

Fundamentals of language Acquisition

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Lecture 024

Lec 24: Sociopragmatic factors and attentional learning account

Hello and welcome back. Today, we will look at lecture 4. In Lecture 3, we looked at the various theories that primarily discussed linguistic constraints. There are some innate constraints that help children acquire words in the stage when they are in the naming explosion, and those are the theories that discuss how they are probably able to narrow down the choices with respect to mapping the word to the name. The label, the word label, the referent mapping, how they extend, and how it goes. So various linguistic theories, and we also finish that module.

We concluded that module by saying that there is, of course, supporting as well as countering evidence for each of those theories. However, of late there is a new kind of focus that is away from the linguistic constraint and looks at other cognitive processes. So, treating language acquisition within the larger cognitive domain and general cognitive mechanisms is where we are focusing. So, is it possible that larger cognitive mechanisms help children learn language apart from the linguistic constraints? So, that is what we will look at in this segment, primarily looking at two kinds of factors: one is called the socio-pragmatic factor and the other is the attentional learning account.

So, the question that was asked was, is it only linguistic constraints that help in learning words? Is it possible that there are other factors that might be equally important? Of course, this theory does not negate that there could be a possible linguistic, innate linguistic constraint, but what if there are other factors as well? So, a number of researchers pointed out that children's learning of words is a result of their growing need to understand communicative intent and joint attention. We talked about joint attention in the initial stages. So, while the child is growing, they are also an active member of the social scene. They are there, and they are part of a group of people. So, they will automatically grow up

learning about the beliefs and intentions of the other members in the conversation.

So, what if that also shapes the way language learning happens? That is the idea. So, there are these two powerful theories that have been proposed: the socio-pragmatic factor and attentional learning that we have just seen. A socio-pragmatic account was given by many people, but primarily by Bruner, Tomasello, and some others. So, the idea behind this theory is that children do not need linguistic constraints; rather, they are guided by what others are trying to say. It is not a linguistic constraint, but rather the communicative intent of the people who are talking to them or who are around them.

That is the idea. So, in other words, they call it social cues. So, social cues, or clues, you can call them as well. So, these are the cues that help them learn the meaning of new words rather than an innate kind of linguistic constraint. So, what is the social cue? A social cue is basically something that is part of any kind of conversation setup.

So, when we speak, we not only use words, but there are also a lot of non-linguistic factors that are part of any kind of conversation, any kind of speech scenario, so to say. So, according to this theory, those extra linguistic or non-linguistic cues are adequate, rich, and diverse. They are good enough to help the child pick up the meaning of a word, which is the idea. So, such cues will be utilized and automatically will be used by the children to work out the meaning of a word. So, what are those cues? For example, looking at the object, gesturing to it, or even using facial expressions.

So, when we are talking about any object, typically we will look at that object; sometimes we might even point to the object, and so on and so forth; facial expressions will change. So, these are things that accompany any kind of speech scenario; they might be different from culture to culture, but they do exist in every culture. So, that is what Bruner and Tomasello have talked about in terms of social cues, and this is what they pick up. So, in order to make use of these social cues, children have to engage in two cognitive tasks. One is to establish joint attention and understand the speaker's communicative intent.

When we talk about joint attention, remember we talked about two kinds of joint attention: one was initiating, the other was responding. So, both of these are crucial in understanding social cues in order to understand word meaning. So, even though I have written here about establishing joint attention, it is understood that we are also talking about responding to joint attention. So, both IJA as well as RJA will be utilized. The second is to understand the speaker's communicative intent: what is the person trying to say.

By that, we have seen that children from a very early age are capable of, you know, understanding what the other person is probably thinking or how to attract the attention of

the other, and so on; building blocks of the theory of mind, if you remember. So, those things are already in place, and that is why they say that because the child is already growing up with all the required cognitive mechanisms in place, they should be good enough. You do not need linguistic constraints to help them out. Now, let us see some examples. So, a child is playing with a pet dog when the mother says that it is a dog.

The child will not need any other kind of constraint, but they will actually use joint attention by turning her gaze to the referent because the mother, when she says it is a dog, is probably looking at the dog. So, the child will also look at the dog, follow the mother's gaze, and look at the dog, and this is how they will be responding to joint attention and thereby mapping the word onto the referent immediately. They do not need any other kind of cue. So, simultaneously she will also read the mother's intention to name the entity. So, while the mother says that it is a dog, she means that this is the name of that entity.

She does not mean to take the dog outside for a walk, for example. So, these are the two things that the child immediately picks up in this scenario. So, one famous example, a famous experiment that has looked at this particular idea is called the Toma experiment. This was reported by Baldwin in 1991 and 1993. So, this experiment shows that children do use social cues to learn novel words.

So, they were given a toy in the experiment; the scenario went like this: the children were given a toy, and the experimenter also had another toy in her hands. Now, they created two kinds of condition. In one condition, which is called the joint attention condition, half the children were made to take part in that condition, while the other half of the children participated in the normal other kind of discrepant conditions. So, in the joint attention condition, what happened was the experimenter waited until the child and she were looking at the child's toy, and then she labeled the child's toy as "it is a Toma." So, both the child and the experimenter have a toy each in their hands, but in the joint attention scenario, they both looked at the child's toy and called it, "this is a Toma; it is a Toma.

" So, basically, the child's toy is called the Toma. In the other condition, the same thing happens with everything remaining the same, but the child is looking at her own toy, the experimenter is looking at her own toy, and then the experimenter calls her own toy "a toma." So, in both situations, there are two different entities that are referred to as the Toma. This is the first phase. In the second phase, children were shown both the toys and asked "where is Toma?" Children 18 and 19 months old, but not younger, from both conditions identified the Toma correctly.

So, whether they were attending to it or not, the children could identify the Toma correctly in both conditions. So, what does this mean? This means that children could identify

objects by simply paying attention to them, even if they are not overtly attending to them, and they could still name the object correctly, which means that even if they are not overtly attending to it personally, they are aware of what is happening. So, this is one proof that was given for this theory. Another domain that this theory explains very well is the area of verb learning. We have seen that most of the cases we are talking about, nouns like "dog" and "table," and all these examples we have already given, but in the case of verb learning, it is a little tricky.

Also, many languages have shown that children learn nouns first, including English, American English, and other languages as well. So, what makes learning verbs a little tricky is that it is very short-lived. Verbs refer to actions. Now, those actions are short lived.

It is not sitting there. So, for example, you show that this is a toy. The toy is there. It is going to be there until you remove it. But did you play? The playing thing has happened; it is gone, done, and dusted. So, this is a short-lived and very intangible sort of thing.

So, that is why researchers say that verb learning is a little tricky affair, and finding out how they learn the verbs is also, again, a tricky affair. So, most of the time when children hear a verb, the action is not exactly 'being performed'. So, for example, you are eating, I am running, etc. Typical sentences that mothers will use with children will be something like this: "Have you eaten your dinner?" in which case this is talking about a completed action. Let us play with the toys; this is a plan and anticipation of playing that will happen, which is not happening right now.

Also, we are going to Grandma's house, so that is anticipating an action, and so on. This is how typical sentences are. Thus, the mothers use verbs to either request the child to complete an action, anticipate an impending action, and so on, rather than doing an action and saying, "This is what it is." So, for example, this is playing, this is running, as opposed to this is a toy, this is a book kind of thing. So, that is what we meant when we said that it is intangible and typically it is not talked about when it is happening then and there.

But children do learn verbs; we all know that. So, how do they learn? Now, this theory says that we have an answer. What is the answer? The answer lies in the intention of reading. What is the person trying to say? The other person, whatever action they are referring to, has an intention that the child can read. So, they can actively monitor what the other person's intention is.

Now, there is this famous experiment called the widget experiment that showed how it is done. This was done by Tomasello and Akhtar in 1995. So, the scenario was like this: The experimenters created a novel apparatus, a new thing that the child had not seen before,

where a toy spun around on a turntable. That is the toy; it is a toy. And children saw the event and heard the experimenters say a sentence that would either refer to the toy as "widget" or the action "widge it."

" Very slight differentiation depending on the kind of action. So, what kind of actions are there? The experimenter created two different kinds of social cues. In the first case, action highlighted condition. The action highlighted the condition in which the experimenter was preparing the toy, the turntable. So, she was readying the experiment for action; then she placed the toy on it and alternated her gaze between the toy and the child.

So, she was making that toy ready for play, then looked at the toy, looked at the child, and said the sentence, "widget or widge it." In the object-highlighted condition, this was a different kind of condition where the experimenter picked up the toy, alternated gaze between the toy and the child, and simply said "widget" or "widge it." So, there are two different cues and two different kinds of outputs that the child saw and heard. So, this was the test; this was the planning stage, the first stage. In the test phase, they were asked a question: can you show me the widget or widget it? The result showed a mapping between the conditions and the response.

What do we mean by that? Children in the action-highlighted condition were more likely to demonstrate the action. So, what can you show me about the meaning of the widget? So, they will actually play out the action because they have seen the action happening. In the other case when they were in the highlighted object condition, they did not favor the action. So, it was concluded that the socio-pragmatic cues provided by the experimenter were responsible for the result because the child was able to read the intentions of the other person. Now, the third advantage of the socio-pragmatic theory explains the cross-linguistic differences in word categories.

We have already seen the difference between Korean and English prepositions. So, in English, "in" and "on" do not have an equivalence in Korean; rather, they have a tight fit versus loose fit kind of distinction. So, if the child pays attention to the language around her, it does not need any universal biases because it is a sociopragmatic theory. So, you are looking at what other people are doing, and you simply understand what to do. So, you do not need any universal theory for that.

So, there is evidence from different cultures in one interesting study that was reported on particular people, the Kaluli people from Papua New Guinea. Now, these people in the world have different kinds of cultures; not every culture has the same kind of, you know, activities around a child. In the western scenario, the adults typically tend to include the child in the conversation, even if they are not able to converse per se; they are included

because they are, and they are also persons; they are also part of the entire scenario. So, that is how it works, but in many other cultures, that is not how they think. For example, these particular people think that children have no understanding of the world around them.

So, there is no point in including them in the conversation at all. So, as a result, they do not engage children in any conversation. So, however, does it mean that they do not learn language? They also learn language perfectly well because they are able to tune in to the adult conversation that is happening around them. Even if there is no focused and child-directed speech in that environment, they still pick up the language because they are attending to the social cues around them; they are attending to the other people talking. So, by tuning into that conversation, these children are able to learn about words and their mappings from other people talking about people, events, objects, or whatever.

So, that is one of the kinds of proof in a cross-linguistic setup. Criticisms have also been present for socio-pragmatic theory. For example, they have given two primary arguments. Argument number one is that social learning cannot be the whole story. If you depend only on social learning, you probably do not get the entire picture because word learning can take place without social scaffolding.

That is point number one against this sociopragmatic theory. Point number 2 is that we do not need socio-pragmatic skills to explain word learning altogether. So, previous theories have said that we do not need linguistic theories. Now, this criticism of the theory says we do not need socio-pragmatic theory.

So, let us unpack argument number 1. Argument number 1 basically says that children are capable of learning words before their ability to read the intentions of other people is in place. Now, this ability to read intentions develops over a period of time. It is not very early in life. But we have already talked about the MacArthur Communicative Developmental Inventory. So, that is what was used as an example of language word learning preceding the ability to read others' intentions.

So, this inventory assesses the language abilities of infants and children through developmental stages. So, in this study, in the particular study by Bates et al. (1994), they reveal that 8-month-olds understand 30 words, some even 90 words; we are talking about comprehension. So, even at that age and at that layer of developmental stages, they are able to comprehend so many words, and that is not the stage where the theory of mind, joint attention, or understanding others' intentions has been completely developed. So, which means that this is not necessary for understanding words or following the words.

And then similarly, similar findings have been reported from other kinds of language; for

example, there is something called baby sign. Baby sign is kind of a fun sub-part of sign language that is typically used with babies and small children. So, babies who were taught baby sign language could produce signs for food, drink, and activities at 6 months. Again, the stage where their ability to read the attention of others is not entirely in place. So, they have not yet fully developed it because this development occurs between 9 and 12 months.

So, they must have other means to learn words. Similarly, data from autistic children have also been used as a counter to the argument that autistic children find it very difficult to assess social cues. In fact, one of the most important signs of children belonging to the autism spectrum disorder is that autistic children neither initiate nor respond to joint attention. Now, here they should that means they should not be able to learn any language at all. Of course, there is a language delay among autistic children, but some children do learn to speak, and some children are also good at language. How is that even possible? There should be no autistic children should be able to speak if this was dependent entirely on the socio-pragmatic cues.

So, in the lab-based study, one very important finding showed that children with autism consistently picked up an interesting object as the referent of a novel word, in spite of the experimenter clearly signaling something different, which was a boring object, as the intended referent. So, this is just one example, but we have more examples like this where children belonging to the spectrum refuse to attend to the same thing that the other person is attending to, even after clearly signaling what the referent is. However, in the real world, children with autism are also found to learn words, sometimes even at par with TD children; TD refers to typically developing children. So, sometimes some children on the spectrum actually do master language alongside many other children. So, sometimes now when we talk about autism spectrum disorder, it is a spectrum.

So, there are different, you know, stages of the disorder; some people might have a very severe case, while others are more mild, and so on. So, the mild patients typically do not have much difficulty with language, but even when there are severe socio-pragmatic difficulties among them, language development has been observed. So, this sociopragmatic theory does not answer that. So, as a result of this, this theory needs a relook; that was argument 1. Argument 2 is that we do not need sociopragmatic skills to explain word learning at all.

For example, Samuelson and Smith cited an influential study by Akhtar and group that was used as proof of sociopragmatic bias. So, one particular very interesting study we will look at shortly. So, that study was used as proof for sociopragmatic learning and sociopragmatic scaffolding. But according to Samuelson and Smith, they said that the same information and the same study can be interpreted very differently. It need not be

interpreted in terms of sociopragmatic cues, but it can be interpreted in terms of a general-purpose cognitive mechanism.

So, let us just see what the experiment is. So, this was the actual experiment by Akhtar, Carpenter, and Tomasello (1996). What happened was that in this case, there were again two phases: the training phase and the testing phase. In the training phase, there were four people: two experimenters, the child, and the child's parent; only one parent was there, who played with three novel objects, which were all unfamiliar to the child. Then, after playing for some time, they sat on the floor and played with three objects. After some time, Experimenter 1 leaves the room along with the parent.

So, two people leave the room. Now, the child and the experimenter B are left inside the room. They are playing; they are still playing. While those two people are outside, experimenter B introduces a new object to the child and places all four objects in a transparent box, so that you can see the contents of the box from outside. After some time, the experimenter A and the parent return; upon returning, the experimenter A exclaims, "Look, I see a geyser, a geyser!" This is what the experimenter says: before this, none of the objects had a name; none of the objects were called anything; the child had no name and no label for any of the objects. Now, what happened was that in the test phase, children were asked to give me the geyser.

All children preferred the fourth object as the referent of the word. Now, the authors claimed that Tomasello's group stated that because the child understood it, the child knew that it was the experimenter B who was talking about the fourth object, as the children were interpreting the experimenter's intention since the experimenter was outside the room when the novel object was introduced. So, naturally, this is the thing that they were finding novel, as a result of which they would have exclaimed, " I see a geyser." Remember our Anne and Sally experiment; this is somewhat similar, and this was taken as proof of interpreting the experimenter's intention and, as a result, sociopragmatic theory. However, Samuelson and Smith said that this could be interpreted quite differently.

The result is just a matter of interpretation. We can interpret the whole thing very differently. So, they argued that the children were influenced by the novelty of the events surrounding the introduction of the fourth object rather than by the other experimenter's intention. So, the first three objects were introduced in the same context when they were all sitting on the floor and playing together. The fourth object was introduced in a different setting, with one adult sitting at the table. So, as a result, it is the context that combines with the preference for leveling the novel object with the novel word.

So, they concluded that the children attach a new label to the new object because of the

changed context in which that object was introduced. So, it has nothing to do with the children's sophisticated ability to read the intentions of the experimenter. So, to prove their point, they did the experiment again, but with some minor changes to check if their hypothesis held. So, in the new version of the experiment, what they did was that experimenter A did not leave the room. So, thereby you cancel out Experimenter A's intentions, beliefs, or novelty of the situation for Experimenter A.

Experimenter A sits there in the same room. However, the fourth object was introduced in the presence of A, but in a new setting. So, here also the setting within which the fourth object was introduced is new; it is not the same setup. So, what did they do? The new setting was added in the sense of sitting at a table that had a brightly colored cloth. In the first scenario, they were first sitting on the floor and playing, and then the fourth object was introduced by being placed on the table, which had a brightly colored cloth.

Children still preferred the fourth object as the geysir. And thereby they proved that it is because of the context rather than the experimenter, because in this experiment, the experimenter did not leave the room. So, they said that this is a case of cognitive bias. However, the story does not end here. There have been many other studies, many other counterexamples, and also some other studies favoring them, and so on.

There is a lot of other work that has followed. But you get the baseline understanding of what the main theories are and how they were countered. Now, let us move on to the attentional learning account by Samuelson and Smith, because based on their findings and the way they countered the previous findings, they came up with the attentional learning account. This account puts the child's cognitive abilities at the center of the learning process. So, nothing about the social cognitive cues, but the ability of the child himself or herself; the ability is cognitive abilities.

So, one such ability is the associative learning ability of children. What does that mean? Associative learning ability means that if two things co-occur a sufficient number of times, then you understand to code them similarly. So, this kind of creates a prediction for that name to occur with this object. So, for example, if the word "book" occurs in the presence of the same particular kind of shape of an object, then the child will eventually learn what it means. So, every time you see a book, you call it a "book." So, over a period of time because of this constant co-occurrence, they will learn that this is how it is, this is how the mapping is done.

So, eventually, they learn to associate the shape with the word. Now, what does this depend on? This ability is not dependent on any specific word learning mechanism, but it is based

on general-purpose processes of perceiving, remembering, and attending. This is how they put it. So, within this theory, there are three general processes that are considered important, along with associative learning. So, attention mechanisms, memory, and cross-situational learning.

Cross-situational learning is very interesting; we have seen this before as well. So, when you can map across contexts, then you are able to understand how the words map onto different kinds of context. So, for example, let us go back to the little girl again with her pet dog, with her mother saying that this is a dog. Now, the attentional learning theory would predict that the girl will associate the word with the object because the object is the current focus of the conversation and is the focus of attention. So, we are attending to something; whatever we are attending to is the focus of attention because the child is aware of that; thereby, she learns. Eventually, she learns to extend the term to other members of the same species through a kind of shape bias; however, according to this theory, this bias is not innate, but rather learned through the child's exposure to different kinds of scenarios.

One very interesting study that provides proof for this theory is by Smith and Yu. Here they looked at children who were 12 and 14 months of age, and they showed that even children this small can use cross-situational learning; this is central to the attentional learning theory. So the experiment went like this. In the training phase, children saw pairs of pictures of objects and heard a name. So, two objects appeared at the same time, a pair of objects came at the same time, but they heard only one name. For example, they had a star-shaped object and a square-shaped object, and they heard the word "bosa.

" Then, again, these pictures went, and then another pair appeared, in which case there was a star-shaped object alongside a round-shaped object. They heard the word bosa again. This is some sort of a logical reasoning test. So, star and star come along with a square, then star comes with a round.

You are hearing the same words. So, you all automatically know which is what Bosa is referring to. In the third stage, this is again a training stage continuing; they see a square and a round object, and now they hear a novel word called "geyser, geyser, geyser"; they hear this new word. Now, none of the training trials provided adequate information about the exact name of each of the objects. However, because if the child remembers across contexts, they will be able to easily figure out what the word bosa or the word geyser refers to.

So, this is the idea. So, in the test phase, they were presented with a novel word and two objects: one target and another a distractor. Children looked for a significantly longer time at the target object, showing recognition. So, basically, they found proof of children being able to map things across contexts and thereby prove the theory. The next theory is about what is called syntactic bootstrapping theory.

This theory says that all previous theories are good. They are not denying any of the theories. They said all are good. However, in the case of verbs, we need a separate theory. All other theories may be good for nouns, but for verbs, we need a syntactic theory. Because children need to pay attention to the syntax and the entire sentence structure in order to understand the real meaning of verbs.

So, we have already seen why learning verbs is a problem. So, this is what they were trying to address. Now, this is a study carried out in 1999, and many others followed, but this is one of the most important. This is how the study went. Adults were shown a number of videos of mothers and children playing, and the audio was turned off.

So, they could not hear what the mother was saying to the child, but they looked at the video. The task was to identify the word the mother was saying at a particular point indicated by a beep. So, it was all audio that was not there. So, there were beeps in certain cases, and wherever there was a beep, the person was supposed to say what the mother was saying to the child. Now, each word occurred 6 times in different situations thus giving adequate clue about them. However, the result showed that only 45 percent of nouns and 15 percent of verbs were identified by the participants.

Now, this study was carried out on adults. So, in spite of giving an adequate amount of cues, the participants could not understand the verbs correctly most of the time. So, 85 percent of the time, they failed. So, they concluded that simply observing words paired with events across multiple situations is not really good enough. So, since we do learn verbs too, this means there is a way out; that way is syntactic bootstrapping.

So, what does syntactic bootstrapping do, basically? It does this in different kinds of situations. For example, verbs referring to events having only one participant tend to occur in sentences with only one noun phrase. So, the examples are like "I sleep," "I walk," etc. In such a situation, in this kind of sentence, the verbs will have, if there is only one noun

phrase, typically an intransitive verb. So, sleeping, walking, and falling are all intransitive because you are, I fail, I walk, and I am doing the one; there is no other object, and there is no direct object involved. Similarly, verbs that need two participants, where one participant causes something to happen to another participant, are when we have something like a transitive verb.

So, sentences would be like, "I read the book." So, I am the subject, the book is the object, and then read is the transitive verb here. The third possibility is when the verbs denote a transfer of an object from one donor to a recipient. So, I gave the book to Mohan. So, there are two objects here: the book and the person to whom I gave it.

So, this is called a ditransitive verb. So, until you have been cued into the sentence structure, you will not know the differences among these verbs. So, for example, upon seeing a dog chase a cat, the mother says the dog is glorping the cat. So, in this kind of scenario, the child will understand the meaning of glorping as it refers to the activity that the dog is involved in right at that moment, not the cat. So, meaning it means chasing and not fleeing.

So, as a result, the meaning of the entire word is arrived at by looking at the full sentence. The dog is glorping the cat. So, in order to understand that you need to just understand the meaning of glorping, you need to understand the sentence, and the sentence in turn helps the child to learn the meaning of the word. So, this is called syntactic bootstrapping. However, this has also faced a lot of criticism; one line of criticism is that even at 3 years old, children cannot understand the meaning of words by just hearing them in a sentence because sentence acquisition happens a little later, and so even at 3 years, they are not expected to learn them through sentences.

So, as a result, we come to the end of lecture 4, but we are still not sure what is happening. So, we have seen various kinds of theories, and each theory seems to have some sort of support from data, as well as some problems with that kind of idea and that kind of hypothesis. So, there are some criticisms for each. So, to solve the problem, we will try to look at yet another theory in the next segment. So, this is where we complete our lecture 4. Thank you.