DOCTORAL DISSERTATION THESIS

Eötvös Loránd Tudományegyetem
Bűlcészettudományi Kar

LIBÁRDIPÉTER

MULTI FACETED ANALYSIS OF
THE MENTAL LEXICON

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1. INTRODUCTION

The development of the mental lexicon and the changing of the size of vocabulary is the result of a life-long process. The acquisition of the mother tongue is different for each age group and shows huge individual deviations as being influenced by the experience, age and cultural heritage of the person. The age groups are only indicators as their boundaries overlap. Psycho linguistics determine age 13-14 as the minimum age limit for youth language whereas the upper end cannot be easily defined. Ageing shows a continuous increase in the number of the activated words, understanding gets better and it is likely to intensify during institutional education.

I shall apply the contact processes representing the pattern of the mental lexicon and the related base fields and aspects of psycholinguistics as the theoretical background. Besides the oral and written word associations, some analyses on word knowledge, word search and narrative testing was applied as analysing methods. The theoretical and methodological peculiarities of the topic of the dissertation is presented in Chart 1:

Chart 1: The contact processes representing the pattern of the mental lexicon (arrow), the related base fields and aspects of psycholinguistics (ellipsis), and the analysing methods (rectangular) with regard to the research of the dissertation.
The topic of the dissertation is made actual due to the lack of knowledge regarding the mother tongue acquisition of the transition period in the Hungarian professional literature.

The growing tendency of language awareness may be observed via the characteristics of the language use of the youth. The homogenous secondary school language shall become determinant beyond the individual peculiarities as student language and sleng will play a vital role besides literature and professional language use.

The topic of the dissertation is the analysis of the pattern of the mental lexicon of the spontaneous speech of grammar school students, to introduce the state and peculiarities of the youth vocabulary at the transition period of the mental lexicon of the age group between childhood and adulthood.

The findings may be utilised in several other linguistic sciences, language teaching methodology or pedagogy beyond psycholinguistics.

2. THE STRUCTURE OF THE DISSERTATION

The dissertation consists of 16 chapters. My aim was to survey the operations within the mental lexicon of 14-16-18 year-old grammar school students via different written and oral research methods. There were three experiments in both methods, free word association, word knowledge and word search by providing definitions in writing and free word association, spontaneous narrative and the repetition of a text after listening in the oral test.

I shall introduce the general topic and aim of the research and present the applied processes and the methods of the analysis in the introduction part.

The 1st chapter presents the possibilities for the determination, the structure, the ratios and the processes of the mental lexicon.

The 2nd chapter presents the two forms of language use, that is, speech production and speech perception.

The 3rd chapter presents the characteristics of spontaneous speech.

The 4th chapter describes the process of mother tongue acquisition until adulthood, and structures the theories related to the genetically coded mental principles and the social environment indicating experience and presents their counter effects on the development of the mother tongue.

The 5th chapter presents the role of memory in storing words.

The 6th chapter highlights the psycho linguistic aspects of youth language and also presents the empiric researches starting from the 1990s.

The 7th chapter presents one of the possible methods to explore the mental lexicon, word association. This represents the lexical access process as the execution of a specific command. Word priming follow rules. The chapter presents the possible types of word associations, which may be different as per persons. The word association surveys include the differences of the orderliness of the mental lexicon deriving from the specifications of the age group of the speakers.

The 8th chapter includes the aims and hypothesis of the research. The focus of my research is the analysis of the relationship of the units stored within the mental lexicon. I research the
influence of the language as a system and the meaning relations among the linguistic symbols on the information stratification in the transition period of youth language closing the period of the acquisition of the mother tongue.

The 9th chapter includes the presentation of the data providers of the survey and the general introduction of the survey methodology.

The 10th chapter includes the detailed and ordered analysis of the findings of all research types.

The 11th chapter presents the conclusions drawn from the findings in general and with regard to the specific surveys.

The 12th chapter is the short summary of the dissertation.

The 13th chapter includes the theses.

The rest of the document includes the sources used.

The last chapter of the dissertation includes the annexes, which were used for the experiments: the test sheet for the written survey, and the written version of the text used in the directed oral narrative-experiment.

3. MATERIAL, METHOD, TEST SUBJECTS

The experiment was conducted with the participation of the students of a talent promoting grammar school of Budapest in three age groups with a number of 98 persons.

The three age groups were 14, 16 and 18 year olds from seventh, ninth and eleventh grade. The gender distribution of the participants is presented in the chart below.

<table>
<thead>
<tr>
<th>Korosztály</th>
<th>14 évesek</th>
<th>16 évesek</th>
<th>18 évesek</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiúk</td>
<td>14 fő</td>
<td>21 fő</td>
<td>20 fő</td>
</tr>
<tr>
<td>Lányok</td>
<td>19 fő</td>
<td>12 fő</td>
<td>12 fő</td>
</tr>
</tbody>
</table>

In the oral part of the test there were 20 students from each age groups with 10 boys and 10 girls from each group. The test sheet used for the written experiment was paper based and included all three research materials together. I expected priming for 5 nouns (woman, violin, grammar school, traffic light, and siren), 3 adjectives (blue, holey, Spanish) and 2 verbs (hurry, rumble) in the word association. When testing word knowledge the students needed to find the definition of 20 words from among 4 options per words. The word search was aimed at finding 20 words again. The test sheets were filled in classrooms during grammar lessons in 45 minutes, and was supervised by the author of the dissertation.

There were also three tests in the oral survey with priming for altogether 8 words. The spontaneous narrative was related to the learning methods of the students. The repetition of the text was performed immediately after listening to it. All oral testing was recorded in digital version for later processing separately per persons.
4. FINDINGS

4.1. Word association in writing

Activating the elements of the mental lexicon is performed as part of several diversified and complex processes. All the three age groups was most characterised by the operation of the semantic strategy, which were accompanied by different phonetic and structural context.

Chart 2: The word association findings as per grades and gender according to words on average

The metonymic and synecdoche priming shows a gradual increase in the three different age groups. The metonymic activation always lags behind the synecdoche types. The largest difference may be found among the 18 year-old boys, where the difference is 2.95 on average between the two types of activation. The metonymic and synecdoche connections are represented in Chart 3.

Chart 3: The metonymic and synecdoche type word associations on average as per age groups
Two age groups (14 and 18 year-olds) preferred the synonymic word priming whereas the 15 year-old girls preferred word associations of opposite meaning. The most synonymic expressions were associated by the 18 year-olds, and there is a continual increasing tendency among the girls in all age groups leading before the boys.

Chart 4: Synonymic and opposite meaning priming and relation concepts on average as per age groups

In all age groups there were associative activations.

Chart 5: The associative type priming as per gender on average

The phonetic type priming was less than structural relations, whereas emotive associations, numbers or abstract priming was not usual. The 18 year-olds had no association for numbers at all for any of the words given. The most common structural relation was the adjectival construction, the students activated the characteristic of the given word, or formed an adjective from them. The typical word activation of the 3 age groups are presented in chart 6.
Chart 6: The phonetic, structural, emotive, number and other type of word associations on average as per age group

**Network relations in the mental lexicon of the responding students in case of the word grammar school**

I modelled the possible connections of the activations with regard to the word *grammar school* based on their frequency in case of more than 2 elements. I used three different types of arrows; the bold, continuous arrow is the strongest (more than 15), the thin continuous arrow for the medium (5-15), and the dashed line arrow for the weak connections (0-5). The number below the words show the priming rates of the three different age groups (14 year-olds in red, 16 year-olds in blue, 18 year-olds in green).

Chart 7: Network relations in the mental lexicon of the responding students in case of the word *grammar school* as per age groups
4.2. Contrasting the findings of the oral word associations in the three age groups

Altogether 3.830 words were provided for the 8 words to associate with from the 60 participants in the free oral word association. According to the GLMM statistic analysis, the grade and the buzzword is significant.

Chart 8: The significant cases of the responses as per each buzzword

Chart 9: The findings of the free oral word association as per buzzword, gender and age group

The above data shows that girls outperformed the boys in all age groups. The oral word association was best performed by the 16 year-old girls, who were followed by the 16 year-old boys.
4.3. Testing word knowledge in writing

When testing word knowledge, the task was to define 20 words in writing. I categorised the responses into three groups, correct, incorrect and there is no response. There were four options given on the test sheet to choose from:

\[
\begin{array}{lll}
\text{egyelőre} & \text{a) most, jelenleg, még} & \text{b) egyenletesre} \\
& \text{c) azonosra} & \text{d) valamely korábbi időponttól számított bizonytalanul rövid ideig}
\end{array}
\]

I found a significant difference among the age groups based on the repeated ANOVA statistical analysis: $F(2.18)=47.931; \ p<0.001$. The Bonferroni-test verified that the comparison of the average of each group is significant $p<0.001$. An increasing tendency can be found among the results of the age groups, which is represented by chart 10.

![Chart 10: The difference in word knowledge as per age groups in %](chart10.png)

4.4. Word search by giving definition in writing

The word search by giving definition in writing experiment seemed to be the hardest task for all the three age groups. I accepted the words indicated in the source or a close synonym thereof as a correct answer, and accepted the words with a similar meaning as similar.

The task of the students was to search a word in the mental lexicon, which they find most appropriate to fill in the gap of the definition. Example:

\[
\begin{array}{l}
\text{A } \underline{\text{ }} \text{ olyan szabályosan visszatérő időszak, melyen belül hasonló jelenségek, folyamatok fordulnak elő, mint az előzőkben.}
\end{array}
\]
The correct word was *ciklus*, and the following responses were provided by the respondents:

Table 2: Respond words for the buzzword ciklus as per age groups

<table>
<thead>
<tr>
<th>Age Group</th>
<th>helyes válasz</th>
<th>hasonló válasz</th>
<th>helytelen válasz</th>
<th>nincs válasz</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 évesek</td>
<td>ciklus (0 előhívás)</td>
<td>évszak (9 előhívás)</td>
<td>szakasz (1 előhívás)</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td></td>
<td>hónap (3 előhívás)</td>
<td>déjà vu (2 előhívás)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ismétlődés (3 előhívás)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>nyár (1 előhívás)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16 évesek</td>
<td>ciklus (6 előhívás)</td>
<td>évszak (5 előhívás)</td>
<td>ismétlés (1 előhívás)</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>periódus (2 előhívás)</td>
<td>megszokott (1 előhívás)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>nyár (1 előhívás)</td>
<td>monszun (1 előhívás)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>tél (1 előhívás)</td>
<td>réfrén (1 előhívás)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>menstruáció (2 előhívás)</td>
<td>sorrendiség (1 előhívás)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>nap (2 szóelőhívás)</td>
<td>visszatérés (1 előhívás)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>napkelte (1 előhívás)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 évesek</td>
<td>ciklus (8 előhívás)</td>
<td>periódus (17 előhívás)</td>
<td>szezon (1 előhívás)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>évszak (2 előhívás)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>körfolyamat (1 előhívás)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.5. Spontaneous narrative test – presenting the learning habits of the students

The students presented their learning habits in 120.95 minutes in the spontaneous narrative test, which represents an average of 2.02 minutes per respondent. The longest speeches were made by the 16 year-olds with an average of 2.52 minutes.

The most commonly mentioned 10 words included 4 words, which were associated to some extent in all age groups. The most commonly activated words are *study, go, love, and subject*, among which the most frequent was the verb *study*.

My survey included the diversity of the lexis in their speeches. I have found all parts of speech within the corpus, and on the basis of the findings the representation of the different parts of speech shows huge deviations. The most often used parts of speech are the nouns, adjectives and verbs.
4.6. Repetition of a text after listening

The time factor of the repetition of the text heard is diverse in all age groups showing individual differences. The respondents spoke for altogether 117.88 minutes, which is 1.96 hours. The shortest time was 53 seconds (16/F/6).

The content recognition showed an increasing tendency with the age growing. The full repetition of the sentence was least represented in all three age groups.

5. CONCLUSIONS

One of my main hypothesis stated that there is a difference in the data of the priming of the respondents both individually and as per age groups. The findings supported my hypothesis as the three different age groups produced different quality and quantity word activations as per age groups and individually as well. Word activations show intense variability in both cases, which present further correlations. These correlations within the priming are organised on phonetics, associative and emotive basis.

My other main hypothesis was proven as well: gender was a main influential power in all types of tests within the research, the word activation of girls was different from that of the boys, and was not always longer in time or more productive. The differences of mother tongue acquisition process in school age as per gender, in which girls are two years ahead of boys (Hámori 2005), usually vanish by teenagehood (Gósy 2005). The variability according to gender found in the present corpus is to prove the above statement.

The word association experiments enabled the analysis of the network correlation of the meaning presentations, on the basis of which the development of the connections between the different semantic units could be observed.
The mental lexicon develops dynamically under the influence of age group, gender and the social environment (society, family, institution...). The specific permanent changes are partially universal, partially individual (vö. Lengyel 2009: 16).

It is essential to have a suitable sized vocabulary besides the central operations; that is, speech perception and speech understanding. The priming of the elements depends on the quality and quantity of the background knowledge, a further condition of which is the knowledge and application of the grammatical and syntactical rules. The analysed corpus reveals that the respondents are open to the quantitative and qualitative acquisition of the new information.

**SOURCES USED FOR THE SUMMARY**


