Chapter 5: Discussion & Conclusion

Discussion

The use of such studies is to explore the cognitive mechanisms that underlie lexical processing. Further, its use is to know whether a speaker's active lexicon is dealt with largely by mechanisms of storage and retrieval of whole-word forms, or whether there are also mechanisms of morphological composition that are invoked during normal processing. It also aims to explore the nature of these cognitive mechanisms or morphological compositions. These constitute some very central and important issues in neurolinguistic studies and in the following sections, through the discussions on the analysed data for each case, the arguments progress to the central issues in the area. That constitutes the chief focus of this concluding chapter. Following section takes the impairment - patterns of the cases into consideration and discusses their significance in the context of neurolinguistic findings.

Case 1: R.K.

The impaired data resulted into following inferences which are being discussed below.

1. Dissociation between two levels of production and comprehension –

   a) dissociation between lexical production and post-lexical or syntactic production on repetition & reading aloud tasks (present across modalities except in the modalities which couldn’t be tested)
   b) dissociation between lexical comprehension and post-lexical or syntactic comprehension on reading aloud tasks

2. Furthermore, a dissociation between spared auditory (phonological) comprehension and impaired written/reading (orthographic) comprehension at post-lexical or syntactic level.
3. Dissociation between spared plurality on adjectives with 0% error rate and impaired plurality on nouns with 73.09% error rate at lexical level output.

4. Dissociation between impaired [e] & [yā] plurality markers with 86.32% error rate and relatively spared [ē] plurality marker with 48.1% error rate for the nominal categories.

5. Further dissociation between feminine nouns which take [ē] as plurality marker. Among the different groups of feminine nouns it was seen that the group of feminine nouns which was not able to access plurality, with 90.75% error rate, was the group of nouns with consonant and ‘-u’ as their last segment. Other group with ‘-a’ as their last segment was able to access plurality with relatively spared ability with 8.1% error rate, therefore the dissociation within [ē] plurality marker was found.

6. Dissociation between spared feminine gender marker access for the nouns and impaired feminine gender marker access for the adjectives.

7. Double dissociation between the categories of the nouns and the adjectives in terms of the access to the plurality and the feminine gender marker. Here lexical production was impaired at the inflectional level whereas the syntactic output was completely impaired. RK could comprehend simple sentences but there was no syntactic output. Dissociation was observed at the syntactic level between input phonology and input orthography whereas at the lexical level there was no such dissociation, i.e. both input orthography and input phonology were preserved. Dissociation of input orthography and input phonology was reported by Caramazza & Miceli (1990), but the present study provides the evidence for the dissociation within input orthography for the lexical and post-lexical outputs.
Here there were no impairments on plurality in adjectives (with 0% error rate) in contrast to the 73.09% error rate in the plurality for nouns$^{61}$. Further there is dissociation within the plurality marker on nouns. Then there was feminine gender impairment on the adjectives with 90.06% error rate, while in contrast the nouns had fully preserved feminine gender. The double dissociation between the nouns and the adjectives was observed. Miceli et al (1984) previously reported double dissociation between production of nouns and verbs -- as the agrammatic patients were impaired in the production of verbs and relatively intact in the production of nouns and then there were anomic patients who exhibited impairments on nouns while the verbal category was intact.

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$^{61}$ Ranjan (1998) and Nehru & Ranjan (1999a) also reported cases of Wernicke’s and Broca’s aphasia with dissociation between number and gender inflectional morphology.
There is selective impairment on plurality in nouns which is the evidence for selective processing of plurality on nouns and a separate one for adjectives. Again within the nouns there is highly selective intactness of the plurality marker ‘-ē’ which is suffixed to feminine nouns only. This again is a strong evidence for selective processing of ‘-ē’ plurality marker. Further investigations into this spared plurality marker ‘-ē’ revealed a
finer dissociation which places claims for selective processing of ‘a’ ending feminine nouns (which were the only preserved category of nouns). Generally in Hindi language the feminine marker on nouns has been universally accepted as ‘-i’ and the masculine marker as ‘-a’, therefore present category of feminine nouns are exceptionally marked for gender – which makes it, as a category, prone to the effect of any impairment in language. This is the reason this category of nouns was selectively spared so the selective processing for this ‘-a’ ending feminine nouns.

Other feminine nouns within the ‘-e’ plurality marker, i.e. consonant and ‘u’ ending, were relatively impaired. The selective processing of ‘a’ ending nouns was found\(^2\). The

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\(^{62}\) The data was not statistically relevant as the number of stimuli were only 4 although there were 100\% impairment on these nouns.

\(^{63}\) Ranjan, (1998) reported a similar selective processing in S.G. for ‘a’ ending feminine nouns with 0\% error rate, while ‘n’ ending masculine nouns were severely impaired with 92\% error rate, i.e. plurality [e]. He also reported, in addition, a very selective processing of the plurality marker ‘-a’
selective impairment of feminine gender inflectional marker on adjectives provides claims for the selective processing of the feminine gender marker against the masculine gender inflectional marker.

![Diagram showing selective processing of feminine gender marker on adjectives and masculine gender marker on nouns]

There was a double dissociation between adjectives and nouns as nouns could process gender without impairment whereas plurality was impaired in nouns and adjectives couldn’t process gender while number was spared on adjectives. Therefore this claims for separate and selective processing of nouns and adjectives. Even the number and gender inflectional marker are autonomously represented\(^6^4\) there was double dissociation between them.

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\(^6^4\) Ranjan (1998); Ranjan et al (1998a); Nehru & Ranjan (1999a) also reported dissociations between number and gender inflectional morphology.
Fig. 1.5: Directionality and hierarchy of the number and gender inflectional morphemes: Evidences from Case 1: R.K.

Present language breakdown data support the hierarchy in the access and thereby support a directionality constraint in the word-formation strategy. Singh & Agnihotri (1997) do not consider the directionality constraint as valid in the word formation strategy so for them all words are equally accessible to the speaker. They support the ‘bi-directionality’ in word formation strategy. They supported this hypothesis with evidence from language
acquisition and diachronic linguistics. As response to masculine plural or singular noun, was never a feminine noun and vice-versa, which suggests that gender is more internal to the noun than number. Process in the impaired access may start with deletion of number and then if there is no attested form or word without number, overt or non-overt, it will try the next option available to the speaker. That option is selected from the same plane. Therefore the gender is internal to the number inflectional marker for the processing for nouns. This supports Ranjan (1998), which provided the same hierarchical structure for the access to number and gender inflectional morphology. Nehru & Garg (1997) reported along the same lines and showed that in the morphological impairments, number inflection is more impaired than gender inflection.

Case 2: OPS

Based on the analysis of the impaired data following inferences were made –

1. There is dissociation between spared input orthographic lexicon and impaired phonological lexicon as OPS could read and copy the printed or written texts without impairment but couldn't repeat verbally or write to dictation.

2. At the lexical level there was dissociation between the intact access to the nominal category and the impaired access to the category of adjectives with error rate of 8.85% which was not significant at all at the outset. But a further analysis of the impairments on the category of the adjectives at the lexical level revealed that the group of adjectives getting affected in the access was the one which could be converted onto nouns by the process of substitution of the inflectional morphemes by the derivational morphemes therefore the dissociation between the two categories of adjectives – nominalisable adjectives & non-nominalisable adjectives.

3. On repetition tasks on adjectives OPS substituted the inflectional affix, i.e. gender affix (feminine gender in most of the cases, i.e. 13 out of 17), with derivational affixes which
nominates the bases. Out of all errors, 76.47% errors belonged to the group of adjectives which take '-ai' suffix to nominalize, 17.6% belonged to the adjectives which take '-apān' to get nominalize and 5.8% take '-apa' for the nominalization. If the impairments would be compared with respect to the number of stimuli then the error rates would be 92.8%, 11% & 50% for the adjectives groups which take nominalizing affix '-ai', '-apān' & '-apa' respectively. The clear-cut dissociation could be observed between the adjective group (based on the derivational morpheme which nominalises the adjectives) – adjectives which could be nominalised by the derivational morpheme ‘-ai’ (92.8% impairment) and those which could be nominalised by the rest of the derivational morphemes, ‘-apān’ & ‘-apa’ (14.3% impairment).

4. After observing the above dissociation, i.e. as stated in 4. and approaching this with different perspective a parallel dissociation could be stated - between the feminine adjectives and the masculine adjectives (both of the categories from which nouns could be derived by substitution, i.e. deletion of the inflection and the adjunction of the derivational morpheme), as could be seen clearly that relatively more feminine adjectives are impaired than are the masculine ones.

5. At the syntactic level the impairments on the word classes – nouns and adjectives – were not significant, i.e. 5.66% and 6.41% respectively, while on other word classes – post-positions and verbs – the impairment was absent, i.e. 0%. So the dissociation between the two levels of productions – namely, lexical and post-lexical level – was very much apparent in terms of word class access.

6. The impairment on the verb-internal inflectional morpheme, i.e. aspect marker, was observed. Relatively indefinite aspect was more impaired than other aspects, therefore the dissociation between impaired indefinite aspect and spared other aspects, i.e. progressive and perfective, could be stated.
7. Within the indefinite aspect marking it could be clearly marked that verbs in present tense were more prone to impairment than those in past and future tenses, i.e. 80.35% impairment as opposed to 3.33% & 0% respectively. Thus dissociation within the indefinite aspect marker was observed – the tense acted as the sensitive context in access to the aspect. Overall, for all aspect markers, present tense was sensitive context, i.e. affected 44.03% impairment, for the indefinite aspect.

In this case also there was dissociation between input orthography and input phonology which has been reported by Caramazza & Miceli (1990) who also provided evidences for the autonomy of output phonology and output orthography, suggesting an architecture of the mental lexicon. Dissociation between the nouns and the adjectives was found then the dissociation within the category of adjectives was also observed. Dissociations within the adjectives argue that highly selective process is involved in the convergence of feminine nouns in Hindi to abstract nouns which themselves form only a sub-category one of the word-classes.
Overall this evidence strongly suggest a highly selective process involved in the conversion of gender inflectional morphology to abstract nouns – as selective (feminine) gender marker was deleted and substituted by again a highly selective derivational morpheme. In addition, this is a highly selective deletion & adjunction, i.e. substitution, of an inflectional morpheme by a selective derivational morpheme, which strongly supports in favour of considering independent inflectional and derivational morphology as existing on the same plane of linguistic organization, specifically the organization of morphology as a whole.
The selective processing of the nominalisable and non-nominalisable adjectives was also supported. Within the nominalisable adjectives, the separate processing for the different derivational morpheme was also provided evidences. On a separate plane as depicted in the schematic presentation above, the dissociation between the impaired feminine and spared masculine nominalisable adjectives proves the selective processing for the separate gender inflectional marker for adjectives.

At the sentence-level utterance, these word classes were preserved therefore inflectional deficits which were present on word classes were absent in post-lexical output. Thus lexical and post-lexical outputs were in dissociation regarding the impairment in the adjectives. Luzzati & Bleser (1996) also presented this dissociation through the cases of agrammatism who displayed preserved number and gender inflections and derivational suffixes but the syntactically driven inflections on compounds were seriously disturbed.

Within the verbal complex of inflections, tense inflection was intact but the aspect inflection was impaired. Dissociation between tense and aspect inflectional marker and further, that within the aspect inflectional marker were observed – as only indefinite aspect was impaired against the relative sparing of progressive and perfective aspect inflections.
After closely analyzing the verbal inflections in impairment it was found that tense inflections are intact but very specifically and selectively in present tense the indefinite aspect was impaired. 80.35% of all verbs in present tense were impaired in aspect marker, while verbs in past and future tense, were spared in aspect. Therefore present tense was in dissociation with other tenses. This claims for a separate processing of present tense, or more specifically selective tense-specific aspect processing. Also within the aspect category dissociation places evidence for a selective processing of the
indefinite aspect marker. Also tense and aspect are dissociated categories therefore have autonomous processing in the organizational structure.

The above schema of hierarchy of access to the tense and aspect inflection was evolved from the pattern of the impairments on verbal inflections, i.e. tense and aspect inflections & number and gender inflections on tense and aspect (and person only overt on tense). Indefinite aspect inflection was impaired selectively while the tense inflection was
preserved at the same time. Therefore the verb selects tense before the aspect as there is no impairment such that aspect is preserved and the tense is impaired. Therefore the hypothesis would be that if the tense will get impaired then the aspect marker will obviously be impaired as placed lower in hierarchy after tense. In Hindi both tense and aspect are marked for agreement with the noun phrase in the sentence – either with the subject or with the object. Oblique case blocks this agreement, i.e. the agreement between the noun phrase and the verb phrase. Tense and aspect are marked for number, gender and person which are borrowed from the noun phrase to maintain the agreement. In this case tense-internal and aspect-internal inflections, i.e. number, gender and person inflections, were preserved. Since the nouns and adjectives were not impaired for number and gender. This again provides strong evidence of selective processing of inflectional morphemes on aspect as they are spared even when the aspect itself was impaired. Ranjan (1998) made a strong claim for an autonomous and very selective processing of number inflection on tense as every inflection on the verb was preserved except the plurality on present and past tense inflection in indefinite and progressive aspect. OPS was impaired in single word processing tasks and in the sentence processing tasks, the selective impairment was on grammatical morpheme. This goes as against the claim made by Garrett (1982) that morphological paraphasias (e.g. agreement errors) can result from deficits to sentence processing mechanisms while single word processing remains unimpaired. Nehru et al (1999c) also demonstrated a case for autonomous morpheme representation in which the Broca’s aphasic selectively deleted the present tense marker on singular nouns. Therefore in this present case, the patterns of impairments suggest strongly that morphological impairments are not only due to the deficits in sentence processing, they might be differently affected also. Ranjan (1998) also provided evidence for this.

Case 3: DKJ

While the category of nouns was intact that of adjectives was affected in repetition modality. He tended to substitute the masculine plural marker with masculine singular

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65 From subject noun phrase only.
marker, i.e. converting ‘łambe’ into ‘łamba’, i.e. substituting the ‘-e’ (masculine plural marker) with ‘-a’ (masculine singular marker). In other words he first stripped off the masculine plural inflection and then added the masculine singular inflection.

In repetition tasks at the lexical level only the other error-type was the loss of feminine gender inflection, and then substitution by the masculine singular marker. While there were no errors on the masculine adjectives in terms of gender inflection, as their gender was maintained even when the number was impaired.

Analysis of the impaired entities on repetition tasks revealed the following inferences –

1. Dissociation between nominal category and that of adjectives as the nominal category was spared with 0% impairment while the adjectives were impaired with 45.43% error rate, i.e. 104 adjectives are impaired out of a total 192 adjectives. The number and gender inflection on adjectives were impaired while nouns were intact along these inflections.

2. The types of impairment in the category of adjectives were distributed to the inflections – number inflection, i.e. masculine plurality morpheme ‘-e’ was substituted by the masculine singular morpheme ‘-a’, & gender inflection, i.e. the feminine gender morpheme ‘-i’ was substituted by masculine gender marker ‘-a’:

   (a) first dissociation was between impaired number inflection and spared gender inflection on masculine adjectives.

   (b) secondly, dissociation between impaired gender marker and preserved number marker on feminine adjectives.

3. Based on the dissociations as stated above in 2(a) and 2(b) an inference could be brought about – there is a double dissociation between number and gender inflection in the category of adjectives.

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66 Number could not be ascertained in the absence of overt marking for plural, only other way to test the plurals in feminine in the absence of the overt marker is through the sentences and at the syntactic level there was no error in gender marking at all.

67 Stands for both the singular number marker and the masculine gender like ‘-i’ which stands for both feminine gender and singular number.
Nouns (Spared)  Adjectives (Impaired)

Masculine (Impaired)  Feminine (Impaired)

Gender (Spared)  Number (Impaired)  Gender (Impaired)  Number (Spared)

Fig. 3.1: Schematic Presentation of the Patterns of Impairments on Nouns & Adjectives in Case 3: DKJ

Here as obvious from the Fig. 3.1, there is a dissociation between nouns and adjectives was observed (like in Case 2: OPS where also nouns were spared) which claims for a selective processing of the two word classes, while Ranjan (1998) demonstrated a dissociation between spared adjectives and impaired nouns. Within the adjective class both masculine and feminine gender were impaired differently. The findings hold a claim for a double dissociation between number and gender and also there is a double dissociation between masculine and feminine adjectives. Therefore the feminine and masculine adjectives have a selective processing as in the previous case, i.e. OPS, and also the presence of double dissociation between gender and number inflectional marker claims for separate processing mechanism for both the inflections. Also the above cases place evidences for the dissociation between inflectional and derivational morphology [also reported by Miceli & Caramazza (1988); Ranjan (1998); Nehru & Ranjan (1999 a&b)]. About the directionality and the hierarchy of the inflectional markers on adjectives, at least this does not go against the hierarchy as shown in Fig. 1.5. Because the impaired feminine adjectives did not have overt marking for number. Then we can’t
say for sure if there is preservation of number marker on feminine nouns. To validate or refute the hierarchy of access to the inflections, we need a case who has impairments on feminine nouns both in single word and sentence processing as in the sentence processing only the number impairment on feminine nouns could be checked.

Summary & Conclusion

The impairments were very selective in all the cases described previously. They presented finely grained dissociations between different inflectional markers and different word classes. The dissociations were of both types – single and double dissociations. Double dissociations confirm the autonomous processing of the entities which are suggested strongly by single dissociations. Dissociation was found between different plurality markers and also within a single plurality marker. Dissociation was also observed between tense and aspect inflectional markers. Dissociation was observed between input orthography and input phonology; between lexical and post-lexical output; between different derivational suffixes for nominalization (of adjectives); between indefinite aspect and others; within indefinite aspect & between orthographic and phonological comprehension. Double dissociations were observed between number and gender inflectional morphology; between noun and adjective word classes; & between feminine and masculine adjectives. The fact that the entity can be selectively spared or selectively impaired proves the autonomy of the entity in the system.

Based on the single dissociations and double dissociations exhibited in the cases – R.K., OPS, & DKJ – following conclusions could be drawn about the processing of the language.

1. Input orthography for single word and input orthography for sentences are autonomous.
2. Auditory comprehension and orthographic comprehension are autonomous.
3. Single word processing and sentence processing are autonomous.
4. Inflectional and derivational morphology are autonomous.
5. Plurality markers process separately on nouns and adjectives.
6. Nouns and adjectives are processed separately.
7. Tense and aspect are autonomous within the verbal inflectional system.
8. Indefinite aspect processes separately against perfective and progressive aspect.
9. Feminine and masculine adjectives are autonomously represented.
10. Autonomous representation of number and gender inflectional morphology.
11. Autonomous processing of the derivational morpheme ‘-ai’.
12. Separate representation of feminine nouns based on the last phone as its segment, i.e. ‘a’ ending feminine nouns were spared in Case 1: R.K.

Other inferences drawn from this analysis of the impaired data are following –

13. It is neither full word listing nor a complete autonomous morpheme representation. Both words and morphemes are represented in the mental lexicon.
14. Tense is placed higher in the hierarchy of the access to the verbs.
15. Number inflectional marker is lower in hierarchy than the gender – for the access to nouns and adjectives.
16. Syntactic processing deficits are not the sole factor behind the morphological paraphasias.
17. Segmentable units smaller than words are always meaningful, hence are morphemes.

The Nature of Agrammatism

There has been a debate on agrammatism regarding the nature of deficits as traditionally it is a loss of inflection and function word while paragrammatism is the substitution of those. In case of Hindi there is always overt or non-overt marking on the words for different inflectional marker. So it is always a case of substitution of inflectional suffixes. Therefore the agrammatism in the context of Hindi will have different dimension covering both the deletion and then addition of affixes. Both Wernicke’s aphasics and
Broca’s aphasics seemed to be significantly impaired in the production of inflectional morphology [Bates et al (1987)]. Also, there is no significant difference in the absolute level of performance of Broca’s aphasics and Wernicke’s aphasics [Haarmann & Kolk (1992)]. As Broca’s aphasics weren’t more likely to omit than substitute inflections and function words whereas Wernicke’s aphasics also substituted inflections, in addition to words. In the context of Hindi the substitution is the only possible morphological process in the inflectional and derivational68 morphology. This agrammatism / paragrammatism distinction doesn’t work well for richly inflected languages. As for Hindi Ranjan (1998) and Nehru & Ranjan (1998a&b) showed that there were no illegal morphological paraphasias. Also, Grodzinsky (1990) noted that in some languages it is not phonologically possible to omit inflections. So the agrammatic errors were always substitutions. Inflectional substitution were witnessed in Hebrew [Grodzinsky (1984)], in Italian [Miceli et al (1983)] and in Greek [Kehayia (1990); Kehayia et al (1990)]. Unlike the claim by Goodglass et al (1993) these inflectional errors are independent of comprehension, the Broca’s and Wernicke’s aphasics displayed a remarkable difficulty in the auditory comprehension regarding sentence processing, e.g. complex sentences.

Arguments for Autonomous Morpheme Representation


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68 The impairments may show the deletion of derivational morpheme as in Case 1: R.K. but that derivational marker is replaced by inflectional morphemes, e.g. ‘burā’apa’ was impaired to “burā’a’ where ‘-apa’ derivational morpheme was deleted and replaced by ‘-a’ which is a masculine gender and singular number inflection in adjectives.

69 He tried to show the dual nature of the morphological representation using the naturally occurring language data – through code switching, novel forms and speech errors.
argued that if all morphological errors were simply a case of whole-word mis-selection then one would expect all substitution errors to be grammatically well-formed. S.J.D. showed no phonological whole-word substitution and the absence of phonemic errors hinted strongly that morphological errors were not the product of phonological errors either. Therefore the morphological errors and the whole-word substitutions could not be treated as one. It will be very simplistic and straightforward to say that morphological errors were due to a true deficit of lexical morphology. Ranjan (1998); Nehru & Ranjan (1999 a&b) also provided evidences for autonomous morpheme representation through dissociations between number and gender and within number and gender inflections.

A very consistent error pattern in one category of affixed words against a very consistent sparing of other categories of affixed words speaks very strongly of morphological paraphasias as not merely lexical paraphasias, i.e. substitutions. If there is lexical paraphasia in one category of nouns – other categories should be affected – if not so – the categories of nouns are separately represented. If the nouns are spared completely against impaired category of adjectives – this would result in the autonomous status for the word classes – nouns and adjectives. But then, if one commits errors like substituting affixes and substituting the words from adjectives to nouns, that too a particular class of adjectives, i.e. feminine adjectives, then, this certainly is not a case of lexical paraphasia as the patient is selecting nouns instead of the same word class, i.e. adjective, which should be represented separately.

RK consistently converted plurals to singulars in nouns while adjectives were spared. If this is also a case of lexical paraphasia, then in this case RK would have selected other morphologically legal words instead of just selecting the singular form of the stimuli. But the error patterns were highly selective and methodic, i.e. conversion of plural to singular nouns. The inference is quite obvious that she did not substitute gender. Morphologically related forms within the same word-class include words with both gender inflections (wherever applicable, e.g., “vīdyalaya” won’t have a morphologically related feminine
gender form). Going by the theory of lexical morphology, she never substituted “larki” with “larka”, “larkiya” with “larka” or “larka” but the very consistent substitutions were “larka” with “larka” and “larkiya” with “larki”, which strongly suggest an autonomous component for plurality in this case, denying the morphological paraphasias as mere lexical errors. Otherwise in the R.K.’s output it is not possible to witness only singular forms in response to plural nouns throughout the data.

Then in DKJ, the errors were selectively in adjectives, not in nouns at the lexical level (and even these errors were completely absent in sentence production tasks). So this can not be a mere coincidence that there was not a single error on adjectives in sentences. There must be a division between the two levels of processing, i.e. single-word and sentence. Then again within the word class of adjectives, DKJ’s morphological paraphasias were characteristic in certain ways –

1) Plural number impairments were only on masculine adjectives &
2) Gender impairments were only on feminine adjectives.

He always selected “accha” for “acchi” and “accha” for “acche” despite the forms like “acchii”, “acche”, “accha” being available to him for substitution for all the adjective stimuli and these features were consistent in all the errors made on adjectives. “accha” (masculine singular form) was maintained and was never substituted.

In Case 2 (OPS) the errors were selectively on adjectives while nouns were completely spared. Again this error pattern was very consistent with Case 3 (DKJ) where also adjectives were the only affected word class while the nominal category was totally spared. The adjectives were converted into nouns. This was the type of error on adjectives. What is important here is that OPS selected nouns, i.e. abstract nouns, for as morphological paraphasias, whenever he couldn’t access the stimulus.

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70 The errors included change in word order and ellipsis of phrasal structures like subject and object NP, adverbial phrase, adjective phrase etc.
The morphologically related forms within the same word class could be

1) For “c’otj” – “c’otja”, “c’otje”

2) For “mojta” – “mojti”, “mojte”

But these were never selected by OPS as his responses. Instead he opted for nouns like “motapa”. Now if this is also a kind of lexical error, then it would be making a statement to dissolve the word-class boundaries, i.e. there is nothing like independent components of nouns and adjectives in the lexicon. But that is not true as obvious from the analysis of the impaired data in OPS and DKJ. Then another argument from lexical morphology could be that OPS tended to select the word from different word-class as the impaired response, even when other forms were available to him within the same word-class. Why did he selectively choose the derived nouns? What then, should be the implication? It would be that for “occhi” (a feminine adjective), there was no access to its masculine counterpart in singular or in plural, i.e. “occh’a” & “occh’e”, whereas the masculine singular (with 11% error rate impairment) and masculine plural adjectives are accessible to OPS when they themselves were the stimuli. So there was a selective impairment of the pathways to “masculine gender forms of adjectives” when the stimulus was feminine adjective. The non-selection of “mojti”, or “mojte” in response to “mojta” has a different and significant argument for the dynamics of the relationship between morphological substitutions and lexical paraphasias. The word which was available to OPS for “mojta” was “motapa”, i.e. from noun word class. It could be argued similarly in this case that the selective blockage of pathways to the plural form and feminine form for the stimulus “mojta” very selectively the derived nouns were available to him.

Lexical approach to these errors will be that OPS switched to nouns for substitutions. But the question arises – why were other related forms from the same word class not picked up? Again, why the selection from the same word class was blocked in a consistent
pattern, i.e. without any single exception? The explanation seems to be that selective access to nouns was due to the decomposition of masculine & feminine gender and singular number inflection from adjectives and then addition of the derivational morpheme to form the (abstract) nouns. What could be the process – instead of stating a flat reason of “whole-word substitution, the plausible explanation seems to be that – there are roots, inflections and derivational morphemes. Instead of saying that other morphologically related adjectives were not accessed, in a consistent way – it would result in saying that the route to feminine and plural forms was blocked for masculine singular adjectives and, the route to masculine forms was blocked for feminine adjectives, so those routes are selectively impaired following the lexical morphology approach. Then there is something like masculine and feminine gender inflection and plural inflection acting independently in the processing of the adjectives. This will be equal to saying that these inflections are separately placed in the lexicon.
Then explaining the change of word-class it could be argued that since no other attested 
forms were available, the roots were approached and, instead of selecting illegal suffixes 
for plurality/masculinity, i.e. like “mo̓ṭ̊yā” & “əc̣̪̊c̣̪̊ḳ̪̊č̣̪̊” (masculine 
inflect), selected a legal derivational morpheme and came out as a perfect attested form. Fig. 4.1 explains the structure of the 
processing of the adjectives, in the present context, i.e. for cases 2 & 3 (OPS & DKJ). 

When there are such selective impairment and intactness, brain can’t be so simplistic and 
straightforward in the language processing. It just can’t go about selecting a word from 
all the words available to the speaker. There are roots and inflectional and derivational 
morphemes too, which decide the nature of the output. Otherwise in whole –word 
substitution –if it is to select a word from the set of all words – it will either be chaos or
costly (in terms of time) for the language processing in the brain. Therefore it has to be methodical in the way language processes in the brain – then only there will be economy of derivation – which is necessary as brain is much faster than we can imagine.