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Deaf Languages: Does the Hypothesis Still Apply?

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Résumé

Dans les années 1990, des études en syntaxe et sémantique chez des enfants sourds profonds dont les seuils auditifs avec prothèse se situaient en dehors de la zone conversationnelle ont permis de poser l'hypothèse des langues sourdes. Les prothèses actuelles et les implants cochléaires apportent désormais de meilleurs gains auditifs. Il est donc nécessaire d'établir si l'hypothèse des langues sourdes est toujours valable. Les caractéristiques syntaxiques et sémantiques de données orales recueillies auprès de 6 enfants et adolescents francophones et de 6 enfants et adolescents anglophones sourds profonds oralistes ayant au moins 7 ans d'utilisation de leur implant ont donc été analysées et comparées à des données similaires recueillies auprès de 4 enfants et adolescents francophones et de 4 enfants et adolescents anglophones sourds profonds oralistes. Certains schémas des langues sourdes restent présents et de nouveaux aspects linguistiques émergent, tels que les commentaires métalinguistiques, les emplois métaphoriques, l'humour et les énoncés complexes. Le maintien de schémas propres aux langues sourdes pourrait s'expliquer par le déficit de perception auditive des premiers mois de vie qui pourrait entraîner le développement de représentations cognitives spécifiques chez les sourds profonds, en particulier pour l'espace et le temps, et ce en dépit d'un apport linguistique ultérieur important en quantité et en variété.

Mots clé

Syntaxe, sémantique, surdit , langues sourdes, langue orale

Summary

In the 1990s, studies on the syntax and semantics of oral profoundly deaf children and teenagers established the existence of Deaf Languages in subjects with aided thresholds outside the range of conversation levels. Presently, cochlear implants and hearing aids may yield good auditory benefit.

It is therefore necessary to evaluate if the hypothesis of Deaf Languages still applies in these conditions. The syntactic and semantic features of oral data gathered from 6 French and 6 English children and teenagers with at least 7 years of implant use were therefore analyzed and compared to a similar set of data gathered in 1988, from 4 French-speaking and 4 English-speaking oral profoundly deaf children and teenagers. Remaining patterns of Deaf Languages are still to be found and linguistic aspects such as meta-linguistic comments, metaphoric use, humor, and complex sentences emerge. The lack of aural perception in the early months could be responsible for the development of specific cognitive representations, especially of time and space, which may account for persistent patterns of Deaf English despite the subsequent greater amount and variety in linguistic input.

Keywords

Syntax, semantics, deafness, Deaf Languages, oral speech

Introduction

In the field of deaf studies, Charrow's hypothesis on Deaf English (1974 & 1975) initiated a stimulating new approach to syntactic and semantic analyses of the profoundly deaf subjects' productions. Indeed, instead of considering that the deaf make errors in reference to Standard English, Charrow suggested that they actually use "a variety of non-Standard English" with rules of its own: Deaf English. Charrow's hypothesis was extended as further research evidenced the rules of "Deaf writing" (Lacerte, 1988), of "Deaf French" (Dubuisson, Vincent-Durroux & Nadeau, 1991) from written and spoken data, and more generally of "Deaf Languages" (Vincent-Durroux, 1990 & 1992) from the comparative study of spoken data in French and English. The subjects involved in these studies did not necessarily know sign languages. The surveys were undertaken at a time when the profoundly deaf benefited from hearing aids which did not bring aided thresholds into the range of conversation level across the speech frequencies, and profound deafness could therefore be considered as causing specific cognitive patterns with consequences on the productions of the deaf. Time and space are greatly implied in the patterns of Deaf Languages, which can be summarized in those terms: determiner, subject and tense are not necessarily repeated when these items would have been similar in subsequent utterances; many prepositions are missing (especially in the expression of time, space and type); spatial patterns are almost the only way to set up the discourse theme; determiners and subjects in nominal and verbal phrases respectively are greatly autonomous: the analysis of repetitions and spontaneous corrections confirms the loose structure of syntagms in Deaf Languages ; almost no complex sentences, no humor, no metaphor, no metalinguistic comments are observed.

Presently, aided thresholds may come within the range of conversation level across the speech

frequencies with typical aided thresholds of 30 decibel (dB) thanks to hearing aids or implant systems in eligible subjects (Inscoc Ramirez, Odell, Archbold & Nikolopoulos, 2009). In these conditions, the speech productions of the deaf can be expected to be close or similar to standard productions. Studies have been carried out on implanted subjects to evaluate benefits for patients in terms of perception and intelligibility (Miyamoto, Kirk, Svirsky & Sehgal, 1999), and to evaluate the influence of communication mode and duration of implant use on perception and intelligibility (O'Donoghue, 1999; Geers et al. 2000). Other studies consider lexical progress (Ouellet, Le Normand & Cohen, 2001) or syntactic progress (Vieu et al. 1998). No research combining syntax and semantics across two languages has been carried out with implanted subjects. Yet, in the early months, as long as no hearing aid is provided, profound deafness may still affect the deaf subjects' perception of their environment, from the linguistic point of view, but also from the cognitive point of view, since the fundamental notions of time and space have been shown to be related and to be conceived mainly through the sense of hearing (Lafon, 1985; Vinter, 1991 & 2000).

The purpose of this research is therefore to assess if profound deafness in present conditions still has the consequences previously described on language itself. Data from implanted French-speaking and English-speaking deaf teenagers are considered in order to evaluate if the description in terms of Deaf Languages still applies.

1. The data

Oral data were gathered in 1988¹ and in 2006 from English-speaking and French-speaking subjects

¹ The first set of data (1988) was collected for the author's doctoral dissertation (Université de Sherbrooke, Québec, Canada), and was supported by a grant from the *Entraide Universitaire Mondiale du Canada* from 1987 to 1990. The author wishes to thank the children and teenagers who participated in the research, as well as their

with pre-lingual deafness. They did not have sign languages in their environment. The 1988 subjects had classical hearing-aids which did not bring aided thresholds into the range of conversation level across the speech frequencies. The 2006 subjects had been implanted and had typical aided thresholds through the implant system of 30 dB across the speech frequencies and a profound loss in the other ear as they had been unilaterally implanted; they all had at least 7 years of implant use. The number and age of the subjects are summarized in Table 1.

In the 1988 study, the age of the subjects was determined following the results of Bochner & Albertini (1988) on the absence of significant progress after pre-adolescent years. In the 2006 study, the reported benefits of implants were taken into account: more subjects were recorded, as well as a sub-group of younger subjects. A control subject was recorded in each language.

The same protocol (Vincent-Durroux, 1990 & 1992) was used to collect the two sets of data. The instructions were given in the oral and written modes. The subjects knew they were being recorded with an audiotape. The tasks were aimed at the production of various types of speech. Descriptive speech was elicited through the descriptions of a picture and of the subject's home; narrative speech was elicited thanks to a sequence of pictures and through the report of a birthday party; argumentative speech was obtained as the subject reacted to an interdiction.

The data were transcribed according to Level 2 of the Network of European Reference Corpora (NERC), thus using orthographic representations and indicating turns of speech and a few non-verbal elements such as laughter. The transcriptions were divided into Communication Units or C-Units (Loban, 1976, p.105). The quantitative description of the data is presented in Table 2.

2. Results

parents and speech therapists.

2.1. Remaining patterns of Deaf English

Remaining patterns of Deaf Languages still are to be found in the 2006 data, along the same lines as in the earlier data (Vincent-Durroux, 1990 & 1992); they involve tenses, determiners and prepositions, and can be observed equally in the French corpus and the English corpus.

2.1.1. Tenses

In Deaf Languages, the past tense which appears at the beginning of the sentence is not necessarily maintained in the rest of it. It still is the case in the 2006 data (in italics, verbs with no past tense marker):

- (1) the children seemed quite happy and *seem* to enjoy this little trip with the frog seeing all these animals in different colours [LS138]²
- (2) and there was a robot who *is* standing on the shelf [AX97]
- (3) and it was very hot because it *is* in June 19th [AM85]
- (4) il y avait le petit chat qui *dort* sur le lit [SM32]
- (5) et après quand il était dehors il *y a* il *y a* des il *y a* des plein de jouets [SM79]

The same pattern is also to be found in series of speech units in the 2006 data, especially in narrative discourse, as shown by the following examples:

- (6) we went to Lake Districts which is up in North and I had a really good time but it was very cold hum (...) we were in groups with our teacher and we *get* to do different activities a day and we *do* like evening activities [LS69-75]
- (7) et ils ont découvert une vache verte qui lisait le journal un cheval qui *dessine* des carottes un chien qui *dessine* des petits bonhommes des formes des formes un garçon qui comprenait rien une poule bleue un canard à rayures gris blanc une autre poule bleue une vache qui *est* à l'extérieur de la ferme un mouton rose qui *joue* à saute-mouton avec le chat une poule qui *fait* un gâteau avec une fermière [AG38]

2.1.2. Determiners

In Deaf Languages, the repetition of the determiner is almost systematically avoided when unchanged, especially in lists such as:

- (8) one person saw *the boy and girl and woman* [dd146]
- (9) there's *a clerk and shelf* [sb72]

² Initials in capital letters refer to the 2006 subjects; initials in small letters refer to the 1988 subjects.

- (10) pour mettre *des serviettes débarbouillettes* [jd95]
 (11) y'a *des machines pour hacher la viande, puis aussi machine pour presser des oranges*, puis le grille-pain grille-pain, puis *cafetière pour chauffer* [na61]

The same pattern still is to be found in the 2006 data, but only in a few occurrences, such as:

- (12) and when *the pink hippo and cat* were playing a dance *the e- the green elephant and cow and pink horse and and red lion* were talking together [AM106]
 (13) y'a deux chambres *mon bureau et bureau d'ordinateur* [CT23]

Another specific aspect in the use of determiners by deaf subjects was described by Ivemey & Lachterman (1980), and confirmed by the 1988 data: the determiner is more often omitted with a noun in object position whereas it is usually there in subject or thematic positions (Vincent-Durroux, 1990 & 1992). This is also to be found in the 2006 survey: in the English data, the determiner is omitted 25 times but only once in subject position where it belongs to a list:

- (14) well the the orange and the orange horse *and orange sheep* were dancing together [AM108]

In the French data, there are 27 occurrences but only 6 in subject position, although not necessarily in lists, as shown by the following examples:

- (15) euh les zèbres et les girafes les hippopotames les crocodiles des des des éléphants *ours blancs* euh ils dansent [MR85]
 (16) euh *hippopotame* il danse avec le chat et aussi le zèbre avec un mouton [MR93]

The other cases occur in object position, such as:

- (17) hum it's got *school* nearby [LS9]
 (18) and a cow was reading *newspaper* [EB103]
 (19) then I saw *wee tiny monkey* on a monkey [BL90]
 (20) and then I saw *baby ostrich* [BL91]
 (21) we had *birthday cake* [SR31]
 (22) il donne *nourriture* au singe et au grenouille [SM84]
 (23) euh pour faire *sport* dans la maison [CM36]

2.1.3. Prepositions

The analysis of the use of prepositions by deaf subjects is of great interest since prepositions are

based on spatial relationships for a great number of them (Groussier, 1997, p. 222). The use of prepositions is a good indicator of the subjects' modes of representation of space, but also of their representations of time and type, which are both cognitively related to space. From that point of view, the study of prepositions in our data can be considered as complementary to the analysis of tenses (2.1.1) and determiners (2.1.2.), which deal more specifically with time and space, respectively.

Prepositions may be omitted in Deaf English, especially when they would have referred to space, time, or type. Prepositions are omitted in the 2006 data when referring to time (examples 24-25), to space (examples 26-29), and to type (examples 30-32). For each example, the most likely preposition appears between brackets:

- (24) hum last birthday party I had camping [AX48]
hum [for my] last birthday party I had camping
- (25) et mon anniversaire c'est la fin du mois [TM103]
et mon anniversaire c'est [à] la fin du mois

- (26) it is left side [sb13]
it is [on the] left side
- (27) and the garage [ms57]
and [in] the garage
- (28) ils rentrent leur lit [MR98]
ils rentrent [dans] leur lit
- (29) tu vas un peu droite [MR5]
tu vas un peu [à] droite

- (30) we had pizza take-away [SR32]
we had pizza [to] take-away
- (31) it's like a game Cluedo [EB55]
it's like a game [of] Cluedo
- (32) c'est le bowling Montpellier [SM49]
c'est le bowling [de] Montpellier

2.2. Emerging linguistic aspects

It is remarkable that in the 2006 survey, some linguistic aspects which are absent from Deaf

Languages emerge, such as meta-linguistic comments, metaphoric use, humor, and complex sentences.

2.2.1. Meta-linguistic comments

Meta-linguistic comments are based on the capacity of the subject to consider linguistic productions as referents, on the choice of which comments can be made. They are found in the 2006 data when the utterer is (a) trying to be more precise or explicit (examples 33-34); (b) unsatisfied with previous productions (examples 35-36); (c) showing concern for the acceptability of what has been said (examples 37-38); (d) commenting on the co-utterer's discourse, especially with the BE -ING form (example 39); (e) taking up the former predicative relation with DO, an image of that predicative relation (examples 40-42):

(33) in the living-room no *I mean* a dining-room [AX23]

(34) il y a comme un meuble où dessus il y deux médicaments dans un plateau sur un plateau *je veux dire* [TM70]

(35) I can't *really explain it* [BL6]

(36) un petit garçon qui est sous le lit *enfin disons* sous la couette [CM50]

(37) the monkey fuck our back window thing and they jumped on top and we used the sweepers for weapons to get them off *oh come on* [BL85-88]

(38) on voit que le cheval le lion *qui rigolent bien qui rient bien* [CM141]

(39) I understand what *you're saying* [LS165] [= when you say (...) I understand what it means]

(40) did we have a birthday cake I think we *did* [AM87-88]

(41) [interviewer: I don't think you have enough] [*i.e.* money]

I *do* have enough, honestly [BL139]

(42) we don't have a shower or we have a s- we *do* have a shower but we want to have a separate shower from the bath [EB20-22]

2.2.2. Metaphoric use

Metaphors are based on the capacity of the subject to deal with abstraction, since both the referent and the comparative markers are absent (V. Rey, personal communication); when we say "John is a lion", there is neither lion in the situation nor comparative form in the sentence. The following

instances involve metaphoric properties:

- (43) they went *on the computer* straight away [BL98]
- (44) they were actually *on the computer* [EB99]
- (45) the two children are playing *on the computer* playing games on it [EB93]
- (46) this had a *brilliant time* [AX73]
- (47) I had my friends my school *friends over* [EB53]
- (48) in case I have a friend to *sleep over* [BL23]
- (49) un *simple dessin* [AG32]
- (50) nous avons *lancé le jeu* [CM120]
- (51) il va *me coller* tout le temps il va pas *me lâcher les baskets* [CM201]
- (52) ils sont sortis un *bon matin* vers 9 heures [GP61]

2.2.3. Humor

Humor often involves criticism on situations or speech productions and therefore some distance is necessary. Such distance implies the use of language as an abstract representation. A tinge of humor is found in the 2006 data with:

- (53) I was hoping there'd be a big present on the table *which was a big present hum I got an i-pod speakers* [LS89-90]
- (54) en avion c'est quoi le prix Internet prix avion pour l'Italie ouai 875 euros *eh ouai bon on verra bien hein* [GP113-119]
- (55) il y a pas de tour à exploser là-bas t'inquiète *ah non ouai il y a Pise* [GP98-101]

In example (53), there is a play on the word *big*: subject LS was away from home on her birthday and expected to find a big present to make up for her absence. As her parents are listening to her, she acknowledges that she may have been disappointed by the size of the present but not by its value. In example (54) subject GP mimics the search of a price on the Internet in order to convince his mother to let him go to Italy. Unfortunately he gives a very expensive price and acknowledges his mistake by saying *eh ouai* and by changing his plans by saying *on verra bien hein*. In example (55), humor is built on the ridiculous comparison between the Twin Towers and the Tower of Pisa.

2.2.4. Complex sentences

The specificity of sentences with subordinate clauses, or complex sentences, is that they include a marker (*that, which, or Ø, que, qui, dont ...*) which represents the element(s) that would have appeared in both clauses had they been independent. For example, in:

(56) we went to Lake Districts which is up in North [LS69]

which represents *Lake Districts* in the relative clause. As such, it is an abstract image; its use in discourse can be considered as a sign of linguistic mastery (Dubuisson & Emirkanian, 1981-82).

Whereas there were very few complex sentences in the earlier data, the 2006 data show a great number of standard complex sentences, such as:

(57) we have a store-room quite a s- small room *where we put put our books and stuff Ø we don't need* [EB16]

(58) il y a le calendrier *qui est caché par les lumières* [SM42]

In the 2006 data, only 8 utterances in English and 3 utterances in French can be considered as ill-formed, such as:

(59) there was Leon and Daniel *which they are* my best friends [AX50]

(60) on voit que l'éléphant et la vache le cheval le lion *qui rigolent bien qui rient bien* [CM141]

2.2.5. Further differences

More observations can be made on the 2006 data, which could not be made on the earlier data and which further evidence the difference between the two sets of data. The main findings bear on (a) hypothetical situations, (b) narrative patterns, and (c) the recourse to drawing.

There are many references to hypothetical situations, implying the use of modals in English and of the conditional mode in French; they appear mainly in argumentative speech:

(61) you can still get your things stolen if you're out with your mates shopping [LS167]

(62) we could earn money together [EB172]

(63) I would phone you every day [SR73]

(64) how would you feel if I say no you can't go to Italy [SR72]

(65) je pourrais l'aider et il me donnerait de l'argent à l'heure [GP123]

(66) je pourrais ramener des tas et des tas de photos (...) et puis des repas italiens [AG55]

All 2006 subjects use modals in English, with several occurrences each, whereas few occurrences of modals were found in the 1988 data.

There is also the reinforcement of narrative patterns in narrative tasks, with the building up of a narrative frame and the resorting to imaginary explanations, with for example fictional names given to the characters in the pictures:

(67) *once upon a time a boy and a girl woke up in a bedroom and they went on the computer straight away when they turned the computer on a great big pink frog came out* [BL97-99]

(68) *Atrick and Tedjin were playing on the computer they didn't notice that the toy robot has grown up bigger when they played on the computer this fr-frog jumped out of the computer in the paint the frog took them into the computer of the land of animals they saw all sorts of strange animals* [AM93-96]

(69) *dans la chambre des deux petits gar- des petits enfants Mimi et Arnaud jouent sagement dans sur leur ordinateur ils jouent à une grenouille qui saute mais les parents aimeraient bien que ils rangent leur chambre ils voient la grenouille sauter sauter sauter et d'un coup la grenouille sort de l'ordinateur* [CT100-14]

(70) *alors Vincent et sa sœur sont sortis de leur lit un bon matin vers neuf heures pour pour jouer un peu s- pour jouer un petit peu sur l'ordinateur ils se mettent ils se mettent ils ouvrent le jeu de zoo safari zoo pour créer un nouveau univers avec des animaux des fermes et tout ça euh ils y créaient des animaux fantastiques de couleurs de rouge bleu vert tout ça et pouf tout à coup une grenouille rose sort de l'écran et les et les entraîne dans l'ordinateur ils se retrouvent dans le monde dans le monde fantastique disons qu'ils ont créé* [AG61-65]

Finally, when the subjects had to describe their home, the protocol allowed the use of drawing.

The subjects never resorted to drawing in 2006 whereas it was systematic in 1988. This may be due to the fact that the 2006 subjects feel more confident in their language skills.

3. Discussion

The results presented here suggest that the Deaf Languages hypothesis cannot be discarded: it still applies similarly to English and French, showing that profound deafness may still affect the faculty of language. Yet emerging elements exhibit the symbolic function of language and hint at greater linguistic mastery. The results can be discussed in terms of (a) cognitive patterns and (b) possible influence of the greater amount and variety of input.

3.1. Cognitive patterns

The sense of hearing is central in the perception of time, successiveness and space. The results show that there is a specific way of using verb tenses in sequences by the deaf. This typical pattern of Deaf Languages is also described in sign languages (Lacerte, 1993, p.147). These facts may hint at specific cognitive patterns developed by the deaf.

The same conclusion can be drawn from the point of view of space patterns, when comparing the results on prepositions with the description of Sign Languages. As already mentioned, time and space are related to each other and to auditory perception. Type is also related to space, as types and sub-types are referred to in terms of spatial hierarchy (*sub-types*) and in terms of inclusion. Time, space, and therefore type are likely to be dealt with in specific ways by all deaf subjects. The use of prepositions has been described in detail by de Vriendt & Rasquinet for the Belgian Sign Language (BSL). The missing prepositions in the 1988 & 2006 data would almost never have been signed in BSL (Vincent-Durroux, 2008), with proportions unchanged between the two sets of data: out of the 38 cases in the 1988 data, 35 would not have been signed in BSL and two of them would have been signed erratically, and out of the 17 cases in the 2006 data, 15 would not have been signed in BSL and two of them would have been signed erratically.

These results hint at specific cognitive patterns developed by the deaf, whatever their prosthetic

device and auditory gains. This may be due to the lack of perception in the earlier months when they do not have hearing devices. Even if our study bears on profound deafness, it is interesting to put our results in perspective with studies on subjects with less severe hearing impairment. For example, Delage & Tuller (2007) show that even with mild-to-moderate hearing loss, language does not seem to normalize at adolescence.

3.2. Influence of a greater amount and variety of input

On the other hand, the results show emerging patterns that hint at linguistic mastery: in these patterns, the language is obviously used as a symbolic mode of representation, rather than as a code; this may be related to the fact that more linguistic input is available for the deaf. The situations of communication for the deaf with aided thresholds within the range of conversation are no longer restricted, neither in quantity nor in variety. The deaf no longer have to rely almost only on specific situations, such as speech therapy, to improve their language. They can also rely on natural everyday situations with their peers, which involves playing with the language; when prosthetic gains were really small, the mother tongue had to be taught, a situation which led to a stilted use of language. Indeed, contrary to their peers twenty years ago who answered "walk on the pavement" when asked what they were going to do after school (H. Viau, personal communication), implanted deaf teenagers now show their ability to interpret "after" in a non-figurative way when they provide that kind of answer:

(73) la piscine, le golf, le vélo [CT140]

Conclusion

It may be difficult to modify the cognitive patterns developed by the deaf, especially if they date back to the earlier months. Yet the greater amount and variety of linguistic input that the deaf may

now benefit from is an asset to further elaborate their linguistic competence with the help of the people in their environment; in this case, it is necessary for the latter to be aware of the patterns of Deaf Languages since these features may not be easily noticed in the present speech of the deaf as they do not appear in great quantity. The emerging aspects described here (e.g. meta-linguistic comments, metaphoric use, humor, complex sentences) may also be developed by the deaf with the help of their environment.

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Table 1

Characteristics of the Subjects

Date	Age	Language	Number
1988	12-15 years	English	4
		French	4
2006	10-12 years	English	3
		French	3
	13-15 years	English	3
		French	3

Table 2

The data

Data	Words	C-Units
1988	18 817	2 312
2006	15 088	1 896
