

# Revealing Autism

The Secrets of Autistic Behaviour

Rehabilitation establishing new learning connections with Sensory Integration  
Therapy

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## Foreword

Whoever has to deal with autism, whether that person be a parent or a professional, has to be able to answer two questions; what caused the syndrome and how to cure it.

In this study course, we answer both these questions in a neurological perspective, as did Dr Carl Delacato in his book “The Ultimate Stranger –the Autistic Child”. What causes the autistic syndrome is a disorder of the central nervous system, due to mild, but diffuse brain injury; he also suggested a sensorial-perceptive neuro-rehabilitation therapy for the natural learning progress to be reintroduced.

The title of this presentation “Revealing Autism” was chosen purely as a need for simplicity. There is now sufficient clinical evidence that autism is only one condition on a very wide scale of conditions. From mild presentation in terms of minor speech difficulty e.g. stuttering, behavioural problems such as attention deficit disorder, to severe multiple learning, and developmental delay, and at the most severe level of mobility difficulty, as well as learning and development delay e.g. cerebral palsy.

Thus, it is clear that the true title should read “ Attention Deficit Hyperactivity Disorder, Dyslexia, Development Delay, Asperger Syndrome, Autism, Cerebral Palsy Revealed”.

Finally, it can be shown that there is a probable link between brain injury, which gives rise to the condition, and recorded, prenatal and birth problems.

High definition scanning techniques link all these conditions, by identifying discontinuities in the brains of affected children at all levels. The position of the brain injury, and the intensity of the injury, determines the level of the affliction. Couple this with the fact that no two children’s brains are identical and the very wide scale of conditions is easily explained.

So you have been informed by your doctor, health visitor, pediatrician, (you insert your own title) what you already suspected as a mother, father, carer, that your child was not developing at the rate it was supposed to, unlike your previous children or like the children of your best friends.

Your child at 18 months of age has been labeled as;

1. Autistic.
2. Autistic Syndrome Disorder.
3. Developmentally Delayed.
4. Add your own Label

At this point you may have been informed, after a thousand questions, like, how, where, when, and why, that there is little that can be done to help the child.

However you may be told that a lot can be done to alleviate the discomfort and that an army of health visitors, occupational therapists, speech therapists, etc, can be made available on demand when the appropriate time arrives.

You can however take the self-help approach and continue to read.

All is not lost, by understanding what exactly is the problem with your child, there is a multitude of things you can do for yourself.

The problem is that your child has acquired a mild diffuse organic brain injury, that is compromising his central nervous system, and created a child, whose senses are being distorted, and its perception of the world in which it lives is totally unlike ours.

In simple language, it sees, hears, smells and generally perceives its environment in a distorted way to us.

These distortions are such, that, to survive in this world that it finds itself in, the brain has the ability to switch of some of the sensory gathering organs, to reduce, or eliminate the inputs which are overloading the child's systems.

Depending on the severity of the brain injury, will be the severity of the problem, and the speed, and level of the recovery.

Yes, recovery and management are possible, and, achievable by applying simple management principals.

So lets list the things you may observe and may have noticed about your child.

The following may not directly to apply to your child, but to brain injured children in general.

Difficult pregnancy

Difficult birth

Caesarian Section Birth

Did not creep on hands and knees

Went directly to walking from stomach crawling or bottom shuffling

Speech has disappeared.

Development generally has stopped.

Has little or no eye contact.

Ignores requests or command.

Has strange repetitive behaviours

Shies away from contact

Cries a lot or even continuously

Has rapidly changing bowel movements changing from constipation to diaoriha

Irregular sleep patterns.

Eats everything or very little.

Is choosy about what your child eats.  
Is difficult or impossible to toilet train  
Is frightened by loud or sudden noises  
Cannot stay in busy bright environments  
Is hyperactive and is busy in a non constructive way  
Is a control freak ordering his or her life  
Puts everything in mouth.

Having now identified the neurological dysfunctional child we can now attempt to make all our lives easier by controlling the child's lifestyle.

Two new words suddenly appeared –“neurological dysfunctional”  
In simple language your child's problems are to do with the injury in the brain and no, neither you, nor your child are psychotic or neurotic.

The good news is, some of the side effects of the brain injury can be alleviated by controlling what the child eats and drinks and, depending on the severity of the injury, most, or nearly all of the other effects, can be alleviated by doing simple physical and occupational therapies.

The first step is to consider diet. Certain food types affect some, but not all children. One of the principal food types giving children bowel problems is casein containing foods i.e. dairy products .To a lesser extent is gluten containing foods i.e. foods made from wheat flour.

By far the greatest problem to our hyperactive, non- sleeping, incontinent children is SUGAR .By elimination of all foods containing, or, made from refined cane and sugar beet produced sugar, as well as liquids containing high sugar content, the child becomes more manageable.

Take out of the food chain colourings, flavourings, high E numbers, as well as carbonated coloured sugar flavoured drinks, and monosodium glutamate, you can go a long way to reducing a lot of side effects of your child's brain injury.

Now the neurological aspects can be tackled. To lay the foundations of rehabilitation, two aspects are fundamental. Firstly all children should be made to creep on hands and knees, at least twice a day, for a maximum of two minutes each exercise, and this exercise should be practised for at least 4 months. Secondly to attend to vestibular and proprioception difficulty, controlled slow spinning and controlled floor rolling are carried out at the same time, twice a day, 2 minutes each exercise for at least 4 months.

Control your home environment, for hyper auditory children, whisper to the child all the time, remember he switches off if his environment is too noisy, for hyper visual children, their environment should not be too bright.

At this point you can be directed to the writings and work of the Delacato Family who over the last 40 years have helped neurological dysfunctional children worldwide, and the readers attention is drawn to the following publications;-

“The Ultimate Stranger- the Autistic Child” by Dr Carl H Delacato.

“A New Start for the Child with Reading Problems” by Dr Carl H Delacato

“Children who do not look you in the eye” by Dr Antonio Parisi.

Special thanks are given to Antonio for allowing me to reproduce into this piece the section of his book written by Anna Lisa Buonemo entitled “The Secrets of Autistic Behaviour”.

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# Chapter 1

## The History of Autism

The term autism is taken from the Greek “autos” (closed in on oneself and was used for the first time in psychiatry in 1906 by Eugen Bleuler, a Swiss psychiatrist, who used it in connection with schizophrenic patients to describe their isolation from the rest of the world. In 1943, Leo Kanner, an Austrian doctor working in the United States used the term for the first time in relation to infantile psychiatry. He had a number of patients, all apparently physically normal with the following symptoms.

- a) inability to establish relations with parents, relatives and/or outsiders;
- b) retarded development of speech;
- c) generally repetitive speech (echolalic) without communicative intent;
- d) excessive concern about keeping objects in the same place and order (obsessive, compulsive behaviour);
- e) stereotypes;
- f) lack of imagination.

As the number of referrals to Dr. Kanner increased, Asberger began to describe similar cases, which he also diagnosed as autism, but with the difference that he saw

These children as especially gifted in certain areas (drawing, auditory, memory, mathematics). Autism, therefore is known both as Kanner and Asberger syndrome, especially for the condition known as “knowing idiocy”, or for borderline cases of dysfunction with high functioning in some areas.

Until 1943, autism was a term used in the description of some of the symptoms of schizophrenia. After Kanner’s published work, the term autism was used to describe children with specific dysfunctions: the disturbance became not the symptom of another condition, but a condition in its own right.

Kanner attempted to interpret the etiology of the condition. He saw the origin of the disturbance in cold and distant mothers (refrigerator mothers), reaching conclusions of a purely psychological nature.

Other authors reached similar conclusions, including Bettelheim, Szurek, and Dolto.

Bettelheim attributed the cause of autism to the unconscious rejection of the child by parents; Szurek believed the rejection was conscious, and Dolto considered the

origin of the condition to be the psychological blockage of the child’s intelligence, in all cases psychotherapy was the treatment.

This situation remained unchallenged until the beginning of the 60,s at which time authors reported various kinds of neurological dysfunction in autistic

children. Clinical observation and later neurological equipment examinations i.e. EEG scans, CAT scans, MRI scans PET scans, led to the inevitable hypothesis that the neurological development disorder of which autism was the expression was caused by brain injury.

In 1964, Rimland published the first work on autism which posited the organic etiology of the disturbance and Delacato after 10 years of research, published his work "The Ultimate Stranger – The Autistic Child" in 1974, not only identifying the cause of the brain injury but recommending treatment by neurological rehabilitation using sensory integration therapy, taking advantage of the brains natural plasticity, and the ability to create new learning connections via new neural pathways.

## Chapter 2

### Identifying Autism

Many families across the world have brought their children for therapy at Delacato Clinics, and a common thread runs through discussions, in as much that, parents noticed changes in their child's developmental progress at around 18 months to 2 years. In effect, development slows down or stops completely, from a child apparently developing normally, meeting milestones, to a child shutting itself off from the world and losing whatever speech it had at the time.

The timing of 18 months is significant, in as much as, this is the development point at which, the normal developmental process moves from control by the lower part of the central nervous system, to a higher level in the brain.

Any insult for whatever reason, in any part of the brain, at any intensity, has an effect of destroying neural connections from lower brain to upper brain. Loss of these connections means that, control of development of any critical component of development, such as speech, gross motor control, fine motor control, cognitive ability, is stopped or delayed.

The therapy for rehabilitation is to recreate those connections and restart the development process.

Anecdotal evidence from parent's, also suggests that, they suspected even earlier something was not quite in order.

From parents we can glean a number of signs of onset of autism and for the record are listed as such;

Colic, very difficult to feed, whether breast or bottle-fed.

May need very little sleep, restless, crying screaming.

Head banging, cot rocking.

Fits and tantrums.

Cannot be pacified or cuddled.

Child spurns attention

Did not have stage of creeping on hands and knees.

Clumsy, impulsive. Often accident prone.

Erratic, disruptive behaviour.

Compulsive touching- everything and everyone.

Hyperactive in constant motion

Poor concentration.

Repetitive play.

Toe walking

Self harming, hits head, bights hands

This list is by no means exhaustive and children often display some symptoms and not others, and in varying degrees of severity.

Be aware that many of the symptoms listed above are normal behaviour for children in minor forms.

# Chapter 3

## Etiopathogenesis of autism

In the light of real rates of increase of recorded incidence of diagnosis of autism and other learning delay disorders world-wide, the current debate for the reasons of the increases in numbers is ongoing. The purpose of this document is to review the data that has accumulated in the Delacato Organization worldwide over the past forty years to add to the pool of knowledge.

In 1965, in a paper entitled “Neurological Organization: The Basis of Learning”, Delacato, Doman, Doman, LeWinn, Spitz and Thomas, proposed causes of Neurological Disorganization, which in turn would lead to diagnosis of Autism or any other Autism related condition. The following major groupings are founded as nearly as possible on etiological relationships.

The paper presented its findings of work by the group after two decades of clinical research with several thousand brain injured children.

### **Causes of Neurological Disorganisation**

#### **A]**

#### **Defective or arrested development due to;**

##### (1) Genetic Factors

- Chromosomal Aberrations – In Structure and in number.
- Metabolic Factors Genetically Linked – Protein, Lipid, Carbohydrate

##### (2) Maternal Metabolic Disorders

- Diabetes Mellitus
- Dysthyroidism

##### (3) Nutritional Factors

- Gestational

- Postnatal

(4) Exposure of Fetus or Child to Noxious Influences

- Maternal Infection
- Irradiation
- Drugs
- Hypoxia

(5) Infection

- Encephalitis
- Meningitis
- Cytomegalic Inclusion Disease
- Toxoplasmosis

(6) Mechanical Intracranial Injury

- Gestational
- Perinatal
- Postnatal

B]

Circulatory Disturbance

- Cerebral vascular Thrombosis
- Cerebral Embolism
- Cerebral arterial compression in association cerebral edema

- Dural sinus thrombosis
- Cerebral hemorrhage

During the years 1972 to 1997 Carl Delacato aided by numerous associates established clinics around the world for the sole purpose of administering Rehabilitation Therapy to Neurological dysfunctional children. Israel in 1972, Germany in 1976, Italy in 1976, Japan in 1982, and England in 1997. In every clinic, the children attending came with a clinical diagnosis, and every child came with a questionnaire, which detailed gestational, perinatal and postnatal history of the child. From this information a very clear understanding of the level of neurological dysfunction could be established as well as possible causes of the dysfunction.

In 1999, Antonio Parisi MD neurologist, attached to the Sorrento Clinic in Italy and medical advisor to Delacato Organizations in Europe, wrote the book "Children who do not look you in the eye – The secrets of autistic behaviour". His book is based on information gathered by the organization team at the Sorrento clinic with the advantage of 23 years of accumulation of medical histories of patients attending clinics with diagnoses.

The chapter entitled Etiopathogenesis of autism, outlines the causes gleaned from study of medical records, and considers the causes of autism to be all the causes of brain injury during pregnancy, child- birth and the first years of early life, conventionally defined as the first thirty months.

I] PRE - NATAL (exogenous or environmental factors)

a) Infectious Diseases

Toxoplasmosis  
 Cytomegalovirus  
 Influenza  
 Measles during the first 3 months of pregnancy  
 Viral Hepatitis  
 Herpes Infection  
 Syphilis

b) Intoxication

Alcohol, tobacco, substance abuse  
 Thalidomide  
 benzodiazepine

c) Malnutrition

d) X-ray examinations

II] PRE- NATAL (endogenous factors)

Genetic Causes

PERI- NATAL

Environmental changes to which the foetus is subjected

Delivery

Mechanical trauma

Perinatal hypoxia

POST NATAL

Encephalitis

Brain contact with poisonous substances

Brain contact with substances which become poisonous due to the lack of an enzyme (genetic)

Trauma

All causes of hydrocephalus

In the case of pre-natal causes, infections which may cause the death of the foetus should be considered, followed by those which may cause brain injury but leading to neurological disturbances such as autism. It is important to note here our clinic's record that a very high percentage of mothers of autistic children risked miscarriage during the first four months of pregnancy compared to average population.

It is also noteworthy that in Italy all potential mothers are tested to measure immune cells fighting measles, and vaccination is recommended whenever the immune level is insufficient. This has greatly reduced secondary autism caused by congenital encephalopathy due to measles. The screening for phenylalanine and phenylketonuria is also important for the prevention of congenital brain injury and the consequent avoidance of secondary phenylketonuria autism.

Peri-natal causes of encephalitic disturbance are environmental changes to which the new-born baby is subjected at the moment of birth, delivery through the birth canal, mechanical trauma and hypoxia (lack of oxygen).

Hypoxia following over rapid or lengthy labour can lead to death or neurological effects such as autism.

Of the four possible causes, hypoxia is undoubtedly the most risky, despite the fact that brains of new-born babies are less vulnerable to lack of oxygen than those of adults. Hypoxia causes selective injury of the central nervous system affecting above all the cortex, base nuclei, and white matter of the hemisphere. Between the years 2002 to 2004 a number of researchers using computerized imaging in a number of Medical Establishments in the United States observed changes in white matter in the brains of Autistic children. The lack of oxygen in a premature foetus leads to selective injury of the periventricular blood islets of the germinal tissue.

Hypoxia is also the cause of brain injury during delivery, associated with the use of forceps or suction devices, strangulation with the umbilical cord.

Tonic reflux of the neck of the birth canal eases childbirth, but the lack is itself caused by a disorder of the foetus, so dystocia is not the sole cause of the brain injury. This is a common occurrence in the case of autistic children. Our research team often encounter's one cause of brain injury which seems to provoke further vulnerability to a second pathogenic cause of brain injury. We find a high percentage of brain injury occurring at the perinatal stage.

Postnatally, the brains of newborn babies are extremely vulnerable to direct attack by viruses or bacteria (encephalitis) and to agents originating in the rest of the body, through metabolic injury.

The study of Hydrocephalus as a cause of autism deserves special attention. The hydrocephalus is caused by an accumulation of cerebral spinal fluid in the ventricles and/or sub-arachnid space whose volume increases. Hydrocephalus may be caused by obstructions of various types, and this prevents the flow of fluid, alternatively by hypersecretion of fluid (secreting tumour of the plexis), or by the reduced re-absorption of fluid. In 99% of cases, the cause is obstruction. Hydrocephalus in new -born babies has no symptoms except an increase in the volume of the skull with consequent tension of the fontanelles and sutural diastases. All widespread or focal symptoms of disorder the central nervous system may be due to the disorder causing onset of hydrocephalus, and for which hydrocephalus is a symptom, or by endocranial hypertension which sooner or later accompanies the hydrocephalus.

At this point it is worth commenting on the influence of cerebral spinal fluid. Cerebral spinal fluid is a clear colourless liquid with a variety of functions, including the balanced regulation of the pressure and volume of the brain; if the volume of blood or of the brain increases, the volume of the liquid decreases and vice versa. This is why children with brain injuries should be monitored closely for the intake of liquids, which – if excessive – could cause an epileptic fit and/or hyperactivity and/or bruxism. The presence of a larger than normal ventricular space (the location of cerebral fluid) in brain-injured children leads to the creation of larger quantities of cerebral spinal fluid and hence the reduction of blood volume and lack of oxygen, causing epileptic fits and hyperactivity.

In their published paper "Neurophysiological view of Autism: Review of Recent Research as it Applies to the Delacato Theory of Autism" by Delacato, Szegda and Parisi, the authors noted that 81% of children with autism exhibited enlarged ventricles on CT or MRI scans.

Reducing the amounts of cerebral spinal fluid in the ventricles has the effect of increased blood flow and consequently an increased flow of oxygen to the brain.

At the end of April 2004, the National Institute for Clinical Excellence, (NICE), reported at a press conference, that they were concerned about the rise in occurrence of Caesarian Section births. The Delacato Centre immediately responded to NICE to the effect that, observation of birth records of children currently attending Delacato Clinics or having had therapy for Neurological Dysfunction, showed that over 20% of those children had been delivered by emergency or elective Caesarian Section.

In early June, a team led by Dr Emma Glasson at the University of Western Australia announced, that as part of their findings into a study of Autistic children, whose mothers had problems during pregnancy and birth procedures, compared with problem free children, that, delivery by emergency and elective Caesarian Section increased the risk of those births leading to incidence of Autism. She goes on to state that children who developed autism were more likely to have had a birth procedure of less than 1 hour.

Caesarian section delivery is most likely to be considered as a rapid procedure.

#### Survey of Patient Records

Records of past and current records were initially reviewed to establish which fell into the three main groups of;

Prenatal

Perinatal

Post Natal.

A more comprehensive review of each group was carried out to identify a reasonable cause of the dysfunction.

Patient records giving excellent data on the pregnancy, birth and early childhood were reviewed.

Prenatal Observations; 1% - without indicated birth problems.

Prenatal leading to perinatal problems; 35%

Perinatal (without pre natal indication); 30%

Post natal Observations; 22%

1% of children suffered severe reaction within hours after immunisation.

1% of children attending the clinic was known to have a chromosomal abnormality.

Caesarean section procedures were carried out in 25% of cases

Children subjected to delayed neurological organisation due to interrupted development as a result of not having crept on hands and knees before walking accounted for 12% of patients.

In the prenatal group, mothers notified illnesses, including infections as well as accidents during pregnancy, which led to birth procedure problems, which necessitated a high number of caesarean section procedures.

In the perinatal group hypoxia, lack of oxygen, including those suffering umbilical cord strangulation was a contributory effect. The vast majority of birth procedures were overlengthy (more than 10-12 hours), and conversely over rapid (less than 2 hours).

The children attending clinics came with a wide range of diagnoses at the extreme end of which we noted Agnesis of Corpus Collosum to the milder affected children with sensory difficulties diagnosed as hyperactive, reading, and development delay, and those diagnoses of Asperger Syndrome, Autism, and Cerebral Palsy lying between.

As a consequence of the review we noted that 78% of clinic attending patients acquired mild diffuse brain injury during pregnancy and birth procedures which led to their current diagnoses.

Just as significant, half of patients with post natal development delay was due to the interruption of the natural development sequence in very early childhood (up to 18 months) resulting of a missed development opportunity, that is creeping on hands and knees.

## Chapter 4

### Sensory integration therapy

**In 1953, after 3 years of working with Temple Fay in Philadelphia, Carl Delacato, Bob and Glen Doman gave a presentation in New York to the Staff of the Institute of Physical Medicine and Rehabilitation, which contained the following pronouncement.**

“It must be considered as a basic principal that, when a lesion exists within the confines of the brain, treatment to be successful must be directed at the brain, wherein lies the cause, rather than to that portion of the periphery where the symptoms are reflected. Whether the symptoms exist in an almost undetectable subtlety in human communication or in an overwhelming paralysis, this principal must not be violated by those seek success with the brain-injured patient”.

From this simple beginning, Dr Carl Delacato set out on a long journey, which has culminated in what we now practice today as Delacato therapy. Along the way Carl developed the principals of the relationships between the senses, hearing, seeing, touching, which he referred to as the ‘in’ channels which have a direct effect on brain development and the ‘out’ channels of mobility, speech and hand use, which depended on the ‘in’ channels. He found that a lack of opportunity for development for any of those channels, had an effect upon the development of the others, and as such showed the way in which integration of the senses into a therapy, that overcame the brain injury and lack of development opportunity.

Today, we accept without question, the presence of abnormalities affecting the Central Nervous System (CNS) of individuals exhibiting behavioural, learning and mobility problems, after a mild diffuse brain injury.

In 2001 The American Academy of Neurology (AAN) published in its Journal “Neurology” October 9<sup>th</sup> issue, a study undertaken by the PET Center at Children’s Hospital of Michigan in Detroit on 26 children with tuberous sclerosis complex (TSC). Researchers used MRI and PET examinations to study how brain lesions resulted in common behaviours of autism, including difficulties in social interaction and communication and narrow and repetitive stereotyped behaviour. They found that more than one area of the brain was responsible for autistic behaviour in children with brain lesions, and that autism results from a complex combination of events in different parts of the brain, rather from one single source.

In Feb 2002 the AAN published a report of a study carried out at the Medical College of Georgia, using computerized imaging in the frontal, and temporal lobes of autistic patients, and observed minicolumnar abnormalities. A minicolumn is a basic organizational unit of brain cells and connective wiring, allowing an individual to take in information process it and respond. Thus any

changes in size shape or location of the minicolumn will have an effect on the processing capacity of the brain.

In that 1953 original paper presented in New York, the premise that the development of the CNS is the result of the interaction of the organism with its environment was proposed. Increased interaction produces increased development and decreased interaction results in decreased development. This interaction, which is prerequisite to development, is also a prerequisite to learning.

The brain interacts with its environment through a cybernetic loop, which begins in the environment, follows afferent or sensory pathways to the brain and then efferent or motor pathways from the brain back to the environment. Thus the environment as it reaches the brain through the sensory pathways, is the primary prerequisite for the development of the CNS, and consequently for learning. Any changes that occur which have a direct effect of the CNS to function effectively with the environment, have a profound effect on the ability of the CNS to experience the environment, and effectively learn from that experience.

The creation of a sensory integration therapy, enables the CNS to re-establish itself through the sensory pathways, to effectively integrate with the environment. The benefit from that re-establishment, is based on the premise, that, introducing new experiences to the CNS, or reliving the experience, due to brain abnormality, were missed or not effectively experienced during childhood development, is a valid presumption that the CNS is a plastic organ, and due to that plasticity, has the ability to readjust to those new experiences.

There is ample confirmation in the literature that brain function and structure can be altered. In 1979, in an article in the Journal of learning Disabilities, doctors Marianne Frostig and Phylliss Marlow stated, "Neuropsychological research has demonstrated that environmental conditions, including education, affect brain structure and functioning". In their book "Brain, Mind and Behaviour" Floyd E. Bloom a neuropharmacologist and Arlyne Lazerson, state, "Experience i.e. learning can cause physical modifications in the brain". This is confirmed by Michael Merzenich of the University of San Francisco. His work on brain plasticity shows that, while areas of the brain are designated for specific purposes, the brain cells and cortical maps do change in response to experience (learning). It seems that, while learning causes brain growth on one hand, lack of learning, on the other hand, causes a lack of brain growth.

Delacato, as a result of his investigations, put forward the idea that learning delay, is, not only a result of changes of sensory inputs, but also as a result of missed stages in the child's normal development through the stages of creeping, crawling, to walking. This is born out in the Delacato Clinics, that children who did not crawl on hands and knees, who went directly from floor crawling to walking, were subject to development delay. A part of the Delacato Therapy, is for the

child to learn the missed experience. By looking at all the sensory gathering systems, sight hearing touching, tasting and smelling, and evaluating which of those sensory gathering systems have become compromised, either by brain abnormality, or missed experience, a therapy for rehabilitation, can be devised to help the child overcome his problems. We use the plasticity of the brain and its ability to grow by effectively creating new neural pathways to store that new experience, to re-establish the CNS with the environment.

Professor Janet Eyre at the Department of Child Health, Royal Victoria Infirmary, Newcastle upon Tyne, has been conducting studies into children, who had suffered a stroke as babies or in later childhood. Thus reinforcing that premise, that when babies suffer brain damage near the time of birth, there is considerable scope for reorganization of brain development, this reorganization to include transfer of the brains control of sensory output from damaged to non damaged areas of the brain. Using the brains plasticity, for appropriate targeted intervention to improve the outcome of brain injured children.

Professor Eyre is the author of two papers on the plasticity of the brain in 2003. "Developmental Plasticity of the corticospinal system", in: Boniface S and Zimmerman U (Eds.), Plasticity of the Nervous System, Cambridge University press p62-91.

"Development and Plasticity of the corticospinal system in man", Neural Plasticity, 10, P 93.

## Chapter 5

### Secrets of autistic behaviour

She had phoned a few weeks earlier. I mostly listened to the story she had to tell, a long one, with many details.

She could not remember any problems during the pregnancy, the birth was a little longer than normal but the doctors did not consider it unusual.

A few months later the child showed the first symptoms of a problem; she noticed them but the pediatrician just laughed at her. This was followed by a sudden arrest of any development in speech and by stereotypical behaviour. After several hospital visit and examinations to specialists, finally the verdict had been pronounced : autism

As I was trying to remember all the details I sat down on one of the divans in the lobby and once more gazed out of the window. What a contrast, I thought, between the beautiful play of light on the water at the repetitive, desperate behaviour of an autistic child. What harmony and beauty, what imperfection and incoherence.

Suddenly I just felt powerless. What could I tell the child's mother if she asked me how much of the beauty and wonder of the world, as it lay before us, her son would ever see or understand?

In the terrace window I saw a reflection of a mother a child, the child dragging his feet as if he did not want to walk.

When the boy was in the middle of the lobby he let out a scream that froze the room. The hotel porter looked up but something stopped him from making any kind of comment or reproach.

Even in his mother's arms, as she moved forward to escape hostile glances, the boy continued to make noises and to bight his left wrist.

I rose and went toward her, although I realised it might make things more difficult. Just as I had feared, the boy became more agitated, although I had only smiled and shaken hands with his mother. I took her by the arm and steered her towards the corner of the lobby. It looked like the right place, a huge sunshade on the terrace cast a shadow across that corner of the room. It was cooler, without any plants and the table and armchairs were on a white carpet. We settled down and the boy began to settle, then the conversation began.

As often happens to people I talk to, after a while she smiled and asked me if my voice was natural. I have a low voice, which seems to inspire trust and serenity. My voice is just a natural thing, I do not change it. But it is a useful work tool. The first thing I learnt from Dr Delacato is that a loud or sudden noise can disturb an autistic child.

The above is an extract from the publication by Dr Antonio Parisi entitled "Children who do not look you in the eye" written by Dr Anna Lisa Buonomo.

## Chapter 6

### **Neurological Organisation**

In his paper "Ontogeny of Reading Problems" presented to Claremont Reading Conference in 1963, Dr Carl Delacato, ED. D reasoned that the process by which

one attains the ability to learn to read - the ability to learn to express oneself starts at birth. If the child is not afforded the opportunity to develop total neurological organization, the child cannot become totally "human", and as a result cannot communicate at the level, at which the child might have been able to, had neurological organization been completed.

Based on the rationale of neurological reorganization, prevention of communication dysfunction and, as well, the development of meaningful communication is very possible. It must be based, however, on the premise that there are significant development stages of neurological organization which cannot be bypassed, and as the child reaches each stage chronologically, it must be given every opportunity to master the functional neurological activities at that level before moving on to the next. With such a logical approach to child development, we could become able to deal with the problems that face us today, by seeing that every child is given the opportunity to develop wholly and completely in terms of functional neurological organization.

Prior to the presentation of this paper at the Claremont reading Conference, Carl Delacato had spent over 10 years developing the theories on which his paper was based; studying cultures around the world, and working with, and studying children and adolescents with varying degrees of communication and development delay problems. This research led to his premise that all the affected individuals studied, had either an incomplete neurological development, or had received, or been subjected to an event, which interrupted the natural sequence of development, leading to complete neurological development. His two books published in the period up to 1963 outline his rationale and treatment regime, which leads to neurological completion and thus to the individual to achieving meaningful communication.

It is the contention of Delacato International, that individuals exhibiting development delay, neurological dysfunction, behavioral problems, learning delay, communication problems, etc. essentially came to be as a result of incomplete or disrupted neurological organization.

A lack of neurological organization can be the result of a number of factors. It can be the result of a genetic bias; this is known to represent a small percentage of the problems. It should be pointed out that genetic research in this area is still ongoing, and experts agree that there is still not enough knowledge to be absolutely certain that this is a contributor. A second area of etiology is trauma (by this we mean physical, biological or environmental). The third etiological area is the area of the lack of environmental opportunity.

Diagnostically we can begin to assess the etiology of such problems prior to birth. A family history helps to give an insight into the existence of that small group, that which is potentially genetic in etiology. Birth data, early childhood data, illness, and encephalitis give us an insight into the second group of a

traumatic etiology. The third, and that group, which lacked environmental opportunity, can be seen if we view the child in sequential stages from a developmental and functional neurological bias

Data collected from our clinics in Europe suggest that one third of children not attaining successful neurological development, were born with a problem which hindered complete neurological development, another third were subjected to birth trauma. The last third appear to be the result of environmental disturbance or environmental deprivation.

At the start of this treatise it was argued that neurological reorganization is the pathway to help neurological dysfunctional individuals overcome their problems. We now know that the root cause of neurological dysfunction that creates conditions that we label Dyslexia, Dyspraxia, ADD, ADHD, PDD, Asperger Syndrome, Autism etc, has its origins in a mild organic diffuse brain injury acquired by the individual in early stages of development, or as a result of incomplete neurological organization during development.

The acquired brain injury disturbs the functions of the central nervous system (CNS) and thus disturbs the sensory perceptual systems (i.e., hearing, seeing, smelling, touch and taste).

The use of EEG tracings, CAT scans, MRI scans, or other high definition images, can now detect even the smallest discontinuity or anomaly in the brain.

As an example, a recent study published August 2002 by Sommer, et al based at the Universities of Hamburg and Goettingen, who conducted research into individuals who stuttered, using the latest high definition scanners, found structural anomalies in the left hemispherical cortex region of the brain.

Analysis of data available to Delacato organizations worldwide, concerning individuals presenting with some form of brain scan and EEG's, showed the following. There was a preponderance of mild dilation of the ventricular system visible in scans leading to a natural conclusion that these children surveyed as a group, lacked gross pathological defects of the structure of the brain, but still showed evidence of mild changes to the structure, and hence function of the brain. EEG studies tended to show dysrhythmia. Typically these disorganized EEG's showed a preponderance of slow wave activity with a significant percentage showing "spiking" as well. Most of the EEG's were abnormal and non-specific.

All individuals displayed soft neurological signs, lack of coordination, development delay, strabismus, laterality dysfunction's, toe walking, attention aberrations, and significant learning delay.

Studies of individuals were and are carried out to ascertain the incidences of various types of sensory perception problems; within the groups the findings are as follows;

Tactility problems 90-100%.

Auditory problems 80-90%.

Visual problems 60-70%.

Taste and smell 25-30%.

Children with tactility problems presented a hypotactile picture in a 2:1 ratio over hypertactile. A great majority of hypertactile individuals present a sensitivity and or hyper-reactivity to food colourings, preservatives, drugs and certain food types.

A 3:1 ratio of hyperauditory over hyposauditory patients was observed.

A 3:2 ratio of hypervisual over hypovisual was reported.

Only a small percentage presented problems of smell and taste.

Children with at least 2 hyper areas (excluding taste and smell), e.g. vision, auditory or tactility, have a prognosis for progress is quite good, children with no areas of hyper senses but with all areas as hypo made least progress.

The basic treatment technique for all patients visiting the Delacato Clinics is firstly, an evaluation, secondly an individualized home programme specifically designed to normalize the sensory channels of that child. This programme is taught to the child's parents to carry out at home. Later programmes are aimed at improving each patients general development based on progress and observations made during follow-up consultations.

The second stage of rehabilitation is to address the sensory problems identified and administer the programme therapy.

At this point it is important to understand what is termed neurological organization. Previously brain growth was considered a static and irrevocable fact, completed and unchangeable at birth and if injured could not be altered. The theory of neurological organization views the growth and organization of the brain very differently. Recent studies confirm the ability to influence brain injury, growth and recovery.

Each child must follow an essential sequence of experiences and development laid down by revolutionary heritage. This development and organizational sequence begins prior to birth, progresses vertically through the spinal cord, then through the brain stem and medulla, the middle brain up through the two hemispheres of the cortex. In humans uniquely, there is one final stage in this developmental progression. This is a lateral development wherein one hemisphere of the cortex becomes the language or dominant hemisphere of the brain.

As a result of this uniquely human final lateral stage, man becomes the only creature who is correctly one sided, that is right handed, right eyed, right eared and right footed or conversely, left side usage of all sensory gathering organs, and thus only man has been able to develop written or spoken language.

Treatment is based on recapitulation. If a development stage is missed or not completed, the child is given the opportunity to go back through the experience. We have seen many children who have completely missed the creeping stage (on hands and knees) of progression. It is known that the brain can become better organized if significant development milestones are retraced, and re-experienced. Children are taken back to a function typical of a younger age, we then have to practise the related motor functions that reinforce their sensory and neurological development. When lower level stages have been mastered, lateralisation can then take place making them all one sided.

Based on this theory, the child's development is evaluated based on significant areas of development. These areas are subdivided into the sequential order and time schedule in which they appear in non compromised children.

There are three major intakes or sensory areas.

1] Vision; beginning at birth with a light reflex and progressing through 7 stages to understanding writing.

2] Hearing; beginning at birth with a startle reflex and progressing through 7 stages to understanding speech.

3] Tactility; beginning at birth with tactile withdrawing reflexes and progressing through 7 stages to the ability to recognize two-dimensional objects through manual tactility.

The profile also contains 3 expressive areas, each of which also progresses through 7 development stages.

1] Mobility; 7 stages, through movement without mobility, to normal walking.

2] Manual function; 7 stages from grasp reflex to ability to write.

3] Language; 7 stages from birth cry to human speech.

Treatment consists of providing the child with the opportunity to go back and re-experience the stage(s) in which it exhibits a weakness. Remember steps to speech and language reading and writing are through crawling on the stomach to creeping on hands and knees, to walking upright to language and recognition. Final development only takes place when intermediate stages have been successfully accomplished.

At this point we can start to address the sensory perceptual problems of the individual.

Recall we mentioned the senses, which govern our lives and enable us to understand and interpret the world around us and survive in that world.

There are two major sensory dysfunction's, hypersensitivity and hyposensitivity plus a third, less prevalent one we call white noise. Hyper individuals receive too much information from the environment which overloads them, and may result in their "switching off" as a form of defense mechanism. Hypo individuals do not receive enough stimuli and are starved of outside information. White noise, like static on a radio also blocks out the normal stimuli.

To read the sensory problems of the individual, one need only observe the individual; the actions will point the observer to the problem. These actions can be viewed as the individuals attempt to treat it himself.

A fish out of water placed near to water will flap itself vigorously on the land. We may view its convulsions as a sad reminder of the frailties of life – the death throws of a "lost cause", or are they an attempt to move itself back into the water its natural environment? . If the fish is close enough to the water it will often succeed and thus save its life.

Recall the conclusions of studies of sensory impaired children.

90-100% have tactility problems.

Hypertactile children shy away from touch, they do not welcome contact and are sensitive to certain types of fabrics, are happier wearing loose fitting garments rather than tight fitting ones and take off any garments they are not comfortable with. These are the children you cannot take out of the bath, and the ones you cannot get into the shower.

Hypotactile children are the self-mutilators, biting hands, fingers, hitting heads, sometimes against walls, doors, anything to try to induce a sensation.

Recall an earlier comment about children showing reactions to certain food types and foods containing preservatives flavour enhancers, food colourings, these are the children with severe hypertactility problems. The surface hypersensitivity is skin deep as our skin layer contains millions of nerve cells transmitting information back to the central nervous system. From a perceptual point of view, the skin on the outside of our bodies is essentially the same skin lining of our total digestive system. Hypersensitivity on the outside becomes hypersensitivity on the inside increasing the chances of the chemicals in the food we eat, and the liquids we drink, reacting adversely on children with hypersensitive stomach linings.

Now to Auditory problems, we know that three times as many children are hyperauditory than hypo. These are the children who put hands to ears, put fingers in ears, run away from busy environments, scream in noisy rooms. These are the children, who can and do fail the standard listening tests because they have the ability to switch off their hearing when it becomes an overload for them. In the inner ear we have the mechanism which maintains our balance, as hyper auditory children do not use their auditory system efficiently this balancing

system is not being used effectively. Hyperauditory children often have no fear of heights can perform amazing balancing acts and can spin themselves without becoming dizzy.

Turning now to visual problems, again hypersensitivity is prevalent. This manifests itself by the children who do not make direct eye contact; often looking at you sideways. They blink in bright sunlight, and often perform visual stereotypes involving hands, paper, or strings.

These children are trying to reduce the amounts of visual stimuli entering the system, turning them off when they cannot cope.

Finally we come to taste and smell, usually these act in tandem, as these two sensory gathering systems are intimately connected. Only a small percentage of autistic children are affected. Hypertaste / smell children tend to be picky eaters, eating mainly bland foods, sometimes no solids at all, while hypotaste / smell children eat and drink everything, especially strong taste and strong smell items – often to their own detriment.

As a rule, mildly affected individuals show two or more hypersensitivities and no hyposensitivities, and are the easiest to rehabilitate. Individuals with hyper and hypo take longer and need much more therapy.

On the positive side children having had hypervisual and hyperauditory sensory problems essentially see everything better than the average child, hear everything, miss nothing and have an incredible memory . This child has the ability to learn better than the average child yet is often misdiagnosed as mentally retarded.

These children do not have learning difficulties, they have essentially no problems with input only output. What underlines the sensory perceptual problems are development delays due to their adversely affected sensory systems. Once these sensory problems have been rectified, and the ability to learn and develop has been given back to our children,(ideally with hemispherical dominance being attained), the ability to master written and spoken language can be achieved .

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