

Developmental Dysphasia

Theory Diagnosis and Treatment

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INTRODUCTION

Speech therapists all over the world must have a lot in common. I'm quite sure for example, that we all have experienced parents who claim: "my child can hardly speak, but he understands everything". Although a lot of these parents will be proudly bragging about their children, some of them might be telling the truth; they might be talking of children with developmental dysphasia.

Over the last 25 years, more than 2500 persons in the age of 8 months to 38 years (but mostly children from 2 to 12 years) have been examined by the assessment- and treatment team of the Developmental Dysphasia Foundation in Amsterdam. As one of the speech therapists of this team, I would like to tell you about the Foundation and (more importantly) about the theoretical background of the concept of developmental dysphasia (as we define it). Thereafter we will discuss how developmental dysphasia should be diagnosed and treated.

The Developmental Dysphasia Foundation aims to optimise early detection and treatment of developmental dysphasia. The Foundation supports a multidisciplinary assessment- and treatment team which comprises 6 disciplines: child neurology, child psychiatry, psychology, speech-language therapy, occupational therapy and remedial teaching. The speech therapist is the key-figure in both diagnosis and treatment.

Before getting into the theoretical background of developmental dysphasia, we must define the term developmental dysphasia as we at the Foundation understand it. In our concept, developmental dysphasia is a clearly defined speech- language disorder of neurodevelopmental origin, with a very characteristic dysharmonic profile on which I will elaborate later. Therefore, it is explicitly not a speech- language delay (that shows -on the contrary- a harmonic profile), although the combination of developmental dysphasia and a speech- language delay can occur in one person.

I would like to set out why we use the term DD. The neurologists Head and Ewing described a group of children in the early twentieth century in the publication “aphasia in childhood”. In the early eighties, when the Developmental Dysphasia Foundation was established, Developmental Dysphasia was a common diagnosis. In the years after, Specific Language Disorder was more

commonly applied. In general one can say that SLI and DD are diagnosis for the same group of children. The diagnosis DD is still used by us because of our conviction that it names both neurological and developmental aspects of the disorder whereas the term SLI does not.

THE METAMORPHOSIS CONCEPT

The metamorphosis concept is a concept on speech- language development. It is the firm foundation of diagnosis and treatment of developmental dysphasia. Dr. Xavier Tan who was leader and child psychiatrist of our team for 20 years, developed the metamorphosis concept 25 years ago. I will therefore generously quote him on this subject. First of all, one should realise - that developmental dysphasia has its basis in the brain. The 2 hemispheres of the brain are connected by the corpus callosum. In adults the 2 hemispheres have different functions (according to the split-brain experiments of R. Sperry).

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Perception

	Left hemisphere	Right hemisphere
Visual	Analysis-synthesis	At glance (Gestalt), face recognition
Auditory	Analysis-synthesis	Tonality, prosody, rhythm
Olfactory	Analysis-synthesis	Instantly
Taste	Analysis-synthesis	Instantly
Touch	Analysis-synthesis	Instantly
Time	Analysis-synthesis	Globally, floating

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The left hemisphere perceives the world in an analytical, linear, sequential way. Time experience is chronological. The right hemisphere perceives the world at a glance, sees whole patterns, "Gestalt"-like. Tonality, prosody and rhythm are also processed in the right hemisphere. Time experience is floating, dreamlike.

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Thinking and language

	Left hemisphere	Right hemisphere
Thinking	Rational Logical Concept of causality	Intuition In images Multi sensorial
Language	Formal	Colloquial Poetry Exclamations Onomatopoeia

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Thinking in the left hemisphere is rational, logical, with the concept of causality, verbal, detached from sensory association. Language is formal (like lawyers and civil servants use). In

the right hemisphere, thinking is by intuition, irrational, in images and multisensorial. Language is colloquial, poetry, exclamations, onomatopoeia, jabbertalk, babytalk.

But in what proportions do these differences exist in the new-born and the young child, and what is their relation to speech language development?

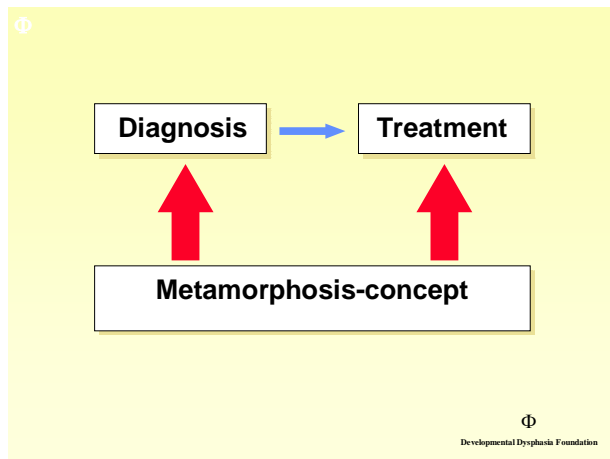
All early functions seem to be focused on rapid, instantaneous detection of danger and the demand of protection. At birth the baby can discriminate human sounds from environmental sounds (machine). After a few hours it can discriminate the voice of the mother versus other voices. Tonal language studies (Chinese, Lettish) have proven the early perception and production of so-called supra-segmental aspects of language (tonality, prosody and rhythm). What a child hears resembles rather a soundscape than a string of sounds. All these (language) functions are processed in the right hemisphere.

Essential in the metamorphosis concept is the assumption that a change in activation balance from the right to the left hemisphere is made. Several lines of research lead towards the idea that RH plays a dominant role before the three-word-sentence stage. At first there are RH neural networks, changing into LH networks, activated for elaboration of language. This means that crying, vocalising, babbling, holophrases with and later without movement, exclamations, onomatopoeia, 1 word and 2 word sentences are mainly processed in the right hemisphere.

Expressions as “daddy car” or “me too” are examples of RH affectively-controlled expressions. Sentences with strong affective emotional connotations. Tan called this the **affective linguistic paradigm**. ALP can be compared with micro-ideas, connected with feelings (affect) and (multi) sensorial sensations put into words. After that stage RH networks become less active whereas LH networks become more active. In the stage where the LH networks become more active language can be elaborated into refined, complicated language.

Disturbances of migration and axonal retraction in the transition phase from two- to three-word sentences seem to be important factors in the origins of developmental dysphasia. This hypothesis has implications for both diagnosis and treatment. In both diagnosis and treatment it helps to have an idea on localisation in the brain. In treatment for example one should handle a right hemisphere approach when speech is still in right hemisphere stages. That implies that it is not very helpful to sit at a table and say: "repeat after me:....." with children who are still in the right hemisphere stage. But later we will come to these practical aspects of treatment.

When visualised the metamorphosis concept as basis for diagnosis and treatment looks like this:



Although clear, the metamorphosis concept is not simple. A neurological theory as a basis for a diagnosis and treatment method is quite extraordinary in the speech-language field. Most theories are established on linguistic foundations.

Not only a good understanding of the metamorphosis concept is crucial for diagnosis and treatment of developmental dysphasia. In addition, it should be acknowledged that (as is commonly accepted) age appropriate speech-language development is also dependent on the following determinants:

- Determinants**
Speech-language development
1. Relationship
 2. Bodily contact
 3. Movement
 4. Imitation
 5. Play

These determinants form the base of the context in which the speech-language is learned. **The relationship** is important because the speech-language can only develop in an affective relation. **Bodily contact**, for example patting the child on the back holding his arm, gives the child a safe feeling and will diminish the fear of separation. This should of course be done with a certain professional distance. **Movement** is important because being in motion elicits speech-language. **Imitation** Children develop their speech/language for the greater deal on the basis of imitation. The input of speech language from their environment is important. **Play** is for children a desirable way of learning. It is a spontaneous and natural interaction that can even be non-verbally initiated.

DIAGNOSIS

Now let us get to the four major characteristics of developmental dysphasia.

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Developmental Dysphasia

A neurodevelopmental disorder

Major characteristics

1. Understanding of speech clearly better than speaking
2. Spontaneous speech (monologue) better than dialogue ('on command' situation)
3. Fluency impaired (connection of ideas e.g. story-telling)
4. Morphological and syntactical disorders

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The diagnosis of developmental dysphasia appears hard to miss, if these major characteristics have been established present. However, the clinical picture varies with age, severity and the presence of complicating factors.

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Developmental dysphasia

Complicating factors

- (Oral) dyspraxia
- Bilingualism
- Hearing loss
- Stuttering
- ADHD
- Immobility; long term institutionalization
- Epilepsy
- Autism

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A frequent occurring complication is dyspraxia. Most of our patients have a form of dyspraxia, varying from severe forms of oral, manual, and body dyspraxia to e.g. a very mild form of manual dyspraxia. Other -less frequent occurring- complicating factors are: bilingualism, hearing loss, stuttering, ADHD, immobility, long term institutionalisation, epilepsy and autism. These factors must not be seen as causes of developmental dysphasia but aggravate the clinical picture and give less optimistic prognosis. Furthermore, we find developmental dysphasia in children with Down's syndrome, Klinefelter's syndrome and fragile-x syndrome. We do not argue that these syndromes are separate complex syndromes with their own speech- language problems. However, growing experience with these children has given us sufficient leads to believe that they all (next to their own specific problems) have developmental dysphasia.

It is clear that complicating factors colour the picture of developmental dysphasia. Given the fact that other problems may frequently disguise the presence of developmental dysphasia, it is important to make a solid, **multidisciplinary differential diagnosis**. Hereby I put emphasis on the word multidisciplinary because only a multidisciplinary team including a speech therapist is

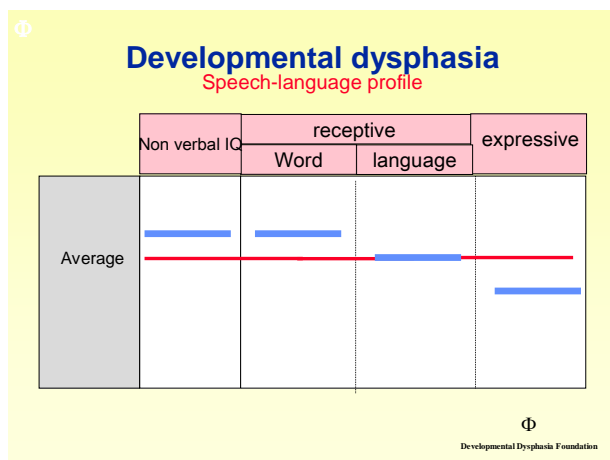
fully equipped to differentiate between autism and developmental dysphasia. An autistic spectrum syndrome can be present secondary to Developmental Dysphasia. Or primary next to Developmental Dysphasia. When it is secondary to the developmental dysphasia children may show autistic behaviour because of the bare fact that they encounter difficulties in their expressive language. Children may also demonstrate inflexible behaviour because they are not able to think in language and therefore have difficulties in e.g. changing from one activity to another. When an autistic spectrum syndrome is primary next to developmental dysphasia one should nevertheless treat the speech language problems because then children will be given the tool to improve contact with others.

In the diagnostic process one should realise that combined causes for speech-language- problems are common. When diagnosing, one should therefore have an open mind for a "and.....and"- approach, and not try to think in terms of "or.....or". This may sound strange, when speaking about differential diagnosis, but speech- language problems do not always come alone. A common diagnosis for example is: 'developmental dysphasia with dyspraxia' or 'developmental dysphasia with mental retardation'. When diagnosing young children it will be harder to set the differential diagnosis. Over time diagnosis will be clearer.

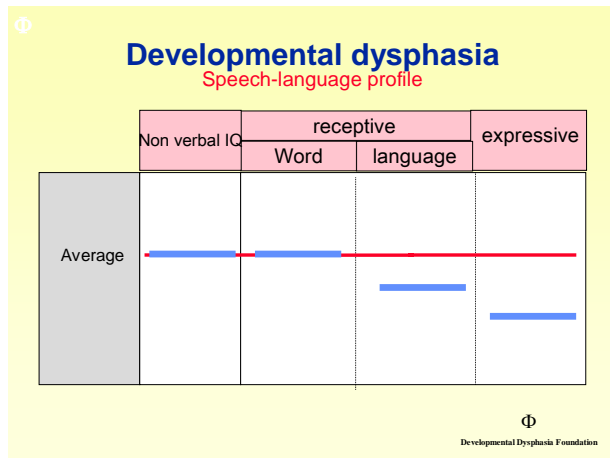
For the benefit of an effective assessment of children who possibly have developmental dysphasia one must bear the following in mind:

- assess both receptive and expressive language and do **never take the average** of the two figures measured;
- look for tests which avoid manipulation with objects, drawing or even writing as much as possible; this is to prevent you from testing praxis rather than the speech- language level;
- observe the quality and quantity of spontaneous language and make a sample; since there are (to my knowledge) no tests that assess the level of dialogue versus the level of monologue (on command versus spontaneous).

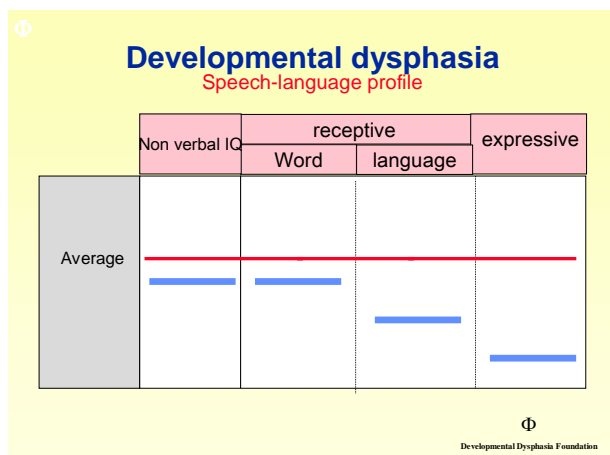
I will show you 3 examples of speech- language profiles of children with developmental dysphasia.



The first profile shows a fairly intelligent child with a mild developmental dysphasia and probably none or not many complicating factors.



The second shows the profile of a child with developmental dysphasia and possibly some complicating problems.



The third profile shows a child with developmental dysphasia that might well be severe and almost certainly with complicating factors.

The discrepancy between the receptive- and expressive speech / language is more or less a constant in young children with developmental dysphasia. The shape of the speech- language profile does not vary much until the age of 8 (although there are of course exceptions). Thereafter there is a trend towards a more levelled profile. Finding the significant difference between language-reception and -expression will then be more difficult. This levelling might be due to mental retardation having set in already and to the fact that it is more difficult to differentiate in the level of speech language level in older children (younger children learn more measurable milestones).

Let us now discuss some guidelines in treating children with developmental dysphasia.

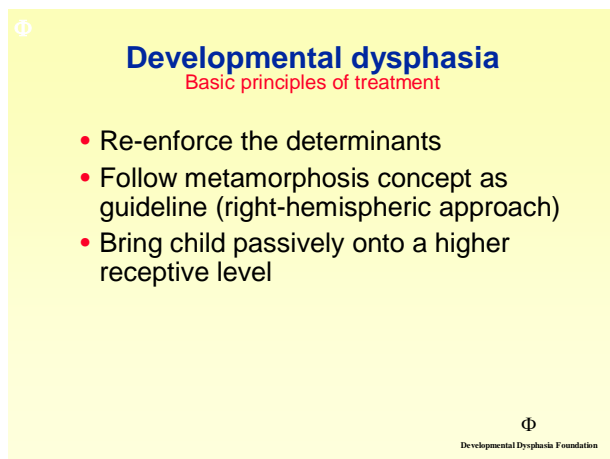
TREATMENT

The method we use is called Tan-Söderbergh. Ragnhild Söderbergh, a Swedish child-linguist came up with a reading method for the deaf. Tan adapted this reading method for children with developmental dysphasia, as the method is in effect right-hemispheric. Our therapy centres round this reading method. This method uses reading as an extra visual code to improve speech language. Another reason for using visual aspects is that visual abilities are more often than not better than the auditive abilities. In that way children use their qualities to the full. Another positive side effect of using reading in therapy is that children who encounter reading difficulties will learn how to read at an earlier age.

I want to emphasise that treatment of young children with developmental dysphasia is time-consuming and intensive, also for parents. Therapists and parents should be available for at least a year. Parents and schoolteachers are expected to play an active role in treatment. Therefore, non-co-operative parents are a contra-indication for treatment because the time spent with the therapist (1 1/2 hours a week) is simply not enough to tackle the complex problem of developmental dysphasia.

To profit from the child's most receptive years in relation to speech / language, we prefer to start direct treatment as early as age 3. Before age 3, indirect treatment can be given.

The basic principles of treatment are:



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Developmental dysphasia
Basic principles of treatment

- Re-enforce the determinants
- Follow metamorphosis concept as guideline (right-hemispheric approach)
- Bring child passively onto a higher receptive level

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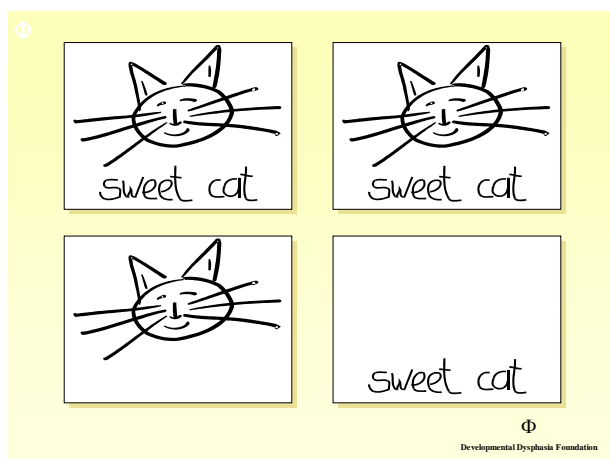
The determinants, as set out earlier, are re-enforced and used in therapy. The therapist follows the interest of the child. The therapist should follow the metamorphosis concept as well. It means that he or she should be aware where the child is in terms of the concept. The principle is that the therapy should connect to the stage of speech and language development where the child is. If he still is in the RH phase the therapist should for example be aware that early speaking is strongly affective. A word like “gone” for example can have the affect of separation fear. The therapist can put the inner-speech in to words for the child and say out loud: ”your mother is not gone but she will wait for you”. The child will feel safe and understands that the therapists know what he means. When a child does not speak age appropriate one is tempted to speak one the expressive level of the child. This should not be done. On the contrary, it is important to speak to the child on his or hers receptive level. Speaking on the receptive level will bring the child to higher receptive language.

At first individual therapy is started. This is in order to: establish a relationship between therapist and child, to make the child familiar with the Tan-Söderbergh method and to get an idea whether group therapy is a possibility.

After a period of individual therapy integral group therapy starts. A speech therapist and an occupational therapist are co-therapists on the group. The group exists of 5 children. The composition of the group is preferably not completely homogeneous (in level and age). In that way children can learn from each other. The children are seated in a circle around one of the therapists (at reaching distance) who we call the teacher; the other therapist sits behind the circle and is called the assistant. The assistant is not there as a deputy sheriff but serves as an **ego-support** to the children. An important role of the teacher is to avoid 'on-command'-situations at first instance and later to facilitate these situations. It is important to share this information with parents and teachers at school, so that they can do the same.

We start with a group-"conversation". Therapists do not introduce themes. On the contrary; themes are brought up by the children themselves. The utterances of the children are written down on a flipover and a drawing on the subject is made by the teacher. **The act of drawing** elicits speech and because the writing is exactly what the children say (regardless of incorrect morfo-syntax), they learn the connection between speaking and what is written down. This flexibility is rather liberating for both children and therapists. The children fill in the framework of the method. But more importantly: giving the children the initiative helps to avoid "on-command" situations. The alphabet and the numbers are learned in order to provide the children with visual elements that can be recalled. Following the right-hemispheric approach, the alphabet and numbers are learned by 'sing-song' and at a drone.

Nevertheless, the purpose of the Tan-Söderbergh method is not to learn to read, but to improve speech-language. The fact that the children may learn to read, merely is an advantageous side-effect, considering the reading problems these children are likely to develop. As soon as the children are able to read approximately 70 words in a global manner, we start with visual analysis and synthesis, for these children will have problems with the auditive analysis-synthesis. I show you an example of the manner in which we learn the children 'read'.





Developmental dysphasia

Speech-language aspects of (group) treatment

- Elicit more and better speech-language
- Bring receptive language to a higher level
- Re-enforce inner speech
- Drinking/eating/praxis/articulation
- Reaction on peers (solving arguments)
- Turn taking
- Teach 'parole gentili' and stopgaps
- Learn to say goodbye



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The speech-language aspects of the grouptherapy are:

- Elicit more and better speech language. This is one of the main goals of therapy.
- Bring receptive language to a higher level. This is done by addressing to the child on the child's receptive level (or just above the receptive level).
- Re-enforcing inner speech. This is done by the assistant, who will put into words the (appropriate) inner speech for the children.
- Drinking, eating, praxis and articulation. To treat problems in these areas one should take a right-hemispheric approach, never practice with separate elements but rather use meaningful notions. We never practice oral motor skills "isolated", but combine these for example with eating. Furthermore, it helps to use the right hemisphere supra segmental aspects (tonality, prosody and rhythm) to support the pronunciation of long words. When the articulation is poor we feel very comfortable using the prompt method (developed in Canada) and applied broadly in (for example) the USA.
- Group therapy gives an excellent opportunity for children to learn how to react on peers and how to solve arguments, with (if necessary) the guidance of the assistant.
- It is important to learn to take turns to function in society; group therapy provides an excellent opportunity hereto.
- The only thing we impose on the children actively are the "parole gentili" (automatic formal sayings) because it comes in handy in normal life (and supports social integration) if they are able to say "sorry" or "thank you" if appropriate.
- Finally, the children find it difficult to change from one activity to another (also a supposed corpus callosum function) and especially to say goodbye. We therefore give special attention to each goodbye-event and prepare children on changing of activities.

We now covered (in short) the first part of the treatment which has speech-language in the centre of the attention. After 45 minutes the children have a break of 15 minutes. After the break the occupational therapy is in the centre of attention (although assistant and teacher role are not switched).

As medication, Piracetam (Noötropil) is sometimes described. Piracetam is said to facilitate the forming of the corpus callosum.

Herewith I would like to conclude this lecture in theory, diagnosis and treatment of developmental dysphasia. As you have discovered, our method is not some kind of standard-

program for treatment. It is a conceptual approach that is being 'materialised' by the children themselves, each time in their different, individual way. I hope that I aroused your interest in the innovative way in which developmental dysphasia, as we define it, should be diagnosed and treated. If you would like further information on the Söderbergh-Tan method, please do not hesitate to contact our Foundation.

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