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COMMUNICATIVE COMPETENCE AND THEORY OF MIND*

Verbal communicative competence (VCC) is defined by Hymes (1972) as the competence of language use appropriate to other participants of the communicative interaction, and appropriate to the given social context and situation; and the theory of mind (ToM), according to Premack & Woodruff (1978), relates to the ability (not always conscious) of an individual to impute mental states to him/herself and to others. Several authors (e.g. Tomasello, 1999) treat ToM as the biological endowment of our species enabling the development of human culture. Since I am interested here in *v e r b a l* communicative competence, some comparisons with language competence (LC) (in Chomsky's sense) are in order. The latter is defined as the speaker/listener's tacit knowledge of language structure, which enables him/her to generate and understand the sentences of a given language. Another related term is Universal Grammar (UG), which is defined as the general rules of language grammatical structure common to all natural languages, and innate to the human mind. There are some arguments to treat UG as the biological underpinnings of LC. The problem arises as to whether UG is also the underpinnings of VCC. Several reasons are presented for the thesis that the more appropriate endowment for the developing of VCC during the process of socialization is ToM.

Introduction

The main aim of this paper is to explore the relations between two notions of great interest in contemporary psychology, namely, *communicative competence* and *theory of mind*. The two notions originated in different domains of psychology and at different times. The former became a very useful term in psycholinguistics in the early seventies and is responsible for one of the main shifts of interest in psycholinguistic research (especially in developmental psycholinguistics) from the focus on grammatical abilities of very young children to their abilities

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for language use. Since then the pragmatic aspects of language use have begun to be more salient and more important for psycholinguists as the object of their studies.

The notion of communicative competence is broader than just verbal communicative competence (nonverbal communication has been studied also very intensively) but my interest in this paper will focus only on verbal communicative competence and on its relation to the notion of language competence from which it originated.

The second notion (theory of mind) is a newer one at least in relation to the interest it evokes nowadays. First introduced in the late seventies in the domain of comparative studies, the theory of mind has since been popularized by developmental psychologists interested in tacit theories of the human mind as well as in the notion of intersubjectivity. Howard Gardner in his work on multiple intelligences made use of the notion of the theory of mind, and researchers on autism have adopted it as the guiding idea of their studies.

My aim in this paper will be to make some comparisons between the two notions. But, first, some remarks on the relation between verbal communicative competence and language competence since interest in the former derived from interests in the latter. The question is: are they really so closely related that we can find and study their common biological endowment? Must someone who is good in one of them be good in the other? My main argument in favor of the special connections between communicative competence and theory of mind will come from a case study of a savant who was excellent in his language abilities but poor in communicative ones and was diagnosed as autistic. Let us start with the definitions useful for my arguments.

Definitions of main terms

First I will present the definitions of the two main terms and then some related terms which will be used in the paper.

Communicative competence (CC) was defined by Dell Hymes in 1972. In his own words, it is competence for language use and not only “the tacit knowledge of language structure” in the Chomskyan sense. It is competence of language use appropriate to the other participants of the communicative interaction and appropriate to the given social context and situation.

The term *theory of mind* (ToT) was introduced by David Premack and Guy Woodruff in 1978 and according to them: “to say that someone has a ‘theory of mind’ means that this ... individual imputes mental states to himself and to others” (p. 515). Later, this “theory” became one of the layman’s tacit kinds of domain-specific knowledge or “theories”, (e.g. “tacit theory of physics”, “tacit theory of biology”) (see Hirschfeld & Gelman, 1994; Bartsch & Wellman, 1995). In terms of speech act theory, one understands other people’s intentions and can express one’s own.

Since the definition of communicative competence was introduced in opposition, or rather as complementary, to Noam Chomsky's theory of language (or linguistic) competence, let us introduce two other related terms: language competence and Universal Grammar.

Language competence (LC) in Chomsky's terms (1965) is an ideal speaker/listener's tacit knowledge of language structure which enables him/her to generate and understand the sentences of a given language. The term language competence has been replaced in Chomsky's writings since the 1980s with the term Universal Grammar.

Universal Grammar (UG) is understood in most writings on this topic as the general rules of language grammatical structure common to all natural languages and innate to the human mind. In particular natural languages UG is realized through the application of universal linguistic principles which are differently arranged on a set of parameters. These parameters are called by Mark C. Baker (2001) the atoms of language.

How are these four terms related to each other? That verbal communicative competence must somehow be related to language competence and, by extension, to Universal Grammar, seems obvious. But what about the theory of mind? I will try to show that all these relations are not obvious and I will try to find other possible connections.

Communicative competence versus language competence: Do they have a common species-specific endowment?

Since verbal communicative competence (VCC) which may be treated as human competence to interact with other people through the medium of language (and this interaction should be appropriate to its participants as well as to the context situation) is by definition related to language competence (LC), let us examine to what extent they share common neuropsychological grounds.

I consider LC to be a very useful term to describe the human capacity or ability to produce and understand sentences of the ambient language/s spoken in a given environment and, at the same time, I see UG as the human species' specific endowment for this capacity.

UG constitutes the necessary and sufficient condition for LC to develop in human beings. So $UG \rightarrow LC$.

If we treat VCC as just (a) a more elaborated form of LC, then $UG \rightarrow VCC$. But if VCC is (b) an independent form of human kinds of competence, then $? \rightarrow VCC$. In other words, what constitutes the underpinnings of VCC? This is the main problem of this paper.

Let us start with some remarks concerning the evidence about the innateness of UG in the sense of being a good candidate for the biological endowment for special capacities.

Evidence for the innateness of UG

The acquisition of language by small children is extremely quick and effective in view of the complexity of the task. This statement had become a leitmotiv for the early developmental psycholinguists and for their great effort toward the discovery of a language specific device.

If we compare our own, and even many three year olds', ease of talking with what emerges from the linguistic analysis of language components that each of us has to take into account while speaking, the task looks really very hard. And if we acknowledge that nobody really teaches children explicitly how to use those components, it is even more amazing. From the analyses of so-called negative input (the degenerated sort of language any child receives) and the so-called baby talk of mothers to their children, the child's task looks still more difficult. So the thesis of special linguistic prerequisites sounds convincing and we might call these prerequisites Universal Grammar.

Deaf children of hearing parents create their own sign language consistent with UG rules (Goldin-Meadow & Mylander, 1990). When hearing parents insist on using their spoken language in communication with the deaf child, that child tries to invent a kind of personal sign language (instead of the one used by the larger community, e. g. American Sign Language, Polish Sign language, etc.). Susan Goldin-Meadow studied the structure of several such cases and was able to detect the presence of rules in those signs and not only a list of sign-object connections.

Localization of the speech centers in the brain is in the left hemisphere in the majority of people. Injury to these centers causes aphasia. This fact was already documented by Broca and Wernicke in the 19th century and for years was used as the main argument for the language innateness hypothesis. This hypothesis was reinforced by the fact that the sign language of deaf people who used it for communication was disturbed in the same fashion as spoken language after injury of the same centers in the brain of a deaf person.

A special gene for speech production (FOXP2) has recently been discovered (Lai et al. *Nature*, 2001). This gene was also discovered in a much lower species, namely mice, but what is stressed by those who made this discovery is that the gene observed in humans constitutes a mutation of the one found in the mice genotype. As a non-specialist in the domain of genetics I will refrain from any further comment on this topic.

A specific language impairment (SLI) has been identified in one family which was transmitted through its members according to Mendel's laws of heredity (M. Gopnik & M. B. Cargo, 1990). Despite some criticisms of the methods used in this study, further investigations have confirmed the first results (M. Gopnik, 1999).

What is interesting here is that children with SLI usually do not have communicative problems in their social settings. Their articulatory apparatus and sensory modalities may be intact.

According to the modularity approach to mind, UG constitutes a separate module, independent, for example, of intelligence (people with a very low IQ can acquire language). Let us see how this problem has been resolved in the literature.

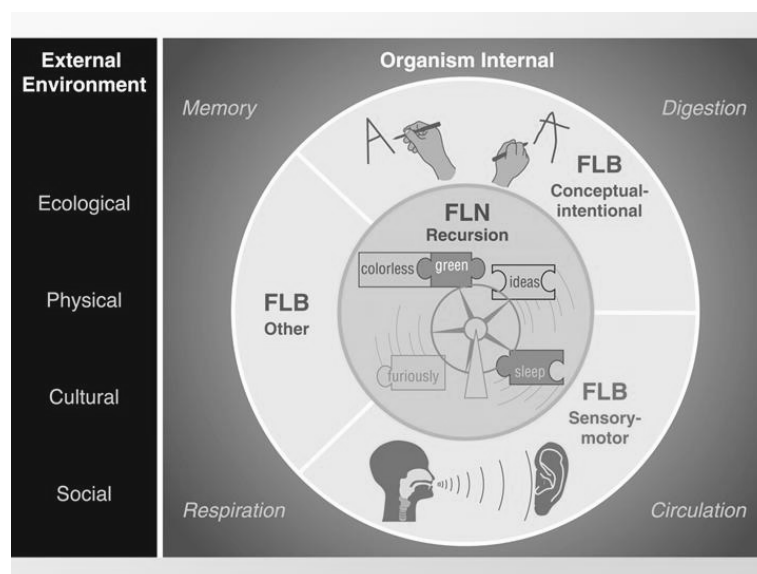
The language faculty in narrow and broader senses

I have chosen for the purpose of comparison to my thesis here the article by M.C. Hauser, N. Chomsky & W.T. Fitch, entitled “The faculty of language. What is it? Who has it? How did it evolve?”, *Science*, 2002. These authors tried to find an answer to my problem but stated it differently, namely, how the language faculty in the narrow sense (FLN) – which they identify with UG – is related to the language faculty in the broader sense (FLB). Within FLB they distinguish several different systems, among them, the sensory-motor system for speech perception and production, and the conceptual-intentional system (see Figure 1).

The authors posed two questions:

- Are these two faculties dependent on each other, i.e. to what extent do disturbances of one faculty involve the other?
- Are FLN and FLB specific to *Homo sapiens* or can they be observed in other species?

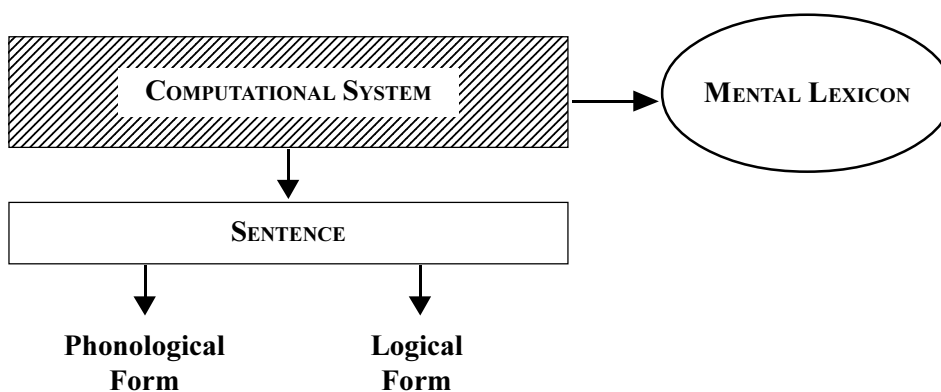
Figure 1. A schematic representation of organism-external and -internal factors related to the faculty of language. FLB includes sensory-motor, conceptual-intentional, and other possible systems (which we leave open); FLN includes the core grammatical computations that we suggest are limited to recursion [Reprinted with permission from Hauser et al., *Science*, 2002, vol. 298, p. 1570 (Fig. 2). Copyright 2002 AAAS]



The language faculty in narrow sense

FLN (language faculty in the narrow sense equated by the authors with UG) which is governed by the recursion rule, is illustrated in the diagram (Fig. 1.) by the particular elements of the famous Chomskyan sentence: *Colorless green ideas sleep furiously*. This means that FLN is identified with the syntactic component of LC which is able to generate the above kind of sentences but not : *Sleep ideas green furiously colorless*.

What about the semantic and phonological components? Are they not included in FLN? But in *The minimalist program* (1995; the latest presentation of UG by Chomsky) he describes UG in the following way:



The Computational System realizes not only the task of the old syntactic component, but also the tasks of the semantic and phonological components since it operates on the entries of the Mental Lexicon, and all the necessary semantic and phonological information is included in each entry plus some formal features (like the grammatical category of the entry, the possible connections with other grammatical categories, and so on).

There are only two main general rules operating in the Computational System, namely, **Merge** and **Move**, and these are able to realize all the universal principles of UG.

Let us however treat FLN in its full structure and its illustration in the diagram as a form of simplification. What kind of answer could be given to the authors' two problems:

As concerns problem 1. (to what extent FLN is independent of FLB), it has already been mentioned that disturbances of FLN in the form of SLI (specific language impairment) are independent of the sensory and motor systems of speech perception and production and that the communicative abilities of SLI children could remain intact.

As concerns Problem 2 (could other species acquire FLN), all the evidence from primates learning natural human language is negative. They could learn some artificial languages (Premack, 1971) and could acquire even more than 300 different signs of ASL but are unable to use any grammatical rules (Terrace, 1979).

The authors of the article under consideration give a similar answer. They treat FLN as an independent faculty (module?) within a larger system of FLB and specific to *Homo sapiens*.

The language faculty in broader sense

FLB is composed of FLN as well as of the sensory-motor and cognitive-intentional systems. If the same questions (Problems 1 and 2) were posed in regard to these two kinds of systems, what could the answer be? Let us start with the sensory and motor systems.

As concerns Problem 1: Are the sensory and motor systems of FLB independent of FLN? I think they are even independent of each other. They are not dependent on speech perception or on a particular sensory channel (deaf people acquire sign language), nor on the articulatory channel (people can use a different channel in speech production, i.e. writing – casus the great philosopher and physicist Stephen W. Hawkins).

As concerns Problem 2 (specific to *Homo Sapiens*): In most of the writings concerning this problem, both speech perception and production have been treated as specific to human beings. For example, the categorical perception of vowels (data from Haskins Laboratories) was attributed for many years only to humans. And the pronunciation of all possible phonemes can be realized only by the human larynx. Recent studies show, however, that categorical perception is a much broader phenomenon. It can be observed in other speech sounds and in music tone discrimination as well. As concerns the special “human larynx” abilities, it is still assumed that only humans (in comparison with other primates) possess them but language does not have to be exclusively spoken. It can be signed.

According to Hauser et al. the perception and production of language is not human specific. Some birds (one of the authors – W.T. Fitch – is a specialist of bird song) can perceive vowels categorically, and several birds (like parrots) can produce human-like sounds. So now only the use of grammatical rules is regarded as uniquely human.

What about the conceptual and intentional systems of FLB? Again I prefer to treat them separately. As concerns problem 1, in relation to the conceptual system of FLB it is independent of FLN in the sense that, for example, children with a very low IQ, like children with Williams syndrome, can acquire language with its grammatical rules. FLN can manifest itself independently of the cognitive abilities of a given individual.

As concerns Problem 2, many other species share with humans the ability to treat the world categorically and can solve even very difficult problems. It is only

a matter of degree. The answer given in the article under consideration is (Hauser et al.) in full agreement with what has been stated here as to the cognitive system. But what about the intentional system?

As concerns the intentional system, problem 1 (dependence of FLN) receives also a negative answer. Autistic persons who do not understand other people's intentions can acquire language. I will return below to this problem

Problem 2 (specific to *Homo sapiens*) cannot be so simply resolved. Our authors attribute some intentional abilities to other primates (like chimpanzees) but they have some doubts as concerns so-called "false beliefs". Let us explain the role of the "false beliefs" task in the intentional system of FLB.

The "false beliefs" of the intentional system

If I share a common belief with another person that a particular object is located in some hidden place and this person leaves the room, and a third person comes and changes the location of the object, what should I expect to be the belief of the first person when she returns to the room?

If I think that she will look for the object in the first place, I have the idea of "false belief".

If I think that she will look in the new location, I do not have this idea. I do not realize that he/she was not able to observe this change of location of the object.

And this is only the second degree of intentionality = I think that you think that...

The first is – I think that..., the third is – I think that you think that she thinks that... We are able to pursue without error to the fifth degree of intentionality.

We have already stated that FLN is uniquely human and that the intentional system of FLB is independent of FLN, at least their disturbances are independent. The problem still remains: can other species show intentionality. There is a great debate on this topic and I will return to this particular problem below. First, I will present some more details concerning the notion of the theory of mind since intentionality and theory of mind are strictly interrelated.

Theory of mind in relation to communicative competence

The theory of mind or mindreading, or the second level of intersubjectivity, is treated by most authors as one of the domain-specific naive theories among the several kinds of knowledge in human minds.

The notion of *intersubjectivity* was introduced by Colwyn Trevarthen in 1979 (a similar notion of *shared attention* was introduced by Jerome Bruner). Primary intersubjectivity refers to the abilities of the newborn (between birth and 9 months) to share attention and to interrelate their emotions with adults in protodialogic exchanges.

Secondary intersubjectivity (developing between 9 and 12 months) is also based on joint-attention abilities – making eye contact interaction, showing objects to others and following the gaze of an adult to share his/her interest in a particular object or event. At this stage some speech acts in the form of protoimperatives and protodeclaratives emerge, so the communicative abilities of the child grow in a significant way. The notion of intersubjectivity is in first place addressed to the emotional sphere of child development.

The *theory of mind* (or its synonym *mindreading*) refers rather to the child's cognitive development. Its proponents – Uta Frith, Michael Tomasello, Henry Wellman – place the starting point of its appearance between 9 and 12 months. They emphasize how sharing the focus of visual attention with others provides the infant with “a sort of window into the other person's mind”. In this approach ToM is one among other domain-specific forms of naive theories built in the human mind. This means that human beings *are able to impute mental states to themselves and to others*. If they aren't, they are diagnosed as autists. The above described “false belief” test is used to diagnose autistic children.

As already mentioned, the term itself and its definition were introduced by David Premack & Guy Woodruff in 1978 in their article entitled *Does the chimpanzee have a theory of mind?* (*The Behavioral and Brain Sciences*, 4, 515-526). Well, according to the authors, it does to some degree.

Michael Tomasello (1999), however, is not so ready to share ToM with other primates. He treats this ability as a specific endowment of *Homo Sapiens*. His studies on the behavior of chimpanzees as concerns intentionality showed that they are able to:

- recognize individuals in their social group;
- form direct relationships with other individuals based on such things as kinship, friendship, and dominance rank;
- predict the behavior of individuals based on such things as their emotional state and their direction of locomotion;
- use many types of social and communicative strategies to out-compete groupmates for valued resources;
- cooperate with conspecifics in problem-solving tasks and in forming social coalitions and alliances;
- engage in various forms of social learning in which they learn /through imitation/ valuable things from conspecifics (Tomasello, 1999, pp. 16-17),

but at the same time chimpanzees:

- **do not** point or gesture to outside objects for others;
- **do not** hold objects up to show them to others;
- **do not** try to bring others to locations so that they can observe things there;
- **do not** actively offer objects to other individuals;
- **do not intentionally** teach other individuals new behaviors (ibidem p. 21).

The 5th point is of special interest here, because the intentional teaching of younger generations is the crucial feature of the behaviors of humans who all over the world are occupied with passing on their knowledge to their children, praising them for being apprehensive and punishing for all signs of disobedience.

According to Tomasello (1999), the theory of mind (ToM) is uniquely human. He emphasizes the role of ToM as the main force in the development of all the child's social and communicative skills (including language competence (LC)).

I would like to treat LC and UG as somewhat independent of ToM in the sense of the independence of their disorders. SLI is a disorder of language competence (LC) and autism is a communicative competence (CC) disorder. The lack of ToM is diagnosed as autism. People with autism do not understand the beliefs and desires of other persons (they do not pass the "false belief" test); they do not understand indirect speech acts, irony, metaphors and so on. I will show later an example of such a case.

One important remark. The possession of ToM does not guarantee the possession of „good character". Howard Gardner (1999) in his theory of multiple intelligences introduced the notion of intrapersonal intelligence (understanding oneself) and interpersonal intelligence (understanding others) and related them to ToM. He noted that interpersonal intelligence could mean a very "good character" or an excellent manipulator of other people's desires and beliefs. The effective swindler or imposter is certainly well equipped with such mindreading abilities. He *does* understand other person's beliefs and desires but *does not* share with that person his or her feelings.

The Christopher case

This case is reported in the book by Neil Smith & Ianthi-Maria Tsimpli *The mind of a savant*, 1995. Christopher was studied by Smith and Tsimpli over four years in the 1980s. He knows (speaks, reads, and writes) 16 languages. His mother tongue is English. The 16 languages are the following: Danish, Dutch, Finnish, French, German, Modern Greek, Hindi, Italian, Norwegian, Polish, Portuguese, Russian, Spanish, Swedish, Turkish and Welsh.

The book contains the proofs of his knowledge of all the above mentioned languages. He is able to find the syntactic errors and other grammatical irregularities. In this respect he is especially good in English.

From among the 16 languages I have chosen examples of his knowledge of German, French, and Polish (Smith and Tsimpli, 1999, pp. 13-15). Christopher heard the passage in the given language and presented orally his translation into English. Between the passage and Christopher's translation an expert translation is provided.

Figure 2. Examples of Christopher's translations

FRENCH
Nous faisons pique-nique au bord de la route nationale qui s'étendait devant nous, toute droite et bordée d'arbres.
 [We were having a picnic beside the main road which stretched away in front of us, dead straight and lined with trees.]
We had a picnic at the route, at the board of the road, which ran behind us, straight and full of trees.

GERMAN
Wolfgang und seine Schwester machen einen Ausflug mit dem Zug. Sie wohnen in einem Dorf. Heute fahren sie in die Stadt. Sie gehen in ein Warenhaus. Wolfgang kauft ein Radio, Sigrid braucht eine Lampe für ihren Schreibtisch.
 [Wolfgang and his sister are going on an excursion by train. They live in a village. Today they are going to the city. They go into a shop. Wolfgang buys a radio, Sigrid needs a lamp for her desk.]
Wolfgang and his sister are on a . . . with the train. They live in a village. Today they go and visit a city. They go in a shop. Wolfgang buys a radio. Sigrid buys a lamp for her writing-table.

Polish
Musiałem go wrzucić do wozu siłą. Położył się na podłodze i zamknął oczy, nie chcąc widzieć, co go jeszcze czeka.
 [I had to throw him into the car with force. He lay down on the floor and closed his eyes, not wishing to see what awaited him.]
I had to take him out of the car strongly and put - he put himself on the floor and opened his eyes - and shut his eyes, not wishing to see what was waiting for him.

Despite all this knowledge Christopher is not able to live on his own in society. He is presented by the authors as a friendly person in good relations with his family but has to live in a special home for disabled people. His IQ is 60. He does not solve the "false belief" test. He does not understand irony and metaphor, nor does he possess a sense of humor.

Here are some examples of his interpretations of a few jokes (Smith and Tsimpli, 1999, pp. 76-77):

Figure 3. Examples of Christopher's interpretations of jokes

On the other side of the moon the Russian and American astronauts met, and said: 'Endlich können wir unsere Muttersprache sprechen'.

When asked why the astronauts spoke in German, Christopher replied "because they were on the moon", and ended saying that the story "doesn't make sense".

A Russian minister visits a car factory. The manager goes out of his way to show him around and at the end of the tour offers the minister a free car.

'Oh no,' says the minister, 'I can't accept it'.

'In that case I'll sell it to you for five roubles.'

The minister hands him a ten rouble bill: 'In that case, I'll have two.'

NS: Why didn't he accept the car?

C: Because it was only five roubles.

NS: But he then said he'd want to buy two. So why do you think he said that?

C: Because five roubles times two is ten roubles.

Castro visits Moscow and is taken on a tour by Brezhnev. First they go for a drink and Castro praises the beer.

'Yes, it was provided by our good friends from Czechoslovakia.'

Next they go for a ride in a car and Castro admires the car.

'Yes, these cars are provided by our good friends from Czechoslovakia.'

They drive to an exhibition of beautiful cut glass, which Castro greatly admires.

'Yes, this glass comes from our good friends in Czechoslovakia.'

'They must be very good friends,' says Castro.

'Yes, they must,' says Brezhnev.

We again interrogated Christopher about this story, and he was able to tell us without hesitation that Castro was 'the Cuban leader,' but probing about the punch line produced the exchange:

NS: Why do you think he says that?

C: Because they ARE very good friends.

NS: Why are they very good friends?

C: Because they live next door to Brezhnev.

NS: So why does that make them good friends?

C: Because they like each other.

NS: Is this a serious story or a joke?

C: It's a serious story.

Conclusion

Christopher as one of the savants is an autistic person whose extraordinary abilities for learning new languages do not go in par with his communicative abilities in those languages. He understands only the surface sense of the sentences and he is not able to recognize their indirect intentional meanings. In other words, he does not possess a theory of mind despite being quite well equipped with UG.

I think that the arguments presented above are in accordance with my thesis that, while Universal Grammar serves as a basis to acquire language competence (LC), it is not the necessary and sufficient condition to acquire verbal communicative competence (VCC).

So we can replace the question mark in ? → VCC with **ToM** (theory of mind):
ToM → VCC

The ideal communicator in any language should possess all the four above capabilities to the highest degree, with some dose of empathy to share also feelings with others.

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