Ch.1

INTRODUCTION TO STUTTERING

General Definition:

It is a dysfluency characterized by an abnormally high frequency and /or duration of stoppages in the forward flow of speech, these stoppages usually take the form of:

1. Repetition of sound, syllables, or one syllable words
2. Prolongations of sounds
3. Blocks of airflow and/ or voicing in speech

Individuals who stutter are usually (aware of their stuttering and are often embarrassed by it), moreover they often use abnormal physical and mental effort to speak.

But children who are just begging to stutter may not always be highly conscious of it.

Dysfluency resulting from cerebral damage or disease, psychological trauma.

To consider the individual have stuttering there are many features concomitant with his speak these are:

I. Core behaviours: the basic behaviours of stuttering, that seem involuntary to the stutterer as though they were out of his control. They contrast with secondary behaviours, that the stutterer has developed as a learned reaction.

The core behaviours consist of the following:

a. Repetitions are frequently the core behaviours of children who are just beginning to stutter. They are simply a sound, syllable, or single- syllable word repeated several times. The speaker is apparently “stuck” on that sound and continues repeating it until the following sound can be produced. In children beginning to stutter (single syllable word repetitions and part- word repetitions

PWR) are more common, than multisyllable word repetitions.

b. Prolongations of words, voiced or voiceless sounds also appear in the speech of children beginning to stutter. The term prolongation is used to denote those stutters in which sound or air flow continues, but movement of one or more articulators is stopped, it may be as short as half of second and still be perceived as abnormal, in rare cases they may last as long as several minutes.

Note: Repetitions and sound prolongations may also be part of the core behaviors of more advanced stutterers, as well as of children just beginning to stutter.

c. Blocks are typically the last core behavior to develop. They occur when the stutterer inappropriately stops the flow of air or voice, and often the movement of his articulators as well. Blocks may occur at any level of the speech mechanism, respiratory, laryngeal, or articulatory.

A stutterer may block at one or more of these levels at the same time.

As stuttering develops we often see blocks grow longer tense.

Tremors often become evident. These rapid oscillations, most easily observed in airway , increased air pressure behind the closure, and squeezes his muscles particularly hard.

Research indicates that an average stutterer stutters on about 10% of the words while reading aloud. There are many mild stutterers who stutter on least than 5%.

Duration of core behaviors tend to average around one second in duration and are rarely longer than 5 seconds.

II. Secondary behaviours: stutterers react to their repetitions, prolongations, and blocks by trying to finish them quickly, if they can't avoid them altogether. The effortful reactions may begin as blind struggle, but soon turn into well learned patterns.

Secondary behaviors divided into two major parts:

a. Escape behaviors

b. Avoidance behaviors

Escape and avoidance are terms from the behavioural learning literature.

Escape behaviours occur when the speaker is stuttering and attempts to get out of the stutter and finish the word.

Examples: eye blinks, head nods, or interjections of extra sounds such as “uh. These often are followed by the termination of the stutter, and thus rewarded.

Avoidance behaviours occur when a speaker anticipates stuttering, such as change words, pause, postponements, starters, and timing devices, e.g., (hand movements timed to saying the word) all of this to prevent a stutter from occurring.

III. Feeling and Attitudes

A stutterer's feelings can be a part of their disorders, it may precipitate stutters, conversely, stutters may create feelings, such as the shame a stutterer feels when he cannot say his name.

In the beginning, a child's positive feelings of excitement or his negative feelings of fear may result in excess repetitions that alarm his listeners.

As the child stutters more frequently, he may become frustrated or embarrassed because he can’t say what he wants to say as smoothly and quickly as others. These latter feelings that result from stuttering make speaking harder, because when the child is frustrated, he may put more effort into speaking, increasing the tension that holds back speech. Typical feelings about stuttering include frustration, fears, embarrassment, shame, and hostility.

Attitudes are feelings that have become pervasive, part of the person's beliefs. As a stutterer experience more and more stuttering, for example, he begins to believe he is a person who generally has trouble speaking. Adolescent and adult stutterers usually have many negative attitudes about themselves and their listeners that derive from years of stuttering experiences.

Listeners probably play a major part in shaping the stutterer's attitude. Research has shown that most people with stuttering being tense, insecure, and fearful.

Changing the stutterer's negative attitudes can be a major focus of treatment.

Basic Facts About Stuttering And Their Implications For The Nature of Stuttering

Authors have suggested that stuttering is not one disorder, but many, psychogenic, and organic, but we well concentrate in this coarse on the most common type of stuttering has been called “developmental stuttering” because the symptoms usually appear gradually, during the period of greatest speech and language development

Onset

The onset of stuttering comes primarily from parent's reports. Because stuttering usually appears gradually, often emerging out of normal childhood disfluencies, parent's reports are frequently hazy about the exact time of onset and the particular symptoms that first came to their attention.

Onset is not easily identified, because stuttering usually comes and goes during its earliest stages.

It may appear as an excess of normal disfluencies for a few days, then disappear for months, suddenly to reappear to stay.

Which of these appearances was the true onset?

Generally, the onset of stuttering may occur at any time during childhood, between the beginning of multiword utterances (18 months) and puberty (11 or 12 years). It is mostly like to occur between ages 2 and 5

Prevalence: it used to indicate the degree to which a disorder is widespread

The prevalence of stuttering tells us how many people currently stutter The results are vary due to

- The stuttering definition.
- The stutterers age.
- The diagnosis tools.

Many studies indicate that about 1% of the school children.

Incidence: is an index of how many people have stuttered at some time in their lives

Also the results vary like prevalence due to the previous factors

Estimates of incidence, when reports of informants and parents are considered, are as high as 15%, but when only stuttering that lasted longer than 6 months is included, the incidence appears to be about 5%

The difference between incidence(5%) and prevalence(1%) suggests that most individuals who stutter at some time in their lives recover from it, and we know that prevalence begins to decline after puberty. Thus, unless treatment alone is responsible for remissions, some aspect of growth or maturation allows many individuals to recover from stuttering.

Recovery without treatment:

Many studies suggest that a large number of stutterers have recovered without professional treatment.

Actually, there are no single figure that pinpoints the percentage of stutterers who will recover without treatment it depend on many factors- the accuracy with which stuttering is differentiated from normal dysfluency, whether the study is retrospective or longitudinal, and the size of the group studied, in general 50-80% of children will recover with or without professional treatment.

Gender ratio:

The results of the studies of stutterers at many ages and in many cultures put the ratio at about 3 male stutterers to every female stutterer. There is strong evidence, however, that the ratio increases as children get older, that’s mean the ratio is increased from 1 to 3 at first grade to 1 to 5 by the fifth grade.

Variability and predictability of stuttering

(**A**nticipation, **C**onsistency, **A**daptation) factors:

Much of the early research into behavioural aspects focused on how stuttering varies in predictable ways.

Researchers found, for example, that when stutterers were asked to read a passage aloud, many stutterers could forecast – with a high degree of accuracy- which words they would stutter on. They also discovered that when stutterers read a passage aloud several times many tended to stutter on the same words each time.

They found that when stutterers read a passage repeatedly, their stuttering usually occurred less and less often.

These findings called anticipation, consistency, and adaptation, respectively Stuttering it seemed, was not simply a neurophysiological disorder. It had aspects of learned behaviour

Language factors:

Many studies showed that most adult stutterers stutter more frequently on consonants

sounds in words initial position, in contextual speech versus isolated words, nouns, verbs, adjectives, and adverbs, versus articles, prepositions, pronouns, and conjunctions
On longer words
On words at the beginnings of sentences
On stressed syllables

Evidently, stuttering is highly influenced by the language the stutterer uses (Fluency-Inducing- Conditions) factors-

Bloodstein found that there are 115 speech situations which stuttering is reduced or absent, these conditions include speaking

- when alone*
- when relaxed*
- In unison with another speaker*
- Speaking to animal or an infant*

- In time to a rhythmic stimulus or singing*
- In a dialect*
- While simultaneously writing*
- In swearing*
- Speaking in a slow prolonged manner*
- Speaking under loud masking noise*
- Speaking while listening to delay auditory * feedback
- Shadowing another Speake
- Speaking with reinforcement for fluent speech

Ch.2

CONSTITUTIONAL FACTORS

Role of heredity-

Many researchers believed that stuttering is transmitted genetically, others argued that stuttering is not biologically inherited but learned.

If stuttering runs in families, that is because a critical attitude toward hesitations and repetitions has been handed down from one generation to next.

A child whose parents were critical of his normal disfluencies would grow afraid and would “hesitate to hesitate” . This would start a spiral of more hesitation leading to greater fear, and so on

Some studies indicate that stuttering, asthma, migraine, and certain other disorders are seen as the result of both heredity and environment, acting together, with elements of chance thrown in.

Family Studies: some studies report evidence of genetic transmission of stuttering was an interim report on an ongoing study of a thousand families in Newcastle. Some researchers found that:

a. Stutterers had far more stuttering relatives that nonstutterers
b. Males in the group were more at risk than female to develop stuttering.
c. Females who stuttered were more likely to have stuttering relatives than were male stutterers.

Some studies found that they were able or predict with remarkable accuracy which first degree relatives of stutterers would also have the disorder.

Males were more likely to stutter than females, females who stuttutered were more likely to have first- degree relatives who stutterered, the patterns of stuttering are best explained by an interaction between the environment and a combination of several genes.

Researchers still not sure how the transmission patterns of stuttering result in the sex ratios found in many studies.

The finding that the incidence of stuttering is higher in males than females may indicate that males are more vulnerable to stuttering and females more resistant to it.

But why should there be more stutterers among relatives of females stutterers?
The answer may be that if females are more resistant to stuttering, only those female who have inherited a large amount of genetic predisposition will actually stutter
In summary family studies have provided evidence that many stutterers have inherited a **predisposition** for stuttering
Research has not shown what that predisposition is. In other words, no one has discovered exactly what physical differences exist in stutterers that may give rise to the symptoms of stuttering.

Twin studies:

Inheritance of stuttering can also be investigated by comparing the incidence of stuttering in fraternal and identical twins. Identical twin (monozygotic twin) have identical genes. Fraternal (dizygotic) may share only half of their genes, like any other siblings. Twin studies of stuttering have shown that stuttering occur more often in both members of identical twin pairs than in both members of fraternal twin pair.

In addition to evidence genetic factors in stuttering, twin studies demonstrate that heredity does not work alone. In some studies of the twin there was more **Concordance** for stuttering among identical twins, some of the identical twin pairs were **Discordant**, that is, in 6 of 16 identical twin pair, one twin stuttered but the other didn't this finding suggests that environmental factors, as well as genetic factors, are at work to create stuttering at least in some individuals.

Differences between stutterers & nonstutterers:

We compare stutterers and nonstutterers in tasks which might be related to speech fluency. If we find, again, that stutterers and nonstutterers perform differently in certain tasks we may have a clue about the disorder. Such indirect research is complicated because the differences might be a result of stuttering not a cause of it.

We will review some of the findings from studies comparing stutterers and nonstutterers:

intelligence: several early studies of stutterers intelligence showed that they were close to the norm or only slightly below it. The slightly lower IQs of the stuttering group found by a few studies, were usually dismissed as the result of stuttering, not the cause of it

More recent studies have shown that both verbal and nonverbal intelligence is slightly lower in stutterers as a group. This suggest that even when stutterers don't have to answer verbally they may still score slightly lower.

One study found stutterers to be poorer than nonstutterers on language related subtests. Another found stutterers poorer on subtests requiring motor skills. Van Riper observes that among those who are mentally retarded, the less intelligent have a higher incidence of stuttering than the more intelligent, this reflects the fact that deficits in linguistic ability, motor ability, or both, increase the likelihood of stuttering

School Performance:

Studies have shown that stutterers perform slightly below average in school. Stutterers are more likely than their peers to be a grade behind and their achievement test scores are lower. At least two factors may contribute to stutterers poorer school achievement. One is their difficulty in talking, simply because of stuttering. The other factor is a deficit in language - related skills, as shown by various standardized tests.

Speech and language development:

as we mentioned strutterers don’t do as well as their peers on measures of school performance and IQ. Both of these findings may be related in part to stutterers poorer language skills. Further deviance of the importance of language factor comes from research which shows that stuterers lag behind nonstutterers in speech and language development.

When assessed on such measures as the age at which they produced their first word and sentence, level of receptive vocabulary, mean length of utterance, and expressive and receptive syntax, children who stutter often score lower than their peers

Stutterers have also been shown to have difficulty with articulation, they have roughly 2.5 times the incidence of articulation disorders as that found in nonstutterers.

The interpretation of these problem suggested that a child who have difficulty with articulation or language will start to believe that speaking is difficult the anticipation of difficulty is hypothesized to lead to hesitation and struggle, and then to stuttering, another point of view suggested that circumscribed areas of the brain are responsible for speech and language related functions, a delayed development of (or damage to) these areas may result in language, articulation, or fluency problems, in any combination

Sensory- Motor Coordination:

a.Central Auditory Processing: it is known that that learning to speak involves both the motor processes of speaking and the sensory processes of feeling and hearing oneself speak. Some researchers (using **Synthetic Sentence Identification Test**) (SSIT) have suspected that stuttering may be the result of errors in how stutterers hear themselves speak. Several studies have shown that stutterers, as a group, perform

more poorly than nonstutterers on tasks requiring discrimination of small-time differences in signals.

One of the tasks which has shown group differences between stutt And nonstutt. Is the **Masking Level Difference Test (MLDT).** This requires the listener to detect the onset and offset of a tone under conditions of masking noise, the listener must use very subtle temporal cues to detect the tone and it is under these conditions that stutterers, as a

group, perform most poorly. Researchers indicate that timing of incoming signals is the weakness of the stutterers who perform poorly on central auditory tests.

b. Right Hemisphere Processing: normal speakers use both right and left hemispheres of the brain for speech, but the left is usually dominant and is more specialized for speech and language because it can process rapidly changing signals (like the quick shift of \t\ into \o\ in the word ‘toe’) better for more than the

right hemisphere. The right hemisphere by contrast is specialized for more slowly changing signals such music, environmental sounds, and the intonation patterns of speech. Some experimenters who have found the stutterers are poorer at tests of central auditory processing suggest that this deficit may occur because stutterers do not use their left hemispheres for speech as efficiently as nonstutterers, and thy use their right hemispheres for speech processing to greater extent than nonstutterers.

Further evidence of stutterers right hemisphere processing has been gathered by researchers measuring brain function during speech, records of electrical and chemical activity in the brain have shown more activity in the stutterers right hemispheres during speech when they stuttering, the implication is that stutterers may be using a less effective part of the brain for timing speech, at least when they are stuttering

Another interpretation that right hemisphere activity is usually associated with emotional expression, and that findings of greater right hemisphere activation during stuttering could be correlate of greater emotionally during stuttered speech.

Speculation About Constitutional Factors in Stuttering

We have chosen three contemporary views of constitutional factors to discuss briefly below:

1. Stuttering as a disorder of cerebral localization: studies of brain damage patients have confirmed left hemisphere dominance for speech, finding far more speech and language impairment with left hemisphere damage than with right

According to the cerebral dominance theory of stuttering, observed that many stutterers seemed to have been left – handers whose parents changed them into right- handers. This change, they suspected led to conflict of hemispheric control of speech in which neither side was fully in charge. The treatment was simply to switch stutterers back to being left-handers. Furthermore, evidence was never found that most stutterers were originally left-handers.

Geschwind & galaburda's theory suggests that a delay in Lf hemisphere development may affect speech and language, while the CNS is formed the nerve cells, that specialized for speech and language are normally migrate to the structures in the Lf hemisphere which are appropriate for their function. But if development of Lf hemisphere structures is delay the cells somehow detecting this delay may migrate across the brain to establish themselves in Rt hemisphere structures which are further

developed than those on the left. These Rt hemisphere structures and the organization of their interconnections, however may not be ideally suited for speech and language. Speech and language developing there may be delayed or deviant Communication functions may be impaired. Like stuttering, which occur most often in conditions of linguistic or psychological stress, the dysfunction of the telephones, fax machines, and computer networks may not be apparent until many of the lines are connected and a

multitude of messages are going through at once

Although the Geschwind\ Galaburda hypothesis suggests how abnormal localization of speech and language functions might occur, the way in which stuttering result from abnormal localization is another question, requiring other theories

2. Stuttering as a disorder of timing

Van Riper suggested that when a person stutters on a word, there is a temporal disruption of the simultaneous and successive programming of muscular movements required to produce one of the word's integrated sounds.
Kent, speculate that the deficit that may arise from inappropriate localization of speech and language is an inability to create the precise timing patterns needed for efficiently perceiving and producing Speech the inability

to create the proper timing programs, kent suggests many stem from the fact that a stutterer's left hemisphere is not as developed as his Rt hemisphere

Kent also notes that emotion may play an important role in the disruption of timing in stuttered speech

3. Stuttering as reduced capacity for internal modelling: another theory of constitutional factors in stuttering has been advanced by researchers studying motor control of speech and other movement

Megan Neilson and Peter Neilson have suggested that the repetitions of beginning stutterers are the result of a deficit in their ability to make and use ‘inverse internal models of the speech . production system During the first year, children store up perceptions of the speech sounds they hear around them, they also coo and babble and learn what movements make what sounds, and modelling of the relationship between their motor movement and the sensory consequences

This might be called a sensory-motor model for speech or an inverse internal model of the speech production system. It called inverse because it inverts the sensory targets into the motor commands needed to achieve them. As they learn to produce the sounds they hear, children constantly use their sensory-motor for speech. They plan a word or sentence on the basis of what it should sound like, then they load their sensory-motor model, and generate motor commands based on the sensory or perceptual target they are trying to hit

Ch.3

Development And Environmental

Influences On Stuttering

1. Developmental factors

The problem of shared resources is more acute in children because their immature nervous system has less processing capacity to share. Some children are especially at risk for strain on their developing resource.
They may be delayed in the development of speech of language skills, yet have to compete in a highly verbal environment.

The children may become excessively disfluent as other developmental demands outpace their more limited ability to coordinate the complex movements of rapid, articulate speech. In other words, the disparity between language facility and motor ability may be an important contributor to his stuttering.

The developmental factors contributed on the following:

a. Physical development: between the age of 1- 6 years, children grow by leaps and bounds. Their bodies get beggar, their nervous systems develop new pathways and new connections, their perceptual and motor skills improve with practice and maturation. This intensive growth is a two-edged sword for children predisposed to fluency problems Neurological maturation may provide more functional cerebral space “which supports fluency” But neurological maturation may also spur the development of other motor tasks, which compete with fluency for

available neuronal resources. Researchers found that children who are learning a new motor skill may become temporarily more disfluent Physical development is also related to fluency because speaking is a physical (motor) skill, if a child's fine motor skills are slow in developing, speech production may be more difficult for him, the notable delay in fine motor skills for speech in relation to a strong urge to communicate and rapidly developing language may set the stage for disfuency

There is some evidence to support the contention that children who stutter are delayed in development of fine motor coordination, but the many conflicting results suggest that this is not a simple issue.

Another way in which physical development may affect speech is when growth of the whole body including the vocal tract occur rapidly, this may require the child to learn new sensory-to-motor and motor-to sensory transformation as he tries to

produce an intended sound with a recently changed speech mechanism.

b. Cognitive Development: It refer to the development of possesses of perceiving, reasoning, imagining, and problem solving that sub serve speech and language but are separate from it

The relationship between cognition and fluency is also complex, the individuals with cognitive deficit, such as those who are retarded, have an increased amount of stuttering so the deficit in cognitive ability

may cause a deficit in fluency. On the other hand, stuttering in retarded individuals may result from their delay in learning speech and language.

c. Social & Emotional Development: Social and emotional development may also contribute to normal disfluency and stuttering. In early childhood, a child's immature nervous system may permit or interference between the limbic system structures and pathways involved in the regulation and expression of emotion and

structures and pathways used for speech and language. The children who are emotionally aroused, fluency may suffer because neural signals for property timed and sequenced muscle contractions may be degraded in some way. Parents reported that when their child was highly excited about something and wanted to talk, they notice that their child began to stutter. Researchers noticed that all children speak more disfluently during periods of excitement.

Conditions most often reported to associated with the first appearance of stuttering were when the child was in a hurry to tell something, and when the child was in a state of excitement. Disfluency in some children increased as anger, excitation, aggression, and guilt.

One of the most common provocations for feelings or resentment is the birth of a sibling. The psychological adjustment in general plays an important role in the fluency shaping so sometimes people who have little

exposure to stuttering believe that stutterers are essentially nervous people or that stuttering is a sign of neurosis. If this were true, we would find evidence of psychological maladjustment and excessive anxiety in stutterers particularly when the disorder first begins in childhood. Reviews of the research on stutterers' personality and adjustment find no convincing evidence that stutterers are different from nonstutterers. But there are a few findings suggest that stutterers are not quite as socially well-adjusted as

nonstutterers, but this can probably be attributed to the influence of stuttering on social experiences.

d. Speech and Language Development: Stuttering usually begins when speech and language are developing most rapidly, in the first place the child is having to learn to control a speech mechanism that is continuously changing size and shape because he is growing rapidly.

He is also having to synchronize his speech to the rates and rhythms of parents and siblings with whom he has growing urge to communicate. In addition, his speech motor skills must accommodate his burgeoning linguistic abilities, in years between 2 and 3, the child's vocabulary jumps from 50 to 250 words, in fact, toward the end of this year he is learning between 5 and 7 new words a day, at the same time his utterances are developing from successive single word pairs with sentence-like intonations and durations into multiword sentences. As he is expending his sentences the child is also overhauling

his lexical storage strategy. At first, he stocks his lexical shelves with whole words in the form of articulatory routines gestural patterns, then changes strategies and stores not whole words but segments which can be combined variously into a multitude of words.

During the early preschool years, he is also, progressively learning active, negative and passive constructions; present, future, and past tenses. At the same time, he is increasing the length of his sentences and concomitantly, the rate of utterances

Rapid acquisition of language competes with available resources for the task of speech production. However, as more language is acquired and utterances become longer speech rate usually increases. But in a system with finite resources, there must be a speed - accuracy trade-off that is if speed increases accuracy decreases.

The notion that developmental of speech and language may diminish fluency is not new; for example, commented that ‘it is tempting to see the ever-increasing demands on linguistic competence and articulatory proficiency as a major factor in the onset of some disfluency.

The age of onset of stuttering is consistently related to certain stages in the developmental sequence. Some researchers show increased disfluencies as language complexity is increased.

2. Environmental Factors

Some children predisposed to stuttering may show the first signs of stuttering as a result of developmental pressures alone, but most children who will become stutterers are probably also affected by environmental pressures. These are factors outside of these children. Typically, they are attitudes or events that occur in their homes. One way they affect children's fluency is by pressuring them to speak at a level beyond there.

developmental capacity. For example, children who are at an early stage of speech development may encounter a listener's impatience when they are speaking slowly and haltingly. Responding to the listener's impatience, they may begin to stutter because they try to speak at a rate beyond their capacity, or they may begin to stutter because the listener's response creates stress in children that disrupts their motor coordination.

The most important factor in the environment, the parents of stuttering

Parents:

Wendell Johnson developed the "diagnosogenic" theory of stuttering, suggests that a child's parents erroneously diagnose his normal disfluency as stuttering, their reactions to the 'stuttering' then cause the child to struggle and avoid in a way that becomes real stuttering. Diagnosodenic theory generated a great deal of research on parents of stutterers.

Researcher found that mothers of stutterers tended to be more critical, more productive and more domineering toward their children than mothers of nonstutterers.

The parents of the stutterers showed significantly higher standards and expectations, particularly with regarded to speech. Parents may transmit the culture's "competitive pressure for achievement or conformity" which may be the environmental factor most likely to be causally linked with stuttering.

Speech and Language Environment: -
Clinical observation and research suggest that more stuttering occurs when children use more advanced forms of speech and language, Crystal proposed that an "interactive" view of many speech and language disorders which suggested that demands made by one level of language production (e.g., syntax) may deplete resources for other levels (e.g., prosody or phonology), resulting in breakdown.

The more complex the syntax and semantics a child used, the more he stuttered. Stuttering may also increase when the individual is uttering a more linguistically. complex sentence. Because a preschool child's speech and language are so heavily influenced by the speech and language around him, especially that of his parents, the speech and language used. by others may be an important source of pressure on the stuttering child. As the

child tries to imitate adult models of speech and language, to use longer sentences, to try fewer familiar words, and to pack more meaning into his utterances, he will be more likely to stutter

Mothers of stutterers spoke more rapidly than mothers of nonstutterers. This may be critical, since a mother's high speech rate has the potential to make a child try to speak faster than his optimal speed, the possibility that a rapid speech rate may lead to stuttering, Johnson and Rosen's finding that

adult stutterers were more likely to stutter when they spoke more rapidly than normal.

Mother's interruptions of children's speech increase the possibility of their stuttering.

Life events: certain events in a child's life can deliver a blow to the child's stability and security. When this happens stuttering may suddenly appear out of nowhere, or previously easy repetitions may be transformed into hard struggled blocks

to have someone closed to your die, to be hospitalized for an operation, or to have your parents' divorce is difficult for any of us, but especially difficult for children. Obviously, many children go through these events and adapt to them without major problems. But children who may be vulnerable to stuttering will often show the effects of these events in their speech. Some studies showed that " all children speak more disfluently during periods of tension, when moving or changing

schools, when their parents' divorce, or after the death of a family member". Johnson and Associates noted that child's: stuttering among the following situations.

a. child's physical environment changed (e.g., moving to new house
b. Child ill
c. Child realized his mother was pregnant
d. Arrival of new baby

Theories About Developmental And Environment Factors

The three views will present in this lecture represent three different concepts of how developmental and /or environmental stresses contribute to stuttering.

1. Diagnosogenic theory: in the 1930s, Wendell Johnson and other researchers at the University of Iowa were the onset of stuttering in children, he suggests that the

parents or other listeners may have mislabeled their repetitions as “stuttering” in so doing, they may have made the children so self-conscious that they tried hard to speak without disfluencies
This effort to avoid disfluencies may have become with the help of further negative listener reaction, what we generally regard as stuttering.
Johnson’s hypothesis which came to be called the Diagnosogenic theory (meaning

that the disorder begins with the) diagnosis or in the case misdiagnosis.
Johnson acknowledged that some of the problem might be more than parents' abnormal reactions, his modified view depicted stuttering as a result of interaction among these three factors

a. The extent of the child's disfluency
b. The listener's sensitivity to that disfluency
c. The child's sensitivity to his own disfluency and to the listener's reaction.

2. Communicative Failure and Anticipatory struggle

This theory developed by Oliver Bloodstien (1987) suggests that stuttering may develop when the child experiences frustration and failure when trying to talk.

Many types of communication failure may cause the child to anticipate futures difficulty with speech, Bloodstein suggests some

experiences that may make some children believe that speaking is difficult such as

Normal disfluencies criticized by

1. significant listeners Delay in speech or language.
2. development Speech or language disorders, including.
3. artic, word finding difficulty, cp, & voice
4. Difficult or traumatic experience reading aloud in school.

5. Cluttering especially if listeners frequency “slow down” or what
6. Emotionally traumatic events during which child tries to speak.

3. Capacities and Demands Theory

This view suggests that disfluencies as well as real stuttering emerge when the capacities of the child for fluency are not equal to the demands of the environment for speech performance.

The demands are primarily those of parents who have high standards and high expectations for their child's behaviour.

Others also acknowledged developmental factors, such as "differences in the rate of maturation" which result in a greater incidence of stuttering in males

Ch. 4

Normal Disfluency & Developmental Stuttering

1. Normal Disfluency (1.6---6) years

Children vary a great deal in who easily they learn to talk. Some children pass through the milestone of speech and language development with relatively few disfluencies. Others stumble along, repeating, interjecting, and revising, as they try to master new forms

of speech and language, on their way to adult competence.

Most children are somewhere in between the extremes of perfect fluency and excessive disfluency, such as 2-year-old shown in the following table.

Type of normal disfluency	example
Part-word repetition	”mi-milk“
Single- syllable word repetition	“I..I…I want that“……
Multisyllabic word repetition	”lassie… lassie is a good dog“
Phrase repetition	I want…I want ice–cream comb
interjection	”he went to the …uh…uh circus“
Revision-incomplete phrase	”i lost my…where’s mommy going“
prolongation	”I’m tiiiiiiiimmy Thompson“
Tense pause	can I have some more (lips “ together ;no sound coming out) milk

Core behaviour*

Normal disfluencies have been catalogued by several authors, and there is general agreement among them as to what constitution a disfluency. the previous table show eight commonly used categories of disfluency.

Some of the major distinguishing features of normal disfluency-features that differentiate normal disfluency from stuttering are the

amount of disfluency, the number of units in repetitions and interjections, and the type of disfluency, especially in relation to the age of the child.

The amount of disfluency is usually measured as the number of disfluencies per 100 words, normal disfluency assumed to be 10%.
The range in frequency of normal disfluency is important to note also, especially if frequency of disfluency is used to make a clinical decision, researchers found that at least one normal child in their samples had slightly more than 25 disfluencies per 100 words.

Another distinguishing characteristic of normal - disfluency is the number of units that occur in each instance of repetition or interjection. Yairi's data suggest that typically, normal repetition consist of extra unit (that my-my ball), interjections are likely to be just a single unit, as in (I want some….uh….juice) the rule was one, and sometimes two, units per rept or interject.

Another major characteristic of normal disfluency - is the type of disfluency that is

most common, interjections, revisions, and word repetitions.

Secondary behaviors*:

The normally disfluent child has no secondary behaviours

Feeling and Attitudes*:

The normally disfluent child does not notice his disfluencies.

Summary, of characteristics of normal disfluency in average nonstuttering child no greater than 10 disfluencies per 100 words

1. Typically, one-unit repetition, occasionally two.
2. Most common disfluency types are interjections revisions, and word repetitions, as children, mature past age they will show a decline in part- word repetition

2. Borderline stuttering

The borderline stutterer has all the symptoms of the normally disfluent child, there are more of these symptoms in the borderline stutterer's speech, and they often differ in several ways, diagnosis of the borderline stutterer is sometimes difficult, because a child may drift back and forth between normal disfluency and borderline stuttering over a period of weeks or months

Some borderline stutterers gradually lose the stuttering symptoms and grow up without a trace of stuttering, other develop more stuttering symptoms and grow up into beginning, intermediate, and advanced stutterers.

Core behaviours of borderline stutterers:

There is no single behaviour that distinguishes the borderline stutterer from the normally disfluent child. But in general there are many characteristics for the borderline stutterer

1. More than 10 disfluencies per 100 words.
2. Often more than 2 units in repetition.
3. More repetitions and prolongations than revisions or incomplete phrases
4. Disfluencies loose and relaxed.
5. Child rarely reacts to his disfluencies.

Secondary behaviours of BLS:

Stutterer has few if any secondary behaviours the degree of tension may sometimes seem slightly greater than normal

but repetitions and prolongations will generally look and sound relaxed the child will not use accessory movements before, during, and after stutters, there is usually nothing to indicate he is aware of his stutters

Feeling and attitudes of BLS:

Since the borderline stutterer shows little evidence of evidence of awareness of his stutters, he does not show concern or embarrassment.

3. Beginning Stuttering

The child here begins to tense and speed up repetitions, at first child may do this only occasionally, when excited or stressed, then gradually tension and hurry become a regular part of the stuttering. The borderline stutterer is now becoming a beginning stutterer, and he is stuttering more often and is less tolerant of it. The child impatient with his stuttering and consequently, uses a variety of escape behaviours.

For example, he learns to stop long repetitions by using a quick blink of his eyes or a sudden nod of his head.

These signs and stuttering in general may still come and go, as in the BLS.

Characteristics of Beginning Stutterers:

1. Signs of muscle tension and hurry appear in stuttering. Repetitions are rapid and irregular, with abrupt terminations of each element.
2. Pitch rise may be present toward the end of a repetition or prolongation.

3. Fixed articulatory postures are sometimes evident when the child is momentarily unable to begin a word, apparently as a result of tension in speech musculature
4. Escape behaviours are sometimes present in stutters. These include, among other". things, eyeblinks, head-nods, and "um's
5. Awareness of difficulty and feelings of frustration are present, but there are no strong negative feelings about self as speaker.

INTERMEDIATE STUTTERING

The intermediate level stutterer, typically a youngster between the ages of 6 and 13 (has two major characteristics that distinguish him from the beginning stutterer. **First**, he is starting to fear his stuttering whereas the be-ginning stutterer is only frustrated, surprised, or annoyed by it. **Second**, he reacts to his fear of stuttering by avoiding it, something the beginning stutterer doesn't do

These new symptoms emerge gradually as the young stutterer more frequently ex-presences negative emotion during stuttering.

For example," he blocks and feels helpless. His listeners respond with discomfort or pity. After this has happened frequently, he becomes afraid.

His fear may be first attached to the sounds and words on which he has stuttered most. He starts to believe that these sounds are harder for him. Then he begins to scan ahead to see if he might have to say them. When he anticipates them, he tries to avoid them. For example, he may say, "I don’t know" to questions, or he may substitute "my sister" for his sister's name when talking about her. He may start a sentence, realize a feared word is coming up, and then switch the sentence around to avoid it.

Core Behaviours

He will still repeat and pro-long, but his most frequent core behaviours are now blocks: The intermediate stutterer's blocks seem to grow out of the increasing tension we saw in the beginning stutterer. The child at the intermediate level usually stutters by stopping airflow, voicing or movement (or all three) and then struggling to get it going again.

His stutters seem to surprise him less than they did when he was a beginning stutterer. Instead, as evidenced by his voice and manner in certain situations, he anticipates them. We have the impression that the intermediate stutterer's blocks are frequently characterized by excessive laryngeal tension, but he often blocks else -where as well. He may squeeze his lips together

Secondary Behaviours:

The blocks can be devastating to a young stutterer. He is not only frustrated with his own inability to make a sound, but he is often faced with a surprised and uncomfortable listener, as well. Even patient listeners may not know what to do. The stutterer then concludes that he is doing something wrong and tries to escape or avoid these pain-full moments.

The escape behaviours, which the stutterer uses to break out of his stutters, are present in the beginning stutterer, but they are far more frequent in the intermediate stutterer. They are often more complex, too. The intermediate stutterer may blink his eyes and nod his head to get out of a block. Sometimes/he may do both.

Feelings and Attitudes

The intermediate stutterer has gone well beyond the momentary frustra-tion and mild embarrassment of the beginning stutterer. He has felt the helplessness of being caught in many blocks and runaway repetitions. The anticipation of stuttering and subsequent listener penalty has been fulfilled many times.

These experiences pile up like cars in a demolition derby to create the entanglement of fear, embarrassment, and shame that accompanies moments of stuttering. These feelings may not be pervasive yet; they do not dog the stutterer all the time. But now stuttering has changed from an annoyance to a serious problem.

The intermediate stutterer shows his increasingly negative feelings about stuttering in numerous ways. He looks away from his listener during a stutter and flushes with embarrassment afterwards. He becomes stiff and uneasy at the prospect of speaking. His stuttering pattern shows an increasing number of avoidance devices, and he is beginning to evade situations in which he may stutter. These are all signs that his feelings and attitudes are pervaded by fears.

Characteristics of Intermediate Stutterers

1. Most frequent core behaviours are blocks in which the stutterer shuts off sound or voice. He may also have repetitions and prolongations.
2. Stutterer escape behaviours to terminate blocks.
3. Stutterer appears to anticipate blocks, often uses avoidance behaviours prior to feared words.
4. He also anticipates difficult, situations and sometimes avoids them fears before

stuttering, embarrassment during stuttering, and shame after stuttering Characterize this level, especially fear.

ADVANCED STUTTERING

The last developmental/treatment level, advanced stuttering, is characterized more by the age of the stutterer than by differences in the stuttering pattern or underlying processes. The advanced level deals with older adolescents and adults.

The advanced stutterer's increased capability in therapy compensates for another characteristic of this level, the individual's long history of stuttering. The advanced stutterer's pattern is highly overlearned because of this history and, therefore, may be hard to change.

The advanced stutterer's self-image is also a consideration. After many years, the stutterer increasingly thinks of himself as a stutterer, rather than as someone who occasionally has difficulty speaking.

Except for a few safe situations, in which the advanced stutterer is relatively fluent, most speaking situations hold some fear for him, and he shapes his life accordingly. His friends, his social activities, and his job are often influenced by the fact that he thinks of himself as a stutterer. He believes that his stuttering is as noticeable to other people as. his having two heads would be and is just as unacceptable.

Core Behaviours of Advanced Stuttering:

Core behaviours in the advanced stutterer are typically blocks stoppages of airflow and/or phonation. These may be longer and more struggled in the advanced stutterer than in the intermediate stutterer, but they are essentially the same behaviour. Because the blocks are longer, tremors of lips, jaw, or tongue may be more evident.

Secondary Behaviour of Advanced Stutt:

The advanced stutterer has many of the same word and situation avoidances that the intermediate stutterer has, but they are likely to be more extensive. Some show these behaviours more obviously than others. They may have a pattern of several attempted word avoidance devices (such as "uh ... well ... you see," and a gasp of air) followed by a block, which is long in duration, filled with unsuccessful escape attempts, and finally released with great effort.

Feelings and Attitudes of adva. Stutt:

The feelings and attitudes stutterer, like his stuttering pattern, are shaped by years of conditioning. Over and over, the stutterer has learned that much of his stuttering is unpredictable. When it is predictable, it comes when he wants it least when he wants more than anything to be fluent. As a result, he often feels out of Control. These uncomfortable internal feelings are confirmed by the stutterer's view of how others see him. Listeners' reactions look overwhelmingly negative to him.

Even when listeners say nothing, the looks on their faces say everything. It is as though the Stutterer drove a rattletrap car that always stalled in heavy traffic amid honking drivers.

These experiences gradually shape the advanced stutterer's attitudes toward feelings of helplessness, frustration, anger, and hopelessness.

On the other hand, some stutterers who have reached the advanced level have become reconciled to their handicap. If they are in their twenties or thirties or beyond, there may be some natural resistance to treatment, because stuttering has become part of their identity.

After years of doubt and turmoil, they've grown accustomed to themselves as stutterers.

To contemplate treatment is to reject themselves, to open old wounds. Those who succeed in treatment may find this worthwhile. But for those who relapse to their former level of stuttering after treatment, there may be a difficult battle inside to regain ground that had been won before and was given up.

Characteristics of Advanced Stutterers

1. stutterer frequent core behaviours are longer, tense blocks, often wJ!:h tremors of lips, tongue, or jaw. Individual will also probably have repetitions and prolongations, as well.

2.stuttering may be suppressed in some individuals through extensive avoidance behaviours

3. Complex patterns of avoidance and escape behaviours characterize the stutterer. These may be very rapid and so well habituated that the stutterer may not .be aware of what he does.

4. Emotions of fear, embarrassment, and shame are very strong. Stutterer has negative feelings about himself as a person who is helpless and inept when he stutters. This self-concept may be pervasive.

Ch. 4

Treatment Considerations

We believe there are a number of clinically relevant issues the clinician needs to consider and resolve for herself before initiating an assessment or treat-ment program with a stutterer. This is important because the position she takes on these matters will guide her clinical judgment and behaviour

The **first** issue the clinician needs to consider is her/his beliefs regarding the causes and development of stuttering. Her assessment strategies and therapy goals and procedures should be compatible with her beliefs about the nature of stuttering.

Secondly, we believe there are a number of important questions that are related to therapy goals that she will need to consider.

These are as follows:

(a) What are the appropriate speech behaviors to target in therapy?

(b) What are realistic fluency goals to have for the client?

(c) How much attention should be given to her client's feelings and attitudes about his speech?

(d) What procedures or strategies are needed to help the client maintain his improvement?

(e) What should be done about any concomitant speech and language problems her client may have

Stuttering Modification Therapy:

This can be done in a variety of ways. For example, the clinician can teach the stutterer to reduce his struggle behaviour and smooth out the form of his stuttering. The clinician can also help the stutterer learn to reduce the tension and rapidity of his stuttering and learn to stutter in a more relaxed, easy, and open manner.

Van Riper teaches the stutterer to stutter more fluently by using the techniques of cancelations, pull-outs, and preparatory sets. By using these techniques, the advanced stutterer is not taught to speak normally; rather he is taught to stutter in a more fluent, less abnormal manner. In our opinion, other proponents of stuttering modification therapy

Fluency Shaping Therapy

Whereas the goal of stuttering modification therapy is to modify the modification of stuttering, the goal of fluency shaping therapy is to systematically increase fluent responses until they replace the moments of stuttering. This fluency is first established in the clinical setting, and then it is generalized to the person's daily speaking environment.

Fluency shaping clinicians usually use one of two approaches, or a combination of these two approaches, to establish fluency in the clinic. In one, a basal level of fluency is first established by having the stutterer produce short fluent responses, such as single words or simple phrases. These fluent responses are reinforced, and any stuttering may be punished. The length and spontaneity of these responses are then systematically increased until the client achieves fluent conversational speech in the clinical environment.

In the second approach, the clinician helps the sufferer establish fluency by altering his speech pattern, this may involve the stutterer's speaking fluently at a substantially slower speech rate.

This slow, fluent pattern is then gradually modified to approximate normal sounding speech. Regardless of which approach is used to establish fluency in the clinic, once it has been established, it is then generalized to the stutterer's daily speaking environment.

A writer whose therapy is representative of fluency shaping therapy is Bruce Ryan (1974). Ryan has a number' of programs to increase or to establish fluent speech in the clinical setting. One of these is the Delayed Auditory Feedback (DAF) Program. In a DAF program, a delayed auditory feedback machine is used to help the client speak in a slow, prolonged, fluent manner.

The delay times on the delayed auditory feedback machine are systematically

changed to allow the client to gradually increase his speaking rate by reducing his prolongation of speech sounds until his rate approaches normal. He is then taken ‘off the machine, and this new fluency is gradually transferred to everyday speaking situations

In this DAF, program, the stutterer is not taught to stutter more easily; rather fluency is first established in ‘the therapy session, and then it is transferred 'to the client's daily speaking environment.

Integration of Approaches:

Many clinicians believe they need to decide, to use one approach or the other in working with their clients. They believe that either they need to modify their clients' moments of stuttering, or they need to target their overall speaking patterns. The two approaches appear to them to be incompatible. To many clinicians, this can be a difficult and confusing choice. fortunately, however, the two approaches are not necessarily antagonistic.

On the contrary, techniques based on one approach can be helpful to the clinicians employing the other approach. In fact, one of our prime goals in writing this book is to demonstrate how stuttering modification therapy and fluency shaping therapy can be integrated. We believe it can be beneficial for the advanced stutterer to learn to stutter more easily on given moments of stuttering, as well as to learn to modify certain aspects of his, overall 'peaking pattern, such as his, rate of ‘speech, to enhance his fluency.

FLUENCY GOALS
Dimensions of Fluency

What are realistic therapy goals to have when working with stutterers?

Before responding to this question, it is first necessary to take a closer look at

fluency has four basic dimensions:
(a) the continuity of speech,
(b) the rate of speech,
(c) the rhythm of speech,
and (d) the effort with which speech is produced fluency.

These four dimensions of fluency, that is, continuity, rate, rhythm, and effort, will now be examined more closely from a clinical management point of view.

CONTINUITY:

By continuity, Starkweather means the smoothness of speech or the extent to which speech is broken up by disfluencies. In terms of clinical management, we are interested in the number of part-word and monosyllabic word repetitions, prolongations, and blocks that occur in us.

In terms of therapy goals, we are interested in the frequency of stuttering remaining in our client's speech at the end of 'therapy. This seems self-evident. After all, our clients come to us to rid themselves/of these disfluencies.

RATE:

Fluency consists of more than just the absence of disfluencies; fluent speech is also rapid. Thus, we need to be concerned about our "client's speech rate. This is particularly true when rate control strategies are used in therapy to elimi-nate or significantly reduce the number of disfluencies. For example, one very common technique used in fluency shaping therapy is to teach the stutterer to slow his speech rate by prolonging each syllable as he talks. This will, indeed, reduce the number of disfluencies.

RHYTHEM:

Rhythm is the third dimension of fluency. Rhythm has to do with the stress patterns of speech. For a client's speech to sound normal at the end of ther-apy, it is important that he use normal stress patterns. He should not sound monotonous:' He should not believing each syllable equal stress spontaneous sounding speech can be a by-product of fluency shaping programs in which the client is instructed to slow his speech by prolonging each syllable

It is important that this monotonous quality not remain in the client's speech at the end of therapy. Both the stutterer and his listener will object to it. Furthermore, many stutterers will not use this monotonous fluency in everyday speaking situations. They would rather stutter and be spontaneous.

EFFORT:

The last dimension of fluency is effort. Starkweather observes that effort could be either physical effort or mental effort. We think that mental effort is the most clinically significant. Normal fluent speech is spontaneous; it does not re-quire the constant monitoring of the act of speaking in order to sound normal. The speaker pays attention to his ideas; he does not pay attention to his mouth. When speech .is closely monitored, it is not normal