

Introduction

This submission has been prepared by CHILD Australia (previously known as the Resource Unit for Children with Special Needs - RUCSN) to provide a context for the role of Child Care in any discussions on the adequacy of services to meet the developmental needs of young children in WA.

Approximately 35,000 children in WA attend child care prior to their entry to pre-primary and primary school. CHILD Australia believes that their health and developmental needs should be brought to the attention of the Community Development and Justice Standing Committee.

The submission includes the following:

- ❖ CHILD Australia's response to the Terms of Reference
- ❖ Information about CHILD Australia and Child Care in WA
- ❖ 2 CHILD Australia articles relating to brain research and its implications for children aged 0-3 years
- ❖ A summary of outcomes of Early Intervention Programs

ABOUT CHILD AUSTRALIA AND CHILD CARE IN WA

CHILD Australia was established in 1987 to support the inclusion of children with disabilities in Commonwealth funded children's services in WA. The range of programs provided by the organisation has increased over the years to the point where it now provides a variety of services. Those relevant to this submission are detailed below:

- ❖ The **Professional Support Coordinator (PSC)** unit in Western Australia facilitates a range of support services to Australian Government Approved Child Care Services
- ❖ **Inclusion Support Agencies** support Australian Government Approved Child Care Services (AGACCS) to include children aged 0-12 yrs with additional needs i.e. those with disabilities, those from a CALD or indigenous backgrounds, and any child about whom a caregiver in childcare has a particular concern.
- ❖ **Rural and Remote Playgroup Support** aims to increase the social links for parents, carers and children (0-5) who are socially and /or geographically isolated, come from an Aboriginal or CALD background and/or have additional needs.

Professional Support Coordinator (PSC)

In WA, CHILD Australia manages the PSC, which in turn is responsible for the coordination of all professional support for Australian Government Approved Child Care Services (AGACCS) in the state. The PSC runs a telephone 'helpline' service which acts as a "one stop shop" for any advice, information, training or resources which a child care service requires to provide a quality and inclusive program for all the children in its care. The PSC has a constantly updated website which provides a conduit for all information relevant to child care. The PSC thus provides a focal point for receiving and disseminating all information on issues current in the children's services industry.

When a child care service requires professional support, the PSC refers the caregiver to an appropriate agency in the community. A service which has concerns about the development of a particular child, for example, would be referred by the PSC to their regional Inclusion Support Agency. They may also be advised to suggest to the child's parent that the child be assessed by their local child health nurse.

Inclusion Support Agencies

There are 5 Inclusion Support Agencies (ISAs) managed by CHILD Australia in WA

- ❖ North Metropolitan and Islands inclusion Support agency: north of the Swan River to Yanchep, and east to Maylands, Morley, Wangara and includes Christmas Island
- ❖ South West Inclusion Support Agency: south from Mandurah to Walpole including Bunbury, Augusta and Pinjarra
- ❖ Central Inclusion Support Agency: from Geraldton to Exmouth, east to the WA/SA border, and south through Kalgoorlie to Esperance
- ❖ Pilbara: from Port Hedland and Karratha, Onslow east to the state border, including Newman, Tom Price and other mining towns
- ❖ Lower and Upper Great Southern: south from Narrogin, to Albany, and east to Brookton and Jerramungup

[N.B. there are 3 other Inclusion Support Agencies in WA. They are not sponsored by CHILD Australia and cover east and south metropolitan areas and the Kimberley region.]

Each Inclusion Support Agency (ISA) consists of a team of Inclusion Support Facilitators whose role is to assist child care services to provide quality inclusive early childhood programs for all children. The focus of ISF support is to empower services to enhance their service by identifying the capacities and skills within both their childcare service and within their community. They are then encouraged to make use of these resources, to meet the needs of all children in their care. Thus, caregivers may contact their local child health service if they have concerns about a child's development.

The ISFs employed by RUCSN all have tertiary qualifications in Early Childhood Development and most also have extensive experience in working with children with disabilities and developmental delays. For this reason, child care services frequently request ISFs to observe children whose development appears atypical. It is not the role of the ISF to screen children for developmental delay, but the ISF is often in the position of confirming with the caregiver that there is cause for concern.

The ISF then assists caregivers in developing a Service Support Plan (SSP) which identifies how the caregivers can most effectively support the child and group. Developmental

concerns about the child are often a priority and require the ISF to make a referral to an appropriate health service e.g. for speech/language; vision, hearing, cognitive and or motor skills assessment.

At this point it is relevant to note that child health screening for children between 9 months of age and kindergarten entry must be initiated by the parent, and can only be undertaken if the parent has concerns about their child's development. Caregivers and ISFs are sometimes placed in the invidious position of being aware that a child is at risk of a developmental delay in one, or several areas, but are unable to convey the need for prompt intervention to the parent. In such cases, regular developmental checks by a child health nurse of all children in child care could help caregivers in ensuring children in their care receive a developmental assessment at least once before school entry.

Playgroups (rural and remote)

CHILD Australia is funded by the state Department for Communities and the Commonwealth Department for Families and Housing Community Services and Indigenous Affairs (FaCSIA) to support a range of playgroups for children and families in the Midwest Gascoyne and Murchison and the Pilbara. The focus of the CHILD Australia support is for families who are socially isolated, or in some way challenged by their circumstances.

These playgroups provide culturally and developmentally appropriate activities for the children and social and community networking opportunities for their families. The CHILD Australia playgroup leaders have early childhood qualifications and are thus aware of, and responsive to, children's development. The playgroups provide an opportunity for observations of each child's development, and play leaders talk with parents and support referral for developmental assessment where appropriate. However, the outcome depends on the parent's motivation to follow through with the referral and on the availability of an assessment service.

About Child Care in WA

There are 505 AGACCS in WA of which 478 are Long Day Care (LDC) Services, 24 Family Day Care (FDC) providers, and 3 Multifunctional Aboriginal Childcare Services (MACS). There are also 50 Occasional Care (OCC) Services. [After School Hours and Vacation Care are also AGACCS but are outside the scope of this enquiry]

Long Day Care provides group care for children, usually in 3 age groups (0-2yrs, 2-3yrs, and 3-5yrs), in purpose built facilities. Daily average attendance ranges from 40 – 120

children, depending on the size of the service. There is at least one qualified caregiver in each age group and the remainder of the staff have a Certificate III in Child Care or are untrained. Children in LDC attend on a regular basis, between one to five days per week and between the hours of 7am – 6pm. Children can attend child care 55 hours / week up to 52 weeks of the year.

All AGACCS must meet standards set by the State Licensing Division of the Department for Communities and also adhere to the 7 Principles of Quality Assurance established and monitored by the National Child Care Accreditation Council (NCAC). Under the Principle 3 of NCAC, caregivers are obliged to undertake regular written observations of each child and maintain a record of each child's progress/milestones/activities.

Thus, there is within child care a system of "surveillance" of each child. However, there is no consistent system to ensure that information pertaining to a child's development leads to a referral, when necessary, to a more formal level of assessment i.e. within the child health system.

Family Day Care (FDC) is a system of child care where a small group (usually of 4-5) children are cared for in mixed age group in a private home. Standards of care in each home are monitored by a Family Day Care Scheme Field Officer who visits the carers' homes to ensure standards of care are met and that the program provided is developmentally and culturally appropriate. FDC carers often have a qualification in early childhood development (Cert III or higher) and Field Officers also have appropriate qualifications. FDC is subject to state Regulations and NCAC standards, which require that children's developmental progress and needs regularly are observed and recorded by caregivers.

Multicultural Aboriginal Child Care Services provide a range of child and community services, primarily for indigenous families. MACS operate in a similar way to LDC, and where possible employ both qualified early childhood staff and untrained caregivers.

Occasional Care Services are similar to LDC, providing care in purpose built facilities, for children 0-5 yrs, but offering the option of irregular or short term attendance for children. Many children in Occasional Care only attend for one half day per week, making it more difficult for caregivers to maintain regular or complete records of children's "progress".

The Importance of the Early Years

In recent years, much has been written on this topic, and it is not our intention to re-iterate this information in the submission. However, two CHILD Australia newsletters have been

included to indicate the organisation's understanding of, and commitment to, the early years in children's lives.

These articles emphasise the importance of attachment and positive nurturing in supporting children's development, and how these can be adversely affected by stress. In this context it should be recognised that lack of timely intervention for young children causes stress for their families. This stress in turn impacts on how effectively a family can cope with their child's developmental challenges. It is widely accepted that family breakdown is common among families of a child with a disability. Difficulty in accessing appropriate support services can only serve to exacerbate the family's stress.

Submission prepared by CHILD Australia in response to the Community Development and Social Justice Standing Committees

INQUIRY INTO THE ADEQUACY OF SERVICES TO MEET THE DEVELOPMENTAL NEEDS OF WESTERN AUSTRALIA'S CHILDREN.

a. Are existing government programs adequately addressing the social and cognitive developmental needs of children aged 0 to 3 years?

CHILD Australia believes there are a number of areas in which children are being disadvantaged due to lack of access to, or awareness of, current services. Some of these issues are addressed below.

Waiting times for services

It is difficult to ascertain the degree to which children in WA, aged 0-3, is affected by the current level of early intervention services in the State because of the lack of information provided to the public on waiting times for children to access Early Intervention Services. The Health Department is not willing to provide this information, so one is dependent on anecdotal reporting of waiting times. One such report suggests a 12-18 month wait for Speech Therapy Service and another tells of a wait of 12 months to see a Paediatrician in the Health Department. With much evidence to support the belief that if children are to achieve to their full potential they must be supported in acquiring the necessary skills at the appropriate 'windows of opportunity', then timely early intervention is essential. A waiting period of 6 months or more to access an assessment and therapy is not in a child's best interests.

Trends in community health

It appears that Community Health services are currently reactive rather than proactive in their approach to provision of early intervention services, although it is understood there is now a move to direct a certain percentage of funding to preventative measures. A proactive approach is important to ensure children and families are supported before situations reach a level requiring intensive intervention. An example of a positive initiative is the "Baby Talk" program which is offered by some Child Health Teams in the metropolitan area. It involves a

pre-language screening by a Child Health Nurse (CHN) when a baby is 8 months old. If the child is not displaying the communication behaviours expected at this age the family are referred to a team of 2 Speech Pathologists who work with the family in order to help the parents recognise and respond to the child's communication cues. This program, also known as the WILSTAR program, originated in the UK, where research showed it to be efficient and effective method of promptly addressing potential language disorders in young children. Evidence from the WA program has produced similar results; with Speech Pathologists reporting that usually only four interventions are required for positive results to be achieved. With the current high incidence of language problems in young children (reportedly 21% have problems at 2 years, 14 % at 4 years and 7% at 7 years), and the long waiting times for therapy, this early screening and intervention may avoid some of the problems being seen at a later age.

“Hidden” groups who are potentially in need of support services

Parental attitudes and decisions are also relevant in discussions about the adequacy of services in early childhood. The majority of children in WA have a developmental check at birth and may have no further developmental screening until school entry. Thus, with parents given no encouragement to seek further developmental checks, it is possible for a child to pass from 0-3 years of age, (and perhaps to school age) with no interaction with a health or early childhood professional. Children in this “hidden” group may have social or cognitive challenges, yet place no demands on early intervention services. At present, most Child Health Nurse (CHN) are too busy carrying out the basic screening of babies and providing support to new Mothers for them to have the time to also check the development of toddlers and pre-schoolers. It is necessary for a Mother to have a concern regarding her child's development before an appointment can be made to visit the CHN.

Pertinent to the above comment is the Economic Audit presented by the WA Commissioner for Children and Young People, Michelle Scott, in January 2008. Commenting on the investment needed for young children to develop to their full potential in the future, Ms Scott uses Department of Health figures to identify that an additional 94 Child Health Nurses are required to adequately meet the needs of vulnerable children and their families, in terms of identification of risks and the building of supportive relationships.

For other parents the significance of their child's delay may not be meaningful to them. Child Australia's ISFs are familiar with the attitude of some parents that “He'll grow out of it”. These families thus make no demand on early intervention services, despite having a need for them. There is a role here for government to consistently promote to families and the

community the importance of Early Intervention in supporting better outcomes in primary and secondary school years and even adulthood.

Children in Child Care

For CHILD Australia, of particular interest in a discussion on service provision are those children attending childcare. There are 2 issues of concern.

Until the late 1990's CHN were able to undertake developmental assessments of children in Child Care centres. Some did this on a regular basis, screening all children in the centre, while others assessed certain children (with parental permission) when the Early Childhood Educator had concerns about a child's development. The CHN would then refer the child to a Child Development Centre if she believed the child had a delay in any area. This CHN service was very valuable when parents worked or were reluctant to go directly to consult a doctor about their child.

This raises the second concern regarding screening of children in child care. Parents who work full time are not able to access the child health clinic services, as these are typically only open for a few hours each week in any one locality. Thus a parent may have concerns about their child's development, but not be able to obtain informal assessment, advice and a referral if necessary.

This group therefore may not be receiving developmental assessments and therapy services, and thus appropriate early intervention, because of the families' inability to access screening.

Consideration of the results from the Australian Early Developmental Index (AEDI) screening

In a discussion on the adequacy of current development screening and intervention services, the Australian Early Development Index (AEDI) provides a developmental profile of children living in specific regions across WA. Teachers' assessments of pre-school children's physical health, social competence, emotional maturity, language and cognitive skills, communication and general knowledge, give an indication of children's abilities in 5 domains.

Recent results showed that one in four children in the metropolitan area was vulnerable and the evidence of delay is higher in Aboriginal children. Such results suggest the developmental needs of many children are not being adequately addressed in the years prior to pre-school. In terms of "school readiness", these children are "not ready" and are

likely to enter school challenged by a lack of basic proficiency in cognition, language and personal independence. Difficulties in these areas at this age will impact on a child's self esteem and his/her capacity to meet the social and intellectual challenges of school life.

The role of “attachment” in young children’s healthy development.

The importance of children's social well being in their early years is relevant in a discussion on the adequacy and effectiveness of support services for 0-3 year olds and their families. The Committee will no doubt be aware of the importance of “attachment” between mother and child from the time of birth. Attachment can be negatively affected by many issues before, during and after a child's birth. Factors such as maternal depression or lack of responsiveness, maternal ill health or substance use, domestic violence, financial difficulties, single parenthood, and family social dynamics can all impact on the bond which should develop between mother and child. Strong attachment is now recognised as essential to a child's ability to learn, to feel secure and to be able to act confidently and independently. Such characteristics are an important component of school readiness. However, poor attachment between mother and child may not be recognised when families are not involved in any community or health programs. These then form another “hidden” group who would benefit from greater visibility and accessibility to family support services.

A desired outcome of support services is usually that children and families access services when they “need” them. It must be accepted however that “need” is often determined by professionals rather than by the families themselves, and it may be difficult to bridge this gap, especially when current thinking favours a “family centred” approach rather than “expert opinion”. Families are generally regarded as being in the best position to decide what would be of most help to them. The potential for conflict between these 2 approaches may be addressed through the provision of generic services that can accommodate both practices. This issue will be discussed in question D.

Thus in any discussion about **the adequacy of early intervention services** it must be acknowledged:

- waiting lists for services exist, but the numbers on those lists are difficult to determine,
- a delay in access to early Intervention will impact negatively on outcomes for both the child and its family,
- a “hidden” group of children exists who have no developmental assessment from birth to school entry. Some of those children would possibly benefit from assessment and early Intervention support

- children who attend child care on a full time basis , and /or whose parents work full time, may not be able to access developmental assessment,
- AEDI results indicate that many young children in WA are lagging behind in key developmental domains, and
- early intervention services should encompass family support.

b. How can developmentally vulnerable children be identified?

CHILD Australia suggests the following avenues for identifying children who are “at risk”.

Family factors

The WA Department of Health Publication - Our children, our future: A framework for child and youth Health Services in WA 2008-2012 (1) - sets out Early Childhood risk factors under the headings: Child Characteristics, Parents and Parenting style, Family Factors, Life Events, and Community Factors. These will not be discussed in detail in this submission, but the committee may wish to refer to the document for more information. In summary, the child characteristics include low birth weight, developmental delay, poor social skills and attachment and disruptive behaviour. Parental influences include single parenthood, mental illness, substance abuse and lack of a stimulating child environment. Family factors include marital disharmony, domestic violence and low level of parental education; while community factors include social isolation and social and economic disadvantage.

Characteristics such as those detailed above have been described by other researchers and form a reliable guide to how some vulnerable children may be identified. This information can be used to alert health professionals and staff from the Departments of Communities and Child Protection of the potential vulnerability of some children and families, from pre-natal stages to 2-3 years of age.

Community Health Screening

Identification of developmental risk factors may also occur at birth when a child receives its first paediatric/developmental assessment. A Child Health Nurse home visit to every new born baby can also provide an opportunity to check on both the baby and any siblings at home. The interim Report, A Healthier Future for All Australians, Dec. 2008 (2) reports strong evidence of the effectiveness of home visits for new Mothers with additional risk factors, with participants benefitting from healthier lifestyles and fewer health problems in the children.

In Child Health Clinics nurses are in a position to regularly check children's progress up to 12 months of age. Of course, not all babies are seen by a CHN, and beyond 12 months of age regular visits to a CHN are not actively encouraged, unless a parent initiates the visit due to concerns about their child's development. Regular screening of babies and young children appears to have been more common 10-15 years ago and that may have been associated with a greater availability of CHN at that time and fewer Mothers working full-time.

A potential to screen the majority of children exists when they have their immunisations, particularly those given at 18 months. It is understood that this is done in Victoria at Child Health Clinics, where immunisations are available as part of the local clinic service.

Another avenue for screening children exists in child care or local playgroups. If CHN had the time they could make regular contact with these groups, providing the opportunity for caregivers or parents to discuss any concerns they may have regarding a child's development and also for children to be screened.

Easier access to Child Development Centres could also contribute to earlier identification of "at risk" children. As present, waiting times for initial assessment and follow up intervention can be so long; that some parents feel it is not worth pursuing.

Other screening options

Early Childhood Educators (ECE) and Inclusion Support Facilitators (ISF) have the ability, and are in a position, to identify children in child care whose development differs from their peers. Their skills provide the potential for greater screening of children in child care but, at present, this resource is not being used. Referrals are made to Child Health Teams by concerned workers in child care, but the contribution which could be made by these early childhood professionals needs to be formally recognised and funded at a government level to ensure its consistency and effectiveness.

In summary, **identification of vulnerable children** could be supported by:

- consideration of family and child risk factors pre- and post-natally,
- access to regular child health screening in the community, perhaps linked to immunisations, and
- recognition of the potential of those working in child care to assist in basic screening.

c. Which Government agency or agencies should have coordinating and resourcing responsibilities for the identification and delivery of assistance to 0-3 year olds?

This is a complex issue and requires consideration of a number of factors.

Role of government

Currently, there are many players involved in the delivery of children's services, including the 3 levels of government and a diversity of government departments. Funding arrangements for service delivery can be across Federal, State and Local levels of government and result in a duplication of services in some regions and no services in another. For example, some WA regions have received both Commonwealth 'Communities for Children' funding and State 'Early Years Funding', creating confusion at times amongst stakeholders when reporting on programs, extent of services and lines of responsibility. This also results in confusion amongst possible consumers of these services as to "who is eligible for what". An example that CHILD Australia is familiar with is the eligibility for inclusion support for children with disabilities in children's services. Schools, kindergartens, child care and other children's programs all have different guidelines on inclusion, funding, equipment provision and support, leading to confusion and sometimes disappointment for those trying to access support.

Within State Government Departments children may be "clients" of Health, Disability, Communities, Child Protection and Education, as well as being impacted on by decisions made by the Departments of Transport, Housing, Justice, Local Government and others. These present 'silos' can cause undue stress and time-wasting for parents and caregivers, as they try to access a suite of services for their children. The same information must be provided repeatedly to different administrations, all of which are (quite rightly) obliged to adhere to regulations about Privacy and the transfer of information. Referrals to other agencies can take undue time as all necessary protocols are observed and this does not contribute to streamlined service delivery.

Differing skills and attitudes of current service providers and policy makers

The combination within one government department of "education" and "care" is the practice in other Australian states and if introduced in WA would bring the state in to line with principles being addressed in COAG's current National Early Childhood Framework.

However, many WA teachers are not trained in early childhood education and some do not readily understand the unique needs of young children and their families. Education staff is often not familiar with principles around attachment, security and the emotional needs of very young children. This is an area which may be better addressed by staff who have specialised in early childhood education and care such as those who work in child care.

At another level, it is important that those working with young children, and particularly with their families, are aware of the principles of family centred practice, where the family is regarded as the expert in issues related to their children. Within WA, those working in this area in the health and disability sectors are expected to have taken part in Family Partnership training, ensuring that they have the skills to form trusting and respectful relationships with families.

It is also important that at a policy level there is a cohesive approach, based on a common understanding of the needs of children and their families, in the formulation of decisions and directions for service provision.

Thus, education, care and health professionals and policy makers need to share a similar philosophy and understanding of children and families if they are to work as an effective team in supporting young children and their families.

What might work?

Centralising services for children and families into Hubs is possibly the most effective way of assisting families to access the support they need in every area – care, education, health, early intervention, welfare and counselling – with minimal barriers. This concept will be expanded in response to question D. Of greatest importance is the need to avoid ‘silos’, whereby a child’s life is viewed in parts rather than as a whole.

Another option is the establishment of an Office for Children which could have the responsibility for ensuring that services for children are coordinated in a way that provides seamless support and transitions. This Office would complement the role of the Commissioner for Children and Youth, acting as a “clearing house” for all issues – questions, services, resources and agency roles – pertaining to children. The Office for Children could maintain a register, mapping all children’s services within WA, thus enabling government departments and current and prospective service providers to identify gaps and overlaps.

NIFTeY (National Investment for the Early Years) WA is currently undertaking a project to identify and locate all children’s services, so as to inform their decision making in the future.

It is understood the Department for Communities is involved in a similar mapping exercise, emphasising the need for a single agency to be responsible for such initiatives.

In summary, with reference to coordination of services and resources:

- government roles and responsibilities require clarification,
- service providers and policy makers need a shared understanding of best practice for children and families,
- “mapping” of services and areas of need should be in place to prevent overlaps and gaps, and
- an Office for Children might effectively achieve the above 3 points.

d. What is the best model to ensure interagency and intergovernmental integration to 0-3 year old children?

CHILD Australia advocates for an integrated delivery of services through a coordinated and centralised program. Such “hubs” or children’s centres would provide a suite of family and children’s services at a local community level. Ideally, the centres would operate in a venue that is welcoming, non-threatening and convenient to access, such as primary school or community centre. Co-location with a library, cafe, recreation facilities or shops is likely to make it a place where anyone can “drop in” without being labelled as “someone in need of help.” This could serve to address the issues raised earlier in this paper regarding those families who are unaware that support is available or are reluctant to seek help when they need it.

In rural areas, a mobile service which combined a variety of services, such as playgroups, CHN visits, financial counsellors, General Practitioners, could travel to outlying regions on a regular basis to ensure that all families had access to services available in more populated areas. It would be important that any such outreach service was culturally appropriate to the families visited.

Hubs or Children’s Centres offer benefits to both the users and providers of services by facilitating entry to programs, referral to other services and communication between consumers and providers. This decreases the risk of children and families “falling through the gaps” and missing out on support when they most need it.

A Hub can also offer outreach services as part of its community network. The Hub’s Child Health Nurse, for example would be a regular visitor to the local playgroups, child care, kindergartens and primary schools, undertaking developmental checks and offering health

advice to parents, caregivers and teachers. Familiarity with the CHN could help parents decide to seek support through the Hub.

It would be important for a children's centre to have local input through a Board of Management which, at least in part, represents that community. This is important to ensure that the services provided meet the aspirations and interests of its consumers. The Review, "Evaluation of DEECD Children's Centres", prepared by the Victorian Centre of Community Children Health, April 2008, (3) details many advantages of integrated services. These include improved access for consumers; more efficient use of resources; more knowledge amongst providers of services available to families; streamlining of service delivery through information and skill sharing; less time and effort for families in moving between programs and less chance of them dropping out of the system.

Also of importance and value to staff, is the sharing of skills, knowledge and philosophy which develop from integrated service delivery. There is an adoption of common models and language as underlying principles are translated into policy and services. This contributes to seamless approach which benefits both staff and stakeholders.

Such a model is well established in the United Kingdom (e.g. Pen Green and Sure Start) and Canada (Toronto First Duty). Similar programs operate in some Australian states. In Victoria funding has been provided for six children's centres/hubs with the aim of promoting integrated, inclusive and collaborative early childhood services, wholly addressing the needs of disadvantaged communities through a "one stop shop" approach to service provision.

In South Australia, 20 children's centres are planned to provide an integrated early childhood service system, located where possibly in primary schools. The centres will offer early education and care from birth to early school years, child health information, family support, play groups and early assessment of children's learning needs and intervention programs. Some centres will also offer hearing and eye tests, immunisations, speech pathology, and occupational therapy. At present there is one such centre in South Australia providing some of the services described above, including developmental health clinics, universal home visiting and parenting programs. The centre is described as a "community hub" with many families visiting daily, all contributing to an increased sense of community participation.

In the United Kingdom, Pen Green has been operating for 25 years and offers many services including family visiting, groups for fathers, post natal depression support, special needs groups, counselling for families and a toy library.

The UK Sure Start Children's Centres provide families with seamless, holistic integrated services and access to multi disciplinary teams of professionals. There are 3 broad levels of service provision, based on the levels of need amongst families and young children in a locality.

Level 1 is "universal", available to all families and includes free early years education and care parenting advice, and prenatal and child health services.

Level 2 is aimed at families experiencing challenging circumstances with greater access to care and parenting support.

Level 3 provides specialist support for families where children are at significant risk of poor outcomes and includes home visits; support in the home (delivered in collaboration with other agencies); and speech therapy, family therapy and safeguards for children at risk of harm and neglect.

The CEO of CHILD Australia and the Manager of the CHILD Australia South West team have visited both Pen Green and Sure Start in the UK and were impressed by the aims and achievements of these programs. CHILD Australia thus endorses this integrated service model, already operating overseas and in other parts of Australia, as the most effective way to reach vulnerable young children and families in Western Australia.

e. How can resources be prioritised to meet identified needs?

There are a number of options which could be explored.

- An Office for Children could have the responsibility of ensuring there is no overlapping of new initiatives or current services.
- A Hub, as a single entry point for families and children, could act as a "triage" for identifying and prioritising needs amongst children and families, referring them to the most appropriate service, either within the Hub or to a specialist agency (e.g. a child with autism and their family could receive care and counselling through the Hub and therapy through an Autism Agency).
- More regular screening of children in the 0-3 group through Child Health Clinics and Child Development Services would help identify vulnerable children. An 18 month check (perhaps linked with immunisation) would assist in identifying children with language, cognitive and social problems, and issues of particularly relevance in the diagnosis of autism which is often not evident until 18-24 months.

- Recognition and endorsement of the potential for Early Childhood Educators and Inclusion Support Facilitators to identify children in child care experiencing difficulties, followed by a referral to appropriate agencies, would be a practical use of resources.
- Generic services for speech and language skills, could be provided to groups of children e.g. in childcare, playgroups, libraries and Child Development Centres. This would provide an opportunity for screening the children while also informing adults (parents and caregivers) on causes for concern and enriching play experiences. Similarly, Occupational Therapists and Physiotherapists could contribute to gross and fine motor programs in child care and pre-schools. This is already happening in some services in the Peel/Kwinana health region with positive effects, as caregivers, teachers and parents become more aware of potential challenges in a child's development and learn of strategies to address some problems.
- Provision of information and play ideas to parents is a practical way to spread resources. There is a lot of printed and electronic information available already, but it tends to be mainly accessed by proactive parents. There is a need for stronger community messages about children's well-being and development. Commercial T.V and radio should carry positive "information ads" describing and portraying the learning opportunities that arise for children through play with parents and caregivers. YouTube and SMS may be the most realistic way to reach some young parents.

N.B. It was suggested in WA NIFTEY's "Vision for Children" (2001) (6) that a 1% tax on all confectionery and junk food would provide a useful "children's fund" for such promotions.

f. How can the effectiveness of programs be measured?

Research from other programs

Outcomes of early intervention programs are often not evident until the children reach their teen years or early adulthood. The long term benefits of the US early intervention program High/Scope Perry Preschool project are often quoted and the outcomes of this, and other similar programs, can be found in an attachment to this submission(4).

AEDI Surveys

The AEDI continues to be undertaken regularly with pre-schoolers .Over a number of years improved scores in any of the 5 domains, could indicate the effectiveness of intervention within that AEDI region. The unexpectedly poor scores in an early AEDI survey in some of the western suburbs of Perth resulted in a collaborative Early Years program involving schools, libraries, health department and other early childhood services. The following AEDI

in the area showed higher scores, perhaps indicating the effectiveness of the supported playgroups and other community activities provided in the area for two and three year olds in the years before the subsequent screening.

g. Other Comments

The importance of play!

CHILD Australia supports a play-based approach in any early intervention program with young children. Play provides avenues for learning in all development domains and is the natural way for attachments to form between parents and their child.

For many adults, play with children is hard work – it does not come naturally. Those supporting families need to be aware of this, guiding parents and children in a respectful, non-judgemental and strengths based way. Sometimes parents need as much or more help than children, especially if the parents are seduced by the belief that technology e.g. Computer games, “Little Einstein, can become a substitute for play.

It is also important to avoid, in any discussion on education and care, a ‘push down’ effect, whereby formal learning becomes the key driver towards school readiness rather than children’s interests and the need to have fun while learning. New skills will be most easily acquired in a stress free and home-like environment, with supportive and interested adults guiding their development.

Barriers to service provision

Many of the community agencies which provide children's services spend much of their time and money in writing submissions for ongoing funding and then completing the extensive reporting requirements attached to those contracts. There is often an expectation that the services provided will be sustainable once the funding period is over and yet may not be a realistic outcome for some programs involving children and families.

In a similar way, in many regions, different government departments and agencies carry out needs analyses so frequently, or without awareness of other similar surveys having been carried out, that stakeholders become blasé or cynical in their responses. Again, a coordinated approach to information gathering would be of greater value in determining the need for services.

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from "Rethinking the Brain":
 New Insights into Early Development
 by Rima Shore,
 Families and Work Institute,
 New York.

Appendix B

1997

Examples of Early Intervention Programs

Program Name	Program Description	Study Description Program Costs Program Funding	Cost Savings	Other Impacts
High/Scope Perry Preschool Project Ypsilanti, MI	Three- and four-year-old children attended a preschool program 5 days per week, for 2.5 hours per day. The preschool program was comprehensive, including education, health and family support services.	<p>A total of 133 children were randomly assigned to either a program group or a comparison group. Since the study's inception in 1963, researchers have been tracking a variety of indicators, including: utilization of special education services, juvenile delinquency and arrests, teen pregnancy, employment history, and post-secondary education. The latest report followed both the program group and comparison group through 27 years of age.</p> <p>Two years of the program cost \$14,400 per child. It was funded by the state of Michigan.</p>	<p>By the time participants reached age 27, every \$1 invested in the program had yielded savings of \$7.16 in costs that might have been incurred if the program had not existed.</p> <p>The program savings to taxpayers (in constant 1992 dollars discounted annually at 3 percent) is estimated to be \$88,433 per child from the following sources:</p> <ul style="list-style-type: none"> ■ savings in schooling, due primarily to reduced need for special education services. ■ higher taxes paid by preschool program participants because they had higher earnings once they entered the work force. ■ savings in welfare assistance ■ savings of the criminal justice system and to potential victims of crimes. <p>Bottom Line: The economic return from the Perry Preschool program outperformed the stock market from 1963-1993.</p>	<p>The follow-up study of participants at age 27 showed that program group members were more likely than the comparison group to:</p> <ul style="list-style-type: none"> ■ report monthly earnings of \$2,000 or more (29% versus 7%); ■ Own their own homes (36% versus 13%); ■ Own second cars (30% versus 13%). <p>Other key findings included:</p> <ul style="list-style-type: none"> ■ Program group members were less likely than comparison group members to receive welfare assistance or other social services (59% versus 80%).

Source:
 Schweinhart, L.J., H.V. Barnes, and D.P. Weikart. 1993 *Significant benefits: The High/Scope Perry Preschool Study Through Age 27*. Monographs of the High/Scope Educational Research Foundation, No. 10. Ypsilanti, MI: High/Scope Press.

Program Name	Program Description	Study Description Program Costs Program Funding	Cost Savings	Other Impacts
<p>Carolina Abecedarian Project Chapel Hill, NC</p> <p>Sources: Campbell, F.A. C.T. Ramey. 1994. <i>Effects of Early Intervention on Intellectual and Academic Achievement: A Follow-Up Study of Children from Low-Income Families</i>. Child Development. 65:684-698.</p> <p>Campbell, F.A., and C.T. Ramey. 1995. <i>Cognitive and School Outcomes for High-Risk African-American Students at Middle Adolescence: Positive Effects of Early Intervention</i>. American Educational Research Journal. 32(4):743-772.</p>	<p>Children between the ages of 6 weeks and 5 years received early childhood education 5 days a week, year round. The parents of children between the ages of 5 and 8 were in a parent involvement program.</p>	<p>A total of 111 children were randomly assigned to either a comparison or program group. There were 3 different program groups — educational services, preschool program only and primary school program only.</p> <p>Services cost approximately \$10,000 per student per year. Funding was from public education dollars from federal, state and local governments.</p>	<p>An investment of \$10,000 per year for one child can yield an estimated minimum savings to society of approximately \$100,000 per child. (This number may understate actual savings realized.) The savings reflect reduced spending on special education, welfare and juvenile crime.</p>	<p>Services begun during children's preschool years had positive impacts on their intellectual development and academic achievement.</p> <p>At age 12:</p> <ul style="list-style-type: none"> ■ children in the program group had IQ scores that measured 5.3 points higher than those in the comparison groups. <p>At age 15:</p> <ul style="list-style-type: none"> ■ children who participated in the preschool years earned significantly higher scores in both reading and math. ■ overall 31.2% of members in the program group were retained in grades compared to 54.5% of members in the comparison group. ■ 24% of the children in the program group utilized special education services, contrasted with 48% of the children in the comparison group.

Program Name	Program Description	Study Description Program Costs Program Funding	Cost Savings	Other Impacts
<p>Parents as Teachers (PAT) St. Louis, Missouri</p> <p>Sources: Pfannenstiel, J., T. Lambson, V. Yarnell. 1991. <i>Second Wave Study of the Parents as Teachers Program</i>. St. Louis: Parents as Teachers National Center, Inc.</p> <p>Pfannenstiel, J., T. Lambson, V. Yarnell. 1996. <i>The Parents as Teachers Program: Longitudinal Follow-Up to the Second Wave Study</i>. Oakland Pk, KS: Research and Training Associates, Inc.</p>	<p>Parents with children from birth to age five received information on child development through home visits, parent groups, and referrals for needed services that the program could not offer. Their children received periodic health screenings.</p>	<p>This evaluation studied a sample of 400 families in 37 diverse school districts across the state of Missouri. These families were randomly assigned to a program group or a comparison group. The evaluation looked at intellectual and language abilities of children at age 3 and improvements in parents' knowledge of child development and childrearing practices.</p> <p>Funding sources: Local, state, and federal funding streams and private sources including foundations, hospitals, churches, and businesses.</p> <p>Average annual cost per family to provide Parent as Teachers Service: \$646.</p>	<p>Cost savings data are not available for the study of the Missouri program. In some Parents as Teachers programs, where cost savings have been calculated, special education costs have been drastically reduced for developmentally delayed children who participated in the program.</p> <p>For example, one small study of a Texas Parents as Teachers program showed that 45 percent of children were delayed in some area of development upon entry into the program. However, upon completion, researchers found that 75% of the developmentally delayed children no longer needed special services and were able to participate in a regular classroom setting.</p> <p>The average cost for a child to attend a regular classroom in this Texas community is nearly \$5,000 per year, compared to \$12,500 per year for special education. This reveals a \$7,500 cost savings when special education is averted.</p>	<p>In the Missouri study:</p> <ul style="list-style-type: none"> ■ At age 3, Parents as Teachers children performed significantly higher than national norms on measures of intellectual and language abilities. ■ Most children from minority families did better than average on performance measures of achievement and language abilities. ■ A follow-up study which re-evaluated the children when they were in first grade, found that compared with other first-graders, 55% of PAT children were rated "above average" by their teachers. Teachers also reported that 74% of PAT parents <i>always</i> assisted with homework.

Program Name	Program Description	Study Description Program Costs Program Funding	Cost Savings	Other Impacts
<p>Prenatal/ Early Infancy Project Elmira, NY</p>	<p>Home visits by nurses started during pregnancy and continued on a monthly basis until the child was 2 years old.</p> <p>This home visitation program aimed to improve:</p> <ul style="list-style-type: none"> ■ outcomes of pregnancy (i.e. reduction in low-birthweight and preterm babies). ■ qualities of parental caregiving (including reducing associated child health and development problems). ■ maternal life course development (helping women return to school, find work and plan future pregnancies). 	<p>The study sample included 400 program participants in a semi-rural community in Elmira, NY. Of these participants, 85% were low-income, unmarried and teenaged young women who were pregnant with their first child. Participants were randomly assigned to one of three groups: the first received home visits by nurses; the second received home visits plus transportation for health care and screening for health problems; the third received only transportation and screening.</p> <p>In 1980, the program cost \$3,173 per family for 2.5 years of intervention. (In 1996 dollars, the program costs were estimated to be \$7,800 per family.) Funding sources: federal, state and local government dollars.</p>	<p>The initial investment in this program (\$3,173) was recovered with an added dividend of about \$180 (1980 dollars) per family within two years after the program ended. Additional studies on the long-term benefits of this program are now underway in Elmira, New York, Memphis, Tennessee; and Denver, Colorado.</p> <p>The savings reflect decreased spending on welfare and food stamps; increased tax revenues because of a higher labor force participation rate; and a reduction in costs related to child abuse and neglect. Specifically, research shows that reduced Medicaid, welfare and food stamp expenditures accounted for 80% of cost savings.</p>	<p>Results demonstrated:</p> <ul style="list-style-type: none"> ■ Among women who smoked, those who were visited by nurses had 75% fewer preterm deliveries. ■ Among young adolescents (aged 14-16 year), those who were visited by nurses had babies who were nearly 400 grams heavier than those in the comparison group. <p>During the first two years after delivery:</p> <ul style="list-style-type: none"> ■ Program participants had a 15% lower incidence of reported neglect or abuse. ■ Program participants paid 87% fewer visits to the physicians for injuries and poisoning after the program ended. ■ Program participants lived in homes with fewer safety hazards; and their homes were more conducive to a child's intellectual and emotional development. ■ Four years after the birth of their first children participants had 42% fewer second pregnancies and 83% of mothers had jobs. <p>15 years later:</p> <ul style="list-style-type: none"> ■ Program participants used welfare 2.5 years less ■ They had fewer subsequent children. ■ For children born into households where mothers were unmarried and low-income, there was more than a 50% reduction in the rates of abuse and neglect. ■ There were 67% fewer arrests for these mothers.

Source:
Olds, D.1997 The Prenatal/Early Infancy Project. In George W. Albee & Thomas. Gullotta, *Editors. Primary Prevention Works*, Vol. VI of Issues in Children and Families' Lives. Thousand Oaks, CA:Sage Publications, pp.41-67.

Program Name	Program Description	Study Description Program Costs Program Funding	Cost Savings	Other Impacts
<p>Avance Parent Child Education Program San Antonio, Texas</p>	<p>Children from birth through age two received educational child care (3 hours per week) while parents attended three-hour classes for the first year of the program. Parents could also participate in adult literacy programs and English as a second language (ESL) classes.</p> <p>Participants were high-risk, low-income families. Most were Mexican American.</p> <p>The major goal: to help the families develop strong parenting skills.</p>	<p>At each of two sites, mothers were divided into two groups: a program group and a comparison group. Mothers in the comparison groups did not receive any services during the course of the evaluation.</p> <p>All groups were followed for two years from the time they enrolled. Mothers were evaluated at the end of the first year and again one year later to assess changes in parenting knowledge and interactions with their children.</p> <p>Services cost approximately \$1,616 per family per year. Funding sources: federal, state and local governments as well as private sources including foundation and corporate giving.</p>	<p>Although a cost/benefit analysis has not been performed for this initiative, the results in the next column demonstrate that the program has had a positive impact on mothers' behaviors.</p>	<p>Compared with mothers in the comparison groups, mothers in the program:</p> <ul style="list-style-type: none"> ■ Provided a richer, more educationally stimulating environment for their children —a factor that has been linked to later academic success. ■ Were more active in verbally communicating with and teaching their children. ■ Talked more to their children and initiated more playful interaction with them.

Source:
Walker, T.B., G.G. Rodriguez, D.L. Johnson, and C.P. Cortez. 1995. Avance Parent-Child Education Program. In S. Smith and L.E. Sigel, Editors, *Advances in Applied Developmental Psychology: Vol. 9. Two Generation Programs for Families in Poverty: A New Intervention Strategy*. Norwood, NJ: Ablex, p.67-90.

FOCUS ON ZERO TO THREE (PART 1) BRAIN RESEARCH—WHAT'S NEW?



ARTICLE

Recent advances in brain research have given us new insight into how the human brain - the most immature of all organs at birth - continues to grow and develop during the first years of life. This growth was once thought to be determined by genetics, however scientists now know that it is also highly dependent upon the child's experiences. Research shows that interactions with other people and objects are vital nutrients for the growing brain in just the same way as protein, fat and vitamins.

We know that a child's ability to understand language, solve problems and get along with other people is strongly influenced by experiences as an infant and young child. These very early childhood experiences impact on the way that genes are expressed in the developing brain.

'Early care and nurture have a decisive, long-lasting impact on the way people develop, their ability to learn and their capacity to regulate their own emotions'.¹

Much of the information and new knowledge generated by the last decade of brain research will not surprise, or even seem very new, to caregivers as it revolves around the primacy of interactions and attachment. What is new is the scientific research base that underpins our knowledge of early Child Care and development together with the widespread publicity and implications of this information. Table 1. (page 2.) simplifies and summarises our present understanding about brain development.

This article will provide information for caregivers to assist you to provide high quality Child Care that is a positive experience for infants and young children. It is not intended to tell you all there is to know about brain research – but to get you thinking about how to use this information in your own care giving practices and in the wider community. It will also give you information to answer the questions that parents ask about early care and child development. In this way you can help to spread awareness about the crucial importance of the child's early years.

WHY ARE WE HEARING SO MUCH ABOUT CHILDREN'S BRAINS THESE DAYS?

As a result of new technologies, including powerful brain scans and imaging techniques, scientists are able to form a much clearer picture of the brain's inner workings. These technologies have allowed new insights into early development. How we think, learn and develop has always fascinated people. In particular, many parents and caregivers are eager to understand the role they play and how they can enhance children's brain development in the crucial early years.

WHAT HAVE SCIENTISTS DISCOVERED THAT WE DIDN'T KNOW BEFORE?

Scientists have made discoveries about how a child's earliest experiences affect the way the brain is organised. Some of the neuroscientists' findings simply confirm what many caregivers already intuitively believed. For example, researchers now confirm that the way we interact with children and the experiences we provide or encourage have a big impact on emotional development, learning abilities and the way children function in later life. Scientists are learning more about the biological processes that underlie development.

They are finding that the kind of care giving that children receive has an even greater effect on brain development than previously suspected. In order for children to thrive, they must be loved, held, talked to, read to and allowed to explore. Of course, heredity also plays a role. We know that a complicated mix of heredity and experience shapes brain development. Our genetic inheritance establishes our potential, but our daily experiences determine just how this potential is expressed. Because most of children's brain development takes place after birth and experience shapes the developing structure of the brain, caregivers have the opportunity, every single day, to contribute to healthy development. In order to understand how this happens, we need to understand a bit about how the brain works.

¹ Shore, R (1997) *Rethinking the Brain, New Insights into Early Development*. Families & Work Institute, New York. p. 27

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The human body is entirely made up of cells, and the brain is no exception. These cells are not yet connected into networks as they will be when the brain is mature. These **networks** are crucial - they allow thinking and learning to take place. Given their importance why do we begin life without them? One answer is that an 'unfinished brain' allows babies to form networks of brain cells in **direct response** to their world. The brain's ability to develop and change in response to the demands of the environment is referred to as **plasticity**.

From the infant's viewpoint – their caregiver **is** their world. They experience the way you look into their eyes, they see the expressions on your face; they hear you cooing, singing, talking and reading; they feel you holding or rocking them; they take in your familiar smells. They often experience the taste of your skin as well as their own.

These primary sensations – touch, taste, sight, smell, sound and movement are what developmental neurobiologist, Dr Bruce Perry, refers to as the '**somato-sensory bath**'² –

provided by high quality carer-child interactions.

*'These primary sensations play a major role in providing the patterned, repetitive sensory stimulation and experiences that help organise the child's developing brain.'*³

The daily interactions between the caregiver and the child are the keys to the way in which the child's brain forms connections.

HOW DOES THE BRAIN DEVELOP?

The brain is made up of distinct regions, each devoted to a specific function, such as identifying what we see, processing spoken language, or assessing whether we are in danger. Within each of these brain areas are millions of **neurons, or nerve cells**, which are connected to each other by **synapses**. These trillions of synapses and the pathways they form make up the 'wiring' of the brain. They allow all of the various brain areas to communicate and function together in a coordinated way.

Old Thinking	New Thinking
How a brain develops depends on the genes you were born with.	How a brain develops hinges on a complex interplay between the genes you're born with and the experiences you have.
The experiences you have before age three have a limited impact on later development.	Early experiences have a decisive impact on the architecture of the brain, and on the nature and extent of adult capacities.
A secure relationship with a primary caregiver creates a favourable context for early development and learning.	Early interactions don't just create a context; they directly affect the way the brain is 'wired' .
Brain development is linear : brain's capacity to learn and change grows steadily as an infant progresses toward adulthood.	Brain development is non-linear ; there are prime times for acquiring different kinds of knowledge and skills.
A toddler's brain is much less active than the brain of a college student.	By age three, children's brains are twice as active as those of adults. Activity levels drop during adolescence.

TABLE 1: RETHINKING THE BRAIN ⁴

²From presentations by Dr Bruce Perry during his 2000 tour of Australia and audiotaped Keynote Address, NAPCAN Conference, New Zealand (1998)

³From presentation "Principles of Neurodevelopment" Dr Bruce Perry, 2000.

⁴Table reproduced from Shore, R (1997) op cit. p18.

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The number and organisation of connections in the brain influence everything from the ability to recognise letters of the alphabet to managing complex social relationships.

Neurons develop rapidly before birth, but after birth no new neurons are formed. Instead, brain development consists of an ongoing process of wiring and rewiring the connections among neurons. New synapses between cells are constantly being formed, while others are pruned or broken. During the first eight months after birth, connections are formed more quickly than they are broken, so that at age eight months a baby has an astounding 1,000 trillion synapses in his brain. After the first year, synapse pruning occurs more rapidly than synapse formation until at age ten, when a child has about 500 trillion synapses – roughly the same number as the average adult.

Early experiences can have a dramatic effect on this brain wiring process, causing the final number of synapses in the brain to increase or decrease by as much as 25 per cent.⁵

HOW DO BRAINS FORM CONNECTIONS?

Brain cells are designed to make connections. Each cell sends signals out to, and receives input from, other brain cells. The signals, in the form of electrical impulses, travel down the length of the nerve cell (or **neuron**). With the help of special chemicals (neuro-transmitter substances such as serotonin) the signals travel from cell to cell, creating connections. Repeated activation of networks of neurons strengthens these connections.

HOW DOES THE BRAIN 'KNOW' WHICH CONNECTIONS TO KEEP?

When a connection is used repeatedly in the early years, it becomes permanent. In contrast, a connection that is not used at all, or often enough, is unlikely to survive. The brain operates on a **use it or lose it** principle: only those connections that are frequently activated are retained. Other connections that are not consistently used will be pruned so that the active connections can become stronger. For example, a child who is rarely spoken to or read to in the early years may have difficulty mastering language skills later on. By the same token, a child who is rarely played with may have difficulty with social adjustment as he or she grows.

DOES IT MATTER WHEN CONNECTIONS ARE FORMED?

No complex building process happens all at once and different parts of the job get top priority at different times. It's the same for brain development. For example, in very early pregnancy, the cells that make up the cortex – the part of the brain that allows thinking – have to travel to exactly the right place at the right time. This is a '**prime time**' for brain development. During this prime time, it is particularly dangerous for an expectant mother to take drugs or come into contact with radiation. If cells get side-tracked in their journey up the cortex wall, the baby's brain development may be jeopardised.

There are other prime times both before and after birth. Some of them are relatively short. For example, if the brain is not exposed to visual experiences in the first years of life, then the child will not be able to see. Other prime times can last a decade or more. For example, for the first dozen years of life, children can learn languages easily, as opposed to later in life. Our goal must be to:

*'provide the right experiences in the right amounts at the right time in the life of the child. Few infants will benefit from a linear algebra lecture – and few adolescents need to be held for hours, rocked and breastfed.'*⁶

Whenever these prime times are discussed, it is essential to keep in mind that, whilst we advocate for early childhood intervention, it is never too late to help children learn and develop – although it can be more costly and time-consuming than in the early years of life.

THE EFFECT OF ABUSE OR NEGLECT ON BRAIN DEVELOPMENT

At the CIVITAS Child Trauma Programmes at Baylor College of Medicine, Dr Bruce Perry and co-workers have studied the impact of trauma/neglect on the neurobiology of over 1,000 abused or neglected children. In one study, 20 children who had been raised in impoverished, under-stimulating environments – children who were rarely touched or spoken to and who had little opportunity to explore and experiment with toys – were examined with sophisticated brain imaging techniques and other measures of brain growth. These children were found to have brains that were physically 20 to 30

⁵ Starting Smart: How Early Experiences Affect Brain Development. An Ounce of Prevention Fund (1996) p3. Website reference <http://www.childtrauma.org/ctmaterials/caregivers.asp>

⁶ From presentation "Principles of Neurodevelopment" Dr Bruce Perry, 2000.

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per cent smaller than most children of their age and, in over half of the cases, parts of the children's brains appeared to have wasted.⁷

The effects on children of abuse and neglect result in 'under-development' of parts of the brain associated with (amongst other things) anxiety, impulsivity, self-regulation, managing emotions and possibly even such skills as problem solving and empathy. Abused or neglected children miss out on the somato-sensory bath provided by high quality carer-child interactions. These experiences provide the major sensory cues responsible for organising key areas of the brain. Lack of specific sensory input during development results in abnormal development in those brain systems that sense, perceive, process, interpret and act on information related to that specific sensory system.

WHAT DOES THIS MEAN ABOUT INTERACTIONS WITH CHILDREN?

Scientists have found that your relationship with a child affects his or her brain in many ways. By providing warm, responsive care, you strengthen the biological systems that help him handle his emotions.

Research also shows that a **strong secure attachment** with the child helps him withstand the ordinary stresses of daily life – not just today, but in the future as well. A strong bond doesn't just reassure him, it actually affects the biological systems that adapt to stress. Scientists have shown that in stressful situations, children who have experienced a secure attachment are more adaptive and produce less cortisol – the stress hormone that affects metabolism, the immune system and the brain. Excessively high levels of cortisol alter the brain by making it vulnerable to processes that destroy brain cells, and just as importantly, reduce the number of connections in certain parts of the brain.

Consistent and responsive attention to a crying baby helps the infant to build the neurobiological capacity to tolerate future stress in a positive manner. You cannot 'spoil' a baby by responding to them – instead, you help them become resilient. Babies require very different experiences than toddlers or older children. The key to expressing the genetic potential of a child is to provide experiences matched to the developmental needs of the child. This research finding is consistent with high quality Child Care provision.

SOME SPECIFIC EXAMPLES

Language Skills

When an infant is three months old, his brain can distinguish several hundred different spoken sounds. Over the next several months, his brain will organise itself more efficiently so that it only recognises those sounds that are part of the language he regularly hears. For example, Japanese babies can distinguish between 'r' and 'l' sounds at six months of age but lose this ability by twelve months of age. By then, the distinction has been ignored by their brain structure because it isn't used in the Japanese language. During early childhood, the brain retains the ability to relearn sounds it has discarded so young children typically learn new languages easily and without an accent.

The Spoken Word

Researchers found that when mothers frequently spoke to their infants, their children learned almost 300 more spoken words by age two than did their peers whose mothers rarely spoke to them. However, exposure to language through television or adult conversation not directed at the child had little benefit. Babies need to directly interact with others to gain maximum developmental benefit. They need to hear people talk to them about what they are seeing and experiencing, in order for their brains to fully develop language skills.

Vision

Wiring for vision takes place in the first few months. A baby whose eyes are clouded by cataracts from birth will, despite cataract surgery at age two, remain blind. However, an adult who grows cataracts later in life and who has them removed will regain vision. This is because the adult's circuits were already 'wired' - an example of the use it or lose it principle in early childhood!

Creating One Stable Bond/Primary Caregiver

Researchers who examine the life histories of children who have succeeded despite many challenges, have consistently found that these children have had at least one stable supportive relationship with an adult early in life.

⁷ Starting Smart: How Early Experiences affect brain development. An Ounce of Prevention Fund, 1996. Website reference <http://www.childtrauma.org/ctmaterials/cargivers.asp>

WHAT'S HAPPENING IN AUSTRALIA?

NIFTeY

In Australia, **NIFTeY (The National Investment for The Early Years)** emerged out of a meeting of academics, practitioners and government officials held in Canberra in March 1999. These people, from many sectors, concerned about the wellbeing of children within the context of their families and communities, endorsed a proposal that a major initiative focusing on the first three years of childhood be launched to coincide with the new millennium. One of their guiding principles⁸ is that early brain development is strongly influenced by the nurturing environment and security of relationships that surround the young child, that sets a base for learning, behaviour and health for life. In Western Australia there is a State Branch and RUCSN maintains an active involvement in this local organisation. Meetings are held every six weeks and are open to anyone with an interest in early childhood issues. Attendees include paediatricians, therapists, nurses, early childhood educators, and representatives of the Department of Community Development. More information about NIFTeY can be sourced at its website: www.niftey.cyh.com.

Government Policy

The **Commonwealth Child Care Advisory Council** provides advice to the Minister for Family and Community Services on Child Care issues. Their new initiative is **Child Care Beyond 2001** - to share ideas and hear the views of anyone with an interest in Child Care and the 'big picture' issues that will shape its future.

*'The recent announcement of the **Stronger Families and Communities Strategy** by the Prime Minister on 16 April 2000 provides a timely opportunity to consider the potential role and options for Child Care in family and community life.'*⁹

The Government demonstrates an awareness of the crucial importance of the early childhood years for long term well being, development and health. They also recognise that quality Child Care provides important social and learning opportunities for children and that caring for children is a skilled role:

*'There is a wealth of new thinking and recent research into early childhood. There is also substantial expertise and experience in our communities. We have the tools to maximise the early experiences of our children. The challenge is to share these tools and develop the skills of everyone involved in Child Care both in and out of the home.'*¹⁰

IMPLICATIONS FOR CHILD CARE

Brain development is non-stop. It continues around the clock – when the child is with her parents, and also when she is not, for example, when in Child Care. That's one reason why high quality Child Care is so important. Warm, responsive care giving not only meets an infant's basic day to day needs for nourishment and warmth, but also responds to their preferences, moods and rhythms. This kind of consistent care giving plays a vital role in healthy development. Caregivers help to shape the experiences that allow the brain to develop. From the child's perspective, every important caregiver is a potential source of love and learning, comfort and stimulation.

Children need experiences with important caregivers who are sensitive to their emotional and physical needs. By providing consistent and responsive care giving, you can ensure that children have the best opportunity for healthy emotional and social development. Every important caregiver has the potential to help shape a young child's future.

*'Child Care is more than a service that holds daily schedules intact. It is a place where children build their brains.'*¹¹

⁸ The guiding principles were determined in July 1999 and were based on research evidence and adapted from the Ontario Report (Mustard and McCain (1999) *The Early Years – Reversing The Real Brain Drain*.

⁹ Commonwealth Child Care Advisory Council (May 2000), *Child Care Beyond 2001*, cover page.

¹⁰ Commonwealth Child Care Advisory Council (May 2000), op cit, pg 3.

¹¹ Website reference: <http://www.news-observer.com/2little2late/stories/day1-main>

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THINGS FOR CAREGIVERS TO CONSIDER

- ⦿ Consistent staffing – rostering, relief in the babies' room, allocation of primary caregiver.
- ⦿ Encourage attachment¹²– allow yourself to get close and be involved.
- ⦿ Provide information for parents on the importance of the early years.
- ⦿ Think of ways to increase opportunities for the somato-sensory bath – experience and interactions.
- ⦿ Allow time to 'be with' babies and learn their needs and respond to them.
- ⦿ Make time for talking.
- ⦿ Respond to babies' needs – they are supposed to cry and we are supposed to soothe them.
- ⦿ Create a stress-free environment ¹³.

INFORMATION ON THE INTERNET

A recommended website

There is a wealth of information available for caregivers who want to know more about current information and research. It can be hard, however, to know where to start and you can easily waste time and resources looking for the 'right' website.

To guide your search, RUCSN recommends that you begin with the following site as it contains information specifically developed for Child Caregivers together with lots of 'parent information' that you can download and distribute to parents who use your service. This is my favourite starting point for clear and useful information.

<http://www.zerotothree.org/brainwonders>

Brainworks is a collaborative project of the Boston University School of Medicine, Erikson Institute and ZERO TO THREE. It has been developed to provide user friendly information about how the brain develops within the context of relationships from conception to the three year stage. It contains separate sections for Parents, Child Care Providers, and Paediatricians. (Although it's helpful to look across all of the areas). The section designed for caregivers looks at different age groups and at relevant areas of brain development.

For example, the age span 'newborn to two months' looks at

- ⦿ vision, hearing and touch
- ⦿ crying
- ⦿ breast feeding and brain development.

It answers specific questions in these areas and provides information about what caregivers can do to enhance children's development and most sections contain a reference and further resource list.

SUPPORT FOR CAREGIVERS

If you are having difficulties including all children in your care environment, consider discussing any issues and problems with your Regional Inclusion Support (SUPS) Team. They have a wealth of experience and are able to offer practical advice, suggestions and information about local resources. They can also help with information about referral procedures for children with additional needs. If you are unsure which SUPS Team covers your service, contact RUCSN. Inclusion Support teams and RUCSN can offer staff training if skill enhancement is required.

GLOSSARY

Cerebrum

The large, rounded structure of the brain that includes the cortex. The cerebrum controls and integrates motor, sensory and higher mental functions including thought, reason, emotion and memory. It is divided into two hemispheres, the right and the left.

Cortex

(Technically the cerebral cortex.) The neuron-rich, furrowed, outer portion of the cerebrum. The cortex controls higher mental functions such as thinking, planning, remembering and analysing.

Networks

Groups of connections (see neural pathways) between brain cells that are created and maintained by particular experiences. They allow brain areas to communicate with one another in a coordinated way. Each neuron can connect to as many as 15,000 other neurons.

¹²Dockett, S, Caring Adults – A Necessity for Optimal Brain Development Every Child Vol 6, No 1, Autumn 2000, pp 12-13

¹³ Lawrence, M, Stress Free Environment – Providing Healthy Brain Development Every Child Vol 6, No 1, Autumn 2000, pp10-12

FOCUS ON ZERO TO THREE (PART 1) BRAIN RESEARCH—WHAT'S NEW?

Neuron

A cell that is part of the brain or central nervous system.

Neural pathway

A series of synapses (connections) that forms a network in the brain. These pathways can be activated by a particular experience.

Neurotransmitters.

Chemical substances, such as serotonin or dopamine, that enable electrical impulses to pass across a synapse from one neuron to another.

Plasticity

(Technically, neuroplasticity.) The capacity of the brain to change or adapt in response either to experience or to damage.

Pruning

A term used to describe the selective elimination of synapses (connections).

Somato-sensory bath

Carer-child experiences and interactions which 'immerse' the infant in the primary sensations of touch, taste, sight, smell, sound and movement.

Synapse

A link (connection) between two brain cells (neurons).

Wiring

The organisation of connections and networks in the brain. The brain's 'circuitry'.

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This article was prepared by Lee Jeffery, Training and Resource Development Coordinator from materials, notes resources and discussion with Inclusion Support Workers and caregivers throughout the state and included in the RUCSN Newsletter, Issue 2 (2000). Any error, oversight or omission in attribution is regretted.

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(available to loan from RUCSN library) featuring an interview with Dr TREVOR PARRY, HEAD, STATE CHILD DEVELOPMENT CENTRE of WA

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FOCUS ON ZERO TO THREE (PART 2) THE BRAIN: STRUCTURE AND FUNCTION



ARTICLE

In **Focus on zero to three (Part 1)**¹ we explored the implications, new knowledge and information gained throughout the last decade of brain research. We looked at how the brain develops, forms connections and 'knows' which connections to keep. In this fact sheet, **Focus on zero to three (Part 2)** we will look at the brain's structure and function to create a framework for learning about children's growth and development. Understanding the fundamentals of brain function and development provides us with an insight into the relationship between different areas of development, including social, emotional, physical, language, behavioural, and cognitive. We are then more able to identify caregiving practices that support optimal development.

At birth, the human brain is undeveloped and few of the brain's areas are organised and fully functional. It is during childhood that the brain matures and our brain related capabilities develop in a sequential fashion. Just as we crawl before we walk, and we babble before we talk, so does our brain develop from simple to complex. The development of the brain during infancy follows this bottom up (or sequential) structure. The most regulatory, lower regions of the brain develop first; followed, in sequence, by adjacent but higher and more complex regions²

The human brain is an amazing organ. It is responsible for all of our thoughts, feelings and behaviours. It enables us to create, to imagine and to hope. It allows us to communicate, to learn, to interact with others and to resolve conflict. In order to do all these things, our brain must organise its 100 billion individual nerve cells (neurons) into efficient systems that sense, process, perceive, store and act on the continuous sensory input from the environment: the physical sensations, the sights, sounds, tastes, smells and touches.

Our brains don't automatically 'pop' into existence capable of doing all these things. The brain begins to develop in utero from just a few cells and, by about age three, the child's brain grows to be 80 per

cent of the size of an adult's brain. (This is really disproportionate to the growth of the body. Imagine if a three year old was 80 per cent adult sized. Child Care Services would need to be much bigger!) The brain grows into a dynamic and ever changing biological system which is the product of our genetic potential and our history of experience.

Experiences – repetitive, consistent, predictable and nurturing experiences – are required to express each child's underlying genetic potential. The experiences of early childhood play a key role in determining the brain's organisation and capabilities. The experiences, environments and opportunities we provide our children help determine their strengths and create their vulnerabilities. If a child's world is chaotic, violent and emotionally or cognitively impoverished, their potential will remain unexpressed or less than optimal. If the child's world is safe, nurturing and rich in social, emotional and cognitive opportunities, he or she will flourish.

THE BRAIN'S KEY ACTIONS

Our brain helps keep us alive and thriving while we develop. Once mature, our brain allows us to procreate, protect and nurture the next generation. Our brain is designed to help us survive as a species, to reproduce and become caregivers. Our sensory organs (eyes, ears, nose, taste, and touch) tell us what is going on in the outside world. The brain senses and processes incoming sensory signals, stores elements of this information, and acts on the input. All sensory signals (inputs) begin a molecular process in the brain that alters the brain's structure (the connections that it makes and keeps³) and function. The way that this occurs depends on the '...pattern, intensity and frequency of neuronal activity produced by *sensing, processing and storing* signals.'⁴

The more a particular pattern of neuronal activity occurs; i.e. the more often the same sensory experiences are repeated, the more indelible the 'memory' created.

¹ RUCSN Newsletter Issue 2 (2000)

² We discuss this in more detail on pages 2-3

³ Focus on Zero to Three (Part 1) RUCSN Newsletter Issue (2000) p 4-5.

*'Throughout life, the brain is sensing, processing and storing patterns of neuronal activation (i.e. making memories) that correspond to various sights, sounds, smells, tastes and movements. Using various modes of memory (e.g. cognitive, emotional, motor) the brain stores these patterns, making associations between the multiple sensory stimuli that co-occur, creating templates of experience against which all future experience is matched.Take the visual image of a mother's face. If no other face has ever been seen by the infant, (he/she) will create some neural templates of the basic features of a face – eyes, nose, mouth, expressions. When the infant sees father, the neural templates for face are in place and only minor modifications need to be stored.'*⁵

The brain requires patterned activity to effectively develop and organise its systems. Imagine trying to learn a language if you only heard random words without the context, grammar and syntax of the language (i.e. the pattern of use). Even if you heard and perceived all the words, you could not develop language. Random exposure to words without an overall organising pattern would lead to atypical development of speech and language. This holds true for all learning experiences, including cognitive, emotional and social development. Repetitive, patterned and consistent experiences allow the brain to develop a well organised neural system.

THE HIERARCHICAL STRUCTURE OF THE BRAIN

The brain, at birth, is undeveloped. During its development it organises and grows in a logical and sequential fashion, starting from the lowest most regulatory regions of the brain and proceeding up through the more complex parts of the brain responsible for more complex functions. Healthy development in one region is dependent on the healthy development of lower brain regions that take place earlier in the developmental process.

To make it easy to understand, the human brain can be divided into four areas: brainstem, diencephalon, limbic system and neo cortex. Some of the key functions of different parts of the brain are outlined in Diagram 1. The brain areas store information related to the functions for which they are responsible. For example, the cortex stores cognitive information such as names, faces and facts; the limbic system stores emotional information such as fear, pleasure

and sadness; the diencephalon stores 'motor-vestibular' information such as handwriting, riding a bike and swimming; the brainstem stores 'body state' information such as our physiological response to stress, trauma, anxiety and arousal, together with controlling heartbeat, body temperature, respiration and autonomic nervous system functions.

The complexity of structure, cellular organisation and function increases from the lower, most simple area, the brainstem to the most complex, the neocortex. The most complex part of the brain is the cortex and 60 per cent of all of the neurons in the brain are in the outer 1cm of the surface of the cortex. Matching this increasing complexity of structure, is increasing complexity of function together with increasing plasticity (ability to change). The simplest regulatory functions of the lower brainstem areas are the most genetically determined and have the least variation and individual difference of response – there is a very limited behavioural repertoire at this level. As we go up the brain hierarchy, the impact of experience becomes increasingly important, individual differences abound and there is a wide range of behavioural responses available.

'USE DEPENDENT' DEVELOPMENT

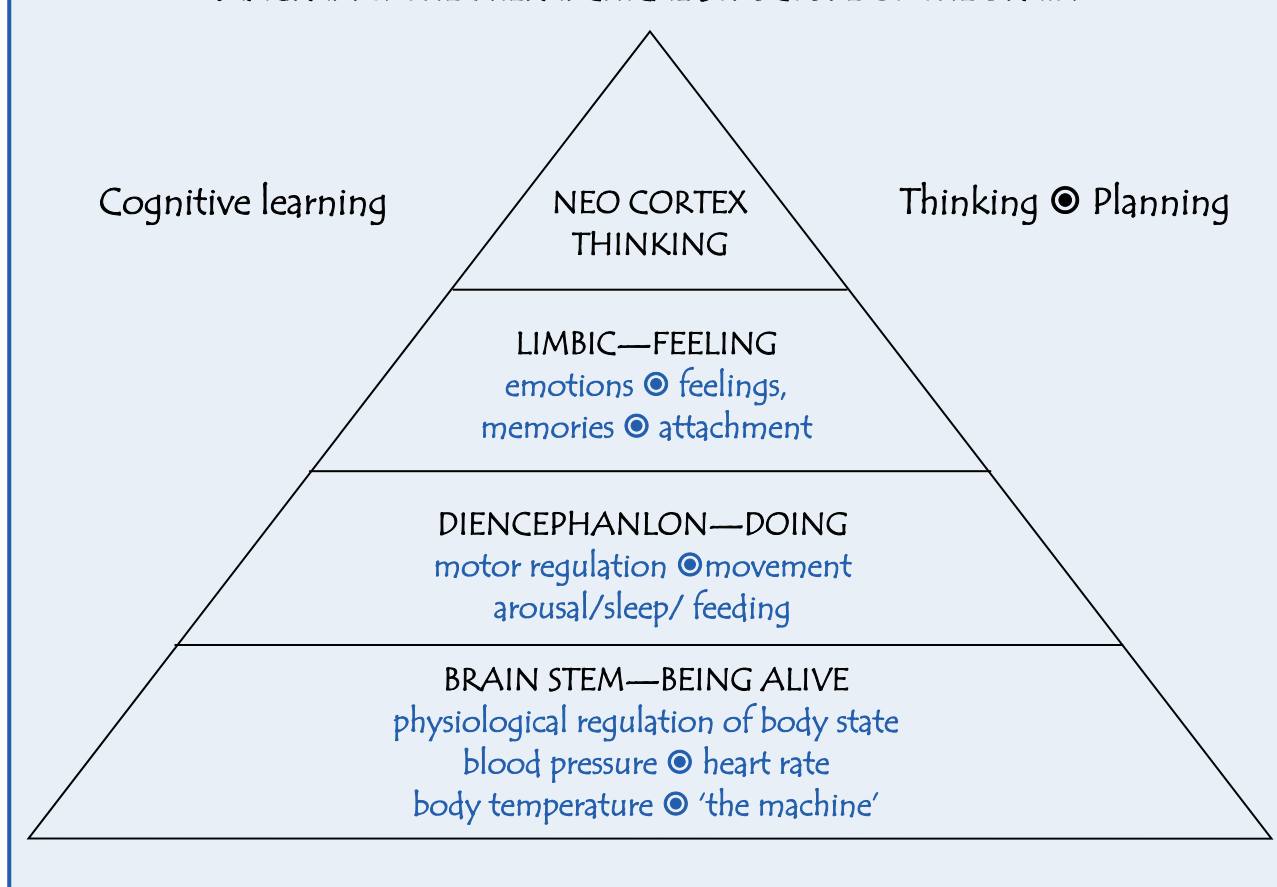
The normal organisation of any brain area or capability is 'use dependent'; i.e. it depends on the presence, pattern, frequency and timing of experiences during development. The more patterned the activity (e.g. music, reading, conversation) the more the brain regions responsible for these tasks will organise and be functionally 'healthy'. Patterned repetitive activity results in patterned neuronal activity that changes the brain. These experiences help build in our capacity to better perform those functions and to improve with practice. For example, hearing language helps to develop speech and language capabilities, practising piano helps to develop fine motor and rhythm reading capabilities and increases children's capacity for verbal comprehension and abstract reasoning. Children exposed to consistent, predictable, nurturing experiences that are developmentally appropriate will develop neurobiological capabilities that will increase their chances of future health, happiness, productivity and creativity. The child with a neglectful, chaotic or disorganised environment will have significant problems in many areas of functioning.

Play is essential for children to provide those repetitive experiences that improve and express the

⁴ Perry, B D (2000) *Brain Structure and Function I: Basics of Organisation*. Child Trauma Academy Interdisciplinary Education Series, Vol 2, No 3, p 4.

⁵ Perry, B D (2000) op. cit., p 5-6.

DIAGRAM 1: THE HIERARCHICAL STRUCTURE OF THE BRAIN



THE IMPORTANCE OF PLAY FOR HEALTHY BRAIN DEVELOPMENT

Central to a child's healthy development is the opportunity to act on their natural curiosity – to explore, to play and, thereby to learn. Children's play mirrors the process of sequential development. Babies play with their feet and hands, toddlers practise motor skills, and fantasy play encourages socio-emotional and cognitive development.

As children grow, their complexity of play also grows. Solitary, parallel, dyadic and then group play develops in sequence with the developing social capabilities of the child. At each stage of development, it is play and the repetitive elements of play that help organise neural systems which are responsible for more complex motor, social, emotional and cognitive skills. For example, in early childhood, when the brain is developing motor-vestibular capabilities, there is much more gross motor play than in adolescence. Play opportunities must be provided in an appropriate sequence that matches the child's level of neurodevelopment. This matching process depends on understanding the child's development in key areas: physical/motor, behavioural, emotional, social and cognitive.⁶

⁶ Perry, B Hogan, L and Marlin, S (2000) *Curiosity, Pleasure and Play: A Neurodevelopmental Perspective*. p3

child's potential in all areas of brain growth and development. We must never underestimate the need for consistent, predictable, patterned and frequent opportunities for play in a child's life.

WINDOWS OF OPPORTUNITY

Most of the brain's sequential and use dependent development and organisation takes place in early childhood. Remember that the brain grows to about 80 per cent the size of that of an adult by age three. This same three years olds brain is also twice as active as that of an adult.⁷ It is in this time period that the foundations are being laid for life long learning. It also means that – of all the experiences through our life span – those of early childhood have the most powerful and enduring effects on brain organisation and function.

Critical Periods

Are times in development during which a set of signals **must** be present for neural systems to differentiate normally.

Sensitive Periods

Are times in development when an undifferentiated neural system is especially receptive or sensitive to a set of signals

KEY POINTS

Brain Organisation and Function

- ◎ The brain is not a single system. It has many interacting and interconnected systems organised in a specific hierarchy – with the most complex (cortex) on the top and the least complex (brainstem) on the bottom.
- ◎ Different parts of the brain (systems) are responsible for different functions; e.g. the cortex is responsible for thinking, the brainstem is responsible for states of arousal.
- ◎ The brain's systems are networks of nerve cells (neurons). These neurons are continuously changing (in chemical and structural ways) in response to 'signals' from other parts of the brain, the body or the environment; e.g. sight, sound, taste, smell.
- ◎ Changes in neurons allow the storage of information (memory).

- ◎ Different parts of the brain store memories specific to that part of the brain enabling different types of memory – e.g. cognitive (names, phone numbers), motor (typing, riding a bicycle), affect (sadness).

- ◎ The brain stores information in a use-dependent fashion. The more a neurobiological system is 'used', the more that state (and the functions associated with that state) will be built in – for example, practising the piano, memorising a poem, or staying in a state of fear/stress/arousal.

CRADLE TO KINDERGARTEN

From the infant's birth to commencing Child Care and moving on to the school environment, development goes at a lightning pace. The range of tasks to be accomplished by the developing child are enormous: from developing day/night rhythms and patterns (circadian rhythm) to acquiring a basic moral code, learning how to negotiate and sustain friendships, and developing considerate behaviour.

The seeds of these tasks are there at – and indeed before – birth. We have broad genetic potential for development in all areas and what we make of this potential depends on our life experiences. We know that our brain develops and becomes organised in response to all the sensory stimulation it receives. Although we have developmental prime time or windows of opportunity, we continue to grow and develop all of our lives. We are very complex organisms and have a life long capacity to change and reorganise ourselves – this is what is meant in brain development terms by plasticity. This makes us both adaptive and responsive to our environment and experiences, whilst simultaneously vulnerable to the impact of our environment and experiences.

Although we demonstrate this plasticity, we know it is easier to do something right the first time rather than undo it and start again. This is particularly so when we consider human development. This is one of the reasons that there is such a strong focus on the early years of life and on providing the conditions for optimal development.

We look to the early years because experiences at the beginning of our lifespan establish a set of capabilities, orientations to the world and

⁷ Shore, R (1997) *Rethinking the Brain, New Insights Into Early Development*. Families and Work Institute, New York. p18.

expectations about how things and people will behave that affect how new experiences are selected and processed. They form the blueprint or template for children against which new things are matched. Consider the following examples:

- ⦿ The infant who has learned that she can engage an adult in play and who can successfully manipulate objects develops a fundamental belief in her ability to affect the world around her;
- ⦿ The toddler who has learned that the people she depends on for comfort will help her when she is distressed develops trust, security and empathy;
- ⦿ The child who has routinely curled up an adults lap for book-sharing is more likely to enter school with a keen interest in reading.

The child who misses these experiences may have a hard time recapturing them later in life. It will take a lot longer and will require more frequent and more intense repetition of experiences than it would for the infant. It means some 'unlearning' and re-learning rather than first learning. In short, getting off to a good start in life is a strategy for increasing the odds of greater competence and development to potential in adult life.

ZERO TO THREE: KEY TASKS

Most of us have a reasonable knowledge and

understanding of theories of child development. There are many texts, theorists and developmental perspectives. Our challenge as early childhood professionals is to identify those early developmental tasks that – if mastered – appear to get children started along positive adaptive pathways. These same tasks, if seriously delayed or problematic for some reason, can cause a child to falter or to have developmental difficulties in one or more domain. When we review the research, child development texts and theorists, together with our accumulated knowledge and child development folklore, we see that these tasks cluster in three main areas of accomplishment across childhood:

- ⦿ Negotiating the transition from **external to self regulation, including learning to regulate** emotions, behaviour and attention. This captures the child's emergence of self-control and independence.
- ⦿ Acquiring the capabilities or building blocks that underlie **communication and learning**. This includes early language development, reasoning and problem solving.
- ⦿ Learning to **relate to others** and form friendships. This highlights the emerging capacity to trust, to nurture and to solve conflict constructively.

These tasks are inter-related and begin with learning to self regulate.

ACQUIRING SELF REGULATION

WINDOWS OF OPPORTUNITY		
	Critical	Sensitive
Emotional	0-24 months	2-5 years
Motor	0-24 months	2-5 years
Vision	0-24 months	2-5 years
Early Sounds	4-8 months	8 months—5 years
Music	0-36 months	3-10 years
Thinking	0-48 months	4-10 years

Children move from helplessness to competence in terms of their regulatory capacity. This initially means mastery of tasks that were accomplished by the mother's body when in utero – but now must be accomplished by the child. These tasks include maintaining normal body temperature, organising and stabilising their biological rhythms of sleeping, waking, and feeding, and learning to soothe themselves and settle once their basic needs are met. As they grow and develop, it means constructively managing powerful emotions and keeping their attention focused.

Self-regulation cuts across all development. Living and learning requires people to react to changing events and experiences and to regulate their reactions. Infants and children are generally good at reacting – but need our help to learn to regulate themselves. The adult's first step in the earliest days of children's lives is to establish regulatory connections with them, and then to gradually shift the responsibility of regulation over to them in the day to day actions of sleeping, waking and soothing.

Developmentally, the first three months of life are a time of transition. The baby's behaviour and physiology shifts from inter-uterine to extra-uterine regulation. The full term infant of normal birth weight is well prepared to manage this transition – although there are wide ranging individual and cultural differences and variations in child rearing practices and expectations. The regulatory challenges of this period are greater for premature, low birth weight, 'at risk' or otherwise fragile babies. These children are those that fill our special hospital nurseries experiencing problems with many of the brain stem mediated body state/regulatory functions; for example, maintaining body temperature, respiration and steady heart beat.

The self-regulation involved in managing physiological arousal (e.g. hunger and thirst), emotions and attention are the earliest ways that infants and toddlers learn to manage themselves. They **begin** to acquire the behavioural, emotional and cognitive self control essential for competent life long functioning. We can see this demonstrated as they become more skilled in exercising self control, applying rules (e.g. Simon says), waiting, sharing, taking turns, concentrating and ignoring distractions.

3 ESSENTIAL CAREGIVING STRATEGIES

To best help children achieve the central tasks of childhood – developing self-regulation, acquiring the building blocks for communication and learning, relating to other people – caregivers need to ensure that the following three key strategies are integral parts of their care giving practice:

- ⦿ the child forms a secure attachment with a caring adult,
- ⦿ the environment is nurturing with minimal stress, and
- ⦿ that appropriate multi-sensory stimulation is provided.

IMPORTANCE OF ATTACHMENT⁸

The last decade of research on the early development of children – particularly the 'brain research' – has resulted in a renewed appreciation and awareness of the importance of a secure attachment to the ongoing social, emotional and behavioural development of children. The best way to ensure the optimal development of children is to ensure that they have reliable care and support from the adults around them. Those first relationships between a baby and their parents are the most important of all.

We have also learned much about early brain development and the 'biology' of attachment through studies that have examined the impact of trauma, maltreatment and neglect and the consequences of insecure attachment.⁹ We know that our capacity and desire to form emotional relationships is related to the organisation and function of specific parts of our brain.

Studies about caregiver-infant relationships show that the most powerful component of a secure attachment is early, sensitive care for children. This is characterised by:

- ⦿ recognition that even the youngest infant can signal her needs and wishes
- ⦿ accurate reading and interpretation of infant cues and signals
- ⦿ letting the child's signals, rather than the parents needs or wishes, set the agenda and
- ⦿ consistency or predictability over time.

The child's overall experience should be that her signals are effective in getting a response – that caregivers are available and willing to respond. In order to respond sensitively, a caregiver must

⁸ See RUCSN Newsletter Issue 4 (2000) *It Begins With Attachment*.

⁹ The work of Dr Perry and colleagues at the Child Trauma Academy, Baylor Medical Institute, has been very influential.

understand the cues and signals of the child, be willing to respond, and have the emotional strength and social support necessary to sustain sensitivity over time.

NURTURING LOW STRESS ENVIRONMENT

Play and exploration are crucial activities for young children. They help the child's brain develop in optimal ways. Child sensitive places, semi-structured activities and opportunities for exploration that are safe, nurturing and enriched with developmentally appropriate stimulation should be the core of all child focussed programmes. Play develops skills, but a child will only play when she feels safe. A child's sense of safety stems from a calm and predictable world – one in which she knows what will happen next. This means consistency across and within days, together with predictable routines. It also requires that the adults in this world are predictable, attentive, consistent, attuned and attached. We can make a child's world more predictable by having a daily schedule or routine that includes waking, eating, sleeping and bathing at fairly set times. We can also seek to keep significant changes to a minimum and recognise the impact that change has on the child's life. In an unpredictable world without routine, children become fearful and anxious. They do not feel safe and secure, they do not play, and they do not develop optimally. We should identify strategies to ensure that our care environments are places where children feel safe and happy.

YOU CANNOT SPOIL A NEWBORN!

- Consistent and responsive attention to the crying newborn will help the infant build in the neurobiological capacity to tolerate future stress in an optimal fashion.
- Newborns and infants should **never** be physically punished, hit or have food, affection or touch withheld. These actions can actually cause the brain to develop abnormally.

MULTI-SENSORY STIMULATION

A child's environment should also be rich in sights, sounds, smells, tastes and touches. Environments rich in sensory experiences stimulate the child's

brain and give them new information about the world. For a child, a sensory-rich experience can be as simple as the smell of muffins baking, the feeling of a silky pillow against their cheek, or the difference between being outside in the shadow of the tree and then moving into the sunshine. It is important that caregivers realise the importance of early sensory experience – especially for the zero to three age group. Caregivers also need to be alert and recognise that too much stimulation can overwhelm a child causing stress and anxiety. One noisy toy with bells and whistles might be interesting, but too many noise-making toys might be over-stimulating. All children are different. In a group care environment, it is particularly important to get to know the children in order to appreciate and understand their developmental and tolerance levels. We also need to be aware that watching television is not considered to be a sensory rich experience for a child.

SUPPORT FOR CAREGIVERS

If you are having difficulties including all children in your care environment, consider discussing any issues and problems with your Regional Inclusion Support (SUPS) Team. They have a wealth of experience and are able to offer practical advice, suggestions and information about local resources. They can also help with information about referral procedures for children with additional needs. If you are unsure which SUPS Team covers your service, contact RUCSN. Inclusion Support Teams and RUCSN can offer staff training if skill enhancement is required.

This article was prepared by Lee Jeffery, Training and Resource Development Coordinator and was first featured in the RUCSN Newsletter Issue 1 2001. Any error, oversight or omission in attribution is regretted

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- **Early Childhood Interviews** with Anne Stonehouse and Dr J Fraser Mustard

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- **Focus on Zero to Three** (Part One) Issue 2 (2000)
- **It Begins With Attachment** Issue 4 (2000)

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