



Andrej Stopar and Gašper Ilc

University of Ljubljana
Faculty of Arts, English Department

Language Impairment and Generative Analysis

Summary

This article deals with different types of language impairment from the perspective of generative grammar. The paper focuses on syntactic deficiencies observed in aphasic and SLI (specific language impairment) patients. We show that the observed ungrammatical structures do not appear in a random fashion but can be predicted by that theory of universal sentence structure which posits a strict hierarchy of its constituent parts. The article shows that while the hierarchically lower elements remain unaffected, the higher positions in the hierarchy show various degrees of syntactic impairment. The paper supports the implementation of recent developments in the field of generative grammar with the intention of encouraging further theoretical, experimental and therapeutic research in the field.

Jezikovna okrnjenost in tvorbena-pretvorbena skladenjska razčlemba

Povzetek

Pričujoči članek obravnava patološke motnje jezika z vidika tvorbeno-pretvorbene jezikoslovja. Prispevek je osredinjen na slovnično okrnjenost jezikovnih izrazov, ki smo jim priča pri teh motnjah. Na podlagi literature ugotavljamo, da se slovnični deficiti ne pojavljajo naključno, ampak v določenih vzorcih, ki jih predvideva teorija o univerzalni zgradbi jezikovnega izraza, po kateri med posameznimi elementi obstaja stroga hierarhija. Tako pri jezikovnih patoloških motnjah hierarhično najnižji elementi ostajajo neprizadeti, medtem ko predstavljajo hierarhično višja mesta večjo stopnjo slovnične okrnjenosti. Prispevek predstavlja vpogled v področje jezikoslovja, ki uspešno povezuje teoretska in empirična dognanja, kar se zrcali tudi v uporabni vrednosti posameznih raziskav.

Language Impairment and Generative Analysis

1. Introduction

Experimental research in the field of applied linguistics, especially in the fields of neurolinguistics and psycholinguistics, is becoming increasingly interesting for modern theoretical linguists (cf. Makovec-Černe 1993). The reason for this is quite simple: theoretical linguists are making use of the data acquired from empirical research to form new linguistic descriptions and/or prove their (in)accuracy.

No matter how straightforward the relationship between the experimental and theoretical fields seems, it would be wrong to describe it as a one-way-street. On the contrary, this article aims to show that theoretical linguistics can significantly contribute to the type of research usually ascribed solely to the realm of applied linguistics. For example, theoretical linguists can predict the domains of language where certain pathologies are to be expected. Furthermore, on the basis of various theoretical models, new approaches to treatment can be developed which provide invaluable help to patients with language deficits.

A proper understanding of the subject-matter of this paper is important for language teachers as well. It not only expands their horizons but also enables them to educate their students by informing them of yet another field of research worth exploring. It is quite often the case that a teacher is the first to detect a language deficit (such as SLI) in one of their students. The sooner the child is diagnosed, the sooner they can start with the therapy. The awareness of different language pathologies is, therefore, of significant value.

The structure of this article is as follows: First, some examples of language impairment are presented in Section 2. These are followed by an account of a possible theoretical approach to different language pathologies which is based on principles of transformational-generative grammar (cf. Section 3.1). The relevance of this approach is also supported by language acquisition data given in Section 3.2. Some final findings and conclusions are then given in Section 3.3 where our discussion focuses on the grammar of agrammatic language in general. Section 4 concludes the paper.

2. Types of Language Disorders

2.1 Aphasia

The term aphasia stems from the 1860s and is derived from the Greek word *áphatos*, meaning *speechless*. It refers to a language disorder that arises when the area of the brain involved with language processing is damaged. This sort of brain damage occurs mostly as a result of strokes, head injuries, or even infectious disease. Aphasia has a relatively wide range of meaning: the term covers complete or partial loss of speech generation, and at the same time also includes various degrees of receptive impairment (cf. McArthur (1992)).

Research on aphasia is being carried out in different fields of science, by authors of different scientific backgrounds. Consequently, many types of aphasia have been recognized but generally two types are distinguished: (i) motor aphasia, and (ii) sensory aphasia. In most descriptions the former is synonymous with the term agrammatism¹ (from Greek *agrámmatos*, meaning *unlettered*). We discuss both types in more detail in the following sections.

2.1.1 Wernicke's Aphasia

Wernicke's aphasia (also receptive or sensory aphasia) is classically related to damage to the posterior part of the brain in the temporal region known as Wernicke's area, after the German neurologist Carl Wernicke (1848–1905). Furthermore, the 19th century scientist's name was also used to denote the type of aphasia discussed in this section. Wernicke's area is situated in the regions of the brain traditionally associated with hearing and word-meaning, which is why the early neurologists named this type of aphasia sensory aphasia (cf. Dick et al. 2001, 3).

Wernicke's aphasia primarily affects the ability to understand. Characteristic for it is fluent speech, with little or no articulatory difficulty and normal intonation. In addition, their speech contains stereotyped phrases, circumlocution, unintelligible sequences, errors in choosing words and phonemes, and problems in retrieving words from memory.

Since Wernicke's patients have difficulty naming objects, they come up with related words or distortions of the sound of the correct one. Pinker (1994, 310–1) gives the following examples:

- (1) a) *table* is used instead of *chair*;
- b) *elbow* is used instead of *knee*;
- c) *clip* becomes *plick*;
- d) *ceiling* becomes *leasing*;
- e) *paper* becomes *piece of handkerchief*.

Sensory aphasia patients utter fluent streams of more-or-less grammatical phrases but their speech makes no sense and is filled with neologisms and word substitutions. Because of this, Wernicke's aphasia is sometimes referred to as *jargon aphasia*.

Let us quote a couple of examples to further illustrate speech produced by Wernicke's patients. The first example is taken from Pinker (1994) where a Wernicke's patient is answering the question: "What brings you to the hospital?"

¹ This term seems to have a rather loose definition. It covers aphasia, specific language impairment (SLI), and also language disorders typical for some syndromes, such as Down's and Williams' syndromes. Some authors, e.g. Dick et al. (2001), claim that even language disorders arising from stress factors can be described as agrammatism even though they can be observed in neurologically unimpaired individuals. This last type of agrammatic behaviour is

(2) “Boy, I’m sweating, I’m awful nervous, you know, once in a while I get caught up, I can’t mention the tarripoi, a month ago, quite a little, I’ve done a lot well, I impose a lot, while, on the other hand, you know what I mean, I have to run around, look it over, trebbin and all that sort of stuff.”

(H. Gardner interviewing a patient, as quoted in Pinker 1994, 310.)

In the second example the patient is responding to the question about the episode in which he suffered his stroke:

(3) “It just suddenly had a feffort and all the feffort had gone with it. It even stepped my horn. They took them from earth you know. They make my favourite nine to severed and now I’m a been habed by the uh stam of fortment of my annulment which is now forever.”

(Dick et al. 2001, 4.)

Examples in (2) and (3) make no sense. They contain unrelated sentences containing non-existent words (e.g. such as *tarripoi*, *trebbin*, *feffort*...). In contrast with Broca’s aphasics described in the next section, Wernicke’s patients will produce fluent, convincing and syntactically correct speech.

2.1.2 Broca’s Aphasia

Broca’s aphasia (also expressive or motor aphasia) is classically related to damage to the anterior part of the brain in the frontal region. The area is found in the left half² of the brain and represents the speech centre. It is also known as Broca’s area, after the French neurologist Paul Broca (1824–80). Due to the closeness of Broca’s area to the so-called motor strip, early neurologists described this type of aphasia as *motor aphasia*.³

Broca’s aphasia has raised a lot of interest in the linguistic community since it represents a possible key to a better understanding of human language capacity and can also be used as an effective tool for proving the descriptive power of those language theories that support the idea of modularity of the human language⁴ and the existence of specialised brain centres.

Motor aphasia primarily affects the ability to speak. Patients suffering from Broca’s aphasia speak slowly and hesitantly; they have to invest a great deal of effort in their speech. They mostly produce sentences consisting of one or two words lacking in both syntactic and

² i.e. the dominant hemisphere in a right-handed person

³ Speech impairment consistent with motor aphasia is therefore not necessarily a consequence of damage to Broca’s area. Some authors claim that the impairment can also stem from the damage to the motor strip, i.e. the part of the brain controlling the motor function of the jaw, tongue and lips which is situated right next to Broca’s area. Cf. Beveridge and Crerar 1996.

⁴ This refers to the assumption that a language expression is not the result of a single process but actually consists of several, independent modules. The impairment of one module does not necessarily threaten the functioning of others. The modules most widely acknowledged in linguistics are: (i) phonological, (ii) syntactic, and (iii) semantic. The first module assigns phonological form, the second builds a language structure on the basis of syntactic rules

morphological properties. In addition, the omission of function words is also typical: Broca's patients mostly leave out prepositions and conjunctions.

Even though their grammar is reduced and accompanied by some difficulties in finding words, Broca's aphasics generally have no problems with comprehension. They understand words in isolation, and only exhibit comprehension problems when certain – usually more complex – syntactic structures are used. For example, in most cases, they will have problems understanding sentences with more than one possibility of theta-role assignment. Some examples:

- (4) a) Očeta je poljubila mama. (Father_{ACC} kissed mother_{NOM}.)
 b) Oče je poljubil mamo. (Father_{NOM} kissed mother_{ACC}.)
 c) Mamo je poljubil oče. (Mother_{ACC} kissed father_{NOM}.)
 d) Mama je poljubila očeta. (Mother_{NOM} kissed father_{ACC}.)

The nominal phrases *oče* and *mama* above are assigned different theta-roles in sentences (4a,b). In (4a) *mama* is the actor and in (4b) *oče* is the actor, however the linear word order remains unchanged. It is only on the basis of case and agreement morphology that we can distinguish the semantic and syntactic differences between the two sentences: in (4a) the sequence of sentence elements is O-V-S, and in (4b), the sequence is S-V-O. Comprehension difficulties (i.e. an incorrect theta-role assignment) are predicted especially for (4a) where the sentence-initial position is filled by the marked object (i.e. patient) and not the unmarked subject (i.e. actor).

The analysis of sentences (4c,d) is parallel to the one in the previous paragraph. However, together with their counterparts they show the importance of morphology and syntax for sentence interpretation, and thus help us understand the language deficits of Broca's aphasics. In order to exemplify the speech of Broca's aphasics in more detail, we quote two additional examples; the first is taken from Pinker's and the second from Dick's work. In both cases Broca's patients are describing what brought them into the hospital.

- (5) "Yes... ah... Monday... ah... Dad and Peter Hogan, and Dad... ah... hospital... and ah... Wednesday... Wednesday nine o'clock and ah Thursday... ten o'clock ah doctors... two... two... an doctors and... ah... teeth... yah... And a doctor an girl... and gums, an I."
 (Pinker 1994, 307–8.)

- (6) "Alright... Uh... stroke and uh... I... huh tawanna guy... h... h... hot tub and... And the... two days when uh... Hos... uh... huh hospital and uh... amet... am... ambulance."
 (Dick et al. 2001, 3.)

In light of the above data, and also the previous discussion on modularity, we can sum up that Broca's aphasia refers to the impairment of the morpho-syntactic module, and not the semantic module, which is the type of impairment usually associated with Wernicke's aphasia.

2.2 Specific Language Impairment (SLI)

The term specific language impairment refers to a developmental disorder which affects language acquisition in children. Contrary to aphasia, it is not related to brain damage. Specifically language impaired children have no other deficits (e.g. cognitive, motor, auditory, environmental deficits) but severe problems in the development of linguistic comprehension and expression. SLI is also referred to as *language development disorder* or *developmental dysphasia*.

Van der Lely and Stollwerck (1997) see SLI investigations as an increasingly important field of research. Namely, it provides scientists with an insight into the nature of language capacity, language acquisition and the relationship between language and cognitive processes. Moreover, the research in this field also plays an important role in the modularity debate: since it deals with specific impairments of syntactic, lexical or pragmatic abilities, it also provides us with new insights into the possible autonomy of these processes.

The incidence of SLI is approximately 7% (Leonard 1998, as quoted in Rosen et al. 1997, 1). It is most likely of genetic origin since it is much more common in individuals whose family members have a history of similar problems. Rosen, van der Lely and Dry (1997: 1) dismiss some authors' belief that it is caused by, or associated with, auditory perceptual disabilities that are not specific to speech. They claim that SLI is a disorder which is specific to language, or – to be more precise – a disorder specific to grammatical competence.

An exemplary study that supports this view of SLI is van der Lely's article (1997) in which she gives an account of a 15-year-old boy with a significant morpho-grammatical deficit. In spite of this deficit, the boy is capable of achieving above-average results in non-verbal tasks, and scores ranging from 119 and 132 points on standardised non-verbal IQ tests. Van der Lely's conclusions show that only his language is impaired, which is a strong argument for the modularity hypothesis.

Similarly to some problems with classifications of types of aphasia (mentioned in previous sections), there is also some controversy as to the clinical definition of SLI. Nevertheless, Davies (2002, 283) lists a number of criteria that should be taken into account when diagnosing SLI. The most fundamental are: (i) the child has a severe language deficit that can be measured by standardized language tests, such as Rice/Wexler's test for early language impairment; (ii) the child has no other non-linguistic disability, i.e. such a child will show no deficit in non-verbal IQ, hearing, physical and social interaction, no oral structure abnormalities, no neurological dysfunction, no recent episodes of otitis media with effusion and no problems with oral motor function (Leonard 1998, as quoted in Davies 2002).

Over the last decade, some relatively homogeneous subgroups of SLI children have been identified, all of whom have different primary deficits. Most notable are the Semantic-

pragmatic SLI, Familial SLI, and Grammatical SLI (cf. Davies 2002, 283). In this paper we will focus on the last subgroup, which is discussed in more detail in the subsequent section (cf. 2.2.1).

2.2.1 Grammatical SLI

Characteristic for Grammatical SLI children is a long-term problem with production and comprehension of grammatical structures. These children may exhibit certain problems in other areas associated with language (e.g. they may have some lexical deficits), however these are notably smaller than the ones in the area of grammar. It should also be noted here that the articulatory abilities of Grammatical SLI children are not impaired. (Cf. van der Lely and Stollwerck 1997, 247.)

A prominent characteristic of Grammatical SLI children is impairment in inflectional morphology. English speaking children, for example, tend to omit the 3rd person singular ending (-s) in the present tense simple ((ibid.) mention a large number – approximately 50% – of such omissions). Errors with both regular and irregular past tense marking have also been found. In addition, Davies (2002, 283) states that the English plural, genitival and aspectual endings -s, (’s and -ing respectively) can be problematic as well. The following are examples given in Davies (ibid., 284):

- | | |
|------------------------------------|--|
| (7) Those girl have long hair. | (no plural morpheme: girls) |
| (8) John like ice cream. | (no 3 rd p. sg. pres. t. morpheme: likes) |
| (9) I’ve got John ball. | (no genitival morpheme: John’s) |
| (10) She has cook the dinner. | (no past participle morpheme: cooked) |
| (11) He’s still run over the hill. | (no aspectual morpheme: running) |

Morphological deficits are commonly accompanied by syntactic problems, such as the omission of the verb *be* in the auxiliary or copular functions. The same observation can be made for the auxiliary *do*. The following examples are also based on Davies’ paper (ibid.):

- | | |
|-----------------------|--------------------------------|
| (12) What he eating? | (no auxiliary verb <i>be</i>) |
| (13) She happy. | (no copular verb <i>be</i>) |
| (14) What he not eat? | (no auxiliary verb <i>do</i>) |

The difficulty grammatical SLI children have with inflectional morphology is not merely a production problem. In some studies quoted in van der Lely and Stollwerck (1997) Grammatical SLI children’s judgements showed that they judged stem forms (e.g. *walk*) to be acceptable in past contexts. Furthermore, their tense-marking errors were more common with regular verbs, which indicates that their problem extends to syntactic tense and is not confined to morphology.

Thus, similarly to aphasic patients, grammatical SLI children exhibit a certain degree of syntactic impairment as well. For example, they are not capable of assigning theta-roles in sentences that

contain two nominal phrases functioning as the subject or object of the sentence, and can be both assigned the roles of actor or receiver. Cf. sentences (4) and (15).⁵

(15) The boy is hit by the girl. (Ibid., 248.)

2.3 Language Deficits Compared

A comparison of specific language impairment and Broca's aphasia reveals a number of similarities. The following can be observed:

- (i) deficits of the morpho-syntactic module;
- (ii) problems with agreement and tense morphology;
- (iii) theta-role assignment problems;
- (iv) ungrammatical production and comprehension of complex syntactic structures, such as questions and subordinate sentences.

In the following sections we will mostly focus on Grammatical SLI and Broca's aphasia. The features characteristic for both will be described by the term agrammatism, and taken into account in the discussion that aims to present some linguistic aspects of and approaches to agrammatism.

3. Agrammatism and Theoretical Linguistics

3.1 Theoretical framework

The theoretical framework adopted in this paper is Chomskyan generative grammar. Its chief aim is to provide a *finite* number of explicit grammatical rules, which allow the formation of an *infinite* number of linguistic expressions. Generativists believe that human beings are equipped with a special innate language system, called Universal Grammar, which together with the exposure to language L makes it possible for a child to acquire the core grammar of language L in a relatively short period of time (cf. Pinker 1994).⁶ When the core grammar of language L is fully acquired, it enables its user to construct any meaningful and grammatical linguistic expression from the array of lexical items drawn from the mental lexicon. The system that builds up linguistic expressions according to the core grammar of language L is referred to as the computational system. From this perspective, language impairment should be viewed as a failure of the computational system, and not as a failure of the user to retrieve linguistic expressions from the memory. This viewpoint is crucial for therapeutic as well as pedagogical purposes: instead of trying to re-teach "forgotten" structures, the agrammatics should be helped to re-establish the

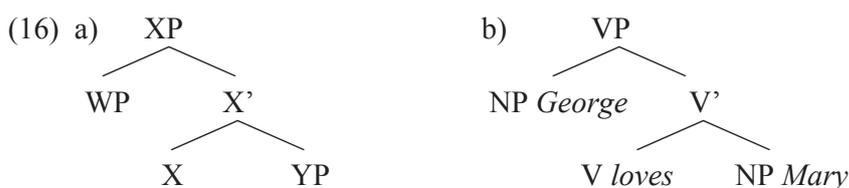
⁵ Such sentences are presented to children without any context. The research is conducted in an environment that gives no semantic or pragmatic clues that could lead the children towards a grammatical response. In this way the research is limited to syntax only.

⁶ This viewpoint undermines the behaviouristic idea that our language ability is reduced to the ability to retrieve

impoverished computational system. As reported by some researchers (Friedmann 2002), such an approach has already borne fruit (cf. below).

In the generative tradition, a linguistic expression is not seen as an arbitrary ordering of words, but as a hierarchically ordered construction: words are joined into phrases; these are again combined into larger phrases. It has been assumed that the structure of phrases is determined by strict principles known as the X-bar theory, according to which each phrase consists of a head, a specifier and a complement. In the tree phrase diagram (16a) X represents the head, which selects a phrase YP as a complement. X and YP together form an intermediate projection X'. Finally, X' and the phrase WP functioning as the specifier, form the maximal projection XP.

Consider the structure of the verbal phrase VP in (16b). The verbal phrase headed by the verb *loves* consists of a specifier (the subject)⁷ filled by a nominal phrase (NP) *George* and a complement NP *Mary*.



The head of a phrase is the word that determines the properties of the phrase. The specifier is the grammatical function fulfilled by certain types of constituents which share some features with the head (e.g. the number, person and gender agreement between the NP and the finite verbal form in (16b)). The choice of the complement is determined by the properties of the head; for instance, a transitive verb as the head of a VP in (16b) selects NP as a complement.

A clause can be analysed as consisting of three layers of projections: (i) the thematic or the VP-layer, (ii) the inflectional or the IP-layer⁸ and (iii) the left periphery or the CP-layer⁹ of projections. While VP is determined by lexical heads, the heads of IP and CP are functional elements which are sometimes represented by phonologically null elements.¹⁰ Based on empirical evidence from French and English, Pollock (1989) proposed that the unitary functional head I be split into two separate heads: T(ense) and Agr(eement); each heading its own projection. In this paper we adopt this articulated structure of the IP-domain – (17).

⁷ In accordance with the VP-Internal Subject Hypothesis (cf. Sportiche 1988).

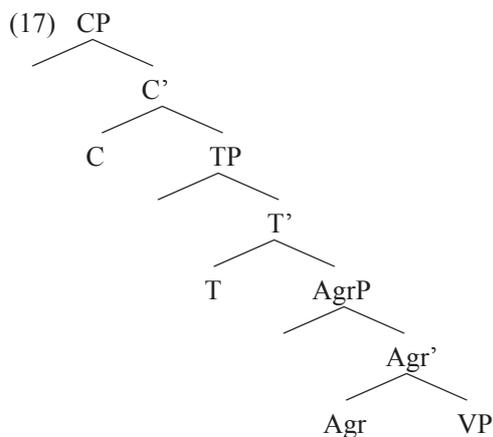
⁸ Inflectional Phrase

⁹ Complementizer Phrase

¹⁰ For instance, a null agreement morpheme in (i) vs. a phonologically realised morpheme -s in (ii):

(i) They all like GGeorge.

(ii) Mary likes sGeorge.



VP, structurally the lowest projection, establishes the relation between semantic participants, for example, between the patient (syntactically the object) and the actor (syntactically the subject). The IP-layer (consisting of TP and AgrP) licenses the temporal and aspectual values of the linguistic expression and determines the agreement relation between the subject and the finite verbal form. In addition, it assigns the nominative case to the subject. To constitute these relations, the subject has to rise (i.e. to move) from its original position (specifier of VP) through the specifier position of AgrP (to license agreement) to the specifier position of TP (to be assigned the nominative).¹¹ CP, hierarchically the highest layer, contains the information on the type of a clause; whether a clause is interrogative, declarative or imperative. In addition, the CP-layer sets a clause into the intersentential (matrix vs. embedded) and discursive frames. To illustrate the sentence structure, consider (18b), which represents the analysis of interrogative sentence (18a).

- (18) a) Who has Mary seen?
 b) [_{CP} Who [_C has] [_{TP} Mary [_T] [_{VP} [_V seen]]]]

3.2 Language acquisition

A legitimate question that may arise is whether there is any empirical evidence for the correctness of the proposed sentence analysis in (17). One answer comes from language acquisition studies which point out that a language is acquired in a step-by-step fashion: lower projections seem to be acquired at an early stage, whereas higher projections are acquired at a later time.

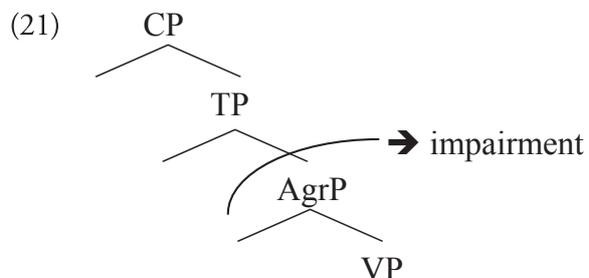
If we have a look at a Slovene sentence (19) we can see that the child's language acquisition has reached the stage where only the VP-layer is (fully) developed, while the IP- and CP-layers are not projected. Sentence (19) does not contain the temporal auxiliary *biti* (TP) and the pronominal clitic *mi*, which in Slovene, as argued by Golden and Milojević Sheppard (2000), belongs to the functional layers (i.e. IP- and CP-layers). From the point of generative grammar the failure to produce the temporal auxiliary and a pronominal clitic is expected: they cannot

¹¹ For detail see Pollock 1989 and Sportiche 1988.

the s.c. *Tree Pruning Hypothesis*, which claims that language impairment is a result of the inability of the speaker to access all structural levels required for the computation of a linguistic expression. According to the Tree Pruning Hypothesis (ibid., 21), *agrammatics frequently fail to project their syntactic tree all the way up to the treetop. This leads to the dislocations found between structures depending on high parts of the tree, which are impaired, and lower structures, which are preserved.*

Returning to the data in (20) in the light of the proposed hypothesis, we can conclude that the syntactic tree of patient SSH is pruned at TP. The patient has almost intact AgrP (95% correct), whereas there is a sharp decrease in the correctness of temporal constructions (35%) and an even smaller number of correct interrogative structures (5%). Diagram (21) illustrates the pruned syntactic tree observed in patient SSH's linguistic computation.

Comparing language acquisition with language impairment, we can observe a striking



resemblance. Namely, in both cases the linguistic computation cannot access some of the levels of projection. This inaccessibility does not occur randomly but is rather highly predictable: high-positioned projections have a stronger possibility to be inaccessible to linguistic computation than low-positioned projections. Language acquisition first develops the thematic (i.e. VP-) layer which is followed by the IP- and CP- layers respectively. In the case of agrammatics some of the syntactic structures originating in high-positioned projections become inaccessible due to brain injuries. The difference between the two phenomena lies in the fact that language acquisition displays a bottom-to-top development, while language impairment displays a top-to-bottom 'pruning' (ibid.).

How can this theoretical finding be used for practical purposes? We will try to offer some possible answers which are hypothetical in nature since we lack relevant empirical evidence as well as therapeutic experience to propose stronger suggestions.

Considering the similarities between agrammatism and language acquisition, we could expect that the exposure of agrammatics to all types of grammatical structures rather than to a grammatically limited linguistic environment, could reduce the range of impairment, and help the patient to re-establish the inaccessible structural parts. This is consistent with language

¹³ Friedmann (2001, 20) claims that [c]rucially, no patient was found that showed a deficit in TP without a deficit in CP, or a deficit in AgrP without a deficit in TP and CP.

acquisition data which show that the exposure to a variety of syntactic structures (i.e. all three layers of projections) enables the child to acquire the core grammar of its language.

Indeed, Friedmann (2002) reports about this type of treatment. Aphasia patients, whose impairment started with TP (see 21), have been exposed to structures requiring all three layers (e.g. questions). A patient who produced 75% of correct agreement structures and 24% of correct question structures improved to 91% in the former and to 89% in the latter case after three months of treatment. Unfortunately, similar data on Slovene agrammatics is scarce, and there is therefore a need for future research. It is relevant for the theory to establish whether Slovene agrammatics display a similar pattern of impairment as those reported by Friedmann (2001) and Friedman (2002).

4. Conclusion

Agrammatic disorders have recently been recognised as a provider of important insight into the nature of human linguistic ability. In fact, research in the field of experimental linguistics supports the theoretical claims that linguistic competence is modular, i.e. composed of several independent modules. Moreover, the same empirical evidence also supports the correctness of certain descriptive linguistic frameworks. In particular, as argued in this paper, some features of agrammatism displayed by both aphasics and SLI children can be explained and even predicted in the generative approach.

It was our intention to show that it is more than necessary to bridge the gap between theoretical and experimental linguistics in order to (i) show the interrelatedness of the two fields, (ii) offer practical applications from the perspective of theoretical research, and (iii) provide language and other teachers with a better understanding of the subject-matter.

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