

**Applied Linguistics.**  
**Professor Rajesh Kumar.**  
**Indian Institute Of Technology Madras.**  
**Lecture -27.**

**Dyslexia: A Developmental Phenomenon or a Disorder.**

Today, we will continue to understand what we mean by language disorder and in particular that is in the domain of language disorder certain types of difficulties in learning. Dyslexia and Dysgraphia are such 2 difficulties that are often pointed out. We want to look at these 2 from a developmental perspective, that is are these really disorders or are they developmental phenomena.

In particular we are going to be looking at how these 2 are part of developmental phenomena and not so much part of disorder. What looks apparently the type of difficulty is really a stage in developmental phenomena in the process of learning of language. We have looked at language teaching and what goes in language teaching in terms of its theoretical background and methods of language teaching in particular context of second language acquisition.

Keeping all these 3 things and associated topics in mind, we are going to be looking at this particular aspect of language disorder as developmental phenomena from experimental perspective. A closer understanding of dyslexia and dysgraphia shows that there is a pattern in what gets reflected as dyslexia. With lots of data and account, we have invited Professor Shreesh Chaudhary to be talking about these 2 aspects of what is known as in particular disorder, however we are going to be presenting this in order for us to understand the relevance of these 2 in understanding developmental phenomena of language as in applied linguistics.

And this is the pattern that is going to be relevant, the developmental development of patterns and our findings of pattern in understanding these things which are generally known as disorder is what helps us understand applied linguistics issues, what follows from a detailed study of language in a scientific order. Please look at these 2 things from developmental perspective.

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## Topics

- Mind Brain and Body
- Dyslexia: Errors in reading
- Dysgraphia: Errors in writing
- Hearing and Listening
- Language Learning



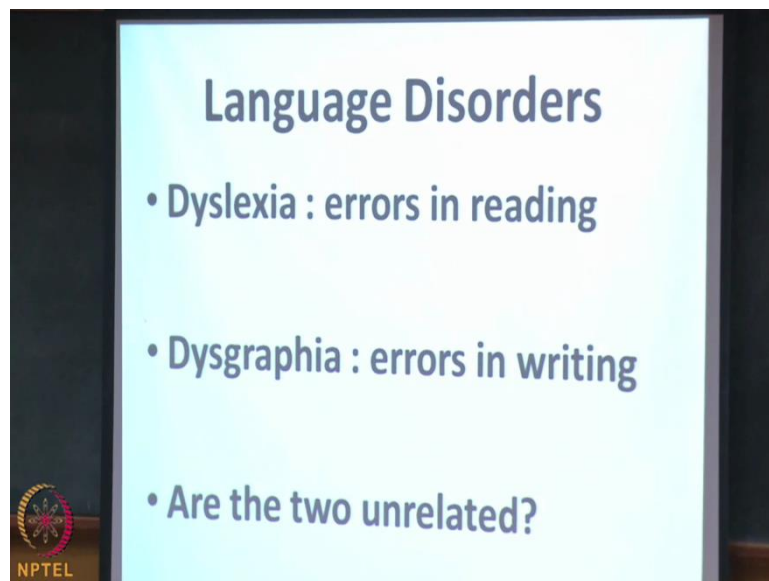
What we are going to be also looking at in the topic that Prof Chaudhary is going to be covering in this discussion are a relationship between mind, brain and body, how dyslexia is related to errors in reading and dysgraphia is related to errors in writing, the differences between hearing and listening and language learning in particular which is going to show finally that dyslexia and dysgraphia are potentially the 2 stages in learning to read and write.

Prof Shreesh Chaudhary starts the presentation:

Language disorders have always been there ever since there has the mankind. Christ was crucified because of reaching something, some of Christ's followers were crucified because they were lisps. The history of you know Bible translation says that the Pharaoh was particularly unhappy when somebody pronounced sh as in English in place of ss as in this.

Everybody in Bengal would have perished under Pharaoh and only people from Bihar would have survived. So, Pritha and I would be safe because both of us come from Bihar. But similarities end, I wish Rajesh had scheduled me before Pritha. After her range of documentation and generalisation, I am afraid that might disappoint you with the limited data and tall claims that I am going to make.

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But anyway, you know since scientists have grown more through blunders than through concerted coherent efforts, I take courage to share whatever disturbing thoughts I have. Let us talk about dyslexia, very briefly reading errors are known as dyslexia, writing errors are known as dysgraphia but it has lots of other sub varieties. Are the 2 unrelated? We do not know enough. They do not seem to be unrelated. Let us move on. Next please.

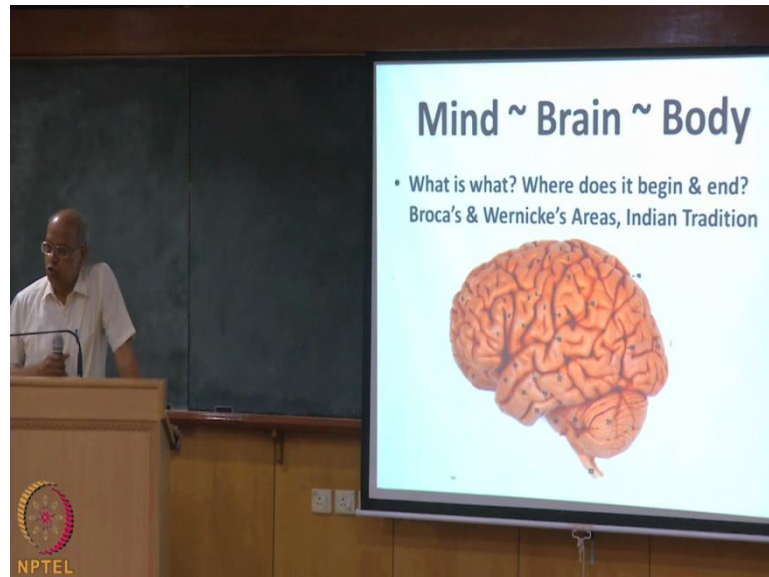
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Lots of people who were known to have been dyslexics in their early childhood, if you Google, celebrities with you no dyslexia, the first page alone gives you more than 250 names of celebrities who come from nearly all fields of human activity, from philosophy to politics, from most intellectual to most mundane. Some names that I thought you might want to see

are those of Agatha Christie, Woodrow Wilson, president, perhaps somebody said Woodrow Wilson has been the brainiest president of the US of A, Albert Einstein, Winston Churchill and who not.

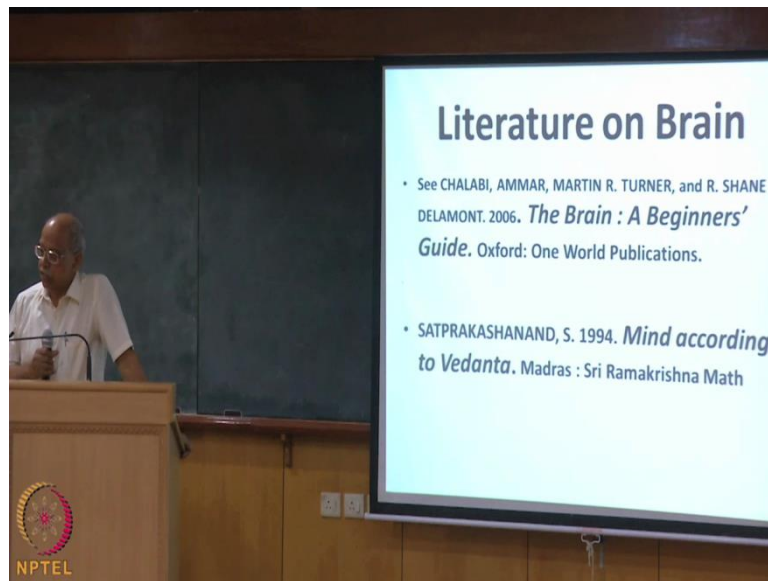
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The huge question concerning all of us doing anything which human beings, is the question of our understanding the brain. Actually nobody other than Dr Vibhuti Grinathan should be here because he is the only person who has made a lifetime study of brain. Even today I am sure and yet Dr Vibhuti Grinathan would agree Prof Vibhuti Grinathan would agree with me that we do not know enough about brains.

We know something about its anatomy, we know something about its physiology, we also know a lot about its biochemistry but we know little, and Chomsky says, we know as much about brain today as we knew about physics in the days of Galileo, which is nearly nothing. There are different traditions and we do not have, this is not the place to go into that but please grant me the understanding that we have limited understanding of brain. Next screen please.

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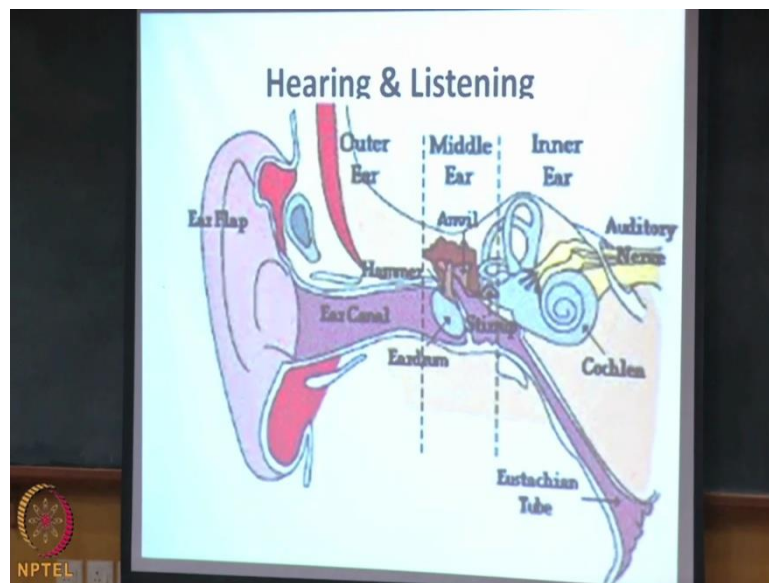


For those of us interested in reading about brain and it continues to be a topic of great interest across fields. Lot of books, papers, articles, popular and newspaper articles are written, popular and academic articles are written frequently but 2 books that would interest and that may be understood by all of us of recent origin are the following. This gentleman, Dr Chalabi is a neurosurgeon of Egyptian origin working in the UK. He and his colleagues have done a beginner's guide on the brain. Anyone of us interested in understanding how brain is structured and functions should look at it.

It costs but an eminently readable book. And then of course, is still better book in my opinion, cheaper and more eminently readable is one that by Swami Satprakashanand ji, published by Ramkrishna Math, Mind according to Vedanta. We have different tradition of understanding mind. We think mind has 4 levels, consciousness has 4 levels, we distinguish between mind and brain, we distinguish between mind and body, in the western tradition of science is not yet clear what is mind, what is brains, where brain ends and body begins, except anatomically.

Perhaps some of these questions can be for those of us who are interested in, who are students and curious are please and both of them have no algorithms, no formula which is difficult to understand, written with lots of anecdotes and case examples, case studies and they are eminently enjoyable.

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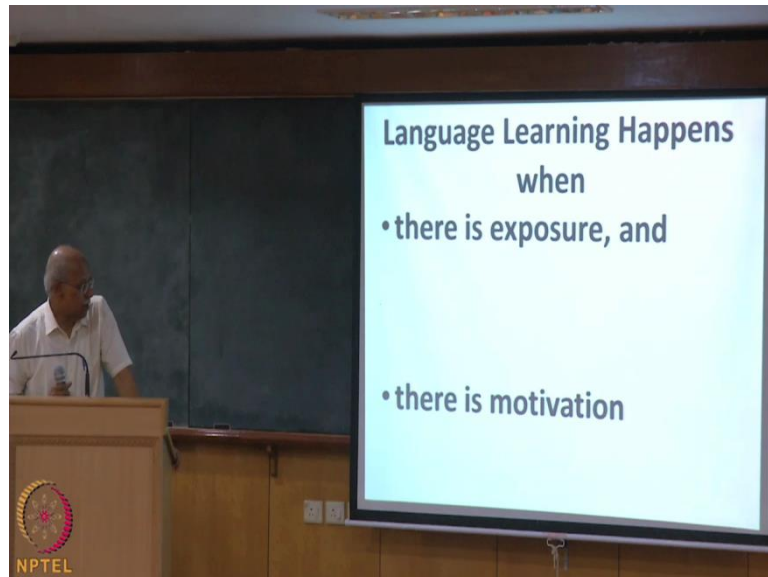
A similar thing with input to the brain, input to the brain is through many channels, visual, tactile, but substantial amount of it comes through our ears but how much do we know about ears? We know a lot about the anatomy of ears, we know a lot about its physiology, we know that this is how ears are structured, we know how or why our 2 ears are not exactly symmetrical and why we have 2 ears, why it is cartilage, why it is not bone? How sound signals reach cochlea?

How cochlea makes different kinds of angles under pressure from different kinds of sonic booms, sonic signals? But then we have to stop here, we do not know, we do not know what happens beyond. We do not know how these signals are converted into individual sounds, why somebody called Devki can be misunderstood as Janki or somebody called Janki can be misunderstood as Devki's... You know there are correlations, yet there are not and brain makes these finer distinctions and unless we make these distinctions, we do not understand and speak language correctly.

It is crucial to us and somebody called human beings understand these things, the brain works with these things absolutely fabulously without any instruction from anyone of us. In other words, what we are talking about is God's World of which we have very limited understanding. We know little about brains because functioning human brain is not available for study. We either, whatever we know about brains, we know either through dead brains or through brains which are not at the best of their...

There are other kinds of difficulties, I am very confident professor Vibhuti Grinathan can say much more more authentically about them. All I am trying to say is that language is related to brain and we know little about brain. Actually as I go on further, I will ask you to join me in challenging many other assumptions we have cherished as God-given.

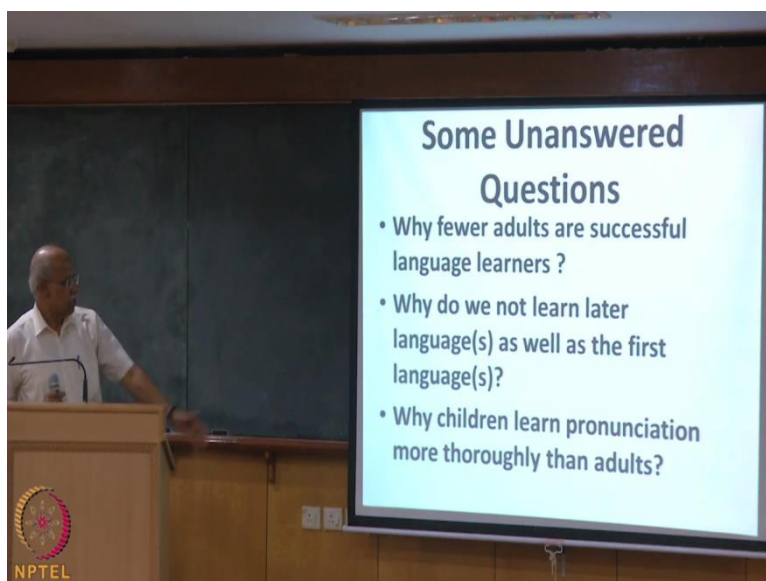
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We believe that languages can be learnt so long as there is exposure and there is motivation. Not necessarily, not necessarily true. Everybody in India wants to have English. There is plenty of exposure of English to Indians in India, or to any other language, in that case all civilians will become Rabindra Nath Tagore or there will be no Rabindra Nath Tagore, you know the amount of exposure, motivation for use does not significantly differ. There are many unanswered questions in the field.



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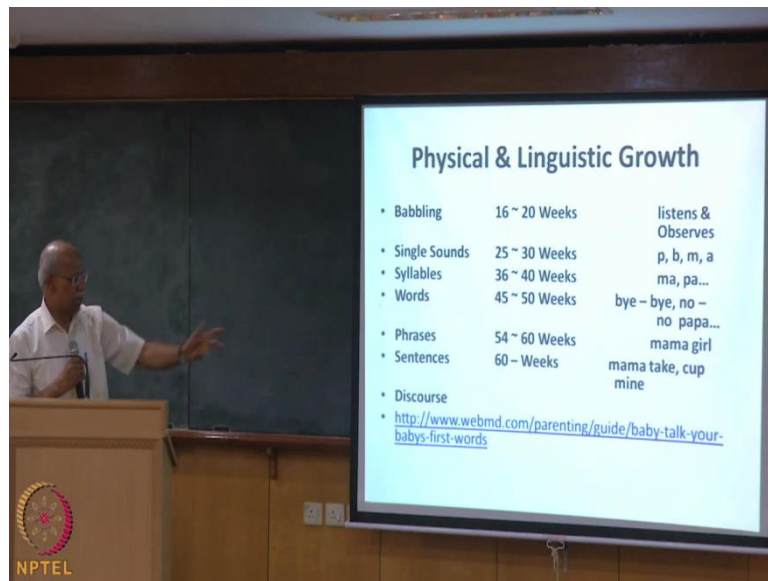
See, why fewer adults are successful language learners than children? We do not know and please do not tell me there is age barrier because there are any number of adults who learn good number of foreign languages past puberty, pass adulthood, some even when they become old. You know, Pritha mentioned Bengalis and Pritha mentioned non-Hindi speakers, the best work on the collection of Ramayana was written by a Belgian priest, somebody called Carmel Bulke, working in Jharkhand, he read 400 Ramayanas and wrote a comprehensive book called Ram Katha in Hindi and he spoke, if there can be some word called chased Hindi because chased Hindi is a contradiction in terms, Hindi is a pigeon, you know...

But he wrote that. So, you know, lots of adults learn, lots of adults do not, why does it happen? Why do we not all of us have mastered at least our initial languages well but why not later languages equally well? Why does IIT Madras have at least 400 faculty members who have lived all their life here but they do not speak Tamil, at least not acceptably. There is there is absolutely no reason.

And there are always our children, faculty children in Kendriya Vidhyalaya who pick up Tamil in no time, both taboo words and good words. Okay, why children learn pronunciation more thoroughly than adults and there are any number of questions... These are not the 3, I just wanted to draw your attention to the fact that we look, we have absolutely limited and at the best, you know, speculative knowledge about language and language learning. Okay.



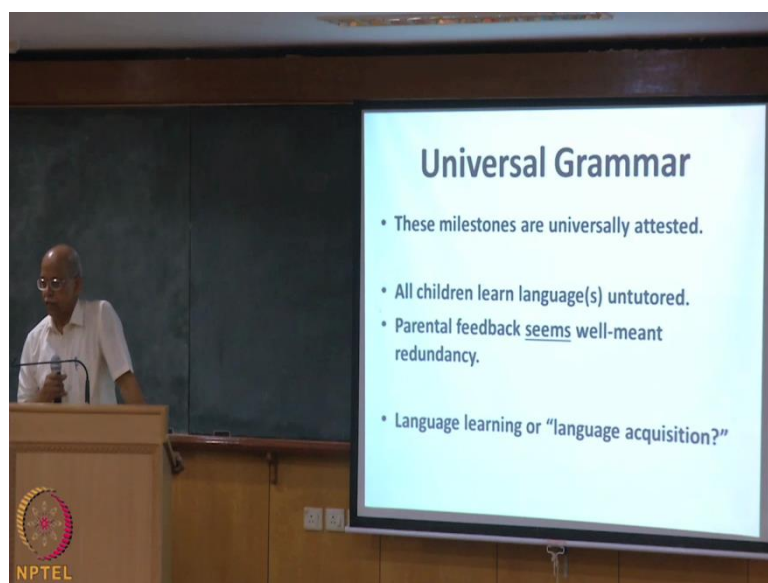
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Physical & Linguistic Growth		
• Babbling	16 ~ 20 Weeks	listens & Observes
• Single Sounds	25 ~ 30 Weeks	p, b, m, a
• Syllables	36 ~ 40 Weeks	ma, pa...
• Words	45 ~ 50 Weeks	bye – bye, no – no papa...
• Phrases	54 ~ 60 Weeks	mama girl
• Sentences	60 – Weeks	mama take, cup mine
• Discourse		
• <a href="http://www.webmd.com/parenting/guide/baby-talk-your-babys-first-words">http://www.webmd.com/parenting/guide/baby-talk-your-babys-first-words</a>		

These milestones you can Google, you can reach, you can click this website and you get lots of data. These are however generally attested that at certain age a child would have certain kind of language proficiency. Once again, why does it happen worldwide? So, we cannot say there is nothing like universal grammar. We can only say that language is a God's gift to mankind, it is not an invention, it is an attribute, like God gave flying, you know to quote Chomsky again, as Pritha did it is like God created, like God created fish to swim, birds to fly, he perhaps created man to speak and that is why Greek philosophers called human beings homo locquans, talking animals. Next.

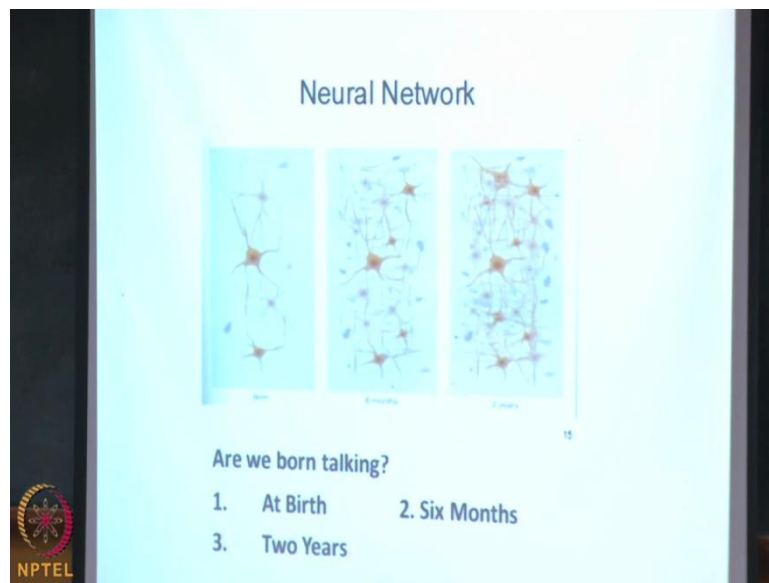
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- These milestones are universally attested.
- All children learn language(s) untutored.
- Parental feedback seems well-meant redundancy.
- Language learning or "language acquisition?"

Another irrefutable fact seems to be the case that all children learn language or languages untutored. We might deceive ourselves by saying that you know our children speak better language because we have taught them, there is however nothing to bear this fact. Yes exposure is important, yes motivation is important whether it is something more, I will not even get into the debate between language learning or language acquisition, these are play on words. You you do not learn, you do not acquire anything without active effort, whether we understand that activity or activeness well is another matter.

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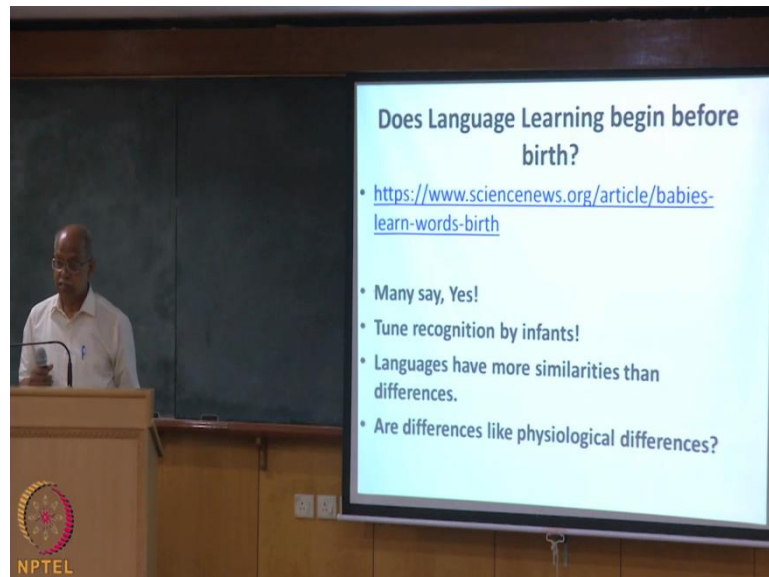


If you look at how the brain develops and I have taken these diagrams from a Journal of neuroscience from the University of Columbia, it is slightly dated, I took it from an art chemist appeared in 60s, I can give you the reference if you like. But you know the first picture, the neural network in the first brain is of the child at birth. But see how with exposure it develops, at 6 months and 2 years and imagine you know how it goes you know Prof Vibhuti Grinathan knew him and I knew him, there used to be somebody here called a, very famous neurosurgeon called Dr Ramamurthy and very active person but very humble as most learned people in Chennai are.

You know, he was very fond of saying that we know little about brains and one of his these forms saying was that an old man's brain may contain fewer neurons but they are all connected so that an old man can see more connections between things, otherwise disparate. A child on the other hand may have many more neurons in good health, good shape but then all may not be as intricately connected as an old man's brain, as a result a child may not see

connections between different things. But once again, you know the point is we do not know enough, let us try, let us explore, let us learn.

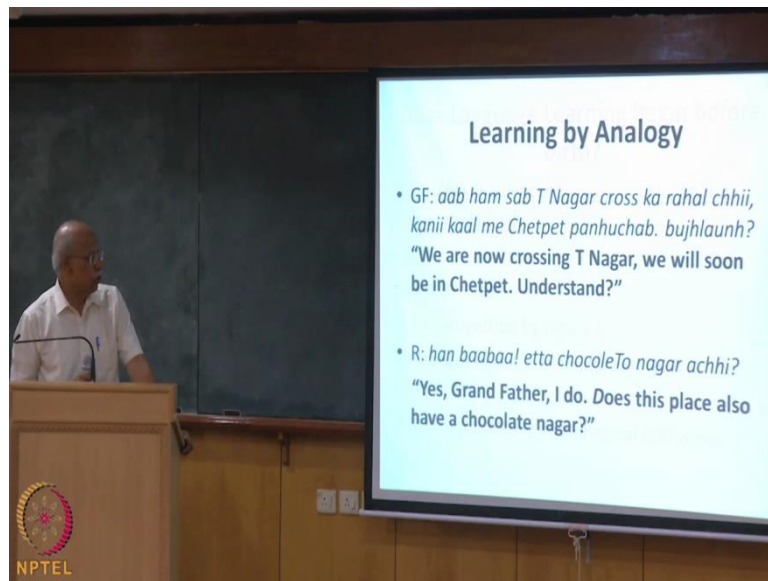
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Thus language learning begin before birth. If it is a developmental phenomena, you know like the growth of the fetus, like the growth of the human being, you know like the growth of a seed into the Banyan tree, it should begin somewhere there. There is not enough evidence, there is not plentiful evidence but there is evidence that you know language learning begins within weeks of pregnancy, within weeks of our taking shape and life inside our mother's wombs.

If you are interested, there are plenty of studies on that but no matter how many, it is not enough. Children have been found to recognise tunes they heard, you know favourite television serials of their mothers, when those tunes were played, the children some seemed to recognise those tunes from those they had not heard before. There are some experimental evidences of that we do not know, nobody had the answer, including Chomsky.

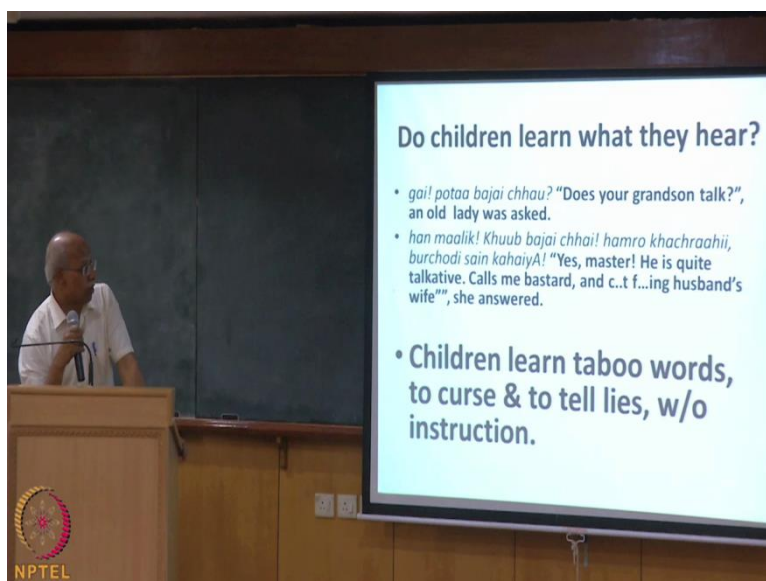
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Look at some, you know how children learn, analogies. We seem to learn from analogies, a child and a grandfather talking, the grandfather says to the child less than 4, we are now cross, less than 3 actually, we are now crossing T Nagar, we will soon be in Chetpet. We understand the conversation takes place in Maithili, actually it is, it was me and my grandson, incidentally my grandson is much older now, as I am of course.

We know. And the grandchild says, “Yes grandfather, I do. But as you have T Nagar, does this place also have chocolate Nagar?” You know, I mean, his obvious connection is you know Tea, chocolate, Biscuit, toffee, coffee they go together, not that T Nagar can be the name of a locality followed by Chetpet etc. etc. The human faculty to recognise classes, categories, subcategories is that work from early infancy.

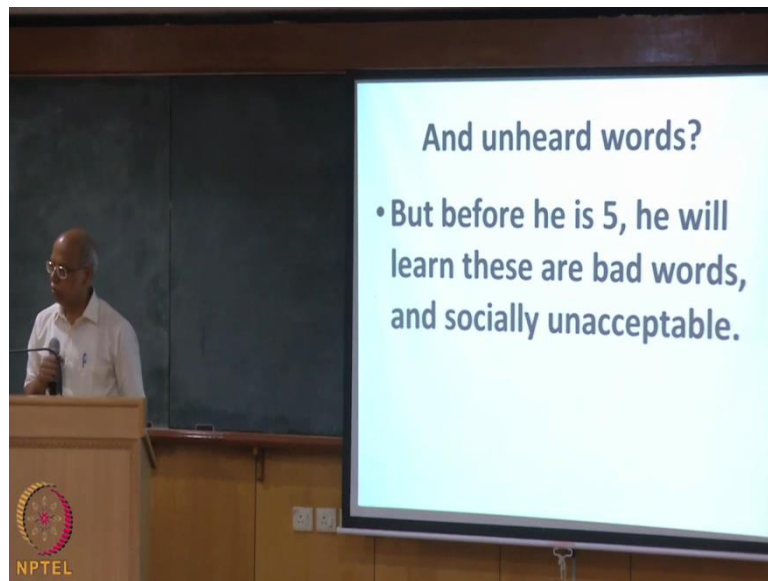
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Do children learn what they hear? Yes and they learn more. They also learn taboo words, they learn cuss words, all of us know how to tell lies and nobody has been, nobody has got any tuitions in telling lies. None of our parents sat down and told us today I will teach you how to tell lies and lies are wonderful things. Lies are the only thing that distinguishes us from other animals, otherwise you know we would not be writing books where Cloud will be told Cloud Cloud please go to my beloved and tell her I am Unhappy away from her, that is a lie. Cloud cannot go to Alka Pudi and tell the you know Clouds beloved that the cloud is unhappy, the entire thing that we call art quote unquote is something which has never happened.

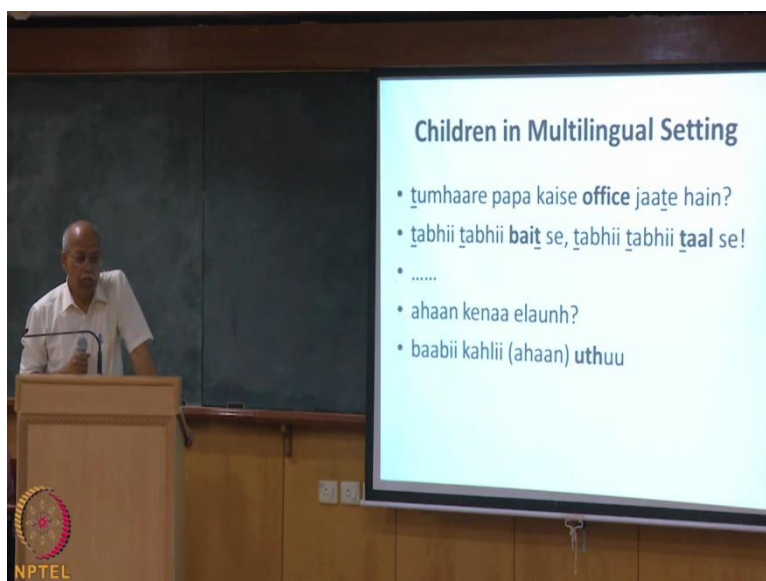
And language and human mind have the faculty to go beyond, you know what they hear, beyond experience. Experience perhaps, you know I am saying perhaps because we do not know enough, again is essential and in all languages, none of us sits down and tell our child today I am going to give you a tuition in taboo words or in you know socially unacceptable words. For those of us who are interested in this area, there is a wonderful book by Jaws Lackoff. When generative semantics was in fashion, my generative syllabus student in linguistics was asked to do a term paper on on Lackoff's book, it was called letters F – – CKING linguistics and he has classified that all abuses in all languages of the world can only be of 3 kinds.

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They either wish you death or distortion or the insult your female relatives. There is another gender bias example of that. But the point here is, the great point here is, I may not say all of us because there are civilised people also hear but many of us know these bad words and without tutoring. Nobody has sat down and... You know and children also learn social stuff. Before the child is 5, the child learns whether a particular word should be used publicly or only among friends or not even among friends, not even in the family, who tells them, who... So, what we are talking about is a very powerful machine you know which takes care of giving the data, which not only reprograms, re reprograms itself but also reaches current generalisations.

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For multilingual children, who tells them to speak to this person in language X and that person in language Y? There are plenty of data from multilingual communities, if you, you know there have been studies of Swiss children, unfortunately this is one area where we lag, India being the most multilingual country or among the most multilingual country, we do not even today have good corpus of multilingual children's utterances. Maybe the young linguists can think of doing some projects in this area. But from whatever little is available, you could see that children switch between languages regardless of etymology at their will and to be being socially currently.

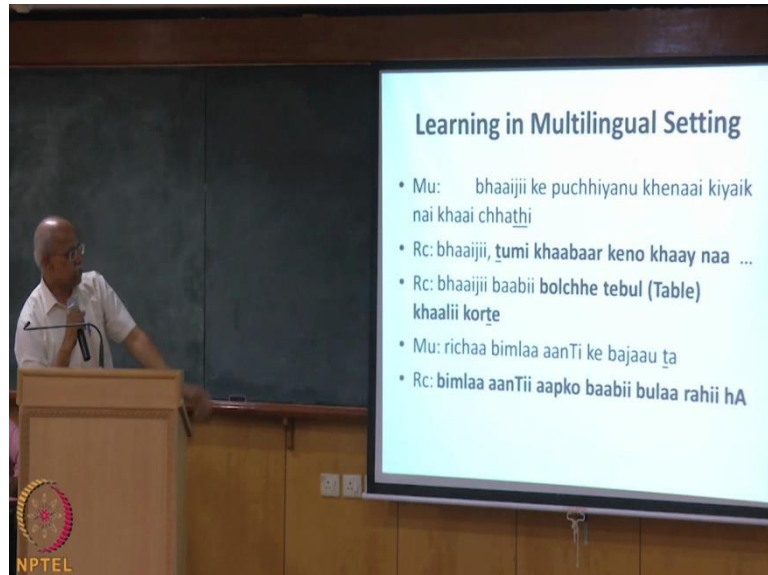
Say for example here, somebody asks the child how does your father go to office, how does your father travel commute to the office? And the child says sometimes on a bike, sometimes in a car but the child lisps. The child does not say bike he says bait tabhi tabhi bait se tabhi tabhi taal se. Right, it is systematic, it comes. If you make mistake with ka, you also make mistake with kha ga da dha, okay. And using words of one language into another, that is what I meant by etymology. It is not that tumhare papa kaise daftar jaate hai? Kabhi kabhi dupahiya gaadi se kabhi kabhi chaar pahiya gaadi se. You know, whatever we hear, etymology will not matter.

Or for example look at the other interesting example. Somebody asks a young child, you know, multilingual in Bangalore, Maitheli, Hindi, English and Telugu. And the child is asked how did you travel? The child says I was told to climb the bus. Now, climb the bus is uth is climb in Bangla, am I right? But the instructions come from Maitheli. So, the children know



what is temp, what is inflection but they do not care where they take, from where they take what.

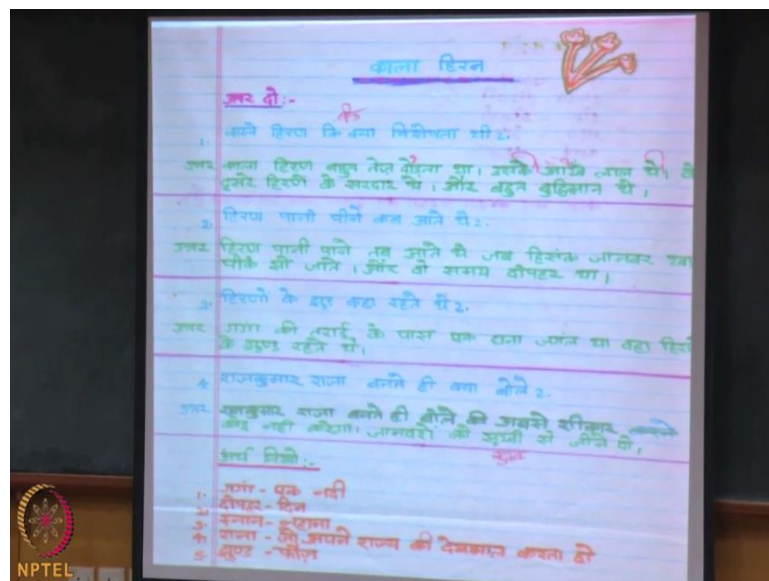
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Similarly, you may switch between languages. They may be instructed in one language but they might speak in another. Grandmother says go and tell your brother why he is not eating. And the instruction is given in Maitheli. But the child says in Bangla, the child talks to her brother in Bangla saying 'Bhaiji tumi khaabaar keno khayee na', why do you not eat the meal you had been given? The grandmother has not told the child go and tell your brother in Bengali, the grandmother is giving the instruction in Maitheli but the child switches. How do the children know, nobody has sat down and told them.

Similarly look at another one. The same child again, come down, the grandmother says 'Richa bimla aanti ke bajaau', Richa going call Bimla auntie, you know the housemaid. And Richa knows that Bimla auntie speaks only Hindi, so Richa tells 'Bimla auntie Bimla aunty aapko bhabhi bula rahi hai'. You know these are I mean if you are interested, some of these things are there in Indian linguistics, I can give references to those papers, you can find plenty of data. The point I am trying to make is that language grows on you, with age, years and experience and in many facets, not only in grammatical but also what we call socio linguistic, though I am yet to, I am not sure where grammatical ends and socio linguistic begins.

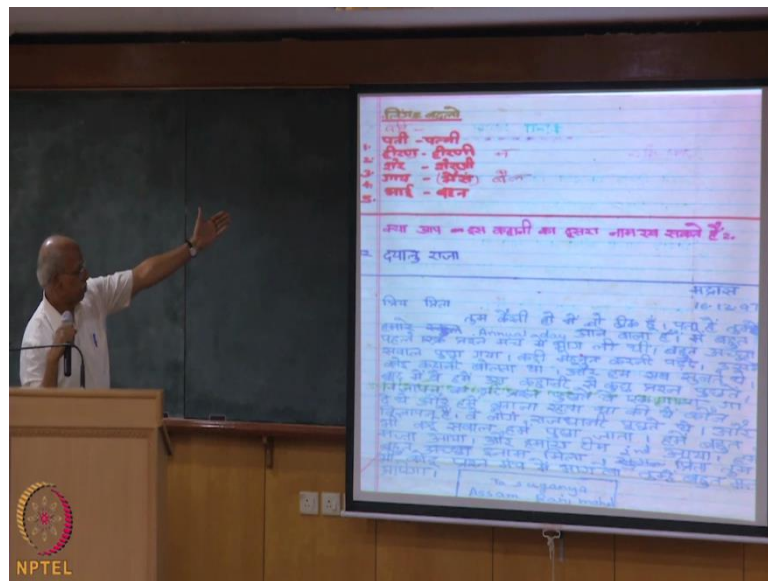
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Same more of the same please go next, take next, okay. Now I am going to present some data on for children who are supposedly dyslexic and trying to get you to see if there if it is really a disorder or some developmental problems. For those of you understand Devanagari, who can write Devanagari or Hindi, this is an example of an error, it should go from right to left not from left to right. Okay. Kaale hiran ki kya visheshtayen thi, what were the distinguishing features of black buck? But the child has done it from left.

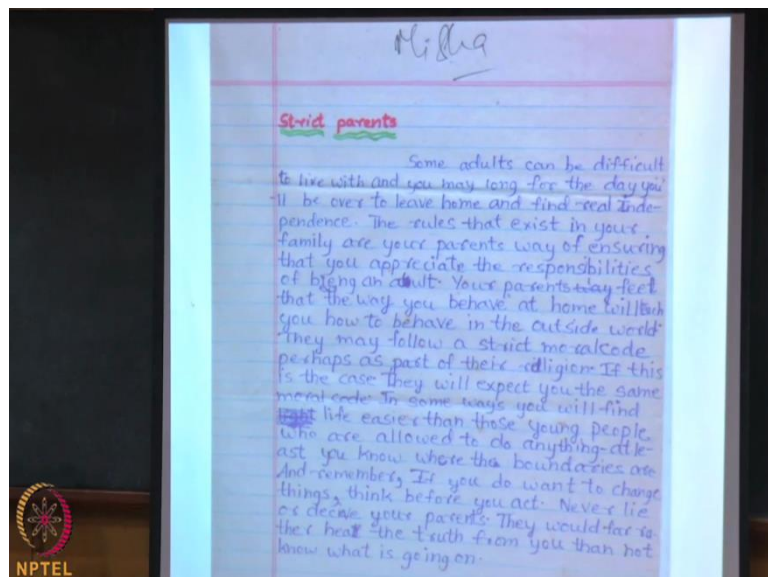
See here the teacher has marked, okay. Similarly all over. If we had time, I could have gone into some detail in some of these things but it should be 'uski aankhen laal thi', aankhen is stree-ling, you know there is again as Pratha rightly said, no, we do not know why eyes are feminine and ears are masculine. Maybe because ears take a lot of shock and eyes do not, there can be explorations, right. But some of those errors, I will soon tell you what is the typology of these errors. Please go to the next screen.

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The child should give one kind of opposite, the child gives another kind of opposite. The child should have one kind of nasal but the child gives, the child should have one kind of nasal but the child gives another kind of nasal, but nasal still. Okay. And this is about a 7 or 8-year-old child, sorry under 10, I am not exactly sure. Similar errors elsewhere. Next. Okay.

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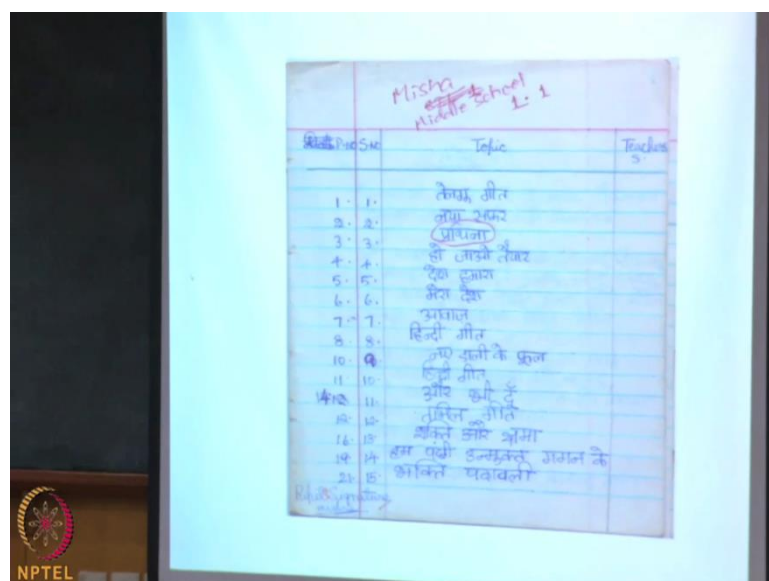
The child has, child seems to have been asked to copy it, you know excellent essay, many, some adults will be difficult to live with, yes. Looking at the adults word from a child's point of view, some adults can be difficult to live with. Okay. And you may long for the day you will be over and the child forgot the word and the teacher will mark that child down for bad English. Is it bad English? You know the kind of syntax that is there in the first sentence

itself, is you know, a passive embedded and made into a simple, it is as complex a sentence syntactically to do the trees, you will have to do 2 sentences, collapse them into one and then get them.

You know the child shows a some kind of extraordinary mastery of language but at the performance level or if I may use Pritha's at the E level, the child seems to have forgot to put in another word... You will be overaged to leave home and find etc. etc. etc. the child makes a simple mistake, you know, order, so you know the mistake of geometry going from right to left or left to right and then order and in a language like English, that can be very significant. Whether you have ei or ie, many English teachers make a living out of that, you know, if you wrote receive as ie, then you are wrong, it should be ei RECEIVE. But in substance, how much of English spelling should a child learn?

Did, was English spelling always like that, until about Dr Johnson's dictionary, 1754, you could wrote, you could write both ways. Look at Shakespeare's Sister, look at Mary Streeps of the 17/16 century, so a lot of pronunciation and spelling are politics. But look at the child's plight. The child otherwise has a good language but because the child makes mistakes with order or geometry, the child is dubbed, the child was dubbed dyslexic and there are plenty of you know other examples elsewhere. Please move on, look at the spelling of receive, etc. etc. and if you other words, all you know Similar, mistake of similar kind.

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1. 1.	तैय्य और	
2. 2.	तैय्य और	
3. 3.	प्राधान्य	
4. 4.	सो तैय्य और	
5. 5.	दिल और	
6. 6.	मेरा दिल	
7. 7.	अज्ञान	
8. 8.	हिन्दी और	
9. 9.	तैय्य और के फल	
10. 10.	तैय्य और	
11. 11.	और और के	
12. 12.	तैय्य और	
13. 13.	और और और	
14. 14.	हम और अन्य और और के	
15. 15.	अन्तिम और	

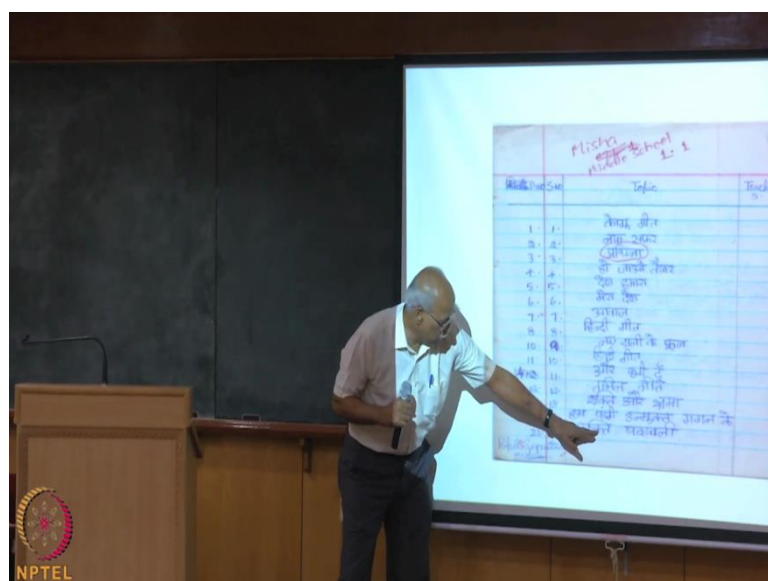
Similarly here, you know Hindi, for those of us who are from IIT Madras, perhaps you might remember is somebody called Prof Kalyan Krishnan of computer science and engineering

Department. Kalyan Krishnan at one point of time looked at the writing systems of all major Indian scripts including Hindi and Telugu and he put over the conclusion that Telugu was one of the most difficult languages too, difficult scripts to learn and write in the world. To learn to write Telugu, you need to learn 486 discrete you know combinations, symbol combinations followed by Malayalam, followed by Devanagari and English was the easiest, English does not have half letters, English does not have crowns and shoes, whereas Telugu has half letter, full letter, quarter letter, you know crowns and shoes, etc. etc.

So, it is one of those crowns and shoes, Kalyan Krishnan used to say that for ra alone and look at the comedy in it. Hindi speakers, so-called Hindi speakers because Hindi, I do not know who is Hindi speaker, so-called Hindi speakers feel immensely proud ours is a very scientific script, they will tell you at every other stop. You start from Segapet to Paris, every other stop they will remind you Hindi, Hindi...

You write, you need 6 different kinds of symbols to write one poor simple ra. Look at the 2 ras here, 1 and 2. The mistake that the child made, this should not have come here, they should have come here, they should have come here. Okay. Is that such a serious mistake as to dub that or to level that child as dyslexic and send her to a special coaching, special tuitions, create an cause you know mental agony to the parents, putting them to expenses and sleepless nights?

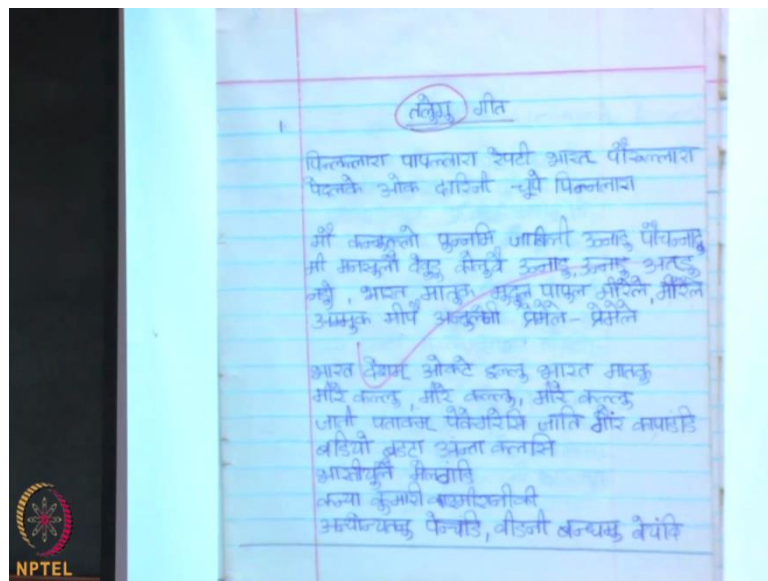
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There are any number of other examples, please go on and, look at Bhakti, the only mistake that the child has made it, it should have been a little less long, that that the trunk of the

elephant should not have touched the letter over there. You know all all graphics or graphology, you know I will I will tell you in a little slides, I have only 2 shapes, they are either variations of lines or they are variations of circles and when you learn a new script, all of us, it has been demonstrated that adults are worse learners of new scripts than children but nobody calls an adult dyslexic because you can afford to get away with mistakes. Please go on, next.

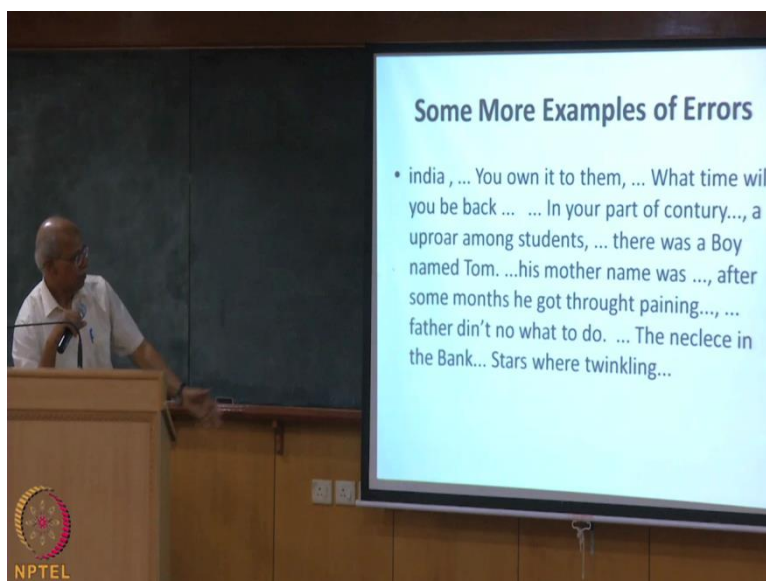
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Similar thing, you know, look at the poor child, she has written Telugu song as a part of her dictation in the school. It is only that this horn, this saxophone should have been on the first letter, not on the second, it has become Telegu, whereas it should have been Telugu. You know I reminded of a German colleague who in spite of 4 years in IIT Madras kept calling Devki as Devaki because you are misled by Roman. So, you know these things happen with all of us, adults or children, another child, other sex and mistakes, you know, similar. All those red if you look at them, they all point to the same things, mistakes of a few finite kind. Okay.



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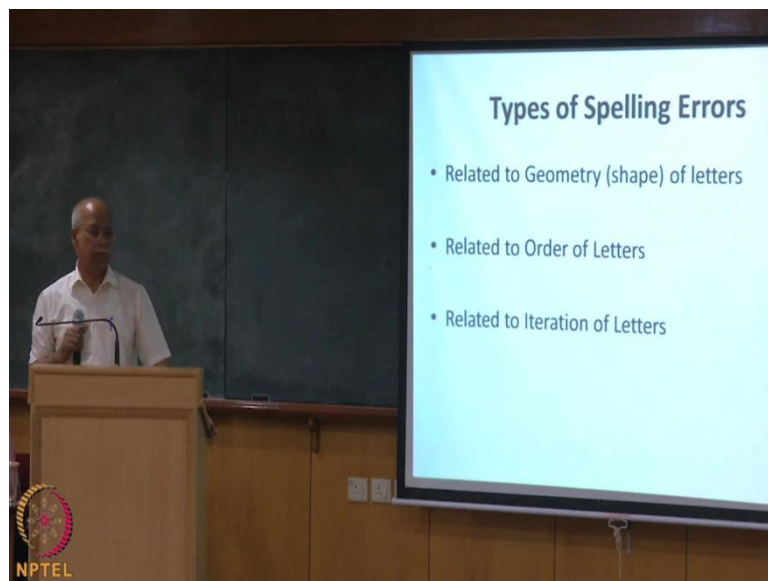


Just put on some things here. You own it to them, it should have been you owe it to them. What time will you be back, when will you be back, in your part of the country, the poor without that intrusive U in the second syllable and the penultimate syllable, the word is all right, country. And uproar among students, there was a boy, what harm is there if these capital... now Google, you know the one great favour Google is done to the English language is, you know after ( ) (34:48) is to have done away with the redundancy of blocked capital in lower case letters. You write Vibhuti Girinathan either way, you will get Prof Vibhuti Girinathan. Even if you miss a few words, his mother name was, his mother's name was, after some months he got throught paining, he got through paining, this T is an unwanted addition that the child made.

I have taken collected these examples from the scripts whose photos are presented a while ago. After some months ago we got, father din't no what to do, the K and W will make it right but the child is over, at that particular moment and many British do that, many British to disengage between, while writing it apostrophe and S and its without apostrophe, but we do not call them dyslexic. The necklace in the bank... Stars where twinkling, not were tinkling. If you look at these mistakes carefully, you will find there either mistakes because of inclusion or omission, not because of biological efficiency.

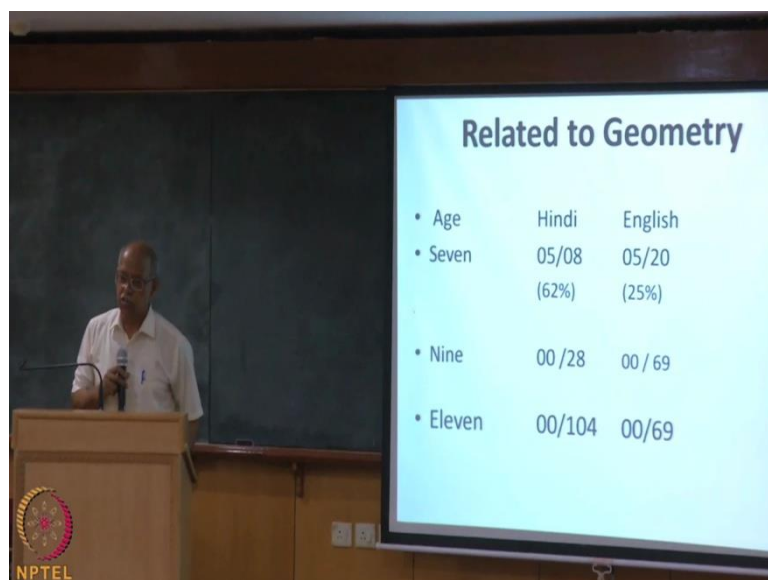


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If you look at all errors of spelling, they are only of 3 kinds. Either they are errors related to geometry or shape of letters, you know, something should, a circle should be right looking with a stroke, then it is d, a circle left looking with a stroke, then it is b, many child can, many children can write book dook for book, book for dook, you know, because of this kind of confusion. Related to order of letters ei or ie, okay or related to iteration, you should have 2 Es, 2As, etc. etc., there is no forced kind of mistake.

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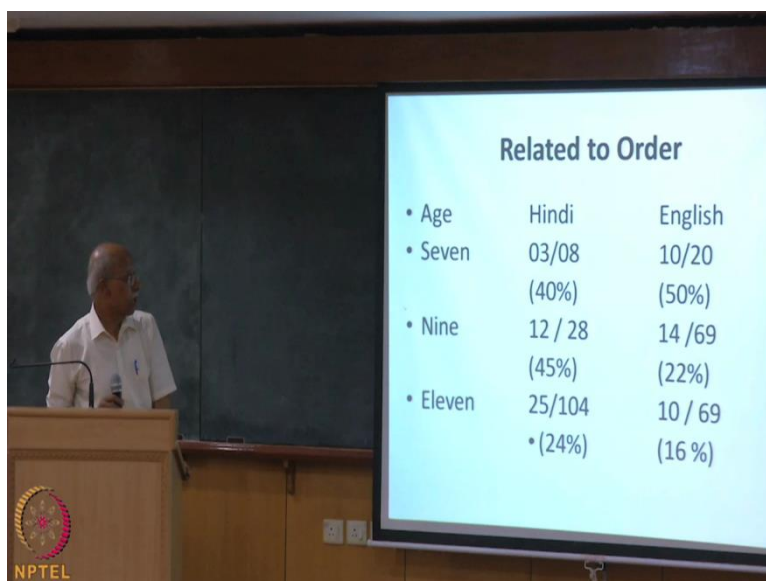
With age, with time, you know it has been found that all those celebrities are named became great writers. Agatha Christie sold more novels now with Harry Potter we cannot say sure but until Harry Potter came, that also goes to show that women are better storytellers. They they

tell more stories and make more money out of them than men. Agatha Christie had the required now Harry Potter, whatever God bless her name has made more money. Winston Churchill got Nobel prize for literature writing history, you know, volumes, and if you have not read his books or the history of English-speaking people or the history of the First World War, then you have not read something best, something wonderful in English language, I mean you should. All of these people turned to become great writers.

Actually one of the assumptions in the field of dyslexia study is that most of these children are gifted children, they are hyperactive, they need to sit down quietly, given support and comfort and then with time, if you draw their attention to these differences, differences of geometry, differences of order in iteration, they have looked all right, they go back to quote unquote normal. I do know, this is a child's linear study as will call it in statistics and language studies. The child when she was 7, the child when she was 9, the child when she was 11, today the child is a manager in a big international firm working in Chennai, she also went out to study at Edinburgh etc. and got a master's degree in economic sciences but this is a three-year slice.

The child used to make you know, mistakes, 62% mistakes of all spelling errors were related to geometry, more in Hindi, less in English because you know Hindi geometry is much more complex. You have more combinations of circles, dashes, lines, broken lines, horns and shoes than English has. So, naturally she has made more, you know 62% against 25%. At the age of 9, her mistakes of geometry almost disappeared, both in Hindi and English. More exposure, some patience on the part of the teacher and the parents and other relatives, the child is as, he is almost you know writes error free languages on that score. Go to the next.

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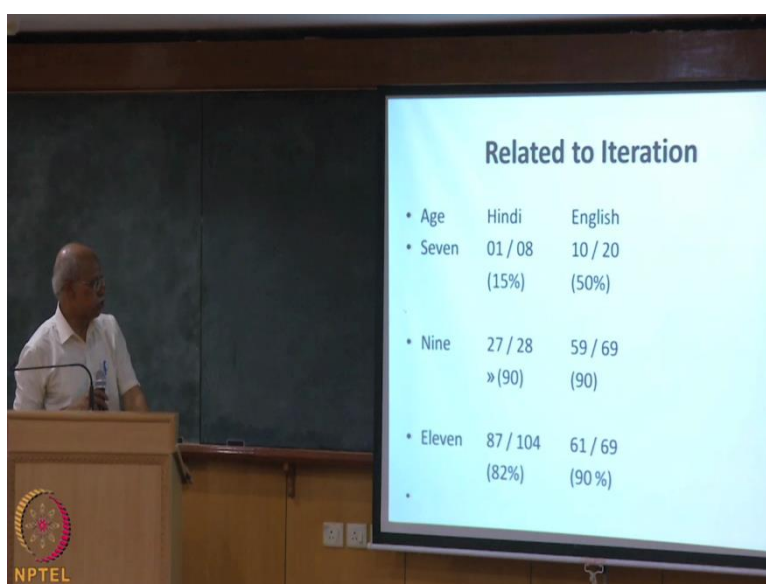


• Age	Hindi	English
• Seven	03/08 (40%)	10/20 (50%)
• Nine	12 / 28 (45%)	14 / 69 (22%)
• Eleven	25/104 • (24%)	10 / 69 (16 %)

Related to order, whether E comes before I or I come before E. Hindi has fewer problems of that kind because Hindi has more symbols, whereas English makes do with only 26 letters and 26 into 2 if you take lower case and upper case, Hindi has any number of you know, Hindi has 39 or Hindi has 42 letters and so many diacritics, as Kalyan Krishnan said, 482 combinations to be able to read, write, read and write Hindi.

So, naturally greater mistakes in Hindi related to order, sorry, Hindi she has got, the mistakes about her are not there in Hindi because Hindi has more symbols but because English uses the same symbols time and again in combination with different letters and their value changes. E After C is sa, E After G is ga, etc. etc. So, you have that and other kinds of words. Look at the graph at 7, at 9, at 11, you know fewer mistakes as the child grows.

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• Age	Hindi	English
• Seven	01 / 08 (15%)	10 / 20 (50%)
• Nine	27 / 28 » (90)	59 / 69 (90)
• Eleven	87 / 104 (82%)	61 / 69 (90 %)
•		

Related to iteration, very few in Hindi because Hindi again has more symbols, more in English at 9, at 11, the child is yet to overcome all of them. The point I am making and I will stop here is that we do not have enough evidence, we have not done, you know studies of the kind that we ought to, you know in India, we are an overcrowded country, we do not have enough money, we are an emerging country, our political and educational policies and priorities are not always in line with what many developed countries think they ought to be.

So, we have not had, you know, we do not have enough data to conclude one way or either but if you think carefully and if you look at whatever data are available, then you find that most language disorders are not disorders at all, they are developmental problems which children can be helped to overcome with some patience, some time and some support. Thank you very much.

“Professor-student conversation starts.”

Student:

I would doubt very much that people who are currently assessing children with disabilities would look as specific instances of dyslexia. I also think that, I would disagree with you when you said that children with these so-called difficulties or disorders have probably the need for patience and perseverance on the part of a teacher. This is actually not true, especially in the case of disorders where it seems to have a fundamental, the wiring of the brain seems to be different and so acquiring language from exposure to it, that does not seem

to work the same way as it does for typically developing children. So, that is that is a comment I wanted to make.

The, I do have follow-up question as well and I was also wondering if I could request Prof Pritha to also perhaps give her views on some of these things but I was curious what you think is the impact of, for example the existence of autism as a language disorder or the existence of dyslexia as a literacy disorder, how does that guy in which Chomsky's views on universal grammar?

Universal grammar really lives, lives and dies by the fact that there is a general purpose, you know language acquisition device in our brains which is able to acquire any language and human being is able to acquire any language. Obviously there is something that breaks in the in a child with autism, a child with any of these disabilities. How does current work in universal grammar reconcile this kind of disabilities with the Chomsky's hypotheses of universal acquisition of language?

Prof Pratha Chandra:

People are looking at kids with autism and by the way autism is a wide spectrum as you will know, so you have this dissociation between the cognitive abilities and the linguistic abilities varying a lot. So you could have kids can write and read multiple languages which is something I would like to come back to later on but they, they cannot do the basic cognitive task like tying shoes but then there are kids on the other spectrum also where you know, they do not know languages and they probably will be able to other kinds activities, for instance remembering dates or will be able to tell you a of a particular, so if you say 1975 1<sup>st</sup> September, right, something like that and they give you the date because they have this ability to permute and go back and come up with a particular day, said it is Wednesday or Tuesday. So, it is a very very wide spectrum.

I think most of the experiments in neuro-linguistics and Psycho linguistics so far has been mainly with trying to see which part of the brain is affected, which I do not, I am a little skeptical also probably I come from a theoretical, I look at things from a theoretical standpoint because sometimes they are unable to explain holistically how, let us say someone who learns language as usual would would differ from someone who cannot learn language probably because of some of these disorders or one of the more well-defined disorders. So, there is this problem out there. But as I said, autism itself is a very difficult thing because I

remember watching a video documentary on YouTube and I also had this question in my mind for a long time.

So, there is this girl who is not grown up, very severe case of autism, I do not remember which one but she could not communicate. I do not think she is hyperactive kid but she obviously could not communicate and then they started using the computer, the you know, the keyboard, right, and you would you also know that they match them, it is assumed that there is a theory of mind cropping, that the, that these special kids cannot understand what you want. Right. Then it turned out that upon years and years of training and nudging, that girl who is now a woman, she would not type out her thoughts.

She cannot communicate but she is typing out her thoughts in perfect language, right, English. So, it is very strange, what would they say about the language faculties in their, let us say at least some kids with or you know adults with autism and there is a interface problem that you hear, you probably understand that somewhere you are not able to communicate, so communication is very essential for you to have that bridge, so somewhere that could be there.

Then I also know kids and in fact one of my colleagues has an hyperactive kid, very hyperactive and, there is this app that has come out recently where you can learn a new language by choosing matching words. So, you are giving words in 2 different languages jumbled up and then you have to... Yah, you said, I forget the name is called Lingo or do Lingo, something like this, something very interesting. It turns out that kid upon nudging, my you keep nudging the child at the elbow has been able to match which is strange because none of the parents of the child knows German or the German script.

So, I think there is an immense ability out there, we just have to manifest it. I do not know if Prof Choudhury will agree but it seems like a lot of things are there and I, I think we agree that we really do not know a lot about many many things, both Indians and otherwise also, right. We do not know where we are, maybe we also do not, we do not know about particulars, we also do not know about how to tie things up.

There is a problem. And so, I, as far as I am concerned, I think autistic kids or adults, they are able to do a lot more and somewhere even if they did not have the languages ability to start off with, somewhere that interface to be able to share your thoughts and your language with

others is somewhere missing, at least for some of them, my thoughts again very very preliminary because I am not a neurolinguist.

And maybe many more things in between, we do not know. Because it is a very modular, it is a very modular thing, right, so I think I found I found the slides were you are showing the synaptic connections, you have this, when you are born you have fear connections, synaptic connections, when you, at 6 months of age deceptive connection becomes more frequent than later on you have more.

So, I think that is also true, even though I will not go with the connectionist view because there is also a very strong connectionist view that says that everything comes through experience. I think part of it is also driven by what we have within ourselves, part is internal, part is external and I think the 2 are so related but western sides, some extent has done a huge mistake of saying that your object of study is completely different from the subject, right.

So, I think the environment is very important and somewhere biology has gone back to that idea, so there is that thing. So, you may have started off with a few modules let us say independent functioning units and then how to connect them is very essential. So, it is true if you look at the studies of PRG for instance, you will see that kids recognise independent, so one toad and then again you recognise, you see the same toad somewhere else, he will not be able to relate this toad to the other toad, you will say there is another toad.

You will, the child will not be able to find out the path from this toad to this toad giving the same identity to it. So, there is, there are 2 different modalities out there, 2 different modules working out there. But as we grow older, maybe the synaptic connections become more, much more complex and our ability to see the world as a complex whole, as a holistic thing, probably becomes true. Right. So, my very initial thoughts.

Participant:

This is regarding the labelling part which you said, whatever problem the observed, actually I am from field of speech-language pathology and audiology. So, we label children as language based to learning disability. I can give a clinical example, if a child of 3 years, chronologically and language delay of 2 years, if the, as the child grows, if the gap of delay keeps growing, we label the child as language based learning disability where the characteristics will exhibit similar...



Prof Choudhury:

Perhaps not all but lots of children can be helped to overcome many of these problems but understanding the kinds of errors they make and why they make those errors. The problem is and this, this is what I wanted to see, we look at their errors in isolation from the rest of their performance and I can give any number of scripts, not just one, you know, in my own collection I have scripts of several children, over a decade's long collection, where I find that children give examples of absolutely fabulous language.

But if they make some mistake, you know, then the teacher, the parent and the caregiver attend or give disproportionate attention to that little island of error than to the rest of it, that is where our problem lies. I am certainly not implying that there are no autistic children, I am certainly not saying that we understand everything and all, we do not.

Student:

The importance of exposure to language, I guess we cannot forget about feral children so, you like, about feral children, the children who are completely cut off from language for like probably 11 to 13 years of their lives and then, then they are introduced into this world and they are exposed to language. For example Ginny, so she was completely isolated, she was kept in a room, and a darkroom for like 13 years and then people tried to expose her to language, of course she picked up quite a few things but probably she would never match to a normal speaker who is already been exposed to language since day one.

So, hey, I am also curious if there is any kind of study that has been done for feral children and to determine what kind of deficiency or what kind of disorders do they face or is it an area that is probably unexplored yet.

Prof Choudhury:

That whatever little language the child was eventually able to pick up went through those stages of development sounds, syllables, words, phrases, sentences and discourse. It is only that in the case of this child, it was faster, not 4 years, not 200 weeks, it was fewer weeks, fewer days. But stages milestones were the same and even otherwise Dr Vibhuti Girinathan will tell you that you know all children do not grow at the same rate.

Quote unquote, all normal children also do not grow at the same rate. You know God's, in God's World, there is mass production but each piece is unique, we should try and

understand those types and help them, you know, help the children. That certainly does not mean that no child needs help, all children are caught unquote normal, no, exactly not. Some children are born differently.

What will interest a child is not very clear, okay but 2 things are very clear. Number-one that children need to hear at least some quantity of language so that they can learn and 2<sup>nd</sup> as you know Chomsky calls it Plato's problem because you know it is philosophising, it is for all of us, how do you and I know somebody is telling lies, I am told that women are good at making these judgements, please do not make that judgement about me...

You know how do we know more than we see? Best case is language. Which child has ever sat down, which mother has ever sat down to tell the child today child I am going to teach you passive voice in Bengali or in Maitheli, English yes, second language yes, foreign-language yes and allow me to give you a wonderful example.

My daughter was very fond of and I have quoted it in many seminars that when my wife makes a mistake and the milk is spilt, so she is like arrey milk got spilt, passive voice, arrey doodh to jal gaya, doodh to gir gaya but my daughter used to say jab usse hota hai to tumne to jala diya doodh, that is how children learn passive voice. When you shift the blame as you do not want to go on it, we do not know, what we know is we know, more than we hear, more than we experience, that is what makes us human beings and that is what behaviourists in good company like you know quadrupeds, horses, dogs, etc. etc.

Participant:

This is more of personal nature, I am Shobha and I am a Maharashtrian, I married a Tamilian, I have 2 sons and you know sometimes it is very confusing at home, we are a joint family where my father-in-law and my husband's brother, his child, they also live, we all live together but sometimes when mother comes, my mother comes to take care of my children when I am away, I find this kind of translation that happens very naturally. Say, for example my elder son is now 10 and when he speaks to me, he speaks in this Marathi English mode and when he goes and speaks to his father, he speaks in English Tamil mode and when he speaks to his paternal grandfather, it is only Tamil mode and when he speaks to my mother, it is only Marathi mode.

So, I was very curious and I kind of asked him when he was around 5 or 6, okay, why do you do this, then he said I do not know ma, I do not know why I do this but I am doing it and then

when he was like 10 or something, now he is in 6 standard, I asked him to still do this, do you think Appa does not know Marathi or do you think you know your I does not know Tamil, no, all of them know all the languages but I think they were not comfortable, they answer to me in that language and that is why I talk back in that particular language.

Now, my younger son who is 5 years old, he again does this, so I asked him why do you do this. I wanted to see whether all children do it in the same manner or whether it is going to get difference in their perceptions of language. So, when I asked him, he said no ma, just like that, I do know, you speak to me like that, so I speak to you like that.

So, I thought it was a mirror kind of an effect and later on I also learned that my elder son at a very later level, he told me that ma and you know what Aai says, she says speak in Marathi. And you know what my Tata says, his paternal grandfather Tamil Dam Tesno. So, you know in their birth certificate, my husband has put Marathi as their mother tongue. So, he was like, but he is a Tamil and he is also learning, I watch so much of Hindi on TV and they speak Hindi also as well but now my brother-in-law's son who lives with us all the time with these boys, I do not know, he can speak Marathi.

So, one day when we all we were speaking Marathi, he was also like yes kaaki all this and I was like he also speaks Marathi now. My husband knows Marathi very well, whenever I have the secret conversations with my mother on phone, he tells me servant does your sister come, I am like okay, you know, it is no more a secret code or anything now. So, I was kind of... Interest...

So, all of us know all languages but you know, I am really intrigued by the fact that it is overwhelming sometimes you know to take language as a power device because my father-in-law sees it that these children should not be led away by their grandmother by learning Marathi, should not pick up those kind of cultural values and my mother's kind of little prickly and she says No-no you speak Marathi.

Prof Choudhary:

I also present data from my granddaughter, her mother speaks Bengali, her mother's parents Bengali, her father's parents which is us, we speak Maitheli and then there is Hindi, English and Telugu Hindi ambience. We presented some data on this campus where you are sitting just now in my opinion is the most multilingual community in the world.

Any child here speaks at least 6 languages, you know Tamil, Hindi, English by default, then if the neighbour is Telugu or if the neighbor is Malyali or as in my case, my immediate colleague was a Marathi mother's Tamilian father's daughter, both parents working, so the child grew up with a Maitheli Speaking aunt neighbour, the child spoke Maitheli, Hindi, English, Tamil, Marathi with equal proficiency and today she is married and lives in Bombay. I can give you her email ID, please do not tell her I gave to you. Okay, right. Next comment, have more children and before it is late please record, we need all those data.

Participant:

Rested when you were saying Sir multilingual settings will need more data and research has to be done...

Prof Choudhary:

Do please record and have your copyright but share it with Devaki, Rajesh, and also me and Pratha please.

Participant:

Thank you.

Participant:

I just want to share my observation about why people speak the way they do. I think human beings are very intelligent, we would like to spend the least effort to get something done, okay. So, whether we imitate and we ought to achieve our communicative purpose and when we say that somebody has a language disorder, are not we being too harsh by setting up certain things as norms and then treating every deviation as a disorder. I do think that we are being a little harsh because as we just discussed, people mix and switch languages with so much felicity, with so much ease, would you call that a language disorder or an intelligent way of communicating? This is all I wanted to say.

Prof Choudhary:

Thanks a lot ladies entitlement, thanks for your attention.