similarity of a particular form or function of the model's responses'.

They propose, therefore, a three-stage model of the process. The first stage (comprehension) occurs when the child comes under the discriminative control of the relationship between a syntactic structure produced in the adult's speech and the environmental stimuli which are associated with the usage of that structure. Secondly, the child uses this structure in his/her own language according to the selective imitation model whereby it will be controlled by the grammatical structure of the model's utterance but will include different content words since the meaning ascribed by the child will typically be different to that of the model agent. Comprehension can be seen to continue developing during this stage.

Thirdly, spontaneous production of the language structure

occurs in the absence of the imitative mode. This spontaneous production may neither in part nor whole be imitative. Comprehension training may eventuate in selective imitative productions (Guess and Baer,1973; Whitehurst,1974), though the optimal conditions that facilitate this transfer are not yet fully determined. Nevertheless, elicited imitation may be a useful tool in research in that it provides insights into the language acquisition pathway especially for the retarded and in prognosis for their language instruction (Lamberts and Burns,1980). Berry and Taylor (1976), suggest for instance, that the systematic imitation of errors of mentally handicapped children reflect their language processing strategies and thereby they argue that the study of elicited imitation is a useful psycholinguistic assessment technique in severe subnormality. Perhaps its underpinning value is that it reiterates that language intervention strategies be 'not governed by the concept of mental retardation' but rather 'governed by language' (McLean,1972).

(b) Meaning and Grammar Proceed from the Simple to Complex. The second proposition is that both semantic and grammatical language development proceeds from the simple to the complex. Increasing cognitive precision precedes semantic elaboration in the same way that the child eventually differentiates between dog as representing all four-legged animals to that which represents a four-legged animal that barks. Terminology relating to family relationships also highlight this increasing

language complexity and definition that follows cognitive elaboration and differentiation (Bower,1970). Likewise, children's grammar is not complete by school entry age but progressively becomes redefined and elaborated (Chomsky,1969; Palermo and Molfese,1972).

These two fundamental aspects of language development- that semantics rules over grammar, and that language development proceeds from the simple to the complex - appear to be universal (Brown,1973), and to apply to all children (Smith,1975). The fundamental thought and language processes in all children appear to develop in approximately the same progression, although they may differ substantially in the rate of acquisition (Brown, 1973). Furthermore, a child learns to use language and to comprehend at the same time although her/his ability to comprehend utterances is greater than his/her ability to produce them. In this sense it is important that language interventionists refrain from focusing simply on the child's skill in talking for this represents only part of his/her language ability.

THE PATHWAY TO LANGUAGE ACQUISITION

Language disordered children appear to follow a course of development in producing responses to language that is similar to that course followed by normal children. There is no evidence that language disordered children follow a quantitatively different developmental pathway from normal children with regard to the initial use of an action strategy. Furthermore, there is no evidence that they depend more on literal interpret-

ations in producing responses as proposed by Sinclair (1976). Likewise, as for normal children, prior linguistic context influences the nature of their responses (Shatz et al,1980). Shaltz, however, distinguishes two aspects in the performance of language disordered children that show variance with normal children's performance. First, they seem less able to produce informing responses when they know such responses are called for. Secondly, they appear to have greater difficulty taking account of prior linguistic knowledge when they are determining what is called for.

Speech problems in cerebral palsy children are predominantly of delayed speech forms. In a study of 110 cerebral palsy children Kamalashile (1975), found that only 10% of these cases could be categorised as having normal speech and language. All these children who exhibited normal speech and language had average intelligence.

Studies have reported the severity of articulatory problems experienced by Down's Syndrome children (Blanchard, 1964; Dodd,1975, 1976; Karlin and Strazulla,1952; Lenneberg, Nichols and Rosenberger,1964). Stoel-Gammon (1980), recently specified greater detail on the nature of the articulation problem in Down's Syndrome cases and her findings suggest that her subjects were capable of producing nearly all the consonant phonemes although correct production was often governed by the position within the word. Furthermore, she reported that the phonological processes which account for the errors of the Down's Syndrome cases were similar to those reported for young normal children. Finally she found that the phonological abilities of her four subjects were comparable

to, if not better than, their general language ability as measured by mean length of utterance (MLU), which raises some questions as to the reported severity of articulatory abilities of Down's Syndrome children in relation to their other language skills (de Villiers and de Villiers,1978; Lenneberg et al,1964; Stoel-Gammon,1980).

These data support the proposition that language acquisition among the mentally retarded follows the normal development pathway, though at a slower rate (Lenneberg, 1967; Yule and Carr,1980). Furthermore, the possibility of early identification of Down's Syndrome children along with their remarkable similar developmental patterns, recommends this group as a valuable source of research information on language acquisition (Wiegel-Crump,1981).

ORAL - NON-ORAL COMMUNICATION SYSTEMS

Total communication is increasingly gaining acceptance as an alternative and supplementary form of communication for some language delayed children for whom oral language instruction appears to be insufficient. Goddman et al (1978), report that total communication is being used to facilitate oral communication and to provide a communicative option to speech alone, but that additional non-language benefits are also being reported. These include greater attention and motivation, increased vocalisations and intelligibility, improved manual dexterity, advanced social interaction, and decreased behaviour problems (Lombardino et al,1981).

Debates have centred upon whether it is more effective to present an oral only or a combined oral - non-oral communi-

cation system (Elder and Bergman,1978; Guess, Sailor and Baer,1977; Snell,1974; Stremel-Campbell, Cantrell and Halle, 1977). The expressed fear is that spoken language may be inhibited by exposure to non-oral language systems but this cannot be supported by the evidence. In fact some researchers report that training in non-oral communication systems can facilitate spoken language in severely handicapped children (Harris-Vanderheiden and Vanderheiden,1977; Hobson and Duncan,1979; Miller and Miller,1973), and it would seem that manual communication systems could be recommended as a temporary mode until oral speech is established (Fristoe and Lloyd,1977). Inevitably, Jones (1980), when reviewing the research data, concludes that the debate is a 'non-issue'.

One recent development is the combination of procedures in the development of language behaviour in an autistic child (Cohen,1981). This study demonstrated the effectiveness of a procedure using behaviour modification techniques such as modelling, differential reinforcement, shaping, fading, time-out for errors and misbehaviour, and stimulus control, in conjunction with a total communication approach. Cohen reported that such a procedure was effective in training verbal labelling behaviour and basic telegraphic speech while also there was an observable decrease in echolalia by the child. Furthermore, follow-up sessions indicated that there was maintenance of the training effects over time as well as generalisation of the effects across both therapists and settings.

Some concluding points are worthy of note. For some

language-handicapped children, oral language training may be ineffective or at best only minimally effective in providing a functional and generalised communication system (Lombardino et al,1981). Total communication procedures provide alternative and supplementary communication systems. Teachers and parents must be able to teach language-handicapped children non-oral communication systems and furthermore must be able to provide themselves as proficient models in both non-oral and spoken language usage.

Secondly, it is important to note that communication-deficit children are not deficit in communication per se. They frequently employ communication systems such as gestures, scent marking, and role playing through non-speech behaviour (Hollis and Carrier,1975). Fraiberg (1977), sensitively notes that the hand-sign language of the blind babies are well-developed when compared to their relatively impoverished repertoire of facial signs. Furthermore, this hand-sign language becomes increasingly differentiated during the first six months to include seeking, wooing, preference, and recognition behaviours within their repertoire.

As language develops, words and gestures are frequently used in conjunction to facilitate more effective communication. Gestural communication may be preferred by a child who has difficulty communicating about temporally or spatially absent objects, internal referents such as his/her own feelings, thoughts and motivations, and relationships of one or more referents (Wellman and Lempers,1977). However, for the less-well advanced linguistically competent child gestural communicative behaviours may surplant or take precedence over

speech. Teachers and caregivers need sensitivity in being able to objectively observe these communication systems and to be able to adapt their knowledge and understanding derived from these observations in the implementation and management of more orally-targeted behaviour. Fraiberg (1977), describes the attempts to read hands as a bizarre experience, especially since non-visually handicapped people are conditioned to read faces. Nevertheless, this is one of the challenges of intervention and professional guidance, given that the responsibilities of research can uncover the mysteriousness of these 'unconventional' language systems.

Concluding comments

Language and communication disorders are frequently occurring disabling conditions. The parameters of these difficulties include delayed language, communication disorders, and speech problems, but the interaction and interdependence of these conditions produces a compounding effect such that speech problems frequently interfere with communication for instance.

The discussion has centred on developmental aspects of language and communication and specific attention is directed at functionality and adaptativity. Language is seen to be learned more effectively by children with language difficulties if it is presented in contexts which stress simplicity, stability, and in which meaningful and useful features are taught. Strategies should reflect the belief that language-learning proceeds from the simple to the complex and that

meaning or the deep structure is prerequisite to grammar.

Increased attention needs to be focussed on the utilisation of the ecological circumstances of the natural environment, for these provide a diverse and meaningful basis for the stimulation of functional language. The significance of proceeding in the belief that learning is a natural act, that the environment can be managed to bring about developmental changes, and that parents and peers should be utilised as educators, all require attention in the design and implementation of language intervention programmes. Furthermore, increased consideration of the interactions that are an essential component in children's play, and of the fundamental role of play as a mode of language adventure have immense implications in language intervention programmes. Home-based programmes utilising parents as participants in their child's language development are frequently reporting greater gains and maintenance of gains than clinic-therapist systems.

Procedures that combine speech and non-speech systems with techniques of behaviour modification are providing exciting developments and possibilities in the acquisition of language by some multiply-handicapped children for whom speech systems alone are ineffective, or at very best, only minimally effective. The fear that children will rely on non-speech systems to the expense of developing speech is shown to be a non-issue.

The implications of such developments suggest that educators have a responsibility in ensuring that they are fluent in both speech and non-speech systems such that they

are fluent in both speech and non-speech systems such that they provide adequate models for their children.

Finally, there is compelling evidence to support the rationale for early intervention in language. The issues and challenges both old and new, that are raised in this area of intervention then, perhaps can be best reiterated by Schiefelbusch (1978), who concludes that

> *"the current state of the art (of language intervention) seems to anticipate the significance of things to come."*
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> (p.405)

CHAPTER THREE : SOCIAL RELATIONSHIPS AND INTERACTIONS

This chapter investigates the significance of early relationships and interactions in terms of social development, and attempts to integrate these ideas in the consideration of early intervention programmes for the less-developmentally advanced preschool child. The relationship between early interaction patterns and later development is explored and it is suggested that there are qualitatively and quantitatively different aspects within interaction patterns that help delineate between mothers of high-risk children and those mothers with low-risk children. Longitudinal studies give some insight into the effect of early interaction upon subsequent development although it is contended that research in this area still remains somewhat tentative.

The parent-child relationship is investigated along with interactions that are exhibited through such situations as play, language and feeding. Problems are highlighted with the research and these difficulties are viewed as compounding variables in the inferential possibilities that may be derived from such studies. The lack of synchrony that may exist between handicapped and non-handicapped child-child, and adult-child interactions is also discussed and the implications of such research are reflected upon preschool educational intervention programmes and the drive towards integrating handicapped and non-handicapped children into the preschool social situation.

EARLY INTERACTION PATTERNS AND LATER DEVELOPMENT

Several longitudinal studies suggest that there are continuities between early interaction patterns and subsequent development for high-risk children (Beckwith et al,1977; Brown and Bakeman,1979; Clarke-Stewart,1973; Field,1979; Jones,1980; Pawlby and Hall,1979). However these continuities are not necessarily easily identifiable as they become complicated by the qualitative and quantitative aspects of interactions, for example, as between high and low-risk children with their mothers. Interactions of high-risk infant-mother dyads as compared to low-risk combinations, are quantitatively and qualitatively different (Field,1980), and this will be further discussed later.

Beckwith et al (1976), in a study of infants who exhibited lower sensorimotor development at nine months, found that these infants had experienced qualitatively and quantitatively different early interaction patterns than children who had achieved a higher sensorimotor status by nine months. These lower developmental-status infants had experienced less mutual gazing at one month, fewer interchanges with smiling during gazing behaviour, and less general attentiveness at eight months. Sigman (1978), followed up this group and found that the pattern of interaction observed in the first few months was the best predictor of developmental status at two years of age. Bakeman (1978), reports that the patterns of interactions at feeding time between the mother and the three-month

old infant are significantly correlated with teacher ratings of interactions with peers at three years of age. These continue appear to be reflected in data pertaining to Down's Syndrome infants (Jones,1980), and for cerebral palsied children (Kogan,1979). These data are discussed in further detail later. However it is important to note that disrupted interaction patterns that may exist between the mother and the child during feeding times may affect the attachment behaviour that forms between the child and mother.

Recent data therefore suggest that continuities exist between early interactions and later development in children, and this accentuates the importance of understanding disturbances within early interaction patterns and subsequently alerts attention to the issues that might be of intervention. However, our considerations should be monitored with caution as these studies are group-based and hence diminish the importance of individual differences. Furthermore, the limitations of longitudinal research pervade the interpretations of the data. Causality can only be considered if factors such as time and scope of the observations made and measurement and analysis difficulties are overcome. Field (1980), also suggests the culture-specific variable that may be operating in interactions such as in the case whereby eye contact may be culturally appraised as inappropriate and insulting.

Such may be the case for New Zealand's Maori and Polynesian peoples who in general avoid direct eye contact

during speaking but have advanced skills in non-verbal communication (Metge and Kinlock,1978). It is suggested therefore that it is important for participants within intervention settings with these children to be well versed in a knowledge of cross-cultural communication. Furthermore, the benefits derived from the mastery of such non-verbal communication skills may well translate into the programme developments for other children who may have special needs and who have a restricted pattern of responding to verbal and eye contact systems.

The interaction between the parent and child in particular, therefore, seems an essential consideration in determining some early interactional patterns that may be deemed to be important in later development and it is to this, and the inherent problems in such considerations that attention is now directed.

PARENT-INFANT INTERACTION : PROBLEMS AND CHALLENGES

There are many different orientations that may be taken to focus attention on sources of psychosocial risk. The ultimate decisions that are made depend to a large degree on the dimensions that underlie the particular orientation. Thus, whereas some approaches focus on individual differences, others may give greater attention to social-environmental factors.

This section focuses on problems and challenges facing researchers in the study of possible sources of psychosocial risk that may reside in the context of parent-infant interactions.

The variability between parent-infant dyads

From the outset it is important to recognise that the differing characteristics that exist between different parent-infant dyad interaction patterns may be attributable to the transactional processes operating between environmental, genetic and biophysical factors. Psychosocial risk, therefore, is inherent in those relationships where the interactions between the parent and the infant lack interactive synchrony (Sawin et al,1980). Research sophistication consequently is challenged by the task of accounting for the transactional processes operating between these factors. Such analysis will give a deeper understanding of psychosocial risk from parent-infant interactional context and allow this knowledge to be converted into operational and effective intervention programmes, should these be necessary.

Synchrony in parent-infant interactions

An effective patterning of mother-child interaction is dependent upon the joint regulation of activity. If the purpose is to engage in dialogue, then both participants must share communicative acts that hold similar meanings for both people. A smile may indicate approval for instance, and facilitate further interchange. For an interaction to be appropriately co-ordinated, it is necessary that the communicative acts of both participants match the predictions each person has made concerning the other's behaviour. Joint regulation between the participants occurs when there is mutual matching of both

the communicative acts and the predictions. When mismatches occur between predictions and behaviour, the interaction fails to be jointly regulated and may become disordered (Tronick,1980). Because communicative acts are performed across time, the temporal aspect demands that joint regulation be a continuing activity and in this sense implies synchrony.

Condon and Sander (1974), noted that even neonates are capable of engaging in interactive synchrony by demonstrating their co-ordination of movements with the adult's speech. This is interesting in that phoneme boundaries are not physical entities as such but rather psychological constructs which appear frequently with an amazing temporal brevity of one tenth of a second. At this point in time, however, there appears to be no certain explanation for this interactive synchrony by the infant.

Procedures to study parent-infant interactions

A major concern and impediment in the study of parent-infant interactions is the lack of refined procedures of measurement and analysis. Essentially, the problem is that interactional research is still evolving. Theories that fully account for the infant's contribution to the parent-infant interaction system are still in their early stages of development as are those theories that attempt to delineate those specific qualities that are seen to be significant components in the interaction setting in terms of the infant's sybsequent development. Above all, there still is no one well-rounded theory that adequately integrates those qualitative factors that are pertinent in

promoting optimal infant development (Sawin et al,1980). Furthermore, there are some difficulties in the nature of the data that research has been generating. Many studies are employing multivariate strategies to incorporate large numbers of individual factors and behavioural variables for both the parent and the infant. Obviously, there are some statistical complexities in coping with such large numbers of variables, along with difficulties in maintaining reliability and validity when determining the 'best' qualitative aspects of the interaction process as well as those characteristics of the individuals involved in the actual interactions.

Systematic observation techniques are one attempt at increasing the objectivity of observations made in parent-infant interaction situations. Bakeman and Brown (1977), suggest, however that such methods still produce a wealth of information and that, furthermore, the tendency to focus on specific behaviour within specified intervals may lead the observer to ignore the flavour of the overall interaction. These writers suggest that a more manageable and insightful method for objectively assessing the style of parent-infant interaction, with less due regard for the specific content of that interaction would be one that views the interaction as a behavioural dialogue. Such a technique attempts to combine the objectivity and specificity incorporated in systematic observation methods along with the more global considerations. Any such procedure needs to ensure that there is essentially no inference from the observer and must utilise specifiable

behaviours. Nevertheless, there should not be a dependence on specific behaviours in particular but rather designed such that it remains sensitive to reveal the structure of the interaction.

The dialogic model of early mother-child interactions therefore focuses on the occurrence and sequencing of behaviours or communicative acts in a general way and not on specific behaviours as such. Such an approach to the study of interaction is not new nor is it necessarily restricted to speech. Aspects of the dialogue could include all vocalisations (Stern et al,1975), visual regard (Stern,1974), verbal and non-verbal behaviours, kinesic behaviours, or communicative acts (Bakeman and Brown,1977). Bakeman and Brown determine mother's communicative acts to be those "interactive behaviours which could be responsive to the infant and/or to which the infant could conceivably respond" (1977, p.197).

Roberts and Forehand (1978), reviwed six approaches to the analysis through direct observation of maladaptive parent-child interactions and concluded that there are assessment advantages in employing sequential event recording as compared to descriptive narrative procedures, event recording and interval sampling. The shift has been from the realisation that only limited reliance can be given to self-reports by parents on child-rearing practices to that which is founded on direct observation techniques (Mitchell,1976). Furthermore there has been a shift from the study of general categories to more specific

aspects of behaviour and one of content to process in family interaction (Hetherington and Martin,1972). Essentially, however, interaction is best studied in interactional settings for the knowledge about a child or adult's behaviour may not predict either's behaviour in an interactional situation (Jacobs,1975). Thus sequential recording techniques have been employed in the investigation of parental command-giving (Peed et al, 1977), and parental ignoring and disapproval (Patterson, 1977). It is suggested that further refinement of such techniques will contribute to an increasing understanding of maladaptive parent-child interactions.

Inevitably, the type of approach taken by an investigator will determine the nature and the scope of the research data produced, and in this respect, likewise it will influence the type of decisions and implications abstracted. Sackett (1980), pertinently notes that generating and analysing social interaction data is both expensive and time consuming. On the one hand, we may fail to see the obvious for the mountain of computer read-out we may have amassed, whereas on the other hand, simple one-step contingency relationships may fail to adequately represent, or sensitively account for such factors as long-term and sequential event dependencies.

Future directions

Thus, three general areas require further research attention in the future. First, there is a need to produce reliable and refined measurement and analysis

techniques and procedures that are suited to the parent-infant interaction setting. These may not be necessarily transferable to child-child interaction situations. Secondly, there is a need for research to clarify the nature of the relation between early interactive patterns and later child development. And thirdly, research needs to be directed at ascertaining the form and content of intervention which is appropriate for dyads that lack interactive synchrony, should this be necessary (Sawin et al,1980). Such insights may inevitably help to de-escalate the potential psychosocial risk inherent in those relationships where the reciprocal interactions between the parent and the infant lack interactive synchrony. It may be found that, for example, specific training techniques in non-verbal communication, cue-taking, and perspective taking skills may assist the parent to adjust their level of interactive complexity in accordance with the intentions and developmental status of their child. Such understandings should contribute significantly to planned future interventions with such parents and children.

Thoman(1980), further suggests three challenges that confront researchers. First, there is the problem isolated by Parmelee, Kopp and Sigman(1976) who determined that some infants with established risk status seem to nevertheless develop normally regardless, as contrasted to further known-risk children who manifest difficulties at later ages. This promotes difficulties in the identification of these children and infants with the consequence that many who would benefit from intervention are overlooked.

Secondly, there is the identification difficulty imposed by those infants who manifest no obvious stressors at or immediately subsequent to birth, but who nevertheless come to exhibit developmental dysfunctions at later ages. Thoman suggests that a third challenge is the need to sharpen developmental assessments such that reliable indications of deviance from developmental norms can be established against reliable, and essentially prerequisite, discriminations of developmental patterns among normal and retarded children, for instance, inevitably becomes confused with differences in chronological age and this further factor is an important variable for which future research will need to struggle with.

There is still strong reason to exercise caution, therefore, in extrapolating direct comparative studies between, for instance, mothers and their normal children, and mothers with their retarded children. Primarily, a good deal of such studies employ a restrictive sample size which implies the need for caution in inferring comparative developmental trends. And finally there may be good reason to also suppose that parents of retarded children, for example, may respond differently than those of normally developing children in clinic settings (Cunningham et al,1981), and this further necessitates cautiousness in extrapolating developmental inferences and trends.

Nevertheless, there is strong and accumulating evidence that suggests psychosocial risk is inherent in the parent-

child relationship where the interactions lack synchrony, and that there may be critical periods of intervening to change patterns of interaction, and these therefore remain a research challenge for the future.

The study of interactional patterns and possibilities that exist between the behaviour of the handicapped child and his/her changing environmental circumstances in which she/he functions, is therefore an insightful means to establish points of departure for intervention to facilitate children's social development. However, what is becoming increasingly recognised is that there is an interplay between all the variables involved in interactions such that what may appear at first hand to be related within an encounter may in effect only represent part of the total interaction. Developmental outcomes in this sense must be viewed as the products of the child's characteristics, his/her material environment, and the cognitive levels and values of his/her social milieu (Sameroff,1975). What becomes increasingly important, therefore, is to establish ways to identify and isolate the complex reciprocal transactions which are found to affect problem behaviour, and yet still leave intact the overall context in which these transactions occur. Thus the point of departure for research is to study those complex and reciprocal transactions which are considered to facilitate or hinder adaptive integration as both the child and his/her surroundings change.

This section has outlined some of the concerns and issues involved in parent-child interactions and the

challenges that confront researchers. Attention is now turned to the research that has been directed at parent-child interactions and their retarded children.

INTERACTIONS BETWEEN PARENTS AND THEIR RETARDED CHILDREN

Recent research makes it increasingly clear that adults systematically alter the length and the complexity of their speech to young children (Broen,1972; Fraser and Roberts,1975; Martlew,1980; Moerk,1974,1975; Snow,1972). Moerk (1977), illustrated that adults reduce their rate of speech, use more pronounced intonation patterns, and employ correctional or teaching strategies to adjust their pattern of speech such that it is slightly more linguistically sophisticated than that of the child's. Brown and Fraser (1963), refer to this advance of adult language over the child's level of developing expressive skills as the 'optimal linguistic lead'. Interactions between parents and their developmentally language delayed children, must compound the difficulties for parents to adjust their speech complexity and rate accordingly. Terdal, Jackson and Garner (1976), suggest that retarded children are less responsive to maternal social interactions, questions and commands than normal children at comparable developmental levels. The conflicting results from various studies, however, are complicated by the different matching procedures used, and the interpretative limitations of the data (Marshall et al,1973; Rondal,1977).

Mothers employ more complex language when they are communicating with older children than they do when they

communicate with younger children (Baldwin and Baldwin, 1973; Broen,1972; Phillips,1973; Snow,1972). This regulation of maternal language with regards to the child participant was discussed in chapter two. Snow (1972), suggests that to some extent this maternal regulation of language complexity and rate is consciously controlled by the adult but is also affected by the feedback from the child. Sherrod et al (1977), in a study of maternal language to prelinguistic infants, report that maternal speech to children varies according to the age and the language abilities of the child.

More recently, Cunningham et al (1981), demonstrated research support for previous investigations into interactions between mothers and their retarded children (Marshall et al,1973; Terdal et al,1976), with preterm language-delayed children (Cohen, Beckwith and Parmelee, 1978), and with siblings of older familially-retarded children (Wilton and Barbour,1978). Cunningham found that retarded children were less interactive and less responsive. Furthermore, they spent more time in solitary play than normal children. Mothers of retarded children initiated fewer social interactions and exhibited more control over their children's play than did mothers of the normal group. These patterns of interaction were observed in both free play and structured task settings. It is important to note also that the retarded children in Cunningham's study were no less compliant than the normal children. Nevertheless, mothers of retarded children tended to use more commands and were less likely

to respond positively to their child's co-operative behaviour.

The very nature of the interactions that transpire between the caregiver and the infant may inevitably influence and, to a large extent, determine the complexity and successfulness of the immediate and subsequent interactions. Young children who, for instance, tend to be less responsive may restrict the amount of information that the adult requires in order to both ascertain the linguistic complexity and to make adjustments accordingly to maintain the optimal linguistic lead. Inevitably, the failure of the adult to adjust his/her language accordingly is in turn likely to mitigate against attempts to increase responsiveness to adult's interactions and requests by a less responsive child.

The tendency for mothers of retarded children to use more directive patterns of interaction as illustrated in the Cunningham study, may further impede the use and development of expressive language and social skills by the child. For instance, Hubbel (1977), suggests that directive strategies by the caregiver may be associated with low frequency and lower-level complexity of the young child's spontaneous speech utterances. Furthermore, the reduced responsiveness by the caregiver to his/her retarded child's social efforts through interactions suggests that the child's communication and social interactions are likely to be frustrated. The less frequent interactions between mothers and their retarded children coupled with

frequently unsustained interactions restricts the amount of feedback provided through a communicative act. Inevitably it provides fewer opportunities for language development and social learning and in this sense these children can be considered 'disadvantaged'. This learning opportunity discrepancy is compounded when the language of the adult is beyond the functional limit of the optimal linguistic lead for a given child. Such a situation may arise through insufficient information being generated through the interaction process itself which leads the adult to adapt his/her language beyond the level of optimal linguistic lead. When such a state exists, the adult provides an increasingly more difficult model to imitate. The retarded child's difficulties in his/her interactions and expressive language development, therefore, are compounded by the type and nature of responses that these children appear to elicit from their mothers. The extent to which the mother and child can develop reciprocity in their interactions appears to influence the degree to which mothers can successfully regulate and adjust their speech to their child (Cunningham, 1981).

Thus, there would appear to be an adult commitment in establishing and maintaining optimal interactions within the child's capabilities. Teyber et al (1977), consider that intervention in the future may well be directed at promoting decentring in adults such that they may learn to be more empathetic to children's communications and inter-

actions. Their conclusions are tentatively based on the study of interaction between adults and children over emotion-laden communication which presented antagonistic and intimate encounter situations to children. They found that adults tended to respond with communications whose affect matched that of the child. Parental training therefore in decentring strategies and social cognition procedures may assist parents to increase the amount of information provided through an interaction sequence and this, in turn, may promote a more satisfactory regulation of adult responses to child initiations and responses. Such tuning of adult responses in accordance with both the complexity and the intent of the child's attempts in interaction, inevitably will increase the child's opportunities to successfully engage in social and communicative activity. In this manner, therefore, his/her social development skills will be promoted.

Parent training to increase parent-child social competence

Parent-training as a means of intervening to increase parent-child social competence have been reported. Such procedures have been successful in modifying the mother's behaviour towards the infant (Falender and Heber,1975; Kennell and Klaus,1971; Seashore et al,1973). Recent research has also been directed towards modifying the father's behaviour towards the infant in an attempt to increase the social competence within the child-parent interaction (Dickie and Gerber,1980). This study reported that increases in the father's competence in social inter-

actions with the child were concomittent with decreases in the same behaviours with the mothers, indicating that in two-parent families at least, the triad approach may be more important in the analysis of parental competence. However, the triad approach involving both the parents and the child introduces new complexities into the interactional possibilities between the members and in this sense amplifies methodological difficulties. Nevertheless, such triadic approaches warrant further investigation, and reflect the increasing concern for an ecological perspective on child development.

Developing children's-perspective taking

The reciprocal relationship exists as well. The child who is able to understand the perspective of other people and to discern the intentions and motives of others, it is argued, has a good cognitive footing for subsequent prosocial behaviour (Johnson,1975; Levine and Hoffman,1975; Rubin and Schneider,1973; Waxler et al,1977). Research by Barrett and Yarrow (1977), suggests that there is an interaction between social inferential ability and assertiveness in the prediction of prosocial behaviour in children. In any event, it would seem that the interacting factors of personality and social cognitive abilities such as decentring, require more consideration by researchers in their analysis of dyadic and triadic interactions between adults and children. The nature of the type of interaction patterns and sequences that transpire between adults and disabled children, as previously discussed, may further

inhibit the extent to which assertiveness and the development of perspective-taking can be achieved and, in this sense, further compounding the development of prosocial behaviour.

There may also, however, be a factor of the relative age of the child which may be associated with the nature of the interaction that takes place between adults and children. Wilton et al (1978), found that high-risk (low SES) preschool children who were older tended to interact less with their mothers and to participate less in intellectually-based activities than low-risk preschool children. It is important to note, however that Wilton et al, screened out children with obvious physical abnormalities though the extent to which this was successful is perhaps debatable. Nevertheless, their concluding regard for 'at home' intervention strategies which take account of the child's and the family's ecological circumstances, is worthy of attention. Preschool intervention programmes tend to be more successful if consideration is given to providing for the child in his/her home situation. This may mean providing for family support services for medical care, nutrition, and social worker support (Ramey and Smith, 1977), and through parental training in homemaking, rehabilitation skills and child-rearing where this is necessary (Heber and Garber,1975; Kugel and Parsons,1967).

Children's non-verbal behaviour

It is, furthermore, important to consider that the child's non-verbal behaviour may also affect the adult's

behaviour. The effects of children's behaviour on parents and teachers is well documented for normally-developing children (Bates,1975; Bell,1968,1971,1974; Harper,1971). The evidence is not always clear as to which ways the patterns of interactional effect act upon the adult-child interaction, but there is mounting support for the proposition that teacher's and parent's behaviour affect developmental outcomes (Dunkin and Biddle,1974; Martin,1975; Stevenson,1972). Adult expectancy effects have been suggested as being transmitted through non-verbal cues such as smiling and visual attentiveness (Chaikin, Sigler and Derlega,1974), and probably through the absence of them also. Bates (1976), found that with older children who exhibited higher levels of smiling and visual attentiveness, there was also a correspondingly higher level or reciprocal smiling and visual attentiveness behaviours from the adults. Furthermore, these children who exhibited higher levels of smiling and visual attentiveness were also judged by the adults to have higher levels of intellectual and social abilities. The implications for retarded and other handicapped children from such research may indicate that such expectancy factors may have significant inhibitory effects on the developmental progress and status of the child.

Parental expectancy effects

The degree to which parental expectancy contributes to the rate of developmental progress experienced by developmentally-disabled children is difficult to forecast.

Stinson (1978), reported that mothers of hearing-impaired children expected later development of speech and language than did those mothers of normally-hearing children. Furthermore, these mothers expected later acquisition of acceptable and positive social behaviour, although they did not expect later development of independence.

Similar data are reported for autistic children and parental expectations. A commonly reported sympton of autism is the apparent social distance between the child and other people, and in its severe form where intense anger, fear and prolonged screaming is exhibited, there is an intense and difficult strain placed on the adults who attempt to interact with that child. However, in a study by De Myer (1979), one-third of autistic infants were regarded by their parents as in normal social contact. De Myer also found that about two-thirds of autistic infants in the study were rated as less responsive socially than their siblings or more withdrawn than the normally-developing children used as controls. It is also important to note that it was often difficult to distinguish between the 'good happy baby' and the abnormal 'too good' baby, but that the 'too placid' autistic infant was reported for about a third of the cases. Nevertheless, in situations where there is a lower level of responsivity such as smiling and visual attentiveness, there may also be a comparative reduction in the levels of responsivity from the adults engaged in the interactions and such effects may contribute to inhibiting and indeed compounding further developmental

progress for the child.

Attachment behaviour

Much of the research on attachment behaviour has focussed on the infant and his/her caregiver in the first year of life (Ainsworth, Bell and Stayton,1971; Ainsworth and Wittig,1969; Bell and Ainsworth,1972; Rheingold and Eckerman,1970,1971; Schaffer and Emerson,1964; Stayton, Ainsworth and Main,1973). Eye contact or face-to-face contact has been reported as important in the mother-child attachment process (Rheingold,1961; Robson,1967). Indeed, within the first year of life, the sighted child makes increasingly more selective and highly differentiated responses to his/her mother. In general, many autistic children avoid face-to-face contact (Hutt and Ounsted,1966), and the blind infant have special difficulties in establishing attachment relationships (Fraiberg,1971,1977). Developmental studies seem to suggest that the preferential smile, the discrimination of the mother from others, and the whole sequence of differential responses seem dependent upon visual recognitory experiences (Fraiberg,1977). In the absence of vision, adaptive substitutes must be found and the successfulness of these adaptive solutions will, in turn, monitor the developmental gain these children will make. And, in a similar sense, parents need awareness and assistance therefore, in observing and facilitating these adaptive abilities in their child.

Blehar et al (1977), reported that although normally-developing infants became more responsive in face-to-face

interactions with their mothers during the period from six to fifteen weeks, it appears that the mother initiated most of these episodes and terminated more of them than did the babies. Maternal behaviour, to a large extent, determined whether or not these babies responded positively with smiling, vocalising, movement, or meeting her gaze, and also governed much of the patterning and duration of the proceeding interaction chains.

Thus, disturbances in interaction are frequently typified by gaze aversion by the infant and maternal over-stimulation (Brazelton, Koslowski and Main,1974; Greenberg, 1971; Hutt and Ounsted,1966; Stern,1974). Eye-to-eye contact appears to be important in sustaining the interactions of normally-developing infant and mother dyads (Brazelton et al,1974; Stern,1974; Trevarthen,1974). The reciprocal behaviour of looking into each other's eyes by two inter-actions has been variously referred to as 'mutual gaze' (Kendon,1967), 'mutual glance' (Exline et al,1965), and 'eye contact' (Argyle and Dean,1965), and it is common for these terms to be used interchangeably. In a recent study (Sinson and Wetherick,1981), it is reported that normal preschool children will go to great lengths to try and establish mutual gaze with Down's Syndrome children and exhibit behavious that indicate increasing uneasiness if they have no success in achieving this. The pattern of mutual gaze observed between normal children and Down's Syndrome children seems to parallel the mutual gaze observed between normal children preceding mutually satisfactory play

interactions. The evidence seems to suggest that repeated failure to establish and sustain mutual gaze by normal children with Down's Syndrome children inevitably leads to them giving up on their attempts with the result that the Down's Syndrome child may become an isolate within his/her group. Sinson and Wetherick suggest that their failure may be interpreted by the other children as gaze aversion and as such may be understood to mean a desire to avoid interaction.

Nevertheless, face-to-face is not the only context of early interaction that appears to relate to the quality of later attachment. Bodily contact and feeding behaviours may be similarly linked. Field (1977), found that there were no significant differences in the amounts of maternal stimulation of breast and bottle-feed groups, but she found that mothers of high-risk male infants produced more stimulation during sucking periods though these feeding situations tended to be more disorganised. Whether this difference in stimulation is attributable to the mother's sensitivity, or lack of it, seems to be dependent upon whether or not the baby is a normal or an immature, disorganised feeder (Field,1977). Indeed, there are some suggestions that increasing maternal stimulation with an unresponsive child may actually reinforce that child's unresponsiveness (Brazelton et al,1974; Field,1976).

Autistic meonnates tend to be less successful in feeding, breathing, oxygenation of the body and neurological control De Myer,1979). De Myer reports that difficulties in

chewing, sucking, or swallowing were features of 18% of autistic children whereas they were absent in the normal control children. She suggests that these difficulties may imply a delay in motor integration of the mouth, jaw, tongue and swallowing muscles. Furthermore, there is no significant difference in the amount of breast-feeding between autistic and normal groups. Parental reactions to feeding problems with children varies. For autistic children, parents were most upset about messiness, leaving the table and frequent tantrums. The techniques employed by parents for changing the autistic child's feeding behaviour varied with age, parental expectations, and the severity of the symptoms. Essentially, however, as the parental expectations decreased, so did the frustrations, and parent's acceptance of these behaviours increased.

In any event, the feeding and bodily contact period appears to be a source of further investigation especially in the light of interaction patterns and later attachment behaviours between mothers and their children. Bakeman's (1978), report that interactions between mother and child during feeding situations are significantly correlated with teacher ratings of peer interactions as late as three years suggests this course of investigation is worthy of further pursuit.

A contributory factor in the possible breakdown or disharmonious synchrony in the parent-child interaction, and one that is frequently overlooked by researchers, is the handicapping role of the psychosocial effects placed

on parents in their process and capacity of raising a handicapped or developmentally disabled infant. The constant stress imposed on a family through the continual business of coping with such a child may also be considered to have detrimental developmental outcomes for the child involved. Travis (1976), delineated possible sources of problems accruing from such coping experiences, but the data remains relatively scarce. Travormina's et al (1981), study, however, suggests that parents of physically handicapped children are an essentially normal group with special needs for support and interventions that are arranged to help them cope with the extra stresses that they are expected to face. These parents, for instance, projected the desire to be perceived as 'good parents', though they had doubts as to their own parental successfulness and abilities. They clearly reflected the effects of their tensions and it is inevitable that such problems will reflect in their functioning and interactive patterns when coping with their child. Further research is necessary in this area to extract the effects of prolonged and constant coping stress on such parent's interactive patterns with their children. The hopeful outcome from such investigations would be means of reducing this coping stress and techniques of increasing interactive effectiveness between the parent and the child. Such evidence may yet also relate much of the lower interactive contacts and less frequent discourse patterns reflected in interactions between parents and their handicapped child, to the effects of coping with stress.

McDonald (1977), reiterates that the relationship between the caregiver and the child is essentially one of interaction. She stresses, however, that what is increasingly being established as crucial is the quality of this interaction. In turn, she convincingly argues that this quality of interaction is dependent upon the caregiver's feelings about him/herself, about his/her own situation within society, and about the degree of support she/he receives in the course of child caring. Preschool educational services may be one such support system available to these parents although substantive research is still necessary to determine the effects such experiences have upon handicapped children and their parents. Nevertheless, for normally developing children at least, the results are positive and encouraging (Smith and Bain,1977). These researchers found that day care settings encouraged the development of close relationships with other children and with the adults working in the centres. Sensitive integration of developmentally-handicapped children into such centres with the adequate provisions of materials, facilities, expertise in the front-line and back up staffing and services, and especially funding, may do much for the preschoolers within those settings and also for the parents of those children that for various reasons promote greater stress on parental functioning and effectiveness. The onus for these provisions and supports for these children and their parents should not be assumed to be the sole responsibility of the parents involved. Time-out from the parental role may be as equally as important as

structured time-in, and interventionists should be wary to recognise these basic individual needs and differences of parents.

The problem of temperament

Some argue that the quality of interaction may be at the mercy of such variables as temperament which may be accentuated by problems of health or development. Temperament in interaction with environmental variables seems to play a contributing role in behaviour problems such as developmental delay (Carey,1981).

There appears to be conflicting and inconclusive evidence, however, as to the extent and significance temperament-environmental interactions contribute to such problems. Matas et al (1978), investigated the relationship between the quality of attachment and later competence for two year old infants and found that those infants assessed to be securely attached at 18 months were more enthusiastic, persistent and co-operative, in general, than those insecurely attached at the two year assessment. These differences appeared to be not due to differences in developmental quotient or temperament. Furthermore, no firm agreement can yet be established over temperament characteristics of Down's Syndrome children, for instance. Blacketer-Simmonds (1953), argue that universal temperament characteristics for these children are not definitive. Others typically describe these children as affectionate, lovable, imitative, humorous, stubborn and cheerful (Benda, 1969; Brousseau and Brainend,1928; Hanson,1981; Smith and

Wilson,1973; Tredgold,1922). Baron (1972), compared Down's Syndrome infants with the normal infants in Carey's (1970), study, and found no significant differences in temperament characteristics although there are confounding difficulties in the matching procedures employed in the experimental design.

More recently, Cicchetti and Stroufe (1976), found that Down's Syndrome infants laughed at stimulus objects in a similar developmental sequence as normally-developing infants. However, these Down's Syndrome infants apparently showed a delay until the onset of laughter and were more likely to smile at stimuli when their normally-developing counterparts would tend to immediately laugh. Serafica and Cicchetti (1976), investigated the exploratory and attachment behaviour of Down's Syndrome children as compared to normally-developing controls and found that the Down's Syndrome children differed on the use of the signalling behaviour of crying. Normal children appeared to cry and vocalise more in the absence of their mothers in a strange situation. From this, these researchers concluded that the caregiver's absence in strange situations evoked more more attachment behaviour for the normal than for the Down's Syndrome children. There is a likelihood also that these results indicate that Down's Syndrome children were less threatened by strange situations in the absence of their caregiver than were normal children. A cautionary point, however, is that although Down's Syndrome children may share many characteristics as a group, there is tremendous variability among individuals which inevitably

become submerged in group analytic data.

Throughout the course of this discussion it has been argued that interactions that lack synchrony between the adult, (and indeed), adults and the child can contribute to the compounding difficulties that mitigate against successful and effective interaction and inevitably, the social development of the child. The success of an interaction sequence is dependent upon the behaviour of both, or all, participants in the context of that interaction. This implies that the interaction sequence is likely to be strained or, indeed, to break down if only one of the participants in the encounter fails to sensitively cue into the signals in and across the transaction. One might reasonably expect that the reduced level of responsiveness of a mentally retarded child, produces a less rich environment for him/herself along with a reduced amount of information necessary for the satisfactory regulation of the other participant(s) responses and contributions.

Some researchers have attended to the significance of prelinguistic communication for the eventual development of language (Bruner,1975; Ryan,1974; Sugarman,1973). Jones (1977), suggests however, that Down's Syndrome infants probably show some form of communication dysfunction long before their 'first word'. One problem contributing to why data are insufficient at this point in time, relates to the inadequate development of analytic techniques sufficiently sensitive enough to investigate such interactions effectively, as was discussed earlier.

There are some important outcomes in the Jones' study.

First, it was found that all the Down's Syndrome subjects could participate in prelinguistic communication with their mothers. It appears that Down's Syndrome children initiate sequences less frequently than their matched normals, although they were given less opportunity to do so by their mothers. The outcome of such a situation is that these children received less opportunity to freely choose the topic of the interaction, and hence receive less support and enrichment in their activities than do normally-developing children.

Furthermore, the Down's Syndrome children appeared to engage in less eye contact and less referential looking behaviour, suggesting that they are not extracting the same amount of feedback from their mothers as do normally-developing children. This does not imply that these children do not use these behaviours, but that rather they take advantage of less opportunities to do so.

The Down's Syndrome children appeared to be as vocally active as the normally-developing child both in terms of the variety and number of vocal productions. Despite this, however they appeared to more frequently produce vocalisations that were difficult to match with the context in which they were produced. The mother's responses in these situations furthermore, tended to be brief acknowledgements which produced in effect a reduction in both the variety and the richness of the vocal interaction.

One further point is worthy of note. The Down's Syndrome children in this study employed poorly developed skills in 'turn-taking' and this was coupled with more

frequent vocal clashes with the mother where the mother and the child vocalised at the same time. Pawley (1977), further noted that the mothers of Down's Syndrome children also tended to discourage the imitation of socially unacceptable gestures, thus, in effect reducing the response repertoire of the handicapped child.

The important outcomes of such studies highlight the need to recognise that interactional dysfunction can eventuate through many aspects of the interaction context and process and that, therefore, attention should be directed not only at the behaviour of each of the participants in the dyad or triad, but also to that behaviour that transacts between the developing child and his/her changing environmental circumstances. The behaviour under study, in this sense, can therefore be seen as one which can imply different communicative meanings that become dependent upon the contexts in which the interaction occurs.

HANDICAPPED AND NON-HANDICAPPED PEER INTERACTION

The drive for mainstreaming physically, mentally, or emotionally handicapped children within the school setting has raised three general issues. These issues include the child's self-respect, his/her scholastic achievement, and his/her social and emotional development (Dunn,1958; Johnson, 1962). More currently, however, is the increasing emphasis being directed at preschool education and this further raises the issue of how critical peer imitation is within the preschool setting. Parents recognise that children do imitate each other, and it is with some justification

that they express concern that their non-handicapped children may 'pick-up' behaviours from their handicapped peers.

Paterson et al (1977), however, found that both handicapped and non-handicapped preschool children were more likely to imitate a non-handicapped peer than a handicapped one. This result appears to be neither due to the non-handicapped child's greater abilities in imitating the behaviours presented, nor did it seem due to the influence of popularity on imitation as the sociometric measures indicated no difference in peer acceptance between handicapped and non-handicapped children. Such results support the suggestion that non-handicapped children represent the most effective models for both the non-handicapped and the handicapped children, and that handicapped children in particular, stand to benefit from interactions with their non-handicapped peers.

More recently, Guralnick (1980), examined the extent of interaction between handicapped and non-handicapped children and revealed that communicative interactions between non-handicapped and mildly handicapped children occur at a very high level. An important consideration in Guralnick's work, however, may be that these mildly handicapped children, as in the Ispa and Matz (1978), study, were older by one year than the non-handicapped children and had very similar social play skills as measured by the Parten (1932), scale. Likewise, with earlier studies, there was only very limited social interaction between the more advanced and less advanced children (Ray,1974). Furthermore, non handicapped

and mildly handicapped children interacted less frequently than expected with moderately and severely handicapped children. In this sense, mildly handicapped and non-handicapped children may both benefit from integrated experiences. However, interactions did occur between the less advanced and their non-handicapped advanced peers at about the same frequency as those directed by this former group to children of different developmental advancement.

This belief that retarded children are expected to profit from exposure to developmentally-typical peer models is founded in the belief that they will have increased opportunities to learn adaptive patterns to socially interact with their non-handicapped peers (Bricker and Bricker, 1972). This philosphy is leading to increased efforts in integrating preschool education programmes with retarded and non-retarded preschoolers (Apolloni and Cooke,1977; Wynne et al,1975). Research is generally indicating that positive effects accrue from such integration (Apolloni and Cooke,1977; Guralnick,1976; Wynne et al,1975), though it has been difficult to show that these outcomes are directly consequential from such arrangements (Peck et al,1978). Allen et al (1972), note that within such integrated arrangements there are mimimal amounts of peer imitation and interaction between handicapped and non-handicapped children. Attempts to teach procedures that will lead to increased imitation have been reported (Apolloni, Cooke and Cooke, 1977; Guralnick,1976). These studies demonstrate that increased desired imitation of peers is consequential to intervention. Peck et al (1978), suggest that one

beneficial side effect from such specific training may be increased peer interaction, and this, in any event, may possibly increase opportunities for future positive developmental outcomes for both the handicapped and the non-handicapped child.

Recent studies on the socialisation and the acceptance of educationally-handicapped children illustrates the point that these children tend to be socially isolated within integrated educational settings (Goodman et al,1972; Kolstoe,1972; Ray,1974). Typically, these children have a limited repertoire of acceptable positive social responses. These may include such isolate behaviours as inadequate functional speech (Risley and Wolf,1967), indifference to social requests (Wahler,1967), physical withdrawal from others (Hutt and Ounsted,1966), and gaze-aversion behaviour (Sinson and Wetherick,1981). In the light of the current drive for integration of children with differing levels of developmental competencies, it seems therefore imperative that the focus of preschool educational intervention should be directed towards the development of appropriate and functional speech and social behaviours.

Furthermore, there is a need for research to develop effective training procedures to enhance children's social skills for initiating, building, establishing, maintaining and responding in positive peer relationships. Oden and Asher (1977), support the conclusion that skill training has a beneficial and lasting effect on children's peer acceptance. Ladd (1981), replicated these findings and noted that training those social skills found to be

correlates of children's peer acceptance resulted in improved sociometric status. This accentuates the belief that the development of peer acceptance is in some way a function of the skilful social behaviours existing among peers (Ladd,1981).

Some tentative conclusions therefore seem warranted. The evidence seems to suggest that within integrated preschool settings there is minimal cross-group interaction and imitation, though this is dependent upon the relative degree of developmental difference between the children. This finding also applies to imitation between handicapped and non-handicapped toddlers (Ray,1974), and similarly for preschool children under naturalistic conditions (Devoney et al,1974; Guralnick,1976). Specific teaching procedures appear necessary to facilitate cross-group peer interaction and imitation (Ladd,1981; Snyder et al,1977). Children appear to favour social interactions with others at similar developmental functioning levels (Cooke, Apolloni and Cooke, 1976; Ray,1974). Direct teaching of retarded children to imitate their non-retarded peers appears to facilitate cross-group social interaction (Cooke, Apolloni and Cooke, 1976; Devoney et al,1974; Guralnick,1976; Peck et al,1978). Similar training paradigms also appear to facilitate generalised imitation (Apolloni, Cooke and Cooke,1977; Cooke et al,1976; Peck et al,1978). Furthermore, because of the nature of peer acceptance, there may be a need for peer imitation to be reciprocal if positive social relationships are to develop between retarded and non-retarded children (Cooke, Apolloni and Cooke,1978). This inevitably

necessitates that peer imitation training needs to be directed at both retarded and non-retarded children rather than simply applied to the retarded child alone.

The social-linguistic environment

There is increasing awareness that child-child interaction especially among children of different ages and/or developmental levels may have significant developmental repercussions for the socially-learning and language-learning preschool child. Guralnick (1976), proposes that interventions which facilitate the social play among children of different developmental competencies result in increased positive verbalisations directed to non-handicapped children by handicapped children. Guralnick and Paul-Brown (1977), noted that non-handicapped children adjust their speech to the developmental level of similar-aged peers. The increase in both frequency and complexity was concommitent with higher developmental levels of the peers to whom this language was addressed. Furthermore, these verbal interactions were remarkably consistent between instructional and free-play settings. Importantly, however, the linguistic environment of the handicapped child that was provided by the non-handicapped child was dependent upon the degree of developmental severity that the handicapped child exhibited.

An increased understanding of the importance of the linguistic environment provided by non-handicapped children for their handicapped peers, and the extent and effects of their adjustments in speech to suit the developmental competencies of their less developmentally advanced peers,

would seem to be of immense importance in the consideration of, and the implementation of interventions within the integrated preschool centre.

The value of play

The value of play has been well-sounded by researchers as a medium for cognitive concept development (Vygotsky, 1976), language learning and development (Caplin and Caplin, 1973), and for its importance in providing essential skills for social learning and daily living (Sheridan,1975). A child's ability to initiate, establish, and maintain positive social relationships and interactions with others is an important prerequisite for much of that child's social behaviour development, and that its absence may be viewed as contributing to retardation. Failure to develop social behaviour, speech and appropriate play behaviour is argued to be predictive of later childhood retardation (Lovaas, Freitas, Nelson and Wahlen,1974; Lovaas, Schaeffer and Simmons,1974), and to possible longer-term difficulties (Cowen et al,1973). Yet children with less obvious compounding handicaps are less likely to be identified as they present little if any disruptive or organisational difficulties within the preschool setting. Difficulties in identification, therefore, may lead to oversights in the provision of intervention strategies designed to facilitate social development of these at-risk children.

Approaches to facilitating social interaction

Increasingly, behaviour modification programmes have been directed at facilitating constructive social inter-

action between preschool children (Buell et al,1968; Hart et al,1968; Kirby and Toler,1970; O'Connor,1969). Typically, these studies determine a specific behaviour category such as co-operative play, and manipulate the social and physical environment to promote the desired behaviours. However, whereas the individual planning and instructional paradigm has been employed successfully in the facilitation of academic gains (Haring and Krug, 1975), not all writers agree such formats are suitable in the analysis and treatment of delayed or deviant social responses (Strain, Cooke and Apolloni,1976; Strain and Shores,1977). These writers favour intervention strategies based on the reciprocal conceptualisation of social behaviour in the remediation of social deficits. Their emphasis, accordingly, is placed upon social exchange rather than the behaviour of separate individuals, and they view such social exchange as the basis and target for change.

The teaching of skills of play has become part of preschool educational programmes for mentally retarded children (Wehman,1977), but the theoretical orientation that these programmes should follow is still disputed. Piagetian models are proposed by cognitively-orientated educators (Kahn,1979),whereas behaviourally-orientated educators suggest that programmes need to be based on functional circumstances of the child and his/her environment and techniques of operant conditioning (Switzky et al, 1979).

Odom (1981), suggests that the cognitively-orientated

developmental model which has been successfully implemented with normal and less developmentally advanced children (Hoffman et al,1979), may be useful for young mentally-retarded children. He suggests that as the child grows older, or the retardation becomes more acute, there is a decreased relationship between play and the developmental age of the child. For these children the functionally-orientated behavioural approach may be more useful in teaching play skills. However, it may be argued that such an approach is implicitly too simplistic and that attention may need to be directed at generating new approaches that incorporate the advantages of all traditional orientations.

One concluding remark needs to be stated. With the determination of researchers and educators to intervene in order to facilitate developmental advancements, there needs to be caution to ensure that those seemingly less obvious delays and deficits are not oversighted. Within the interactions of all the variables that complement the total functioning child in his/her environment, there is an interdependence which inevitably must contribute or compound the nature and effectiveness of all other variables. The functionality of social interactive skills, therefore, inevitably influences the functionality of skills in other domains.

CHAPTER FOUR : SUMMARY AND CONCLUSIONS: Implications for the development of early intervention programmes

Introduction

A remarkable feature of human-kind is that most children grow up to think, speak and behave like adults. While the specifics of development have captivated research interest in the past, these remain only tokens of the grand and complex achievement that most children seem to proceed through in the pathway to adulthood. Only when children are sufficiently biologically impaired or when they experience environments that continue to mitigate against this complex development, does the notion of intervention become relevant. And it is at this point that intervention based on individual differences can only be viewed as being worthwhile when the specifics of development can be integrated and applied through intervention programmes that demonstrate their worth by producing developmental outcomes which can be deemed as more viable than those produced by other programmes or through the absence of intervention. Such is a daunting task. In this sense, therefore even the most effective preschool programmes cannot be conceived as a form of innoculation (Gray and Klaus, 1970), but must be viewed as forming the basis of a long-range system of strategies (Bronfenbrenner,1977).

This chapter attempts to highlight propositions that may serve to link those areas dealt with earlier in this paper. An attempt is made to integrate the ecological perspective of child development, language and communication

difficulties, and social relationships and interactions, into some considerations and implications for early intervention programmes.

A. THE ECOLOGICAL PERSPECTIVE OF CHILD DEVELOPMENT

The use of ecological theory and methods is argued to be a potentially useful means of increasing our understanding of developmentally disabled persons and their supportive services in their natural habitats (Scott,1980). Ecological theory attempts to link behaviour and the environment together into an interdependent system. The ecological approach to human development takes the position that the human is a growing and active organism in a changing environmental setting.

Proposition 1

> The ecological perspective views child development as a process of accommodation between the changing and growing child and his/her changing circumstances of the immediate setting in which that child is active, which in turn are affected by the relations between the wider contexts which encompass the immediate settings.

The child is viewed as an active participant in the developmental process rather than a passive responder to environmental stimuli. The 'tabla rasa' concept of the child as proposed by some extreme environmentalists (e.g. Rose), cannot be accepted. Rather it is through his/her activity that the child increasingly enters into, extends, and restructures his/her environment. Such activity on the behalf of the child is necessary in order that she/he can continually adapt to the changing circumstances of the environment. There is also a reciprocal

interaction process between the child and his/her environment for both the child and the environment exert influence on each other. Furthermore, the environment is not restricted to those conditions that determine the immediate setting but also incorporate the relations between other surrounding settings in which this immediate setting is embedded (Bronfenbrenner,1979).

Proposition 2

> Child development is a process that involves an active child who restructures or extends his/her conception and awareness of his/her environment.

The interactions that occur between the growing child and the environment can best be conceptualised in a more dynamic model of developmental transaction. This model highlights the continual and progressive interplay inherent in the interactions (Sameroff,1975). This transactional approach stresses the plasticity of both the environment and the growing child, as well as the activity of the child participant. The child actively organises and structures his world. Accordingly, the restrictions in development are not some predetermined set of traits but rather the processes by which these traits are accommodated through the transactions between the child and the environment (Sameroff,1975).

According to this view, children manifest deviance in developmental norms when some continuous disharmony in the transactions exists between the child and his/her environment. Sameroff argues that two forces may operate to mitigate against the normalisation of developmental deviance. First he refers to the casuality attributable to an organism's

integrative mechanism ('reproductive casuality'), and secondly, that attributable to environmental forces which mitigate agains normal integrations during development ("caretaking casuality"). Inevitably there may exist an interactional effect between both these continuum which may serve to further compound the integrative success by the developing child.

Thus, the child actively operates on his environment which is constantly changing, and in doing so is able to extend and restructure his/her conception and awareness of this environment. Successful adaptation and accommodation inevitably contributes to the developmental status of the growing organism. Furthermore, the rate of development can be considered to vary with respect to individual differences between children.

Proposition 3

> Child development research should account for the characteristics of the individual, the environmental setting in which this individual operates, as well as those processes which occur between and within these.

Development occurs within context. It involves not only the properties of the individual but also the circumstances of his/her environment and the processes that operate in and between these. This implies that research needs to account for those environmental influences, both within the individual's immediate setting and those settings which encompass the immediate setting but which are somewhat further removed. To establish whether or not development has occurred as the result of environmental manipulation, it is essential to determine whether or not this developmental

change can be evidenced in other settings and at other times.

Experimentally, such considerations of the characteristics of the child and his/her environment, and the interactional processes operating, imposes methodological complications. The interdependence between these properties necessitates that systems approaches be adopted and it is contended that the complexity inherent in these interdependencies are likely to determine the main effects in ecological research to be attributable to interactions (Bronfenbrenner,1979).

Proposition 4

> The developmental status of a child is illustrated by the extent to which his/her engagement in behaviour is meaningful or intentional to that child and other participants within a given setting, and is initiated and sustained by that child in the absence of or without the direction of others.

The developmental status of a child changes as she/he successfully accommodates between the changing circumstances of his/her environment and the adaptations and restructuring that the child brings to bear upon his/her circumstances. Concomitant with this activity comes an increased ability to conceive and differentiate those properties of the child's changing environment. As this ability increases, the child is able to contend with wider aspects of his/her environment and in doing so increases the amount of control she/he exhibits upon the environment. Furthermore, this control facilitates and provides for increased opportunities for the child to engage in more and wider modifications and restructuring which in turn contribute to both the existing

structure and its content.

The extent to which a child's modifications or restructuring is successful is, to a large degree, dependent upon the nature and content of the feedback that the child perceives. If interactions serve to be meaningful or intentional, the child is encouraged to continue as an active participant. Conversely, unsuccessful interactions are reflected in the nature and content of feedback that the child may or may not perceive. Such feedback obligates the child to employ different modifications or restructuring or, in turn, may opt to abandon subsequent attempts to accommodate. In this way, developmental gains are monitored by the nature and content of the feedback resulting from the child's activity in modifying or restructuring his/her environment. The mitigating effects of those difficulties within the child or his/her environment clearly contribute to the rate of developmental gain in that the pathway to meaningfulness and intentionality is compounded by the provision of and the reception of feedback to the child's attempts to modify and restructure his/her environment. Conversely, the child who receives positive feedback from attempts to modify and restructure is likely to be more willing to exhibit these behaviours in the absence of or without the direction of others.

Proposition 5

> Developmental progress is enhanced when the child frequently engages in reciprocal and increasingly more complex transactions with a person for whom the child has established strong emotional attachment.

Evidence suggests that the mother's behaviour towards

younger children may be related to the children's later developmental status (Kennell et al,1975; Ringler,1977). Furthermore both qualitative and quantitative differences have been isolated in the interactions between mothers and their Down's Syndrome infants (Jones,1980), cerebral palsied children (Kogan,1979),and for children with sensori-motor delays (Beckwith et al,1976; Sigman,1978). These interaction patterns, in general, appear to reflect later peer ratings for these children (Bakeman,1978).

An essential feature of adult-infant interactions is that adults appear to systematically alter the length and complexity of their speech to children (Broen,1972; Fraser and Roberts,1975; Martlew,1980; Moerk,1974; Snow,1972). These modifications, however appear to be disrupted for mothers with retarded children (Marshall et al,1973; Terdal et al,1976), where it is frequently reported that more regulatory control and less interaction initiation was employed by these mothers. Such systematic adaptation of the adult speech to the child's linguistic competence is contended to be essential in the facilitation of interactive effectiveness and hence of developmental progress.

In the early years, at least, the infant has a psychological and survival dependence on the caretaker and the mother in particular for the satisfaction of such basic needs as food and comfort. Through the continued interaction between the child and the mother there develops an expectancy and predictability in the behaviours of both the child and the mother. Although this strong and enduring attachment

may be formed with someone other than the mother, it appears that the quality of the interaction is an important variable (McDonald,1977). An essential quality of continuing interactions with an enduring and emotionally-significant adult is that as one member of the dyad undergoes developmental change, so too is the other likely to undergo change, and this synchrony would appear to facilitate developmental progress thus providing for the regulation of progressively more complex reciprocal transactions. However, where the reciprocal transactions between mother and child are disharmonious or indeed break down, such developmental progress becomes interrupted and constrained. Nevertheless, evidence from intervention programmes that incorporate parents as teachers and agents for change in their children are providing evidence of enduring and positive effects for the mother, the child and other siblings (Gray and Klaus,1970; Gilmer et al, 1970; Karnes et al,1968,1969(a),1969(b),1970; Levenstein,1972).

Thus developmental progress is facilitated when the child engages in reciprocal transactions which are progressively more complex and which occur with a person with whom the child has established a strong and enduring emotional attachment.

Proposition 6

> The characteristics of a setting and the relation of a child to that setting evoke roles and associated expectancies in accordance with those roles.

The extent to which parental expectancy contributes to the rate of developmental progress is difficult to predict. Mothers of hearing-impaired children expected later development of speech and language than normally-hearing children

(Stinson,1978). However, differences in expectation may be attributable to individual differences in parent and child relationships. De Myer (1979), found that one third of parents of autistic children regarded their children as in normal social contact, though two thirds rated their handicapped child as less socially responsive than their siblings and more withdrawn than their normally-developing counterparts.

Nevertheless, where children respond with lower levels of smiling and visual attentiveness, for instance, there may be a comparative reduction in the levels of reciprocity and interaction from the parents involved in the interactions. Reduced levels of satisfactory interaction in conjunction with a reduced level of responsiveness by both the child and parent, provides a less rich environment for the child, and thereby constrains developmental progress by providing fewer opportunities to explore, test, and adapt to the environment.

Thus, the child who makes slow developmental progress over time evokes expectations that she/he will continue to do so.

B. LANGUAGE AND COMMUNICATION

Language and communication difficulties are frequently cited as major disabling conditions for many children. Despite the wealth of research that has been directed towards understanding the language process there still remains many difficulties to unravel and theoretical conflicts that remain unsolved.

Proposition 7

> Language disorders encompass a wide range of difficulties which can be broadly conceptualised in terms of language delay, communication difficulties, and problems in speech.

Delayed language includes cases such as the severe deficit in the non-verbal child, those children who have substituted the conventional language system with gestural and primitive vocal systems, and those who use incomprehensible modes of expressive speech. Communication difficulties are apparent when children have an adequate understanding of language and ability to express language under optimal conditions but who nevertheless are ineffective in communicating within the contexts of normal social and learning demands. Problems in speech include articulatory problems, voice disorders and stuttering which may interfere with communication. Articulatory problems, for instance, are cited as contributing to the phonological difficulties in Down's Syndrome children (Stoel-Gammons,1980).

Proposition 8

> While it may be possible to isolate general areas of language disorders, it is not uncommon for difficulties in one or more areas of language to interact with and influence other possible areas of language disorder.

Speech disorders, for instance, may in turn become a communication disorder as well. Articulatory problems are frequently reported for Down's Syndrome children (Blanchard, 1964; Dodd,1975,1976; Karlin and Strazulla,1952; Lenneberg, Nichols and Rosenberger,1964), and can be seen to contribute to ineffective communicative interactions (Stoel-Gammon,1980).

Proposition 9

> Language programmes must be functional in order to encompass the wide range of language delay and dysfunction that may be present.

The difficulty imposed on placing clearly defined boundaries on language difficulties which is compounded by the interactive effect each disorder may have on others is furthermore accentuated by the wide range of individual differences that exist between children. Intervention programmes need to not only account for the individual differences between children but also to recognise that within each child there is a variability of language attainment. To account for such variability, language intervention programmes must be extremely functional (Schiefelbusch,1978), which in turn is dependent upon the repertoire of meaningfulness each child can contribute and utilise.

Proposition 10

> Learning principles appear to play some part in language learning and in shaping subsequent behaviour as well, but it is doubtful as to whether these principles alone can adequately account for language acquisition per se.

The learning theory account of language development has difficulty in explaining how the child comes to experience such a wide range of stimulus response situations that would be necessary for language to proceed at the rate of acquisition that is typical for normally-developing children. Furthermore, it is doubtful whether the learning theory model is completely plausible in that it is difficult to see how adult reinforcement can easily explain the child's learning of correct grammar (Brown,1973). Rather than being a passive

receptor and responder to language, the child appears to be an active participant in the language learning process.

Nevertheless, reinforcement programmes have been successfully applied to increase vocalisations in young and older children who are experiencing severe difficulties (Hewitt, 1965; Hingtgen and Trost,1966; Isaacs et al,1960; Lovaas, Berberich et al,1966; Sherman,1963;1965; Salzinger et al, 1965).

Proposition 11

> Current thinking tends to favour the interaction between environmental and innate factors, and views the child as being biologically prepared for language, but who requires extensive experience with expressed language for adequate language development to proceed.

Such a view places an emphasis upon the interaction between environmental and innate factors. Piaget contends that the infant's innate tendency to exercise his/her reflexes and to organise his/her actions to adapt to the environment promotes those cognitive abilities during the sensorimotor period that are considered to be prerequisite to language development. Likewise, Bruner attributes language development to an interactional position. Hebb et al (1971), argue that 'learning co-operates with heredity' and these writers stress the importance of latent learning involving perceptual learning, sensory pre-conditioning, and one-trial learning (Fundudis,1979). Piaget, Bruner, and Hebb's theories are all essentially different but their underlying premise is that language development manifests through an interaction between the environment and hereditary factors.

Proposition 12

(a) Language is essentially a symbolic system which is founded in the nature of meaningfulness, and meaningfulness resides in the repertoire of the child's experience.

Piaget argues that representational stages in cognition must precede any symbolic communication system, and that the child must therefore first construct a 'reality as known' (Piaget,1951; Piaget and Inhelder,1966). This 'reality as known' emerges from the child's concrete sensorimotor encounters with the world and becomes progressively modified and restructured as the child adapts to the changing environment. This representational stage is less bound to the sensorimotor experience though the essential pathway proceeds from sensorimotor interactions to representational levels.

(b) Intervention programmes in infancy should provide materials and opportunities for the meaningful exploration of sensorimotor experiences which are considered to be prerequisite to higher representational development.

Meaningfulness, it is proposed, resides in the child's repertoire of experience and this is prerequisite and fundamental in the acquisition of higher representational stages. Intervention programmes should therefore provide both materials and opportunities for children to encounter sensorimotor experiences.

Proposition 13

Two fundamental considerations in language development should be reflected in the conception and implementation of language-intervention programmes, namely that grammar is preceded by meaning, and that meaning and grammar proceed from the simple to the complex.

Many theorists aruge that children's semantic, or deep structure, capabilities always exceed their linguistic

capacity to express these underlying conceptual structures (Brown,1973; Clark,1973; MacNamara,1973; Smith,1975). The child must understand the nature of relations between actions, objects and events before she/he can construct or comprehend sentences about them. In this sense, therefore, meaning must precede grammar.

Furthermore, both semantic and grammatical language development proceed from the simple to the complex. The increasingly more elaborated and differentiated cognitive and language patterns that emerge over the early years is reflected in progressive precision, from the simple all inclusive to the complex and differentiated, that children apply to concepts such as family relation terminology (Bower, 1970). Likewise children's grammar is not complete by school entry but progressively becomes redefined and elaborated (Chomsky,1969; Palermo and Molfese,1972).

Both these aspects of language development - that semantics rules over grammar, and that language development proceeds from the simple to the complex - appear to be universal (Brown, 1973), and to apply to all children (Smith,1975). Fundamental cognitive and language processes in all children appear to develop in the same general progression though at varying rates of acquisition (Brown,1973).

Thus intervention programmes for language facilitation should be founded on basis of meaningfulness, and teaching strategies should proceed from the simple to the complex while maintaining the essential and prerequisite core of meaningfulness.

Proposition 14

> An underlying assumption made concerning the purposes of intervention in the management of the behaviour of communication-disabled children is that the desire is to bring about a positive change in adaptive behaviour.

Both the growing child and the environment in which that child operates are constantly changing and this demands that the organism must engage in adaptive behaviour in order to accommodate these changes and provide for opportunities to exert control over his/her setting. Communication makes adaptation to society possible, and the possibilities within the language system allow the child to adapt to his/her environment and to exert this control over it. One function of language is that it provides a means to seek or arrange gratifications and intervention programmes should capitalise on this. This implies that activities can be arranged around naturally arising needs of individual children, and that circumstantial arrangement of environmental contingencies may also create needs that may form the basis of meaningful communication in the quest for adaptation.

Proposition 15

> The developmental aspect of language and communication is founded on the notion that there is a bi-directional effect between the maturing child and his/her increasing sensory capabilities.

Two developmental forces operate to bring the child into closer contact with his/her environment. First, physical growth increases the child's mobility and thereby increases the range and variety of environmental contact that is possible. Secondly, the child's sensory-perceptual system becomes increasingly sophisticated which in part may be a

response to the increased demands placed on the child with the enlarged repertoire of environmental situations in which she/he must adapt. The implication of this is that a handicap in itself may further restrict the child's exploratory chances and hence his/her opportunities to meet with an expanded range of environmental circumstances that may demand adaptation. In this respect one can immediately think of physically handicapped children, though the problem extends beyond this to the environmental deprivation brought about through a parent's embarrassment at exposing herself and her child to situations where the child may seem to act differently to normal children.

Proposition 16

(a) Language-disordered children appear to follow a developmental course in producing responses that is similar to that pathway followed by normally-developing children.

(b) Language disordered children appear to show some differences, however, to normally-developing children in the performance of language.

There is no evidence to suggest that language-disordered children take a different developmental pathway to normal children in respect to the initial use of an action strategy nor that they depend more on literal interpretation in producing responses as proposed by Sinclair (1976). As for normal children, prior linguistic context influences the nature of responses (Shatz et al,1980). Language acquisition among mentally retarded children likewise appears to follow a similar developmental pathway to normal children, though the rate of acquisition is much slower (Lenneberg, 1967; Yule and Carr,1980). The developmental similarity

in the pathway taken by children, therefore makes early identifiable at-risk children with a high probability of language delay and difficulties (e.g. Down's Syndrome), a valuable source of research information on language acquisition (Wiegel-Crump,1981).

Shatz et al (1980), however, isolated two areas with language-disordered children that are at variance with normal children. These children appear to be less able to produce informing responses when they are called for. Also they appear to have more difficulty taking account of prior linguistic knowledge when they are determining what is called for.

Proposition 17

(a) While it is recognised that the sequential and systematic teaching of language skill components may produce significant gains in specific areas of language of children who were previously language-limited, a considerable amount of normal language learning occurs on a whole-task basis.

(b) Intervention programmes should provide opportunities for the child to encounter, apply, test, and evaluate learning about language in a variety of settings and across time.

Specific language component teaching has been applied and successes have been reported. Guess, Sailor, Rutherford and Baer, (1968), taught plurality for instance. Likewise, comparative and superlative forms of adjectives (Baer and Guess,1971), verb inflections (Schumaker and Sherman,1970), and other studies report success and it is also suggested that some of this language skill learning is transferring to other new situations (Synder, Lovitt and Smith,1975).

The problem with the language produced by children who

have been taught using systematic skill teaching techniques is that it frequently lacks spontaneity and lacks intonation (Ingalls,1978; Lovaas,1968). The essential point here is that children do not learn nonsense to make sense of language. Rather they use sense, or meaningfulness, as the basis of both the comprehension and production of language. Meaningfulness as has been contended, resides in the repertoire of the child's experience. Hence language learning, and teaching, should be founded upon meaningfulness which is bound into the child's experience.

To attain a new and advanced developmental status implies that a child can initiate the new repertoire of language behaviours in new and different situations and across time. This implies that for language learning to be successful intervention programmes must ensure that opportunities exist and can be taken advantage of for the child to apply and test out his/her new language learning.

Proposition 18

> Despite the evidence that productive programmes have been carried out at later ages, the amount and speed of spoken language acquisition appears to be inversely related to the age at the time of the commencement of the intervention for most handicaps.

Successful intervention programmes have been carried out at later ages (Carrier,1977; Carrier and Peak,1975). Some writers suggest the first two years are critical for the development of speech communication skills in hearing-impaired children (Fry,1966; Horton,1974; Lloyd,1976; McConnell,1970; Sanders,1977; Schiefelbusch and Lloyd,1974). Successful early intervention can be argued to mitigate against compounding

factors arising through both unsatisfactory language and communication episodes and through the loss of adaptive possibilities that become denied to the child. Therefore, it seems important that intervention programmes should be matched not only to the developmental circumstances of each child but should also occur at the earliest age possible.

Proposition 19

(a) Play is a medium for cognitive concept development, and a valuable foundation setting for language development.

(b) Children need time and opportunities to engage in play activities with and without others, in a variety of situations, and with a choice of both unstructured and structured play materials.

Play has been cited as a medium for cognitive concept development (Vygotsky,1976), and as a foundation setting for language development (Caplin and Caplin,1973). Play has been argued to reflect the child's cognitive development (Piaget,1962; Rubin and Maioni,1975; Watson and Fisher,1977). Training procedures to increase socio-dramatic play has brought corresponding increases in intelligence scores (Rosen, 1974; Saltz, Dixon and Johnson,1977; Saltz and Dixon,1974). There also appears to be a positive relationship between the level of play and the developmental status of mentally retarded children (Wehman,1977). Language provides an opportunity to practise and experiment with language and to encounter and manipulate experiences that assist cognitive growth. Lombardino et al (1981) suggests that structured training sessions should be followed by play sessions designed to facilitate the learner's generalisation of the targeted

language responses into more natural settings. However, it can be argued that play in itself can become the 'training' setting and intervention programmes could well incorporate this aspect into their language systems.

Children need time to play. Teece (1976), reiterates the value in providing both time to play and access to play provisions and argues that the over-reliance of programmed technological devices designed to facilitate language may actually deny the child valuable play time and the opportunities to explore and use language within these naturalistic settings.

Proposition 20

> Providing a rich and stimulating linguistic environment is an essential prerequisite, but ultimately its effects on a child's language development is dependent upon how this source is capitalised on in terms of the child's experiences and individual needs, and how it is structured into the intervention programme in a meaningful way.

Institutional studies have highlighted the importance of verbal enrichment, stimulation and social reinforcement. Language development of infants appears to be adversely affected by prolonged institutionalisation in which there is insufficient quality and quantity of satisfactory stimulation (Haywood,1967; Provence and Lipton,1962). Enrichment of the institutionalised child's social environment suggests that the responsiveness of the adult may positively affect the child's vocalisations (Weisberg,1963).

However, extreme inadequate verbal and social enrichment may also be present in some home situations (Jones,1954). The essential point is that what appears to be important is

the quality of the interactions (Haywood,1967; McDonald, 1977; Rutter and Mittler,1972; Tizard,1969). The nature and quality of the social interactions within a stimulating and supportive environmental setting are therefore proposed to be important variables in the successful development of language and communication (Friedlander,1971; Rutter and Mittler,1972).

Proposition 21

> The amount and nature of parent-child interaction affects the rate of language development in young children.

The suitability of the mother's language input to her child's language learning is extensively reviewed (see Mahoney and Seely,1976). Correlational studies have been reported for various measures of mother and child language (Abrams, Chiarello, Gress, Green and Ellet,1976; Ganzer and Dodd,1975; Moerk,1975; Nelson,1973; Newport, Gleitman and Gleitman,1977). Rondal (1978), reported correlations of mother and child language on conversational speech in the linguistic environment of normal and Down's Syndrome children. Maternal speech appears to be adapted to the linguistic competencies of the child to whom it is directed.

Parents who exercise strong discourse control tend to have children with more advanced language skills than those of that child's peer group, but who likewise may have difficulties in initiating and sustaining discourse with other children (Martlew,1980).

Proposition 22

Parents and peers can act systematically in conjunction with interventionists as agents of change for linguistically less-well developed children.

Parents have the advantage of usually being very reinforcing to their child and in this sense can be ideal teachers (Tharp and Wetzel,1969). Indeed, trained parents may obtain better responsiveness from their autistic children, for instance, than professionals (Schopler and Reichler,1971). The rationale for using parents as teachers is well reviewed (see Parker and Mitchell,1980). Many parent training approaches have involved the application of learning theory in the development of speech and language skills. There are typically two phases to training with the first focusing on developing imitative and motor behaviour (Peterson,1968; Schoeder and Baer,1972), and secondly on teaching functional and spontaneous speech (Sloane et al,1968).

Children are likely to imitate the behaviour of a peer whom they observe to be the recipient of reinforcement (Bandura, Ross and Ross,1963; Broden et al,1970; Carnine et al,1968; Christy,1979; Clark,1965; Geshuri,1972; Kazdin,1973). Non-retarded toddlers have been trained to function as effective behavioural models for retarded children (Apolloni, Cooke and Cooke,1977). Likewise, behaviourally-disordered children have been taught to imitate normal peers with appropriate behaviours (Csapo,1972). The systematic withdrawal of peer attention has been applied to reduce children's disruptive behaviour (Lovitt, Lovitt, Eaton and Kirkwood,1973; Solomon and Wahler,1973). Other programmes have applied

contingent rewards to both the target child and peers for reciprocal behaviour changes (Walker and Hops,1973).

Thus both parents and peers can be useful and effective agents for change in programmes designed to modify children's behaviour.

Proposition 23

> Social interaction in itself may not be sufficient to increase the verbalisations of children who are experiencing language difficulties. Both the nature of the interaction and the feedback between the child and other participants are important variables.

Reynolds and Risley (1968), suggest that social interaction in itself may not be sufficient in increasing culturally-deprived children's verbalisations. An essential consideration within language intervention programmes, therefore, should be on the nature of the interaction (see proposition 20) and the feedback between the instructor in language and the child (Baer and Sherman,1964; Fredericks et al,1978; Hewitt,1965; Sherman, 1965).

Proposition 24

(a) Total communication strategies provide an alternative and/or supplementary form of communication for some children with language difficulties.

(b) The expressed fear that spoken language may be inhibited by exposure to non-oral language systems cannot be supported.

(c) Communication-deficit children are not deficient in communication skills per se, but frequently engage in non-speech communicative behaviour.

Total communication systems provide an alternative form of communication for some language-delayed children for whom oral language instruction appears to be inadequate. Such

systems are reporting that they facilitate oral communication as well as providing an alternative communicative option (Goodman et al,1978). Other non-language benefits are reported to accrue from such systems. These include increased attentiveness and motivation, vocalisations, and intelligibility, improved manual dexterity and social interaction and as well decreased behaviour problems (Lombardino et al,1981).

The fear that exposure to non-oral systems may impede the development of oral systems cannot be sustained (Jones, 1980). Manual training techniques are reported to result in increased spoken language among severely handicapped children (Harris-Vanderheiden and Vanderheiden,1973; Hobson and Duncan,1979; Miller and Miller,1973), and are argued to be temporary language systems until oral language is established (Fristoe and Lloyd,1977).

Communication-deficit children are not deficient in communicative behaviours per se but frequently employ non-oral communicative techniques such as gestures, scent marking, and role playing (Hollis and Carrier,1975). Blind babies tend to have developed advanced hand-sign language despite the absence of facial indicators (Fraiberg,1977), and sensitive intervention strategies will seek to understand and capitalise upon these communicative behaviours.

The challenge for interventionists is to understand these 'unconventional' communicative systems and to implement them as a basis for the development of successful oral-language directed programmes. The success of intervention is most likely tied into the ability of the interventionist to

capitalise upon the communicative strengths of the child for these strengths reside in the meaningfulness repertoire of the child's experiences. As such, they have a relevance to the child and provide a meaning basis for subsequent attempts by the child to comprehend and to produce language.

C. SOCIAL RELATIONSHIPS AND INTERACTIONS

Proposition 25

> Longitudinal studies suggest continuities exist between early interaction patterns and subsequent development.

Some longitudinal studies suggest that early interactive behaviours may be important in later development for high-risk children (Beckwith et al,1977; Brown and Bakeman,1979; Clarke-Stewart,1973; Field,1979; Jones,1980; Pawly and Hall, 1979). These continuities, however, are not necessarily easily identifiable. Lower developmental status infants have been reported to have experienced less mutual gazing at one month, fewer interchanges with smiling during gazing behaviour, and less general attentiveness at eight months than higher-developmental status children (Beckwith et al, 1976. Sigman (1978), suggests that the pattern of behaviour observed in the first few months is the best predictor of developmental status at two years of age. Mother and three-month old interactions during feeding time are significantly correlated with teacher ratings of interactions with peers as late as three years of age and this data seems to reflect the pattern for Down's Syndrome (Jones,1980), and cerebral-palsied infants (Kogan,1979).

Proposition 26

> Psychosocial risk is inherent in those relationships where the interactions between the parent and the child lack interactive synchrony (Sawin et al,1980).

The differing characteristics that exist between different parent-infant dyads interaction patterns may be attributable to the transactional processes operating between environmental, genetic, and biosocial factors. Where there is a disharmonious regulation of activity between the participants within an interaction there is a likelihood of psychosocial risk establishing and manifesting further compounding difficulties for both the parent and the child.

Proposition 27

> Synchrony, or the effective patterning of the mother-child interaction, is dependent upon the joint regulation of activity such that the communicative acts of both participants match the predictions each person has made concerning the other's behaviour.

If the purpose of an interaction is to engage in dialogue then both participants must share communicative acts that hold similar meanings for both people. A smile, for instance, may indicate approval and facilitate more conversation. For an interaction to be appropriately synchronised, communicative acts of both participants must match the predictions each person has made about the other's behaviour. When a mismatch occurs between predictions and behaviour, the interaction fails to be jointly regulated and may become disordered (Tronick,1980). Because humans adapt, predictions necessarily change over time and thus this joint regulation is best expressed as synchrony. The emergence of synchrony

appears early. Neonates demonstrate interactive synchrony by their co-ordination of movements with adult speech (Condon and Sander,1974). Conversely, the absence of smiling and eye-to-eye contact may create an uncertain basis for predictions about the other's behaviour to be made and inevitably may mitigate against successful interactive synchrony between the mother and her handicapped child.

Proposition 28

> The study of parent-child interactions is impeded by the lack of refined procedures and analytic techniques that are appropriately sensitive enough to capture the complex transactional nature of interactions.

Interactional research is still evolving such that theories attempting to account for the infant's contribution to the parent-child interaction system remain tentative. No one well-rounded theory has been established to integrate those qualitative factors considered important in promoting optimal infant development (Sawin et al,1980).

Various research methodologies have been employed to study interactional systems. Multivariate strategies are useful to incorporate large numbers of individual factors but become complicated with statistical complexities and are subject to loss of reliability and validity when the 'best' qualitative aspects of interaction are matched with the characteristics of individuals.

Systematic observation techniques are valuable means of objectifying observations but it is argued that attention to specific behaviours in specified intervals may lead the observer to ignore the overall flavour of the interaction.

The dialogic model of interaction attempts to integrate the objectivity and specificity of systematic observation techniques with more global considerations. While the structure of interactional episoding may be revealed through such approaches, inevitably there is a loss of information concerning specific dialogic content.

There has been a shift from the reliance on self-reporting by parents to more objective techniques (Mitchell, 1976), and a shift from the general study of categories to specific aspects of behaviour and in particular to the familial interaction process (Heatherington and Martin,1972).

Inevitably, the approach taken by a researcher will set the parameters on the information that is gained. Research strategies need further development to become sensitive enough to account for the complex transactional effects that are inherent within interactions.

Proposition 29

There is an urgent need for research

(a) to produce reliable and refined measurement and analysis techniques that are appropriate to parent-child interactions

(b) to clarify the nature of the relationships between early interactive patterns and later child development

(c) to determine the form and content of intervention which is appropriate for dyads that lack interactive synchrony

(d) to explain why some infants with established risk status seem to nevertheless develop normally regardless, as contrasted to further known-risk children who manifest difficulties at later ages

(e) to overcome the difficulty in identifying children who manifest no obvious stressors at or immediately subsequent to birth, but who nevertheless come to exhibit developmental dysfunctions at later ages.

Some infants with established risk status nevertheless continue to develop normally as contrasted to similar risk status children (Parmelee, Kopp and Sigman,1976). This introduces identification problems and may imply that definitions of risk may be still inadequately sensitive enough to identify or to make prognostic inferences about children. Similarly some children who exhibit no obvious stressors at or subsequent to birth nevertheless develop developmental dysfunctions at later ages (Thoman,1980). Further research may reveal both the interactive effects that may contribute to such developmental outcomes and furthermore may assist identification of such children by sharpening up the notion of risk status.

Proposition 30

> Adults systematically alter the length and complexity of their speech to young children.

It is frequently reported that mothers systematically alter the length and complexity of their speech to young children (Broen,1972; Fraser and Roberts,1975; Martlew,1980; Moerk,1974; Snow,1972). This systematic adjustment includes rate of speech, the increased use of more pronounced intonation patterns and more correctional and teaching strategies (Moerk,1977). The adjustment made is generally slightly in advance of the child's expressive developmental level and this is referred to as the 'optimal linguistic lead' (Brown and Fraser,1963).

Proposition 31

> Evidence suggests that mothers of retarded children tend to initiate fewer social interactions and exhibit more control over play their children play than mothers of normal children.

Cunningham (1981), found that mothers of retarded children initiated fewer social interactions and exhibited more control over their child's play than mothers of normal children and this effect was observable in both structured and free-play settings. Furthermore, these mothers showed more directive patterns of interaction. Hubbel (1977), suggests that directive strategies by the caregiver may be associated with low frequency and lower level complexity of the young child's spontaneous speech utterances. Lower levels of language usage and interaction by the mothers, coupled with reduced language usage and responsiveness by the child, may adversely affect the opportunities to engage in the process of using language leading inevitably to a frustration of social and language development.

Proposition 32

> Evidence suggests that retarded children are less responsive to maternal social interactions, questions, and commands, and that they engage in more solitary play than normal children of similar developmental ages.

The reduced responsiveness by retarded children to maternal social interactions as compared to normal children of similar developmental age has been reported (Terdal, Jackson and Garner,1976). Conflicting results from studies are complicated by the different matching procedures employed and the interpretative limitations imposed on the data (Marshall et al, 1973; Rondal,1977). Jones (1977), reports that Down's Syndrome children appear to initiate sequences less frequently than their matched normals but that they were given less opportunity to do so by their mothers. The reduced levels of eye contact and referential looking behaviour by these

children may provide insufficient information to the mothers to facilitate further interaction and to adjust their linguistic utterances accordingly. This is highlighted also by the fact that more vocal clashes are observed in mother and Down's Syndrome child interactions suggesting that Down's Syndrome children have poorly developed skills in turn-taking.

Thus there appears to be an interactive effect contributing to the lack of synchrony that may exist between mothers and their handicapped children in dyadic situations.

Proposition 33

> The tendency for lower frequencies of social interaction and reduced responsiveness to questioning and commands by retarded children as well as engagement in more solitary play, inhibits developmental progress by providing fewer opportunities that are taken advantage of by the children to investigate, experience, and apply linguistic, social and cognitive experience.

The less frequent interactions between mothers and their retarded children, the reduced responsiveness to take advantage of these interactions by the child, and the high frequency of unsustained interactions inevitably limits the amount of feedback provided through communicative acts to both the mother and the child. The extent to which mother and child can successfully develop reciprocity in their interactions appears to influence the degree to which mothers can satisfactorily regulate and adjust their speech to their child (Cunningham, 1981),and this is, to a large extent, dependent upon the feedback provided by the child. Linguistic, social and cognitive development is dependent upon both the provisions of experiences that allow children to encounter and test out

possibilities, and upon the child's responsiveness to enter into and to take advantage of these opportunities. When conditions exist where these factors are not accounted for, subsequent social, linguistic and cognitive development is not optimised.

Proposition 34

> Parent-training has been successfully applied as a means to increase parent-child social competence.

The realisation that the parent, and specifically the mother, is a valuable agent in the change of children's behaviour is receiving increased recognition in intervention programmes (see proposition 22). Parent training as a means of intervening to increase parent-child social competence have been reported. Such procedures have been successful in modifying the mother's behaviour towards the infant (Falender and Heber,1975; Kennell and Klaus,1971; Seashore et al,1973).

Proposition 35

> Evidence suggests that training of fathers increased their competence in social interactions with their child, but that these increases were concomittent with decreases in the same behaviours by mothers, suggesting that intervention to encourage parental social competence should be directed at both parents.

Recent research has been directed at modifying father's behaviour towards the child in an attempt to facilitate social competence within the parent-child interaction (Dickie and Gerber,1980). However, increases in father's competence in social interactions with the child were also matched by decreases in the same behaviours by mothers suggesting that such intervention needs to take account of both parents as

well as the ecological circumstances within which the child and family operates.

Proposition 36

> Teaching parents skills in decentring, or taking the viewpoint of their child, may be a useful means of facilitating synchronous interactions.

Parent training skills in decentring may assist parents to develop more empathetic understandings to children's communicative attempts and to the interaction process (Teyber et al,1977). Such training in decentring and social cognition strategies may assist the parents to increase the amount of information gained through an interaction sequence and this, in turn, may promote a more satisfactory regulation of adult responses to child initiations and responses.

Proposition 37

> Teaching both handicapped and non-handicapped children skills in decentring will promote the ability in the child to understand the perspective of other people and to discern their intentions and motives, and thereby enhance the effectiveness of interactions.

The child who understands the perspective of others and who is able to discern their intentions and motives is likely to be able to engage in more successful pro-social behaviour (Johnson,1975; Levine and Hoffman,1975; Rubin and Schneider, 1973; Waxler et al,1977). Social inferential ability and assertiveness in children appears to be a good predictor of pro-social behaviour (Barrett and Yarrow,1977). Teaching both handicapped and non-handicapped children skills in decentring may be a useful means of facilitating and sustaining communication between these children.

Proposition 38

> Adult expectancy effects may be reinforced through the child's non-verbal cueing such as reduced smiling and visual inattentiveness.

Adult expectancy effects may be transmitted through the child's pattern of responsive behaviour (Chaikin, Sigler and Derlega,1974). Bates (1976), found that with children who exhibited higher levels of smiling and visual attentiveness there was also a higher level of reciprocal smiling and visual attentiveness behaviours by adults. Furthermore, these children who produced higher levels of smiling and visual attentiveness were also judged by adults to have higher levels of intellectual and social abilities.

Proposition 39

> Eye contact, or 'face-to-face' contact, appears to be important in the mother and child attachment process (Rheingold,1961; Robson,1967).

Within the first year of life the sighted child makes increasingly more selective and highly differentiated responses to his/her mother. In general, autistic children avoid face-to-face contact (Hutt and Ounsted,1966), and the blind child may have special difficulties in establishing attachment behaviours (Fraiberg,1971; 1977). The preferential smile, the discrimination of the mother from others, and the whole sequence of differential responses seem dependent upon visual recognitory experiences (Fraiberg,1977). In the absence of vision, adaptive responses are demanded from the child to substitute for this visual recognitory experience, and parents may need insights and guidance to recognise these adaptive responses and to capitalise upon them in their intervention

strategies.

Proposition 40

> Disturbances in interaction are frequently typified by gaze aversion by the infant and maternal over-stimulation (Brazelton, Koslowski and Main,1974; Greenberg,1971; Hutt and Ounsted, 1966; Stern,1974).

Eye-to-eye contact appears to be important in sustaining the interactions of normally-developing infant and mother dyads (Brazelton et al,1974; Stern,1974; Trevarthen,1974). Field (1977), reported differences in the stimulation during feeding sessions between mothers with high-risk male and low-risk male infants (see proposition 43).

Proposition 41

> Repeated failure by the normal child to establish and sustain mutual gaze with Down's Syndrome children may lead to the eventual abandonment of such attempts, and to the inevitable isolation of the handicapped child in integration settings.

Sinson and Wetherick (1981), report that normal children will go to great lengths to try and establish and sustain mutual gaze with Down's Syndrome children in integration settings. This pattern of mutual gaze between normal children and Down's Syndrome children appears similar to the pattern of mutual gazing observed between normal children preceding mutually satisfactory play interactions. Repeated failure by normal children to establish and sustain mutual gaze with Down's Syndrome children inevitably leads to their giving up these attempts and leads to the inevitable isolation of the Down's Syndrome child in the integration setting. It appears that failure to establish and sustain mutual gaze is interpreted by the child as gaze aversion which is

understood to imply a desire to avoid interaction.

Proposition 42

> The early interactive behaviour between mother and infant through bodily contact and feeding behaviour may be linked to the quality of later attachment.

Field (1977), found that there were no significant differences in the amounts of stimulation of breast and bottle-feed groups, but found that mothers of high-risk male infants produced more stimulation during sucking periods though these feeding situations tended to be more disorganised. Some suggest that increasing maternal stimulation during feeding with an unresponsive child may actually serve to reinforce that child's unresponsiveness (Brazelton et al, 1974; Field,1976). Chewing, sucking and swallowing features have been isolated as feeding problems with about 18% of autistic children (De Myer,1979). Parental concern over feeding problems of autistic children were with undue messiness, leaving the table, and frequent tantrums. Parental expectations in feeding varied with the age and severity of symptoms in general. Intervention has shown that decreases in parental expectation is associated with decreases in the frustrations and increases in parental acceptance of these behaviours. It would seem that this is an initial step towards the establishment of more acceptable feeding behaviours for the child.

Bakeman (1978), reports that interactions between mother and child during feeding situations is significantly correlated with teacher ratings of peer interactions as late as three years of age and this suggests that this course of research

warrants further investigation.

Proposition 43

> The psychosocial effects placed on parents of developmentally-disabled children may contribute to the possible breakdown or disharmonious synchrony in parent-child interaction.

The psychosocial stress imposed on parents in their process and capacity of raising a developmentally-disabled child may be considered as a possible contributory factor in the effects it places on interaction between the parent and the child and the family unit. Travis (1976), details some of these problems though the data generally are relatively scarce. Travormina et al (1981), for instance, suggests that parents of physically handicapped children are an essentially normal group with special needs for support and interventions designed to help them cope with the extra stresses that they are expected to face. The effects of their tensions through the constant coping situation is clearly reflected in their functioning and interactive patterns with their children (Travormina et al, 1981).

The emphasis on the use of parents as intervention agents needs to be cautiously weighed against the need for parental time-out from child-caring. Child care settings may provide one avenue for this release though it is essential that quality care is provided and this necessitates finance, trained personnel, materials, and low child-child carer ratios.

Proposition 44

> There appears to be conflicting and inconclusive evidence as to the extent and significance that temperament-environmental interactions contribute to behaviour problems such as developmental delay.

Carey (1981), suggests that temperament-environmental variables play a contributory role in behaviour problems such as developmental delay. The evidence, however, is inconclusive. Matas et al (1978), found that differences between the quality of attachment and later competence was not due to differences in developmental quotient or temperament. Despite the attempts to delineate temperament characteristics of Down's Syndrome children, there appear to be no universal temperament characteristics for these children (Blacketer-Simmonds,1953). Baron (1972), compared Down's Syndrome and normal children and found no significant differences in temperament characteristics though the matching procedures used were somewhat suspect.

Proposition 45

> Integration of handicapped children with non-handicapped children is founded on the belief that retarded children are expected to profit from exposure to developmentally-typical peer models through the increased opportunities they will experience and be able to engage in social interactive behaviour from (Bricker and Bricker, 1972).

This philosophy is promoting increased efforts to integrate handicapped and non-handicapped within the same settings (Apolloni and Cooke,1977; Wynne et al,1975). Research indicates that in general positive consequences accrue from such arrangements (Apolloni and Cooke,1977; Guralnick,1976; Wynne et al,1975), though it is difficult to

show that such outcomes are directly consequential from such integration (Peck et al,1978).

Proposition 46

> In integrated settings, both handicapped and non-handicapped preschool children are likely to imitate a non-handicapped peer than a handicapped one (Paterson et al,1977).

Non-handicapped children appear to be the most effective models for both handicapped and non-handicapped children and it is suggested that handicapped children in particular stand to profit from interactions with their non-handicapped peers. Parents do recognise that children imitate others, and it is an understandable fear that parents may feel that their non-handicapped child may 'pick-up' undesirable and inappropriate behaviours from handicapped children. While this cannot be totally refuted, the evidence seems to suggest that non-handicapped children are the preferential models.

Proposition 47

> Children appear to favour social interactions with others at similar functioning developmental levels (Cooke, Apolloni and Cooke,1976; Ray,1974).

Guralnick (1980), observed that communicative interactions between non-handicapped and mildly handicapped children occur at a very high level. There was only very limited social interaction between the more advanced and the less advanced children (Ray,1974), and non-handicapped and mildly handicapped children interacted less frequently than expected with moderately and severely handicapped children.

Proposition 48

> Studies on the socialisation and acceptance of educationally-handicapped children suggest that these children tend to be socially isolated in integrated educational settings (Goodman et al, 1972; Kolstoe,1972; Ray,1974).

Typically these children may have a limited repertoire of acceptable and positive social behaviours. They may exhibit such isolate behaviours as inadequate functional speech (Risley and Wolfe,1967), indifferences to social requests (Wahler,1967), physical withdrawal from others (Hutt and Ounsted, 1966), and gaze aversion behaviours (Sinson and Wetherick,1981).

Proposition 49

> The development of peer acceptance is in some way a function of the skilful social behaviours existing among peers (Ladd,1981). Social skill training and peer imitation techniques for both handicapped and non-handicapped children appears to have beneficial and lasting effects on children's peer acceptance.

The problem of gaze aversion by Down's Syndrome children has been highlighted (see propositions 41 and 42). There is a need for research to establish training procedures designed to enhance children's social skills for initiating, building, maintaining and responding in positive peer relationships. Efforts to provide social skill training have had a lasting effect on children's peer acceptance (Oden and Asher,1977), and on sociometric status (Ladd,1981).

Proposition 50

> Behaviour modification procedures have been successfully applied to the facilitation of constructive social interaction between preschool children.

Various writers have reported success in facilitating social interaction between preschool children using behaviour modification procedures (Buell et al,1968; Hart et al,1968;

Kirby and Toler,1970; O'Connor,1969). Typically, these studies determine a specific behaviour category such as co-operative play, and manipulate the social and physical environment to promote the desired behaviours. However, not all writers agree on the acceptability of such approaches in the analysis and treatment of delayed or deviant social responses (Strain, Cooke and Apolloni,1976; Strain and Shores,1977), who favour intervention strategies based upon the reciprocal conceptualisation of social behaviour. They emphasise social exchange rather than the behaviour of separate individuals. Accordingly, they focus on social exchange as the basis and target for change.

D. CONCLUDING REMARKS

The potential of developmentally-disabled children appears to have been seriously underestimated (Banus,1971; Cunningham,1979; Erickson,1976). Early intervention programmes are indicating that developmentally-delayed children can achieve higher levels of learning and development than was previously realised, and these gains appear to be relatively independent of IQ scores or performance at onset of intervention (Clarke and Clarke,1974).

The interaction between primary and secondary handicaps may produce greater handicaps than the sum of the separate disabilities (Cunningham,1979). Developmental delay due to secondary handicap may be greater for some infants than the lag attributable to the primary handicap for this behaviour (Cunningham,1979). Developmental delay tends to be cumulative (Bronfenbrenner,1974), and this compounding effect can be

averted to a large extent by early intervention (Hayden and Dmitriev,1975; Hayden and Haring,1977; Mitchell,1981; Rynders and Horribin,1975).

Both the quality and the appropriateness of early intervention programmes appear to be important variables in averting developmental delay (Bronfenbrenner,1974; Caldwell et al,1975). Both quality and appropriateness relate to the characteristics of the child also for intervention based on meaningfulness will capitalise upon the child's experience. The child makes sense out of his encounters and cognitions through using the meaningfulness of the situation in which this encounter resides, and meaningfulness relates to the child's repertoire of experience.

The retarded and delayed child may be denied experiences as a result of his/her primary handicap which may restrict the opportunities for that child to engage in adaptive behaviour (Hess and Shipman,1965). The physically handicapped child, for instance, may have a restricted exploratory range as a result of his/her primary physical handicaps. Furthermore, parents may provide different levels of stimulation for retarded children than the normal child for a variety of reasons such as through low parental expectation and feelings of embarrassment and inconvenience with the child in public settings.

Parent training needs to focus on increasing the awareness of the compounding nature of developmental dysfunctions as well as providing methods to ensure that they come to know and apply intervention strategies to mitigate against

developmental delay. Continuing support services for the child, parent and family are essential.

Assessment demands that consideration be given to the child's repertoire of effective behaviour and to the ecological settings in which these behaviours function. In this sense, diagnosis should be based on observable behaviour rather than on the basis of characteristics which the diagnostician may be unable to find (Harwood,1969).

In conclusion, it must be highlighted that all children have the right to be treated as 'multidimensional human beings' (Mercer,1974), and as people who interact in a complex ecological system. Not only does this insist that strict monitors be placed on the conception of intervention programmes but it also demands that these programmes focus upon the ecological circumstances of all those participants within that programme. Such is not an easy task for developmentally-disabled children operate in the microsystems and mesosystems and of the wider community. Inevitably, therefore, the long and the short of it is that intervention involves people and the eagerness of researchers and interventionists to intervene needs to constantly be monitored by the ethical considerations and rights of all those related to the intervention process.

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