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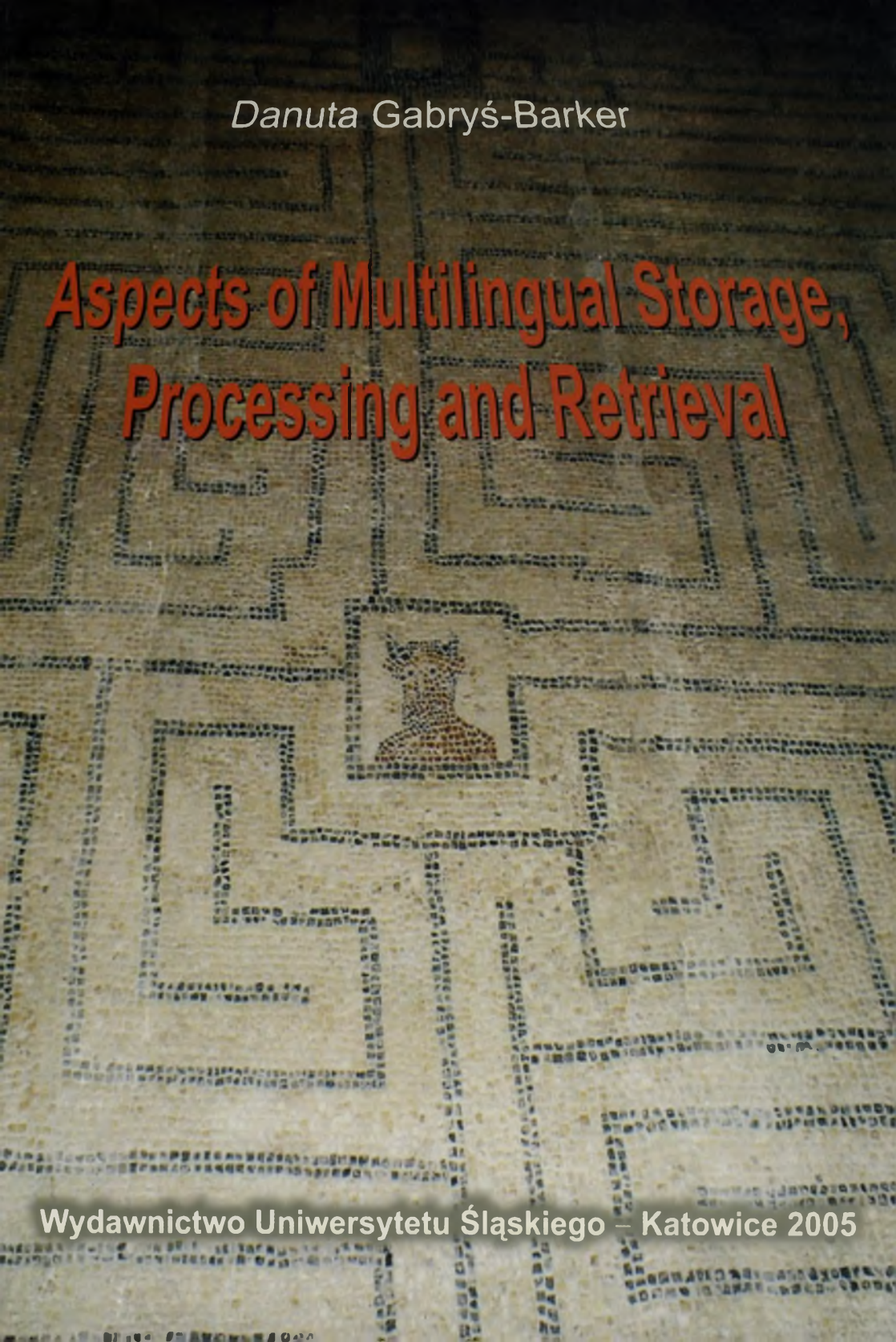
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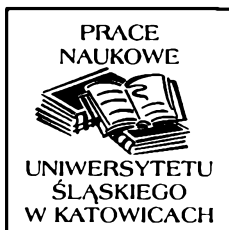
Danuta Gabryś-Barker

Aspects of Multilingual Storage, Processing and Retrieval

Wydawnictwo Uniwersytetu Śląskiego – Katowice 2005

Aspects of Multilingual Storage, Processing and Retrieval

For Tony



NR 2316

Danuta Gabryś-Barker

Aspects of Multilingual Storage, Processing and Retrieval

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Introduction

One of the commonest frustrations experienced by authors is shortage of space. Limits are often and necessarily imposed on the size of a book. In the case of this one, certain decisions have had to be made on what must be included and what can safely be left out. For me, the task of choosing which of the studies I have carried out to present here was an invidious one. A few of those conducted are only briefly referenced in the book. Also, the overview of similar studies in the research area and their findings is not always presented in as much depth as I would like for the same reason. The desire to do justice to the complexity of the theme of multilinguality, weighed against the need to select some aspects but not others, has been seriously constraining.

The reason for my long-term interest in multilinguality derives from the fact that, as I explain in Chapter One, a large proportion of language users and learners in the world are no longer monolingual, nor even bilingual, but rather multilingual. The spread of English as a *lingua franca* also contributed to the development of multilinguality around the world. The spread of multilinguality does not only relate to the natural setting of multilingual societies and mixed-marriages, but also to formal instruction contexts, where the introduction of at least two foreign languages has become an educational norm. Consequently, as teachers of EFL we are often faced with learners who are also acquiring/learning another foreign language and this is clearly reflected in the cross-linguistic influences we can observe in their language production, in terms of both positive/facilitative effects and interference. Shouldn't their increased learning experience be harnessed in our teaching and in their learning practices?

However, there are also personal reasons for choosing this research topic. I refer to my own foreign language development in learning Italian as L3 and Spanish as L4, which gave origin to my very first study on cross-linguistic influences (G a b r y ś 1996). Language instruction received via L2 (English) seemed to me to be a significant factor in L3 development, and what is more, one that impeded my progress! The method of teaching – a grammar translation method – contributed to difficulties in learning Italian, whereas

a communicative method in the case of Spanish made the task much easier. The area of transfer observed in my learning experience of Italian and Spanish via English was mostly in that of the lexical subsystems of both languages and derived mostly from English (L2), with no influence from Polish (L1) observed. This directly contributed to the choice of a more sharply defined research topic, that of the multilingual mental lexicon. At the time when my research started, this area was hardly ever touched on in the literature on foreign language acquisition/learning. Now, this seems to be a fast-growing research interest and more and more experimental studies are being carried out on the multilingual mental lexicon.

This book consists of four chapters focusing on different aspects of lexical multilinguality, and concludes with a fifth chapter devoted to conclusions and a discussion of the didactic implications for the language instruction of multilinguals. The studies presented were carried out over a period of six years or so, made use of various informants with different language combinations, and used a diversity of research methods (Table 1). Some of the results (study 1 and study 2, also study 3c) have already been presented in partial fashion elsewhere as work in progress (Gabryś 1999, Gabryś 2000, Gabryś 2001a).

Study	Study aim	Subjects (no.)	Language involved	Method
1.	lexical storage	150	L1 – Polish, Portuguese L2 – English L3 – German	association tests
2.	lexical storage	60	L1 – Polish L2 – English L3 – German	association chains
3.	– language processing transfer and strategies – language of thought – individual factors	48 4	L1 – Portuguese, Polish L2 – English L3 – German	introspection questionnaire
4.	language awareness	130	L1 – Polish L2 – English L3 – German, French	questionnaire retrospection
5.	learner's metacognitive awareness	36	L1 – Polish L2 – English L3 – German, French	questionnaire
Total number of subjects		428		

Table 1. Research overview

As one can see from the above overview, the subjects involved in this project were all trilingual with a combination of two Germanic languages as their L2 (English) and L3 (German), but had two different L1s, namely Polish and

Portuguese. They had fairly similar characteristics, both in terms of their mode of learning the two foreign languages and the language level achieved, and the profile of their studies: university language departments and teacher training colleges with English as the major and German as the minor. A more detailed description is included in the comment on individual studies in the chapters that follow.

The language tasks used as the tools for data elicitation in the studies range from automatic association and recall tasks to conscious translation activities, exemplifying both automatic processing and conscious and explicit analysis carried out by the subjects in the form of verbalized comments. What were also considered, and which have yielded important insights into the subjects' trilingual lexical competence, are their own reflections on cross-linguistic influences and the interaction of their L1, L2 and L3, expressed in the form of retrospective comments in the questionnaires they completed.

Analysis of the trilingual mental lexicon starts with a theoretical introduction to the phenomenon of multilingualism and multilinguality, and an overview of mental lexicon models (Chapter I). What then follows is a description of the research part of the project (Chapters II to IV). The areas of focus of the particular studies include various aspects of trilingual language competence with reference to lexical storage in three languages (Chapter II), trilingual lexical processing (Chapter III) and trilingual language awareness (Chapter IV). The concluding part of the book makes further comments on the major findings of the studies and their implications for multilingual learning and teaching.

Presentation of the theoretical background to this project (Chapter I) falls into two parts. The first introduces the concept of multilingualism and multilinguality and adumbrates its features. It defines this phenomenon by contrasting it with monolingualism and bilingualism in its different patterns and contexts of occurrence. Different studies in these fields are reviewed and their major findings discussed. The second part of the chapter revisits the concept of mental lexicon and reviews existing models found in recent literature in the field. Its major focus is on the discussion of theories of integration and separation in the case of bilingual (multilingual) mental lexicon storage and processing. It also directs attention to major research projects in the field of multilingual lexical development taking place at the moment.

The research section of the book focuses on three significant issues of interest: lexical storage, lexical processing/retrieval and language awareness. Chapter II (study 1) starts with a discussion of the conceptual structure of a multilingual mental lexicon and concentrates on the problem of transferability of concepts in the multilingual language user. It also looks at ways of lexical storage across languages based on the grammatical characteristics of

lexical items, i.e. how content versus function words are stored in L1, L2 and L3, respectively. Chapter II also examines the “depth” of multilingual lexical storage by analysing the association chains data produced in study 2 and discusses the variables which have contributed to the results obtained.

A further aspect of multilingual lexical competence is presented in Chapter III, which aims to demonstrate the ways multilingual language users access their mental lexicon(s) and shows what processing mechanisms can be observed. In the discussion of study 3a, different approaches to the language task are presented, depending on the language of input (L1 or L2). The data exemplify different types of retrieval strategy used by the subjects in their verbalizations. The incorrect lexical solutions are observed, classified and discussed. Study 3b, on the other hand, focuses mainly on the language of thought and language activation/inhibition in the different types of comment produced by the subjects when performing thinking aloud during multi-language translation tasks. Additional findings pointing to the importance of individual factors in multilingual processing, such as learning history or transfer of training for example, are examined in study 3c.

Having analysed the results of studies 1, 2 and 3, it became apparent that the phenomenon of multilinguality or multilingual lexical competence is very much determined by the language awareness of the subjects in general, and by their lexical awareness in particular, so studies 4 and 5 carried out surveys to determine the subjects’ perceptions of the phenomenon and their ability to use their linguistic knowledge in the pursuance of multilingual lexical development. It was assumed by the present researcher that this form of data collection (questionnaires) would in a complete and explicit way show the subjects’ language awareness. Chapter IV discusses the subjects’ understanding of language awareness in their mother tongue and their foreign language(s), and of ways of developing it. It tries to evaluate the role of the individual learner’s taking responsibility for his or her own achievements, or in other words, learner autonomy as seen by the subjects themselves (study 4). The second part of the chapter (study 5) attempts to present the subjects’ reports on their multilingual learning experiences in terms of their metacognitive awareness, understood as knowing about learning in the context of multilingual lexical development. Thus, it shows the subjects’ awareness of the role metacognition plays in multilingual lexical expansion. This study is a partial replication of an Innsbruck study (Spottl 2001).

Chapter V concludes the discussion on one of the chosen aspects of multilinguality: lexical competence in more than two languages. As the studies show, the complexity of the problem does not allow us to draw definite conclusions about the structure and workings of the multilingual mental lexicon and create a now and forever true model of it (which could never have been the purpose of the book). Only certain patterns can be detected and certain

variables influencing them highlighted. At the same time, however, some implications of the major findings of the studies presented here and of other related research projects on multilingual lexical development can have an important bearing on current didactic practices and learning experiences which stand in constant need of improvement. And in this I see the purpose and the main achievement of this book.

Chapter I

Multilingualism and multilingual lexical representation

1. Multilingualism and multilingual acquisition research

1.1. The phenomenon of multilingualism

In general terms multilingualism is understood as the ability to use or function in more than two languages. The fact of developing European integration and more and more extensive and intensive contacts between the countries of the world, as well as the multilingual situation of developing countries such as African ones, makes the phenomenon of multilingualism less an exception than a norm. Cook (1991: 113) observes that:

It is commonly assumed that acquiring one language is the unexceptional norm for a human being. Acquiring two is assumed to be something that is peculiar, difficult and, an intellectual achievement, a problem – anything but commonplace.

Of course, such a position may characterise that of a typical Englishman, whose need to possess another language is minimal, English being the best current example of a *lingua franca*. However, the data shows that:

On some calculations there are more people in the world like the Cameroonian (who speaks 4–5 languages) than like the Englishman; there are 3000–5000 languages in the world but only about 150 countries to fit them all into.

(*ibid.*)

The urgent need to develop multilingual instruction has already been observed in such centres of international cooperation as Brussels. For example, the European International School with its multiplicity of languages

of instruction seems to be receiving more and more attention. In some European countries (one might mention Spain, Ireland or Holland as examples), the revival of national languages within the country creates a situation in which the multilingual and not only bilingual schools have gained much in popularity. It is schooling that brings about the natural development of multilinguality in communities.

It could be assumed that a high percentage of the people who are multilingual are so either by birth as children in mixed marriages are, by immigration, or by living in another country temporarily. It can also develop through formal instruction in a school context, where two foreign languages are being introduced as an obligatory form of instruction, in most cases English being a state-sponsored *lingua franca* and also a language of the learners own choosing.

In her study of multilingualism, Barron-Hauwaert (2000) shows the complexity of a multilingual (trilingual) context as compared with patterns of language development in a bilingual family. Her research on the trilingual family, a case study of ten selected European families, whose language backgrounds made them multilingual, allowed her to picture the processes involved in the individual language acquisition of children, the co-existence of different languages in a particular family and the consequence of these on the social and cultural identities and educational choices made for children by their parents. The data collected by means of questionnaires resulted in some observations on how multilingualism affects language development in a multilingual family and what the factors that determine the route it takes are. It turned out that children go through definite stages of language use and preference – very young ones seem to develop competence in the mother's tongue first and are initially monolingual, whereas older ones pick up the other family language (i.e. that of the father) and could be described as bilingual at the pre-schooling stage. The school and further social contacts bring about the acquisition of the third language and the children naturally become trilingual. The second finding showed a clear preference for a school with a local language as the major. Multilingual parents seemed to be more prone to make educational choices towards at least bilingual schools. The unavoidable code-mixing observed in all the multilingual families was treated as a stage in children's linguistic development and as Barron-Hauwaert (ibid.) puts it:

The family's attitude towards mixing and the parents' choice of a name for each language shows parental efforts to deal with the situation in a manner appropriate to the child's age and understanding. Gentle and appropriate correction showed considerate attention to both languages and the local language.

It was observed in the parents' comments that their first languages were extensively used, even if they were minority languages, with the view that language is an indispensable part of one's family and the child's personal identity. *Barron-Hauwaert* (ibid.) concluded that a child does not simply become multilingual because of the exposure and immersion in several languages, but because a conscious effort was involved on the part of the parents, school and the environment to make those children multilingual:

All parents are trying to bring up their children trilingually, with varying degrees of success. The parents are extremely motivated to keep their languages and cultures alive alongside the local language.

However, the findings of *Barron-Hauwaert's* study, as she herself states, may not be very representative of other multilingual families. Other factors may carry more weight, such as the social-educational background of the parents, when for example uneducated parents of lower social status motivate their children to integrate with the local community and so local language competence is given preference in reaching this aim. Thus, the processes involved in multilingual development mostly in naturalistic settings will be greatly determined by the social context which usually embraces a lot of variables often affective in nature and difficult to measure. It also means that multilingual patterns of development will be very difficult to determine and will not easily be predicted.

On the other hand, multilinguality acquired in formal settings through classroom instruction will demonstrate its complexity in the language configurations and linguistic characteristics of the languages involved, i.e. their typological proximity and its psychological perception. The way they are learnt and interact with each other will be determined greatly by the way they are taught, as well as the extent to which motivational factors will be involved. The age factor – the acquisition of other languages in later stages of life – will also make it a qualitatively and quantitatively different process. The very nature of the process of formal multilinguality may create patterns very different from those of the natural multilingual context.

1.2. Research on different aspects of multilingualism

Anticipating a situation in which multilingual language competence becomes a must, the call for the development of research in the area of multilingualism and its pragmatic implications is entirely understandable and, in fact, it is presently undertaken through more and more studies being carried

out and research networks formed. However, in most cases multilingual research seems to be a side-product or part of second language acquisition studies, which in themselves are a relatively new branch of research. Even the very definitions, both of bilingualism (the possession of two languages) and multilingualism (competence beyond the bilingual), are a point of controversy amongst researchers, not to mention the conflicting data derived from the studies on such complex phenomena.

Fouser (1997) summarises the reasons for and relevance of MLA (trilingualism) research to SLA:

L3 acquisition research offers a chance for researchers to test SLA theories with an additional linguistic and cognitive variable (...), research in L3 classroom acquisition is important in determining how prior language experience affects the development of learner attitudes and motivations.

The stages of MLA studies clearly follow different ways of thinking about language acquisition than from the SLA perspective. The first studies carried out followed the behavioristic theories of language learning interpreted as habit formation, which was clearly reflected both in models of language acquisition and approaches and methods of foreign language teaching (FLT), e.g. aural-oral approach and ALM of FLT. In this sense, the major interest of MLA research focused on interference phenomena resulting from the interaction between L2 and L3 competence.

The development of cognitivism and cognitive methodology in the 70s allowed researchers to look at the processes involved in language acquisition and various aspects of facilitation multilingual competences perform. The role of L1 and L2 and their influence on both receptive and productive skills in L3 (e.g. in the contexts of African and Asian multilingualism) are often stressed. This area of MLA research is still very strong at present and many studies could serve as appropriate examples.

Most recent interest shown in the phenomenon of MLA has a very pronounced focus on the individual aspects of multilingual acquisition in various configurations of languages involved in the process of learning and language use (various types of multilingualism) and in the sequence of languages acquired, apart from the prominence given to the educational aspects of multilingualism, i.e. the practical implications of MLA research influencing both programmes of language instruction and methodology. It seems that the importance of MLA studies lies both in the development of a theoretical basis, as well as in the practical implications both for language instructors and language users. The major interest of MLA researchers focuses, among other things, on:

- sociocultural aspects of MLA (motivational and attitudinal characteristic of multilingual language users/learners),
- linguistic interaction between the multicompetences of a learner (phenomena of transfer),
- the development of multilingual competence through formal instruction at school versus naturalistic acquisition,
- the pedagogical implications of multilingual instruction,
- case studies of multilingual children.

Table 1 presents a selection of earlier studies of MLA. These are mostly case studies of children in a multilingual context.

Name	Year	Area of research
V. Vildomec	1963	early L3 production
W. Elwert	1973	case study of L3 upbringing (self-report)
E. Oksaar	1977	language transfer and code-switching
E. Harding & P. Riley	1986	contextual and attitudinal factors in L3
J. Navracscis	1999	non-linguistic factors in L3 acquisition

Table 1. Early MLA (Multilingual Language Acquisition) research

Hoffmann (2001) in her discussion of research in the area of multilingualism presents a typology of research that focuses on individual case studies of trilingual children (examples in Table 1). She also discusses the studies investigating the role of education in developing trilingualism (Table 2) and research projects on linguistic aspects of multilingualism and multilingual competence.

Name	Year	Area of research
J. Thomas	1988	minority children in the US
K. Jaspaert & G. Lemmens	1990	multilingualism in Belgium
H. Zobl	1993	learning procedures in L3
J. Cenoz & D. Lindsay	1994	optimum age for L3 acquisition
E.C. Klein	1995	US context multilingualism
F. Genesee	1998	social motivations and achievement (Canadian context)
J. Cenoz	1998	the Basque Country L3 education

Table 2. Trilingualism through schooling (selection of studies)

It is commonly observed in more recent research that it is not just the family context and parental support given to multilingual children that promotes their linguistic development but also the educational measures taken. These measures are mainly manifested by adoption of educational programmes catering for multilingualism. The areas where multilingualism becomes an

important issue in education are these days the bilingual countries such as Spain, and, in particular, some parts of it that want to be identified as having a separate cultural identity, such as the Basque Country, Galicia or Catalonia, where alongside Spanish and a regional language, English is introduced as the third obligatory language.

What is observable and gives evidence of more research involvement in MLA is a growing body of projects which are not just case studies of individual multilinguals mostly concerned with language dominance or other socio-affective factors, but more elaborate experimental research on the linguistic aspects of multilinguality. The major focus of those studies lies within the domain of language processing in various acquisitional contexts and language configurations (e.g. Clyne 1997, Herdina & Jessner 2000, Spottl 2001). In large part, these studies concentrate on the influence of bilingualism on the acquisition of another language (L3) and possible methodologies and strategies that might facilitate multilingual development.

Yet, another area of research on MLA, that of neurolinguistic studies, focusing on the problem of the location of languages in the brain, has to be mentioned here, although its findings are not at the moment very conclusive. They mostly focus on subjects who are neurological patients and who have undergone a stroke, aphasia or some other kind of brain lesion. Brain lesions of various kinds often result in language loss and gradual recovery of languages. Edwards (1995: 71) comments:

There seems little support for the idea that different languages are stored in the brain in essentially separate compartments, but the possibility remains that, within some overarching linguistic-store unit, there may be some subsystems associated with separate languages.

The problem of identifying the location of languages in the brain has been carried out in the monolingual as well as multilingual context, but the use of advanced technology, for example screening tomography or imaging techniques, has expanded possibilities and now begs an interdisciplinary approach.

Edwards (*ibid.*) quotes examples of neurological cases of patients who after the brain lesion occurred gradually regained their language competence in different languages, in different orders and to varying degrees (Table 3).

One of the projects which has recourse to functional magnetic resonance imaging (fMRI) is being carried out by Franceschini *et al.* (2001). The Multilingual Brain Project aims at “correlating images of local brain activation during speech production and perception with the language profiles of the single persons”. (p. 1). Franceschini *et al.* employ a complex methodology of brain resonance techniques with an in-depth study of learning profiles by means of language biographies, interviews and think aloud protocols.

Name	Languages known	Languages recovered (in order)
Benderl 1981	L1/L2 – Chinese/English	reading and writing only in English cause: brain tumour
Romaine 1989	L1 – Swiss-German L2 – German L3 – French	L3 → L2 → L1 cause: a stroke
Romaine 1989	L1 – German L2/L3 – French/English	code mixing (3 languages) cause: brain injury
Edwards 1995	L1 – French L2 – English	L1 – for prayers L2 – communication (in response to French talk!) cause: a stroke

Table 3. Language loss and recovery in neurological patients

Despite critical evaluation of the subjective data received from the subjects (e.g. interview or think aloud data), the researchers discovered a significant correlation between these and brain activation. A type of language acquisition (compound or coordinate) or the factor of age which had already led to competences being assigned to specific areas in the brain (Wattendorf *et al.* 2001) correlated with biographical data and the specific activation of the brain observed via imaging techniques in a silent speech production task. One of the interesting findings of the Multilingual Brain Project is the discovery of “different activation patterns in the brain in the subsystems known for directed attention, rule-consciousness and declarative, explicit knowledge”. (*ibid.*: 13).

Paradis (2000: 179–180, quoted in Franceschini *et al.* 2001: 13) in his discussion of what the focus of neurolinguistics research should be, concludes that neurolinguistics has to

(...) pinpoint the role of the cerebral structures underlying implicit linguistic competence, metalinguistic knowledge and pragmatic ability (...) to determine the relative reliance on these structures (as well as mechanisms responsible for motivation) in the acquisition, representation and processing of native language(s) and language(s) learnt or acquired later in life; and explore the cognitive and neuropsychological aspects of special language tasks such as mixing, switching and simultaneous translation.

Paradis (*ibid.*) advocates the need for the complex methodology employed in the research to be both clinical, experimental and neurological (imaging techniques).

Even a very brief review of MLA studies clearly shows the impossibility of arriving at definite conclusions about the very nature of the processes involved in MLA. As Cenoz and Genesee (1998: 16) state:

Multilingual acquisition and multilingualism are complex phenomena. They implicate all the factors and processes associated with second language acquisition and bilingualism as well as unique and potentially very complex factors and effects associated with the interactions that are possible among the multiple languages being learnt and the process of learning them.

1.3. Multilingual development

1.3.1. Patterns (contexts) of multilingual language development

The very fact that the sequencing of languages acquired/learnt in a multilingual context offers a diversity of patterns possible changes the nature and quality of the processes involved (Table 4).

Second language acquisition	Multilingual acquisition
L1 → L2 (compound bilingualism)	L1 → L2 → L3
L1 + L2 (coordinate bilingualism)	L1 → L2/L3
	L1/L2 → L3
	L1/L2/L3
	L1 → L2 → L3 → L4
	L1 → L2/L3 → L4
	L1 → L2 → L3/L4
	L1 → L2/L3/L4
	L1/L2 → L3 → L4
	L1/L2 → L3/L4
	L1/L2/L3 → L4
	L1/L2/L3/L4

Table 4. SLA versus MLA (after Cenoz 2001: 40)

The context of SLA compared with MLA seems very limited (Table 4), since it either allows for compound (L1 → L2) or coordinate bilingualism (L1 + L2 simultaneously acquired).

In the case of MLA, depending on the number of languages involved, the pattern multiplies (Table 4). In trilingual acquisition, the order follows one of the following paradigms:

- a. L1 → L2 → L3 – all the languages are acquired consecutively,
- b. L1/L2 → L3 – a bilingual child acquiring another language consecutively,

- c. L1 → L2/L3 – both foreign/second languages are acquired after L1 but simultaneously,
- d. L1/L2/L3 – all the three languages are acquired simultaneously.

The four different paradigms apply not only to different contexts of acquisition, being either

- **fully naturalistic**, e.g. **d**: an African context in which one tribal language is the means of communication at home, another tribal language of a higher status is used outside and there is still a *lingua franca*, as the “remnant” of the colonial times, usually English, French or Portuguese;
- **partially naturalistic**, e.g. **b**: a child in a mixed marriage learning another language at school;
- **fully formal** in a classroom setting, e.g. **c**: a typical example of a language learner exposed to formal instruction simultaneously in two foreign languages, or **a**: a consecutive acquisition of two foreign languages.

Hoffmann (2001: 19) distinguishes five groups of L3 learners/users bearing in mind the circumstances and the context in which the languages were/are acquired and used:

Trilingual children who are brought up with two home languages which are different from one spoken in the wider community;

Children who grow up in a bilingual community and whose home language (either that of one or both parents) is different from the community languages;

Third language learners, i.e. bilinguals who acquire a third language in the school context;

Bilinguals who have become trilingual through immigration; and

Members of trilingual communities.

The variety of paradigms, contexts of acquisition, the number of languages involved as well as the socio-cultural motivations behind language development of an individual make the description of the multilingual’s development a highly complex undertaking.

1.3.2. Multilinguality versus bilinguality

Apart from the contextual patterns, another important factor which makes these MLA processes quantitatively (more languages processed) and qualitatively different from SLA is language typology, both linguistic (language distance) and psychological, i.e. perceived by the learners themselves, and an extended possibility of interactions between different languages being acquired, both in terms of interference and facilitation.

Unquestionably, the aspect of prior knowledge facilitating the new cognitive information plays a major role in MLA, unlike in SLA. It is not only L1 competence but L2 as well that allows the learner to build his or her hypotheses when learning another foreign language. It means that the previous learning experience itself, e.g. learning strategies used in L2 acquisition, can be verified and used in the new L3 learning situation. The enhanced state of metalinguistic and strategic awareness of the L3 learner will contribute to the effectiveness of language processing and ultimately will affect the results achieved.

The motivational and attitudinal aspects of MLA will undoubtedly, as in the case of SLA, influence the process of acquisition of another language. The more languages are involved, the more complicated the affective domain will be. Different languages having different social status and vitality will create varied responses and cognitive (perceived difficulty) and affective demands on a multilingual learner.

To summarise: MLA is a process different from SLA both quantitatively (since more languages interact with each other) and qualitatively, i.e. it has to be viewed as a more complex process, whose complexity derives from the more diversified patterns of acquisition: various sequences of languages learnt, different ages of acquisition, different contexts and functions/domains of language use, varied motivations and attitudes, as well as different linguistic, learning and communicative sensitivity and awareness. When describing a bilingual learner/user, the research findings show their superiority over monolingual language users in their metacognitive awareness, cognitive flexibility (with divergent thinking well developed), communicative sensitivity and the ability to monitor their linguistic performance (Baker 1996). It seems reasonable that more extended linguistic resources and even behavioral (socio-cultural and affective) factors will give a multilingual certain advantages over a bilingual. However, this statement should perhaps be made cautiously, because the case may be that the competition between the languages each multilingual must inevitably experience will make him or her less effective in his or her language production and even suffer a certain degree of language(s) attrition, and in extreme cases, language loss might be registered.

In his discussion of multilingual development, Reinelt (2001) introduces the concept of **ease of learning** which he expresses in the statement:

Many multiple successive foreign language learners report that any additional language becomes easier with every new foreign language learnt or acquired to a certain degree, i.e. any FL_x + 1 is learnt easier than the preceding FL_x(s), or to put it in a simple phrase: The more FLs one has learnt, the easier the next one will be.

(ibid.: 1)

Of course, the provision has to be made for favourable conditions for language development to exist, conditions such as time, space and motivations and so on. If they are met, then the multilingual context provides ease of learning by:

- the benefits previous learning experience offers to an individual,
- heightened linguistic awareness and metalinguistic knowledge,
- the ability to make cross-linguistic comparisons,
- lowering the level of anxiety in language learning with growing experience,
- the increased pace of learning,
- facilitation of comprehension (e.g. in the case of languages close typologically).

The above described complexity of multilingualism as a linguistic and psycholinguistic phenomenon, as well as the research tools appropriate for SLA research, limit the reliability and validity of results, which often can account more for the individual cases investigated than allow us to draw conclusions leading to the creation of the theories and models. The lack of both longitudinal studies in MLA, except for the case studies of multilingual children, e.g. Hoffmann (1985) or Clyne's Australian project (Clyne 1997), and replication studies to verify the observations means that MLA research is not ready yet to draw definite conclusions or to form theories and models describing the phenomenon of multilingualism.

Once again, in their critical evaluation of MLA research Fouser (1997) and Hoffmann (2001) point out the distinctness of MLA as compared with SLA, presenting arguments similar to those given above. They look at the cognitive, linguistic and psychological aspects of L3 learning. On the basis of the reviewed studies, they both report that the conclusions drawn from MLA studies are ambiguous. However, there is a certain regularity and consistency in some observations reported on. They mostly refer to the studies carried out among children, which seem to be the most numerous. Fouser (ibid.) in commenting on these research results, refers to the affective influence of multilingualism on children, emphasising that

The several studies on L3 acquisition in children have shown that they develop competence in L3 without suffering from "language overload" as many parents fear. Children (...) do not suffer academically or emotionally from learning three languages, either simultaneously or in sequence.

Hoffmann (2001: 15) reports on the research results focusing on the common traits in language performance exhibited by multilingual children, pointing out the success in developing the phonological subsystems of three languages and lexical competence, following similar stages of language transfer and code-switching in trilingual language development. However, she has

reservations about the amount of linguistic data available for inspection and conclusive and generalisable analysis.

Another area of MLA looks at multilingualism (trilingualism) in an educational context (formal instruction) trying to evaluate to what extent being a bilingual language learner facilitates learning another foreign language, an issue which is broadly represented in Canadian studies (e.g. Genesee 1998). The results suggest that facilitation seems only advantageous when combined with social motivation to learn the third language and with achievement. The same results seem to emerge from Valencia and Cenoz's (1992) research in the Basque Country context. These studies have obvious implications for educational policies in the countries where trilingualism is a necessity, for example Luxembourg (Hoffmann 1998 in Hoffmann 2001: 17):

Luxembourg, for instance, has one national and two official languages and by establishing literacy in the national language (which is the mother tongue of most children) and a combination of teaching a language as a subject and subsequently using it as a medium of instruction, proficiency in the second and then the third language is achieved.

One of the major areas of linguists' interests in MLA lies in discovering the networks existing (or not) between the languages of a multilingual. Manifestations of these are most visible in such examples of linguistic behaviour as code-switching and borrowing (Clyne 1997, Gabryś 2002). These studies show that to some extent MLA (trilingual) resembles SLA in the strategies employed but, at the same time, point out to the proficiency level and transfer of training (natural setting versus artificial classroom context, method of FLT the subjects were exposed to, etc) as important variables in L3 acquisition presented in my earlier study (Gabryś 1999).

The subjects' ability to facilitate cooperation between L1, L2 and L3 derives from a variety of variables, one of them being metalinguistic awareness understood as

The ability to think flexibly and abstractly about language; it refers to the awareness of the formal linguistic features of language and the ability to reflect thereupon (...) To be metalinguistically aware, then, is to know how to approach and solve certain types of problems which themselves demand certain cognitive and linguistic skills.

(Malakoff 1992: 518)

This metalinguistic awareness is closely related to the learner's ability to monitor his or her performance using metalinguistic knowledge which, as can be expected, is much more enhanced in a multilingual than in a bilingual

language user. The more languages as the basic resources for processing, the better the monitor functions (Herdina and Jessner 2002: 64) by performing the following:

1. fulfilling the common monitoring functions (i.e. reducing the number of performance errors, correcting misunderstandings, developing and applying conversational strategies);
2. drawing on common resources in the use of more than one language system and
3. keeping the systems apart by checking for possible transfer phenomena and eliminating them and thereby fulfilling a separator and cross-checker function.

Metalinguistic awareness as mentioned above means also the ability to employ strategies acquired in the previous learning experience (Zobl 1992, Clyne 1997). As in the case of research into strategy use in SLA (Bialystok 1990, Oxford 1990), it is assumed that there is a definite relation between the types of strategies employed and prior linguistic knowledge and experience in multilingual learning – as demonstrated in my previous study (Gabrýš 1999).

Clyne (1997) suggests that it would be difficult to create a universal picture of a trilingual (as it is already impossible to establish a profile of a more or less prototypical bilingual language user), since trilingual competence develops in an even more idiosyncratic way than bilingual competence, with the whole diversity of patterns possible and changing affective and socio-cultural variables, language distance, and exposure to and use of individual languages mentioned above.

Any analysis of an L3 user's performance on the linguistic level should include the cross-linguistic influences observed and discussed in the studies of Ringbom (1987, 2001), Williams and Hammarberg (1998), Hammarberg (2001) or Dewaele (2001). These studies focus mostly on the interaction between languages on the lexical level of language competence and describe conditions promoting interlingual transfer in multilingual learners' languages, as well as emphasising the role(s) performed by L1 versus L2, or different settings of L3 acquisition. Other areas of cross-linguistic influences deal with transfer between typologically close languages (Cenoz 1998) in various language subsystems.

To sum up, it could be said that generally a bilingual model of research does contribute to multilingual research, and that learner characteristics as described in the context of bilingual language development can give us a basis to be expanded into multilingual models, however multilinguality has to be viewed as a much more complex phenomenon on the linguistic, psychological and social levels. So again, the results obtained may not allow for generalis-

ations and models to be created. These models need to be replicated in similar contexts with similar variables in focus, the complexity of which cannot really be forensically reproduced. We may have to be satisfied with hypothetical patterns of linguistic behaviours characteristic of certain language use contexts.

1.3.3. The Dynamic Model of Multilingualism

It should be stated that MLA is a process different from SLA. It was initially assumed that becoming multilingual just meant gaining linguistic competence in yet another foreign language and little more than that, understanding both bilingualism and multilingualism to be developing in a linear fashion. But an interesting proposal for a new understanding and a new paradigm of multilingual development has been put forward by Herdina and Jessner (2002), namely the Dynamic Model of Multilingualism (DMM).

DMM takes a critical view of earlier language research which adopted monolingualism as a norm and defined multilingualism as multi-monolingualism. DMM looks at multilanguage development from a psycholinguistic perspective and describes it as a holistic process based on the assumptions of dynamic systems research used in sciences such as biology, physics, mathematics and neuroscience. The whole model is quite complex and requires a lot of explanation of concepts and terminology. Here, only its major assumptions will be presented as far as they are relevant to this study.

First of all, DMM accepts the holistic approach understood as:

the whole is more than the sum of its parts;
 the whole determines the nature of its parts;
 the parts cannot be understood, if considered in isolation from the whole;
 the parts are dynamically interrelated or dependent.

(Herdina & Jessner 2002: 150)

Secondly, language is viewed as a system, which is assumed to be like any other system

more than just a collection of variables or observables we have isolated from the rest of the world. It is a system primarily because the variables mutually interact. That is, each variable affects all the other variables in the system, and thus also affects itself. This is a property we may call complete connectedness and it is the default property of any system.

(van Geert 1994: 50, quoted in Herdina & Jessner 2002: 77)

What is more, each system is dynamic since it changes over a period of time. DMM emphasises multilingual development as systemic and characterised by the following features (Herdina and Jessner 2002: 89):

- non-linearity,
- maintenance,
- reversibility,
- stability,
- interdependence,
- complexity,
- change of quality.

Non-linearity, as already mentioned, stands against the long-cherished belief that language development is sequential and step by step: a mastery of one leads to the acquisition of the next one, what Nunan (1996) calls “the block-building metaphor”. However, it can be observed that like in the case of any other development, language development is not steady and linear but slows down or accelerates depending on the individual circumstances in which it takes place. These individual circumstances are described in the DMM as the limited resources

expressed in the amount of time and energy learners are able to spend on the acquisition and maintenance of a language. If learners do not continue to refresh their knowledge of a particular L2 or L3, a gradual process of language attrition will set in.

(ibid.: 88)

So, language development irrespective of the number of languages involved in it is pictured as the relation between **language acquisition effort (LAE)** and **language maintenance effort (LME)** which result in **general language effort (GLE)**.

The ability to use and function in a certain language (languages) presupposes that some degree of **maintenance** of a given language (languages) has to be observed. The larger the number of languages involved is, the greater the effort to maintain them will be. Unequal effort or resources used in the maintenance of individual languages, due to various circumstances in which the language is not being actively used, will cause language attrition (decay) of some of them. Herdina and Jessner point out that the rate of decay will depend on:

- limited availability of resources,
- language pressure (e.g. communicative or some other function dominating),
- length of language use (i.e. period of maintenance),
- age of language acquisition (maturation and processes of decay).

So, language attrition is seen as: “an inversion of language growth. Lack of maintenance of a language system results in an adaptive process by which language competence is adjusted to meet the perceived communicative needs of the individual speaker”. (Herdina and Jessner 2002: 91).

However, at the same time, language attrition is a **reversible** process provided that the resources become available again, i.e. the effort needed to maintain the language will be restored. Also, individual language **stability** plays a role in language development: “If the learner can freely vary the amount of effort, this process of adaptation to environmental pressure will obviously increase system stability as a desired effect”. (ibid.: 92).

This relative language stability will, of course, be determined by the number of languages an individual is in possession of. A multilingual language user will need to put in more effort to maintain each of his or her languages than a bilingual would.

Multilingual development according to DMM is not seen as a development of individual language systems, but one dynamic system of **interdependent** language development of individual systems constantly converging and diverging to create multilingual competence. This interdependence leads to a change in the **quality** of a multilingual language system in terms of learning skills (prior learning experience), language management skills (metalinguistic and strategic awareness) and language maintenance skills.

Summarising their arguments for DMM, Herdina and Jessner (ibid.: 96) say:

(...) we believe that learning a third language differs essentially from learning a second – something third language learners themselves intuitively perceive; (...) a trilingual system differs essentially from a bilingual system, as different competences have resulted from the previous language-related cognitive processes; (...) multilingual language acquisition research based exclusively on research into bilingualism and SLA will be unable to deal with and explain the phenomena occurring in trilingualism.

In their discussion of multilingual language development, Herdina and Jessner stress the centrality of the concept of transfer which in bilingual research has already received a lot of attention. However, the understanding of the concept as the influence of one language on another, be it the mother tongue's influence on L2/FL or the other way round, the effects L2/FL has on L1, is challenged as being too static. Whether it has a positive effect (positive transfer) or negative (interference), it does not reflect what actually happens in or to the linguistic competence of a multilingual user. Since DMM stresses its dynamic character, the phenomenon of language transfer is redefined as **cross-linguistic interaction (CLIN)** and includes other phenomena connected

with language processing such as code-switching and borrowing. Herdina and Jessner (2002: 29) comment

(...) it is even a wider concept than that of CLIN which was originally suggested by Kellerman and Sharwood-Smith (1986) (...). CLIN is also intended to cover another set of phenomena as non-predictable dynamic effects which determine the development of the systems themselves and are particularly observable in multilinguals. Such influences can be interpreted as synergetic and inferential ones.

1.4. Multilingual language users' language competence

1.4.1. The concept of multilingual language competence

The concept of language competence, be it with reference to monolingual or bilingual/multilingual language users, describes two different types of knowledge (Ellis 1985):

- declarative knowledge about the language, linguistic competence – implicit in the case of L1 and mostly explicit in FL,
- procedural (knowledge how to produce/use the language) (Fig. 1).

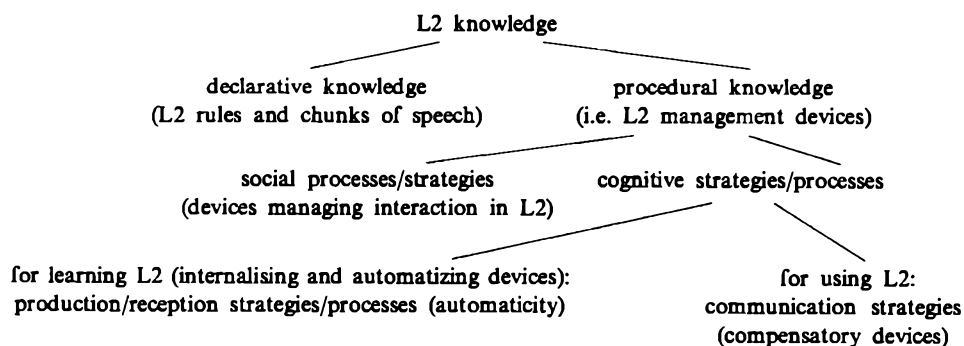


Fig. 1. L2 knowledge of a learner (after Ellis 1985: 165)

In other words, language competence can be viewed as a composite construct consisting of the already mentioned linguistic competence deriving mostly from declarative knowledge, i.e. knowledge of linguistic system at its different levels of functioning (lexical, morphosyntactic and phonological), but it also refers to the ability to use this knowledge appropriately and effectively. This appropriacy and effectiveness relate to the context in terms of pragmatics

(e.g. register appropriacy), discourse (e.g. correctness of a text structure), socio-cultural constraints (e.g. cross-culturally aware language behaviour), or strategic competence (e.g. ability to use a communication strategy in the case of communication breakdown).

Defining multicompetence, various researchers stress the different and idiosyncratic qualities of multicompetence (Table 5):

Name	Year	Definition
V. Cook	1991	<i>a different state of mind</i>
M. Clyne	1997	<i>multilateral competence</i> (linguistic and procedural)
J. Cenoz & F. Genesee	1998	an individual ability to use several languages effectively
Ch. Hoffmann	1999	linguistic and functional ability in all languages of a multilingual user
I. Keszkes & T. Papp	2000	a common underlying conceptual base and a multilingual processing device
P. Herdina & U. Jessner	2000	a complex psycholinguistic system and a holistic perception
L. Aronin & M. O'Laoire	2001	<i>an ecosystem</i>

Table 5. The concept of multicompetence

As can be seen from the above presentation, multicompetence is understood as operating on the level of linguistic knowledge, functional ability as well as psycholinguistic functioning, characteristic of an individual. This individual aspect is emphasized by Aronin and O'Laoire (2001: 2):

Each individual possesses **his/her own multilinguality** which depends on a set or sets of languages (or constellations as Hoffmann puts it), the level of mastery of each language, etc. (...) Multilinguality also includes cognitive and linguistic abilities, potential to gain knowledge, self-image and language-learner preferences, and the tangible impact of the cultural context.

Aronin and O'Laoire (ibid.) propose to view multilinguality "in terms of **an ecosystem** wherein sets of languages operate and function together as a single entity" and they explain that: "We use the term *eco* as an analogue of the ecological phenomenon intrinsic to the nature cycle, emphasizing the essential dynamics of growth, change fluctuation, input, absorption and decay; while stressing the entity of multilingualism".

The justification of the *eco* metaphor comes from the belief that language learning and its use by a multilingual person means a state of constant change through the interaction of various linguistic systems of L1, L2, L3, and Ln. The interaction leads to the introduction of modifications on various levels of linguistic knowledge and function, in which some of the elements (languages) may deteriorate (attrite) or develop (progress).

Figure 2 describes the nature of multicompetence as an ecosystem.

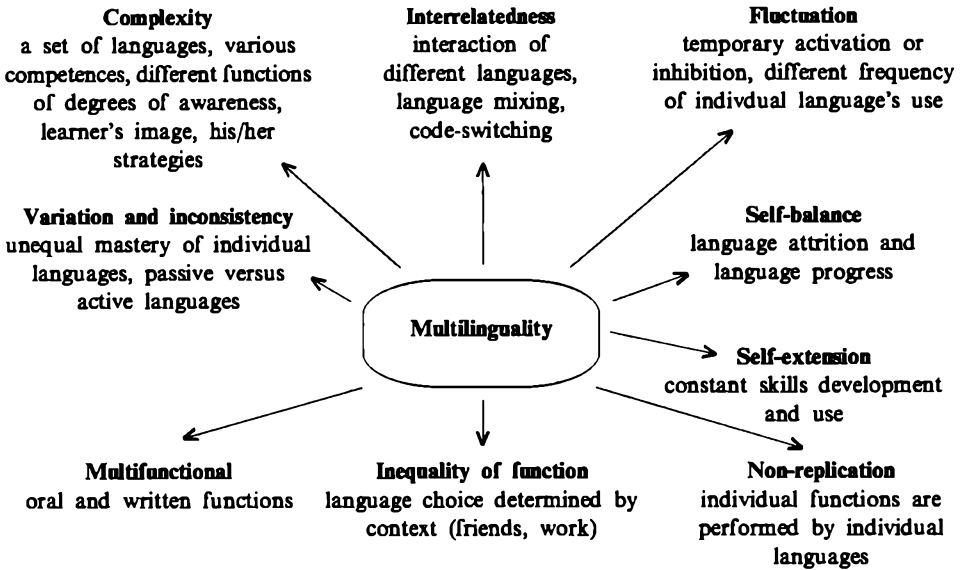


Fig. 2. Multilinguality as an ecosystem (adapted from Aronin & O'Laoire, 2001: 2-4)

Also Cook (1991) in his discussion of **multicompetence** argues for the complexity of the concept. Being a bilingual/multilingual does not mean being two monolinguals in one, but he assumes the existence of "the compound state of mind with two grammars". He argues that a multilingual mind is different from that of a monolingual in a number of ways:

- the knowledge of L1 differs from knowledge of L2/Ln,
- the metalinguistic awareness of language of a multilingual is increased,
- the cognitive processing involved in L1 and L2 recognition and production vary.

Cook (ibid.) also believes that:

1. It is not clear whether multicompetence is holistic, i.e. if L1 and L2 systems merge, for example, if there is only one complex grammar system or separate ones, however, most of the experimental evidence seems to support the multicompetence model.

2. The mental lexicon of a multilingual demonstrates an intimate relationship between L1 and L2 (Ln).

3. Processing in L2 on all language levels is not separate from L1 and learners code-switch readily between different languages and make use of their L1 competence.

4. Recent research shows that the hypothesis claiming that foreign languages are stored in a different brain hemisphere (the right one) from the

mother tongue (the left one) has to be rejected and, what is more, localisation in the brain areas is not separate for different languages but demonstrates a complexity of links and overlaps.

As can be clearly seen, multicompetence and multilinguality as such are very **individual phenomena** that cannot be measured and described in fixed patterns. One has to carefully consider an individual multilingual language learner/user and his or her characteristics in language acquisition, use and his or her psycholinguistic profile.

1.4.2. Defining the concept of lexical competence

One of the levels of linguistic competence crucial for language use, both in monolingual and multilingual contexts, is language users' possession of words, namely, their lexical competence. Lexical competence is built out of different types of lexical knowledge, not only of individual words, but also of the mutual relations between them, as well as reference to meaning outside language reality. Or, to put it another way, being a lexically competent language user means acquiring:

- the denotative meaning of words,
- the hierarchical relations between words (those of superordination and subordination within a given semantic field),
- the relations of homonymy, synonymy and antonymy,
- items marking discourse continuity,
- the connotations that given words carry,
- awareness of the metaphoric nature of words and expressions.

The importance of the relational nature of lexical knowledge is seen in the models of lexical representation as described for example by Clark and Clark (1977), or Paivio (1986). Generally speaking, these models are different from each other in the way they describe lexical representation in the mental lexicon either as **referential** or **denotative**.

The concept of **referential representation** assumes that each word has its mental image, conjured up by a signal, e.g. an acoustic one in the case of a spoken word (Paivio 1986). The image can be either auditory, as in the case of sounds imagined on hearing the word "to whistle", or visual, if a word refers to a physical object.

The results of research show that mental images play a facilitating role in memorizing words, however, they might be misleading in the case of the same images for different words, e.g. remembering the word *swallow* and *bird* will bring about the same mental image, or, on the contrary, some of the words may conjure up no images at all. Paivio's Bilingual Dual Coding Model assumes that:

1. There exist two (more in the case of multilingual representation) separate verbal systems for each language.

2. There is also a system of non-verbal representation shared by all languages and independent of them.

3. The non-verbal system is conceptual and common to all languages.

4. There are bi-directional connections between the verbal and non-verbal systems.

5. Non-verbal images play the mediating role in language processing, e.g. through associations or translation processes.

The model assumes both integration and separation within one representational system.

The **denotative hypothesis** of lexical representation is built upon the belief that words denote categories sharing certain properties. The understanding of the categories is shared by speakers of a language and necessary to make the communication process possible. It is difficult to imagine that lexical representation is either referential or denotative; it might be the case that both of them describe the meaning of a word in the lexicon and may be developmental. Clark and Clark (1977: 410) assume that the first kind of lexical representation is imaginal and "the meaning of a word is in its sense, not in its reference".

When discussing meaning representation in the brain, Menyuk (1988) refers to three existing models of the structure of the lexicon discussed in literature:

- the hierarchical network model,
- the semantic features model,
- the spreading activation model.

All three models assume the existence of the relations between the lexical items stored in memory, but the types of the relations are different in each of the models (Table 6).

Model	Type of relations	Example
Hierarchical network	superordinate and subordinate (superordinate properties apply to all category members)	<i>dog</i> → <i>Alsatian</i>
Semantic features	a lexical item as a set of feature (features unique to one item)	<i>bird</i> : <i>animate</i> , <i>can fly</i>
Spreading activation	multiple relations, not hierarchical (associative, categorial, prototypical)	<i>knife</i> / <i>fork</i> , <i>white</i> / <i>black</i> , <i>apple</i> / <i>fruit</i>

Table 6. Models of lexical representation in the mind

The above models look at the mental representation of lexical knowledge language users possess about words, irrespective of its linguistic aspects, that

is, phonological, syntactic or orthographical representation in the mental lexicon. These models are complemented and described by theories and models of lexical processing.

2. Lexical processing: theories and models

2.1. Defining mental lexicon

Singleton (2000: 161) emphasizes the importance of one's lexical competence by saying that it is "an important dimension of language that needs to be addressed in any description of the phenomenon of language or indeed in the description of any particular language".

This description entails the whole range of different aspects of the development of lexical knowledge such as learning versus acquisition, storage and retrieval from memory, processing words in L1 and L2, their mutual connections and, generally, the way the mental lexicon, i.e. the internal inventory of words is being organised in our minds. Generally speaking, an internal inventory of lexical items, be it of individual words or set phrases, is our **mental lexicon** and can be defined as a system of storage, often described by means of the lexicon metaphor, which

may serve to conceptualise the structure of the interaction of languages in a bilingual or multilingual dictionary as the model of the source domain: the analogy of lists of lexical items in one language with their translation equivalents in the other languages (...) the lexicon metaphor may serve to model the relation of lexical items in various languages with their referents in the real world.

(Dechert 1998: 1)

So, following the interpretation of the lexicon metaphor, the mental lexicon of any language user could be defined as a system of storage, containing information concerning the phonological, morphological, syntactic and semantic data of lexical items or fixed expressions. Also, Emmorey and Fromkin (1988: 144) describe a mental lexicon as

that component of grammar in which information about individual words and/or morphemes is entered, i.e. what a speaker/hearer of a language knows about the form of the entry (its phonology), its structured complexity (its morphology), its meaning (its semantic representation), and its combinatorial properties (its syntactic, categorical properties) (...) also orthographical or spelling representation.

However, it seems that the above understanding of the idea of a mental lexicon is not complete. What it lacks is the conceptual aspect. A mental lexicon should be seen more as a conceptual system than a pure inventory of entries, a system which is composed of concepts and their linguistic realisations both phonological and orthographic, and with strong emphasis put on lexical processing as discovered in my earlier study (G a b r y ś 1998), that is to say, access and retrieval as evidence of the working structure of the mental lexicon.

2.2. Lexical processing

According to Tyler and Fraunfelder (1987: 7), the aim of lexical processing is to “make available stored knowledge associated with words so that this can be used to develop a meaningful interpretation of an utterance”. In other words, lexical processing means reaching a word in our mental lexicon by accessing its specifications, such as its phonological, morphological, syntactic and semantic features. The process of accessing a word operates in three stages: pre-lexical, lexical and post-lexical (H a n d t k e 1995: 115, Fig. 3).

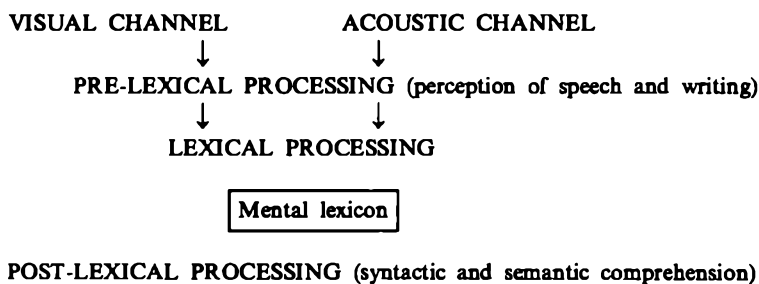


Fig. 3. Levels of word processing (after Handtke 1995: 115)

Before the lexical processing proper occurs, the language processor attends to the input by means of three channels (ibid.: 114):

- the acoustic/auditory input channel,
- the visual input channel for graphological information,
- the visual input channel for logographic information.

So, pre-lexical processing describes the perception of speech or a written text.

At the stage of lexical processing a word, a lexical entry in the mental lexicon is being first recognised (word recognition) and then retrieved (word retrieval). The first stage, i.e. word recognition, consists of the appropriate selection of specifications of a given word, i.e. phonological, morphological, syntactic and semantic (meaning). This process is hypothesised to occur by means of

a sequential elimination of inappropriate specifications for a given input word to be next retrieved from the lexicon.

The two processes are described as occurring either in sequence or as interacting with each other. Handtke (ibid.: 115) refers to two types of information flow in lexical processing:

- an autonomy model in which “the flow of information is strictly serial and bottom-up. In such models decisions at lower levels are not determined by information coming from higher levels”;
- an interactive model which assumes “the information flow between the processing levels in a top-down fashion, i.e. levels further removed from the input influence lower levels”.

On the other hand, Bock (1982) and Levelt (1989) propose to view language processing on three levels: **conceptualising**, **linguistic processing** and **low-level processing** (Table 7).

Level	Aspects			
CONCEPTUALISING	Conceptualiser ↔ Knowledge			
	Message generator		World knowledge	
	Monitor		Situational and pragmatic knowledge and interpretation	
LINGUISTIC PROCESSING	Production system ↔ Lexicon ↔ Comprehension system			
	Grammatical encoding	Lemma	Semantic Interpretation	
		Lexicon	Parsing	
		Form		
		Lexicon		
LOW-LEVEL PROCESSING	Output system ↔ Overt speech ↔ Input system			
	Articulation	Interlocutor's speech	Acoustic analysis	
	Writing	Written language	Visual analysis	

Table 7. Language processing (after Bock 1982 and Levelt 1989)

Deriving from these two extreme hypotheses, the models of lexicon organisation supported by the evidence of different empirical studies try to create a theory of language processing for L1 and multilingual language users. However, despite their sophistication, a decisive answer to the question of lexical organisation is still not offered, since the complexity of variables involved in the lexical competence of a language user – either a native speaker or a multilingual – variables which are both structural (language determined) and non-structural (learner variability) in nature, may only allow for hypothetical pattern-oriented models of the mental lexicon rather than stable structures.

2.3. Review of L1 mental lexicon models

Numerous theories of lexical processing have led to a whole variety of models describing the phenomenon of the L1 mental lexicon (Table 8).

Name	Key phrases/words
The logogen model (J. Morton 1982)	the logogen system, the cognitive system, the responses buffer, the threshold levels, the activation level, context, semantic priming via the cognitive system
The lexical search model (K. Forster 1976)	peripheral access files (phonological, orthographic, lexico-semantic), the master file, channels (oral versus visual), semantic priming via cross-references in the master file, a two phases lexical processing
The modularity hypothesis (J. Fodor 1983)	language as an autonomous module, input systems (perception and reception), output systems (production), inborn language faculty versus processing, informational encapsulation (no context)
The cohort model (W. Marslen-Wilson 1987)	the word-initial cohorts (word detectors), activation and matching, contextual information, word and context-specific semantic priming
Blueprint model (W. Levelt 1989)	declarative knowledge (facts, situations, discourse, lexical, morpho-phonological), procedural knowledge (the conceptualiser, formulator, articulator, audition, speech comprehension), lemmas versus forms, mediator (lexical hypothesis)
Connectionism (J. Elman 1990)	parallel distributed processing, neuropsychological aspects of language processing (interconnected neurons), simultaneous and independent processing of different data, semantic and formal processing (interconnections), strength of connection (not an external symbol or pattern)

Table 8. Models of L1 lexical processing (based on Singleton 2000: 170–180)

The above enumerated models all see lexical processing as an on-line phenomenon, which accommodates acoustic and linguistic (contextual) information, and assumes that lexical items are stored on phonological, semantic and syntactic levels. The major difference lies in the sequence and mode of interaction between the three levels and different types of information available for processing.

Following Garmann (1990), Singleton (1999) in his recent discussion of the L1 mental lexicon distinguishes between the so-called **indirect models**, i.e. those which describe lexical processing as a two-stage activity occurring at the level of lexical access and retrieval, and **direct models**, which assume one-stage processing combining access and retrieval. The direct models presented (*ibid.*) are the **logogen model** and the **cohort model**.

The **logogen model** (Morton 1982) looks at word recognition as a process of accumulating information to finally access and retrieve a certain word. It consists of three componential parts:

- the logogen system (a neural unit or logogen, part of the nervous system involved in lexical processing),
- the cognitive system (semantic information),
- the response buffer (language generator).

The accumulated information comes from auditory word analysis (acoustic signals), visual word analysis and from the cognitive system (semantic information). So, the model assumes the existence of separate representations of a word: phonological and semantic. All this information is received by many logogens and only through the process of elimination is the right choice of the word to be retrieved made. This according to Morton (1982) is being regulated by two types of thresholds defined as control mechanisms: “(...) one controlling access to the cognitive system and the other controlling access to the response buffers”. (Singleton 1999: 86). The lower the threshold, the faster the lexical activation: “It is assumed (...) that each time a logogen reaches its threshold, the value of that threshold is lowered”. (Harris and Coltheart 1986: 140).

The response buffers, directly connected to the logogen system, are in charge of language production, both spoken and written, and constitute the final stage of lexical processing. Morton hypothesises that logogens are of different types: the input ones differ from the output ones, the functional from the category ones. The fact that functional logogens are different from category ones may mean that the lexical representation of lexical words is situated in a different place to the functional ones. The evidence for this hypothesis can be found in studies of brain-damaged patients exhibiting difficulties in one of the two categories of words, depending on the site of damage (Menyuk 1988: 140).

One of the aspects of Morton’s model which has been strongly criticised is his belief that the two modalities – auditory and visual – are not connected in lexical processing, which is not confirmed by the studies of mixed visual-auditory word recognition (Emmorey and Fromkin 1988, cited in Singleton 1999: 90) in which, for example, visual recognition is strongly facilitated by an oral stimulus preceding it, which in turn may indicate the interconnectedness of the two lexicons.

The **cohort model** (Marslen-Wilson and Tyler 1980) suggests that the input words are being recognised from the acoustic information (on hearing the word) by word detectors, which are being activated. The word-initial cohorts, i.e. sequences of sounds are being activated, monitored by the detectors and gradually eliminated – they “decline” till the right word is selected. Marslen-Wilson introduces the concept of “the uniqueness point”

for each word, which marks the exact moment of recognition when the elimination process has been completed. Even though the whole word has not been pronounced yet it can be recognised, because certain clusters of sounds are not possible in a given language, so they are not being activated.

The model describes the process of guessing by elimination of impossible occurrences, but shows that many words are initially activated on the basis of the acoustic information which is being processed simultaneously with the contextual information, i.e. semantic and syntactic, which is also part of lexical processing of each word:

each word would have built into its mental representation not simply a listing of syntactic and semantic properties but rather sets of procedures for determining which, if any, of the senses of the word are mappable onto the representation of the utterance up to that point.

(Marslen-Wilson and Tyler 1980: 31, cited in Singleton 1999: 94)

Various language phenomena observed not only in research studies but also in our daily use of language can be quoted in support of the cohort model, whose main assumption is that words are recognised by their beginnings (initial cohorts). One of them is undeniably the TOT (tip of the tongue) phenomenon, in which lexical access is done via the opening segments of a word.

Experimental research in speech shadowing (retelling a story heard) shows the subjects' ability to retell correctly, even if an incorrect version of certain words in the story was presented. The restoration of the deviant items may be attributed to the ability to use contextual information in the construction process. The existence of the uniqueness point is observed in the ability to anticipate, even if not all the information is available (e.g. a word not fully pronounced can be guessed at).

The indirect models of lexical processing are seen as "looking up a word in a dictionary" or "finding a book in a library" (Singleton 2000: 170), which both imply a sequence of actions to be taken. Singleton discusses the search model, the modularity hypothesis and the connectionism model as examples of indirect (multi-step) models of lexical processing.

Forster's (1976) lexical search model assumes that lexical processing consists in making accurate connections between so-called peripheral access files which are either phonological, or orthographic, or syntactico-semantic in nature and are connected to the master file by pointers. The master file is a complete representation of each individual lexical item. The access to each item depending on the channel (spoken, written or semantically based) is via an appropriate access file. So, as Singleton (2000: 174) puts it

if one is listening to speech, one processes each spoken word by going first to the phonological access file; if one is reading written language one goes first to the

orthographic access file; and if one is producing language on the basis of particular meaning intentions, one goes first to the syntactic/semantic access file. The access file in question then facilitates access to the master file.

What is being emphasised as important for lexical processing in this model is the assumption that the master file contains not only the fully specified lexical item, but cross-references between all the items in the mental lexicon. Singleton's criticism of the above model derives from the lack of supportive experimental data that would demonstrate the feasibility of this model.

The **modularity hypothesis** of language processing assumes that "the entire language faculty is a fully autonomous module" consisting of "a number of distinct, specialized, structurally idiosyncratic modules that communicate with other cognitive structures in only a very limited way". (ibid.: 176, Fig. 4).

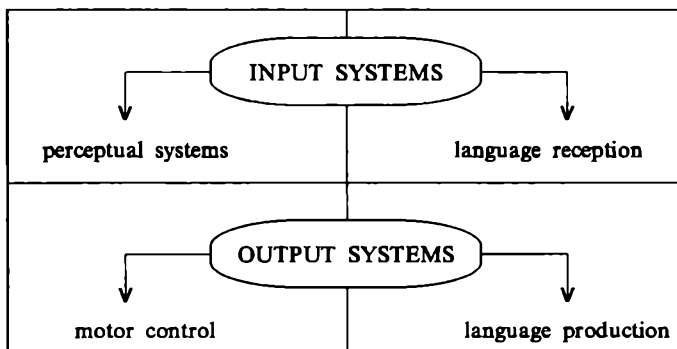


Fig. 4. The modularity of language processing

Fodor (1983) believes in what he calls "incapsulation of modules", understood as the independence of linguistic modules in on-line operating from any other information that might be considered relevant for processing, for example topic knowledge or contextual clues. However, this claim can be easily discarded since research has shown the facilitative aspects of the power of anticipation in language tasks performance – which are very much based on general knowledge or on context. Language processing in Fodor's understanding is limited to "that of a formal processor with no semantic role" (p. 178) and distinct from processing of non-linguistic data.

Connectionism, also known as PDP (parallel distributed processing), is based on neurological theories of brain functioning in which the brain is seen as a network of neurons connected with each other and functioning simultaneously – in parallel and not in a linear fashion – on different levels of processing. This model rejects the idea of the existence of patterns and paradigms in which language processing is seen as the manipulation of symbols into patterns by means of rules. On the contrary,

The connectionism paradigm calls all this into question, representing knowledge in terms of connection strength rather than in terms of rules and patterns. According to connectionists it is not the patterns that are stored – not even the patterns of features that make up what we know as words, morphemes and phonemes – but rather the connection strengths between elements at a much lower level that allow these patterns to be recreated.

(Singleton 2001: 180)

To what extent are L1 lexical processing models applicable to the L2/multilingual context? What are the possible areas of dependence and independence? The answer to these questions and a fruitful approach to dealing with this issue can be partly based on the qualitative and quantitative similarities and differences between the process of L1 vocabulary acquisition and L2/FL vocabulary learning.

2.4. Lexical processing and the mental lexicon of a foreign language user

2.4.1. L1 versus L2 lexical development

When discussing the problem of the lexical development and mental lexicon of a bilingual language user/learner, an immediate question arises: do we talk about one lexicon for the two languages – and if so, what are the networks within its structure? Are the lexicons for L1 and L2 separate entities with no interconnecting links, or, perhaps, the picture is more complicated: some part of the lexicon is shared, whereas some of its functions separately for L1 and L2? The above mentioned hypotheses are reflected upon in various approaches in L2 mental lexicon studies.

Before looking at the different models of lexical storage and retrieval in the case of L1 and L2 processing, it might be useful to compare L1 and L2 development, focusing on the similarities and differences between the two, in respect of what may be seen as either facilitating L2 development or impeding it.

Firstly, the most obvious difference between the two processes is quantitative in nature, reflecting the time and intensity of exposure to two languages. In L1 development it is constant and lifelong, well-embedded in daily as well as professional and personal contexts. In L2 use the exposure may very well be in terms of how often the user is exposed to L2 language use, which might only be occasionally, often only through formal instruction. A large proportion of the vocabulary acquired therefore may expand only passive lexical competence.

Secondly, the cognitive and conceptual development of a baby acquiring its first language is observed simultaneously with the development of linguistic

behaviour, which means that the concepts and the language that represents them come together. In the case of second/foreign language acquisition, a learner/user has already a certain cognitive and conceptual framework formulated and structured in his or her L1. In the simplest of situations, learning another language might mean the mapping of the old concepts from L1 into L2, but, of course, languages do not overlap completely. The conceptual domain of two languages will not differ in terms of concrete objects or unambiguous actions, but will show either clear or partial differences in the understanding of abstract terms: "more often (and perhaps more problematically) the meanings of the two languages – reflecting the cultural peculiarities of the respective language communities – are differently structured and distributed". (Singleton 2001: 181).

In some cases, some of the concepts existing in a certain culture will be absent from the other and will require the acquisition of a new concept. The exclusion or partial overlap results in cross-linguistic transfer, which influences lexical development either in a positive way (facilitation) or, more often, interferes with it. The processes observed in lexical expansion are reminiscent of those used in L1 vocabulary acquisition, when a child tests his or her hypothesis by means of, for example, overgeneralisation (overextension). Incorrect lexical formations of the same kind may be observed in an L1 child and L2 learner. The major differences between the two lexicons are observed in the way they are structured. Numerous studies in word associations carried out among native speakers and learners indicate that: "whereas in the first language mental lexicon the connections between the lexical units are predominantly semantic, in the second language mental lexicon they are predominantly phonological". (Singleton 2001: 182).

Some researchers claim that in the early acquisition of a lexical item, when it is not well established in the structure, and thus not very familiar to the user, he or she tends to access it by form and not by a semantic link. The higher the proficiency of a learner in L2, the more semantic is the type of association (links within his or her mental lexicon) observed (G a b r y ś 2001). Of course, this kind of supposition leads to yet another difference between the L1 and L2 lexicons.

2.4.2. Theories of separation and integration

Probably no other phenomenon in SLA raises so many questions and controversies as the problems connected with word storage, retrieval and memory representations. As Aitchison (1988: 356) states, it is not yet possible to talk about universal principles of lexical organisation, in other words, how lexicons are structured, because of various complications at different levels of language processing as well as in the perception of meaning:

Meaning is even more problematical. It is clear that in the mental lexicon, there is no fixed meaning, that is, there are no necessary and sufficient conditions. Instead, we are probably dealing with a fuzzy lexicon (...) In addition, words can be extended in meaning or coined even in the course of a single conversation.

The complexity involved in L1 lexical storage and processing is multiplied by the complications added by yet another lexical system, that of L2. When describing the possible networks or structures existing in a multilingual mind, considering only the conceptual domain of lexis, O b l e r and G j e r l o w (1999: 12) offer a range of different models to be considered as representative of possible connections existing in the internal lexicons of language users (Fig. 5a–5d). They describe either separationist (Fig. 5a), interdependence (Fig. 5b and 5c) or partial overlap (Fig. 5d) views of the multilingual mental lexicon and their conceptual basis.

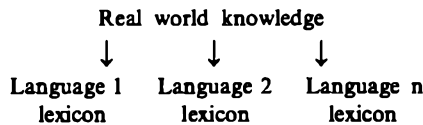


Fig. 5a. Separate lexicons

The model assumes the independence of lexicons of the particular languages (L1, L2 and Ln): the **independence hypothesis**. Research studies in neurolinguistics using imaging techniques, that is to say brain scanning, show that different brain areas are activated when the informant performs in L1 and when he or she functions in L2 (A r a b s k i 2004).

This data clearly supports the separation hypothesis as well as do studies on language handicaps such as aphasia, where language loss is caused by brain damage and its partial or complete retrieval is observed after a certain period of time. They may eventually lead to similar conclusions supporting the separationist view. The recovery of different languages in the mind of an aphasiac happens in an unpredictable order, often with the languages recovered separately and with different degrees of completeness (E d w a r d s 1995).

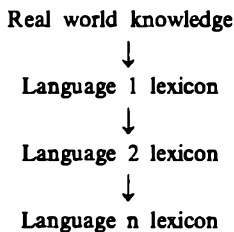


Fig. 5b. Interdependent lexicons

The **interdependence hypothesis** assumes that the meanings in the lexicon of L2 are direct translation equivalents of L1 concepts (like entries in a bilingual dictionary). L1 performs the role of a mediator in lexical processing. In the case of the L_n mental lexicon, the equivalence is indirectly received through the language higher on the scale (here: L2).

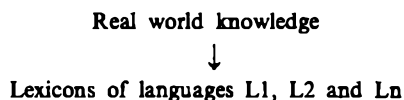


Fig. 5c. Integrated lexicons

In this proposition, there is one concept existing beyond the language, and represented by different language labels, which are activated in the process of lexical access. This fully integrationist model is represented by C o o k (1993) in his discussion of the concept of “multicompetence” as a kind of unitary competence in a multilingual mind, which does not refer, as Cook puts it, to a “sum of competences” but is fully integrated. C o o k (1993) quotes evidence from various studies to support his view. The studies of lexical processing of bilinguals in test tasks, e.g. H a m e r s and L a m b e r t (1972), or more recent ones, e.g. my study (G a b r y ś 1999) show the interaction of the languages L1, L2 and L_n in performing both cloze tests and translation tasks and the use of cognate phenomena or morphemic similarities for faster processing. Important evidence comes from the research project on the mental lexicon in Dublin (S i n g l e t o n 1996 and 1999), which shows through the surface data (product of translation, text, individual items) and processing (introspective comments) the “cross-consultation between the L1 and L2 mental lexica” (S i n g l e t o n 1996: 248).

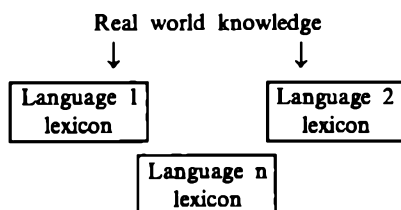


Fig. 5d. Partially overlapping lexicons

Obler and Gjerlow comment on the above model: “The (...) lexicons overlap in their relationship to the conceptual store. Some items share many associations, some none”.

In his discussion of the interdependence of multilingual mental lexicons, A r a b s k i (1996) suggests that L2 lexicons do not constitute a separate entity

from the L1 conceptual store, but derive from the set of L1 semantic traces. These semantic traces are defined as “the meaning contents of lexical items” and are initially L1 specific, which means L2 does not develop its own semantic traces first, but relies on the L1 store entirely. This is clearly reflected in the data demonstrating the degree of lexical transfer in the early stages of L2 vocabulary learning. Through a process of L2 vocabulary expansion (semantic extension), the L1 traces are extended onto L2 (Fig. 6) and the L2 language user becomes capable of distinguishing between L1 and L2 meanings.

Monolingual speaker:	Semantic trace → L1 lexical item
Bilingual speaker:	L1 semantic trace → L1 lexical item
	L2 semantic extension → L2 lexical item

Fig. 6. Semantic traces in the mental lexicons (adapted from Arab-ski 1996: 155–156)

The fact is that L1 lexical processing is more effective and mostly automatic, whereas in L2 it shows a high degree of conscious analysis and reliance on the L1 lexical store, which can be observed in studies using introspective data. This data which directly reports the processing carried out by the informants (Gabryś 2001) shows the degree of interconnectivity and reliance on L1 lexical competence.

The subordination of L2 lexis to L1 mental lexicon and its above characteristics is often explained by the age factor and the existence of an L1 specialised device (LAD) responsible for the rate and route of language development only up to the age of puberty. In the post-pubertal phase lexical operations become much more form-focused. The evidence from association tasks confirms the above hypothesis: the associative operations at the early stages of lexical development are mostly phonological, so-called clang associations through rhymes or phonetic similarity (Meara 1984).

In view of the state of existing evidence, it would be difficult to reject completely any of the hypotheses put forward. Even the independence model rejected by researchers is being reconsidered, bearing in mind the results of neurolinguistic studies of language performance in L1 and L2/Ln contexts. Singleton (1996: 251) offers the following summarising comment:

It is clear that the L1 and the L2 lexicons interact, but it also appears that much of the functioning of each of the two lexica proceeds with little or no reference to the other. One possibility that suggests itself is that of separate storage with interconnections between the storage systems – whether direct or via a common conceptual store. Another (not incompatible) possibility is that some portions of the L2 lexicon are very closely assimilated to parts of the L1 lexicon, the others are more separately organised.

In his overview of studies and arguments either for or against the integrationist or separatist view of L2/Ln mental lexicon, Singleton (2003) quotes evidence in support of both positions (Table 9).

Integration	Separation
<ul style="list-style-type: none"> - cross-linguistic influence observed in bilingual/multilingual production: examples of transfer errors in Ln lexical choices made (sources: L1 or L2 lexis); use of calques (literally translated words) - learning strategies employed by multilinguals: examples of strategies based on the other language(s) such as: associations, use of cognate words or false friends - bilingual behaviour: examples of intrasentential (within one sentence) code-switching, i.e. unintentional insertion of words/phrases from the other language, foreignizing (adapting L1 forms to fit L2/L3 formal rules, of phonetics or morphology for example) - communication strategies observed: examples of subconscious code-switching, slips of a tongue - reaction times: examples of quicker reaction times in the retrieval of cognate words (a quicker access to the lexicon because of the proximity of cognates) - translation tasks: examples of incorrect lexical choices made, for instance the use of words semantically similar but with different contextual restrictions (semantic extension) 	<ul style="list-style-type: none"> - the modularity hypothesis: examples of different specialized modules in the mind cooperating in only a limited way, the post-pubertal learning of L2 is seen as occurring in isolation from L1 - language typology: examples of marked formal differences between languages making multilinguals draw analogies from more familiar rules within one language system - language loss/aphasia: languages are recovered selectively, language disorders may affect one of the languages and not the others, also different areas of language functioning may be influenced by brain lesions - the ability to distinguish and select appropriate language in a multilingual context: examples of communicative sensitivity and selectivity, for instance in the case of bilingual children following the pattern of one parent-one language (a choice of language determined by the language of a parent in mixed-nationality parents)

Table 9. Integration or separation?

Both sides of the argument can be well documented by studies carried out in the area of mental lexica and no extreme position can be fully justified. It seems legitimate to say that perhaps it is different types and degrees of interconnectivity that will make some parts of the mental lexicon more integrated and others separate.

Following this line of argument, Cook (2003: 7) strongly rejects the idea of the existence of a totally separate or totally integrated multilingual mental lexicon:

total separation is impossible since both languages are in the same mind: total integration is impossible since L2 users can keep the languages apart. These possibilities represent the endpoints on the **integration continuum**.

The integration continuum is not a uniform construct since as Cook (ibid.) believes it applies to different language modules differently and that it is not static

a person's lexicon might be integrated, but the phonology separated. Nor does it necessarily affect all the individuals in the same way; some may be more integrated, some not (...). The point on the continuum may also vary from moment to moment in the individual according to his or her perception of language mode (Grosjean, 2001), level of tiredness or other personal factors.

Apart from the above, other factors and their interaction will influence language acquisition/learning and give rise to speculation as to what a bilingual mental lexicon is and how it is organised. Singleton (1999) and other researchers (e.g. Ringbom 2001, Alonso-Alonso 2002) point to the following variables determining the structure and ways of access and activation of a lexical item in a particular language in a multilingual mental lexicon:

- learning environment (natural or classroom setting, degree of exposure to a certain language will have impact on either the separation of lexicons or their integration),
- language dominance in multilingual competence (functional competence),
- language proficiency in each language,
- learning transfer (the influence of methods, techniques and learning strategies),
- a linguistic task to be performed,
- a perceived and real typological distance between languages.

A learning environment in which the process of language acquisition takes place will have a major impact on its route and rate. A naturalistic setting through a degree of immersion and hence exposure to language will make vocabulary acquisition faster. Often this process will be incidental and vocabulary will be acquired in a natural way through intensive exposure. The amount of contact with L1 vocabulary may influence the connections between the two lexicons. The elimination of L1 in certain domains of life will cause language attrition on the lexical level and L2 mental lexicon may function more independently – being more often the language of choice. There would be no need for direct connections – as there is in translation processes in the initial stages of L2 acquisition, between L1 and L2 items. Separate social domains (e.g. home versus work versus school) of a bilingual's functioning will have to cause structure changes in the mental lexicons in L1 and L2. The naturalistic

setting will promote the development of separate or partially overlapping lexicons for both languages, which will be very much determined by the language dominance factor.

The context of formal instruction, that is, a classroom setting, offers a bilingual (a multilingual) a much more limited access to language, specifically it is restricted in vocabulary choice determined not by natural conditions of language use as it is in L2 settings, but by the chosen topic and syllabus in general. What is more, instruction which is still most frequently carried out in L1 limits exposure to L2/Ln lexis. This may make L2/Ln language learners more L1 dependent and, consequently, the structures of their lexicons more integrated in a bilingual dictionary-like fashion. Also, the teaching methods employed in a FL classroom may have a decisive role in the way the mental lexicon of a learner will be organized and how he or she will access and retrieve a lexical item in a foreign language. The traditional overt vocabulary teaching methods or practice of rote learning of bilingual lists of words are only occasionally supplemented with guessing techniques and discovery learning. Traditional methodology heavily relying on L1 as a linguistic resource and reference system brings about the integration of L1 and L2/Ln lexis, often manifested in lexical transfer from the mother tongue, examples of unintentional code-switches or falling into the trap of false friends.

2.4.3. Beyond bilingualism: studies in multilingual mental lexicons (MML)

As Singleton (2000) emphasizes the central importance of lexical descriptions of language, so Cenoz, Hufeisen and Jessner (2003) provide very convincing support for the need to research multilingualism as a common linguistic phenomenon by stressing the major importance of the study of a multilingual mental lexicon. It seems to be one of the central aspects of successful language behaviour both in terms of linguistic and communicative competence. The centrality of vocabulary or, more precisely, one's mental lexicon (words and their interconnections in our brain and memory) can be judged from the abundance of research done in the area of vocabulary learning in the mother tongue and L2. The newly developing research field of multilingualism is very much based on the findings and adapting of methodologies of L2 vocabulary research – as was the parallel case with L2 vocabulary research in its early stages. It was L1 models that were adapted for the purposes of investigating the L2 mental lexicon phenomena. Although still in its initial stages, L3 mental lexicon studies cover a fair amount of ground questioning and presenting as yet tentative conclusions concerning the major areas of interest, such as:

- the relationships between the L1, L2 and L3 mental lexicons in the learner's mind (interconnectivity: dependence or independence?),
- the ways of processing different languages,
- the structure of different languages in the mind,
- accessing (selectively or non-selectively) words in the mind,
- the role of language typology in lexical retrieval,
- the strategies used in the recall processes (see Table 10).

Name	Year	Aspect
J.G.W. Ahukanna <i>et al.</i>	1981	language interference
M. Clyne	1997	L3 learner strategies
S. Williams & B. Hammarberg	1998	language switches in L3
J.M. Dewaele	1998	lexical innovation in L3
C. Bouvy	2000	cross-linguistic transfer
U. Schnopflug	2000	organization of L3 lexicon
J. Cenoz	2001	cross-linguistic transfer factors
J.M. Dewaele	2001	multilingual interaction
P. Ecke	2001	lexical retrieval
A. Herwig	2001	lexical processing
H. Ringbom	2001	lexical transfer
C. Spottl	2001	language perceptions of multilinguals
J. Arabski	2002	learning strategies
T. Dijkstra	2003	multilingual lexical processing
U. Schnopflug	2003	multilingual lexical processing
U. Jessner	2003	language transfer
L. Wei	2003	language transfer
C.J. Hall & P. Ecke	2003	language transfer
M. Gibson & B. Hufeisen	2003	language transfer
J. Muller-Lance	2003	multilingual learning strategies
C. Spottl & M. McCarthy	2003	processing formulaic language
R. Franceschini <i>et al.</i>	2003	neurolinguistic aspects

Table 10. Multilingual mental lexicon (MML) research

The areas of **multilingual mental lexicon (MML)** studies do not differ greatly from the research focus in L2 mental lexicon work and predominantly look at the notion of language transfer, understood now as a cross-linguistic influence and the interaction of multiple languages and its dynamic character. It may be assumed that the discussion of integration and separation of mental lexical systems is an even more complex issue than in the case of L2 mental lexicon. The multiplied variables involved in structuring and processing the languages – be they the increased number of languages available (and possible

directions and degrees of connectivity) or be they the complexity and variety of social language use determinants and different personal characteristics (contexts of acquisition/learning and use, preferences, dominance, etc) – they all make this research area even less conclusive than in the case of bilingualism. Also, we should not forget the basic and thorny issue of determining which language in the possession of the multilingual can be understood as L2, L3 or Ln – is it the order of acquisition of each or competence in or maybe an individual's perception of a given language that should be determining in classifying it, or all of these variables jointly? A lot of different patterns of multilinguality or, more specifically, MMLs need to be investigated.

MML research seems to make extensive use of research tools hitherto used only sporadically such as, for example, thinking aloud and retrospection. Verbalized data can show the ways the multilingual processes individual languages, their degree of activation (selection) and its purposes. Multilinguals' perspective on their learning experiences (retrospection) can also contribute to the picture of language awareness of multilinguals and the value of multilinguality for the development of this awareness. Also, neurolinguistic studies try to expand on language activation issues of multilinguals by the use of neurological imaging techniques for the purposes of locating the areas of responsibility for different languages in the brain, which are expected to develop our understanding of the issue of separation and integration of multilingual mental lexicons.

The aim of this study is to contribute to the analysis of multilingual mental lexical issues in its own modest way by discussion of the data obtained in the studies carried out and described below, and so to lend support to or bring into question some of the findings and hypotheses of the research detailed in this chapter.

Chapter II

The multilingual mental lexicon: lexical storage

1. Introduction to study 1 and study 2

1.1. Lexical storage

To be able to discuss possible models of a **multilingual mental lexicon** one has to look at the problem from various perspectives. The implication of a multilevel understanding of a conceptual model in general is that it consists of elements that are organized into a certain structure that functions in a certain way or ways. With reference to a model for the mental lexicon, as was mentioned earlier in Chapter I, this system should be described as the way words and expressions are stored – **lexical storage**, which, it may be assumed, depends to a large extent on their conceptual structure and linguistic characteristics (e.g. word categories). It also includes the ways lexical items can be retrieved from memory – **lexical access** thanks to lexical search processes, in other words – **linguistic processing** (the **activation and inhibition of languages**). The present chapter looks at the studies that tried to shed light on the storage of lexical items in the multilanguage representational system of a trilingual language user.

The lexical entries stored in a form of lemmas carrying semantic and syntactic information and lexemes, that is to say, the morphosyntactic characteristics of lexical entries (Levelt 1989), form connections between these on different levels, developing a network of lexical entries which we can define as the **mental lexicon**. These connections can be described in terms of their strength which within one language means semantic relatedness, entailing; for example, that words are stored in semantic fields. This relatedness becomes more complex in a multilingual lexical competence. In the case of different languages, it may be assumed, that the strength of connections is determined by the typological closeness of the individual languages. For example cognates are in close proximity since, as studies show, they are retrieved much faster

than non-cognate equivalents across languages. Another variable which adds to the closeness of the links is cross-linguistic influence which may, for example, result in overlap for the storage of such lexical items as homographs (Burteisen 2001: 2).

Apart from these structurally determined factors, it is language users' proficiency in given languages which will result in language overlap at the initial stages of language learning and gradual separation with the development of language competence. Also, the length and type of multilinguals' learning history will affect the types and strengths of connections within the lexical entries, whether it is in a naturalistic setting or classroom-based, for example.

1.2. How to gain access to lexical structure

One of the experimental ways of knowing about storage systems and interconnectedness or separation between lexical items of different languages of a multilingual is a **word association test**. Originally, word association tests were used in psychology in studying the connections between ideas in people's mind. The theory of association (Deese 1965, quoted in Söderman 1993: 98–99) was based on three general premises:

- contiguity – ideas in the human mind operate in a temporal sequence, meaning one idea leads to another in a time sequence,
- frequency – a determinant of the strength of connection between ideas referring to past experience,
- similarity – connection of ideas may be determined not only by a linear sequence, but also by a simultaneous experience of them.

Based on the fact that ideas – or, in other words, thoughts existing in our minds – are expressed verbally, it was assumed that linguistic manifestations of thinking can give evidence of the world representations we hold. As such, word association tests were used in the discussion of stereotype in normal people as well as in discussion of patients with mental disorders (Söderman *ibid.*: 99). Originally, it was not the linguistic character in the sense of type of association produced (form) but their content (exemplification of ideas) that drew researchers' attention.

Later in the 60's, word association tests were introduced into the study of language production in the case of monolingual speakers, where the major interest was in describing language development in terms of a response shift at different stages of linguistic development of a native speaker. The major focus of the research was the syntagmatic-paradigmatic shift in responses in the case of child-adult response type comparison. It was Ervin (1961) who invest-

igated association responses of kindergarten children, the first, third and sixth graders, and demonstrated the change of association types across this age span. She observed that syntagmatic and clang (phonetic similarity, rhyming) associations tended to disappear with age and the first lexical items that brought about paradigmatic types of associations were content words (nouns and verbs) and the words that were frequent in children's language use. Also, Brown and Berko (1960), Entwistle (1966), McNeill (1970) and Palermo (1970) confirmed the first findings of the syntagmatic-paradigmatic shift in the L1 mental lexicon.

In explanation of the above finding, McNeill (1970) proposed that the change in responses was determined by the way the semantic development of a child progressed. A child with a growing body of learning experience and semantic development develops his/her understanding of the semantic features of a word, first in terms of categories familiar to him/her such as objects, and only later complemented by its syntactic characteristics.

In the 70's with the growing interest in studying foreign language learning issues, association tests were introduced into the research paradigm of SLA. The early word association research of Politzer (1978) and Meara (1978 & 1982) aimed at comparing the native versus non-native speaker's association responses to observe whether the syntagmatic-paradigmatic shift would also be a regular pattern at the early versus later stages of foreign language development. Politzer (ibid.) demonstrated in his data the dominance of paradigmatic responses for his L1 (English) subjects and syntagmatic responses in L2 (French).

Meara (ibid.) also compared the responses of foreign language learners and adult native speakers and concluded that there were visible differences between these two groups, however, there were also parallels between early learners of a FL and L1 children's responses, the dominance of syntagmatic and clang associations being present in both cases.

Söderman (1993), in his experimental study of Finnish native speakers learning English through classroom instruction, looked for confirmation of the response shift, similarities and differences of responses as determined by age and the proficiency factor. His data also showed the regularity of the response shift with the growing proficiency of learners. The responses registered by the most proficient groups of subjects showed a paradigmatic similarity to native speakers' responses. He concluded that it resulted from the level of lexical knowledge of the learners being more semantically than formally-based. He also pointed out that word frequency was significant as a variable in response type, that is to say, infrequent words yielded more syntagmatic responses than frequent ones which the learners were more familiar with. Thus, the degree of word familiarity was considered to be an important factor in word association.

Over the period of the last twenty years or so numerous projects and researchers have been involved in word association research accumulating evidence of the workings of the L2/Ln mental lexicon, among them *A r a b s k i* (1996), The Birkbeck Vocabulary Project of *M e a r a* (1984) and Modern Languages Research Project (MLRP) of *S i n g l e t o n* (1999).

The Birkbeck Vocabulary Project generally supported the view that the mental lexicon in L1 is semantically-based and that links between the words are lexical, whereas the L2 vocabulary store is organized within phonological rules, in other words, it is form-based. *S i n g l e t o n* (1999: 132) takes a critical view of the results and those analyses, since he believes that the stimulus words in the test used by *M e a r a* yielded phonetic or form-related responses because they were infrequent items and unfamiliar to subjects with only a minimal lexical knowledge, so the only possible responses would be those relating to form and not meaning. *S i n g l e t o n* (*ibid.*) also quotes another word-association study of *O ' G o r m a n* (1996) rejecting the phonological rule of the L2 mental lexicon's organization.

What is more, in his own project (MLRP) comparable in its design to the Birkbeck Project (in its word association component), *S i n g l e t o n* (1999) observes that the data he received from his advanced learners of French (L2) was semantico-pragmatic and that very few responses were phonological in nature. He concludes

most of these words involved in these tests (C-test and word-association tests) were well-integrated into the mental lexicons of the learners concerned, and that well-integrated in the context of lexical acquisition (whether in L2 or L1) means connected up to the relevant network(s) of internalised lexical meanings – these meanings then constituting the dominant drives and determiners of the processing of such items.

(*ibid.*: 237)

The aims of the above mentioned research into the structure of the mental lexicon focused exclusively on the context of monolingual and bilingual language users. Despite the growing body of research into multilingualism and within its purview the multilingual mental lexicon, no project using word association tests can be reported on. Studies seem to favour multilingual processing research based on the already-mentioned experimental and verbal aloud methods of data collection. This present work intends to introduce a pilot study (study 1) employing word association tasks for the purposes of describing the L3 mental lexicon.

Hitherto, L1 and L2 mental lexicon association research has been based entirely on one-language tests, i.e. stimulus and response words from the same language, with a view to comparing responses in each individual language.

However, a more complex design in which multilingual lexical access would occur may shed light on the lexicon structure, specifically, the application of tests in which stimulus and response would come from different languages, for example L1 stimulus and L2 response, or vice versa. In the case of a multilingual context, the possibilities of language constellations in test design would be even greater. Study 1 of this project uses both one-language and multi-language association tests to comment on L3 mental lexicon structure.

2. Multilingual (L3) storage and its dimensions (study 1 and study 2)

2.1. Research questions

Study 1 and study 2 focus on the problems of lexical storage of trilingual language users, who have advanced competence in their L2 (English) and intermediate competence in L3 (German). The subjects involved in both studies can be described as pretty homogenous in terms of their learning history, since both studies were carried out in the context of formal instruction and the subjects underwent similar periods of study. All of the learners learnt rather than acquired their L2 and L3 by means of FL classroom instruction in comparable academic settings.

Study 1 looks at two aspects of **multilingual lexical storage**:

- the **conceptual basis** for language(s) representation in the trilingual mental lexicon with the aim of determining the degree of cross-cultural transfer between concepts in the learners' L1, L2 and L3. In other words, it looks at content words in the L3 mental lexicon and how they are stored in each language and across languages.
- the storage of grammatical words, in other words, the study looks at **form-focus factors** as determinants of the lexical structure and possible links between L1, L2 and L3 in the mental lexicon.

These two aspects of the multilingual mental lexicon are brought together and compared in study 1. The data was collected by means of single language and multi-language association tests (mixed language tests) of the stimulus-response type. The languages involved in this study are Polish and Portuguese (L1), English (L2) and German (L3).

Study 2 focuses on the **depth of lexical storage**, in other words, the strength of links between lexical items in L1, L2 and L3 measured by means of

association chains, in which both a stimulus and response words are given and the subjects are to connect them through associations. All the subjects were native speakers of Polish (L1), advanced speakers of English (L2) and intermediate ones of German (L3).

2.2. The conceptual structure of a multilingual lexicon (study 1)

2.2.1. Research design

The development of international communication in a variety of contexts, institutional and personal, has brought about a shift from the focus on language structure to meaning with special emphasis put on the **pragmatics of language use**, prominence being given to the appropriateness of language use in a given context, depending on the topic, setting, status, audience, etc. Non-verbal communication and its manifestation by means of gestures, the study of proxemics, became a part of language understanding and instruction.

On the other hand, the development of **cognitive sciences** (cognitive linguistics and psycholinguistics) brought about a new view of language, now seen as a system of metaphors, functioning universally across languages. Since all human beings despite their mother tongue background share the same characteristics in terms of their primary needs in life, this is reflected in language itself: it forms a basis for its metaphoric character (Lakoff & Johnson 1980).

However, universal concepts expressed by languages evolve and are shaped by the **context**: historical, national, political, etc. Who we are (and language is a form of our self-expression) is not universally predetermined but shaped by the past and present, the here and now, by education, age and cultural background (Gabryś 1998).

The pragmatic approach to language instruction and learning introduces the concept of **cultural awareness** (Tomalin & Stempleski 1993: 5), the term used to describe:

sensitivity to the impact of culturally induced behaviour on language use and communication (...) beliefs and values, as well as everyday attitudes and feelings conveyed not only by language, but by paralinguistic features such as dress, gesture, facial expression, stance and movement.

Language used for communication purposes is the best instance of culturally induced behaviour and as such is a loaded weapon, carrying not only

straightforward messages, but hidden ones as well: a whole range of **connotative meanings** beyond. These connotative meanings reflect speakers' affections and attitudes, which may be shared by the group of people whose cultural, social and national backgrounds are the same. This area of cross-cultural differences expressing values, beliefs and attitudes often leads to the creation of preconceptions and national stereotypes.

In this study (study 1), I seek to determine whether connotative meanings are reflected in the subjects' mother tongue (L1) mental lexicon and whether they cross the borders of languages, i.e. whether they are the same in foreign language mental lexicons (L2 and L3) of the questioned subjects. In other words, the conceptual structure of the multilingual mental lexicon constitutes the research focus of the study.

Sample selection

The data gathered in the study comes from a total of 150 subjects from two separate groups of foreign language learners, all university students of English philology departments. Group A represents Polish students of English (L2) at the advanced level and German at the intermediate level, whereas Group B consists of Portuguese students of English at the advanced level (lower than Polish students, however) and German at the lower intermediate level (Table 1). For both groups, English is the major module of their studies, whereas German constitutes the minor (but, nevertheless, obligatory) part of their course.

Lg	Group A	Group B
L1	Polish	Portuguese
L2	English	English
L3	German	German

Table 1. Languages involved in the study

All the subjects learnt rather than acquired both English and German through formal instruction in a classroom setting. Their learning history is similar in terms of the methods used, types of practical language courses as well as exposure to native and non-native teachers.

Research method

Studies of the mental lexicon make use of a variety of different techniques such as recall of words, translation tasks, naming pictures, lexical decision tests and association tests. In the present study, simple association tests consisting of a stimulus-response pattern were undertaken by the subjects. The source association test widely used in association research was adapted, namely, the

Kent-Rosanoff (1910) list of a hundred frequent words. It was slightly modified in that a number of grammatical items were introduced into the list. The tests administered were either single language tests or mixed (Table 2).

Tests	S → R	S → R	S → R
Single language	L1 → L1	L2 → L2	L3 → L3
Mixed language	L1 → L2 L2 → L3	L2 → L1 L3 → L2	L1 → L3 L3 → L1

S – stimulus, R – response

Table 2. Types of association tests

The associative processes consist of:

sorting out meaningful – and that is, logical and syntactic relations among words – contrast and grouping. We can establish the position of any given element in a language within a larger vocabulary of the language by contrasting it with some element or elements and/or by grouping it with respect to some other element or elements. Which of these processes operates at any given moment depends upon conditions at least partly dependent upon non-verbal experience to which the verbal elements refer or are related.

(Deese 1965)

The above principles refer to single language association tests, whereas in the case of the mixed stimulus and response words the process becomes more complex, that is, it seeks association via translation equivalents.

Two different taxonomies of word association tests are used in the study (Söderman 1993: 100–101):

- type 1 based on the structure of the relations between the items: superordinates, subordinates and co-ordinates;
- type 2 based on word categories: syntagmatic and paradigmatic associations, defined as:

A syntagmatic response is associated with the stimulus by contiguity in a sentence and, therefore, as a rule belongs to a form class different from a stimulus word. A paradigmatic association, on the other hand, generally belongs to the same form class as the stimulus and could function as a substitute for the stimulus in a sentence.

(ibid.: 100)

It may be assumed that all types of association response received can be classified into those focusing on the content and those using the form cue of a stimulus word, i.e. form-focused associations (Table 3). Since the tests used in the study are multilingual, an additional category of associations was introduced, namely, translation.

Focus	Category	Types of associations
CONTENT	<ul style="list-style-type: none"> • semantic associations (paradigmatic) • syntactic associations (syntagmatic) 	coordination, superordination, synonym, antonym, translation collocation
FORM	<ul style="list-style-type: none"> • phonetic similarity • graphic similarity 	clang (rhymes)

Table 3. Taxonomy of associations

The following examples illustrate the types of associations enumerated in Table 3:

CONTENT FOCUS:

- semantic associations (paradigmatic):
 - coordination: *rose – tulip, table – chair*
 - superordination: *flower – rose, furniture – table*
 - synonym: *to complete – to finish; hound – dog*
 - antonym: *long – short; beautiful – ugly*
 - translation: *house (English) – dom (Polish) – die Haus (German)*
- syntactic associations (syntagmatic):
 - collocation: *white – snow; to deliver – a baby*

FORM FOCUS:

- phonetic similarity: *physician – physicist*
- graphic similarity: *boy – bay*
- clang (rhymes): *where – hair*

The association tests used in the present study were supplemented by **retrospective comments** made by the subjects on the hierarchy of difficulty in performing the different types of tests, and descriptive comments on their performance of the task.

Lexical material

The subjects were exposed to a list of a hundred universally frequent lexical items (the Kent-Rosanoff list) representing different word categories: both lexical and grammatical words, concrete and abstract.

The stimulus words, like any other words, can be described as either universal, loaded or personal. Loaded words carry connotative meaning which may be characteristic and unoriginal for a certain group of subjects but different for another, for example, nationality group. These words allow us to observe cross-cultural differences.

Having performed the association tests, the subjects were asked to select from the tests the stimulus words which for them were **culturally loaded**, in other words, carrying strong conceptual connotations for these subjects. The items used in the analysis were selected by over 50% of the subjects.

The items selected were further classified into more general categories/semantic fields:

RELIGION: Bible, religion, priest,

HOME: house, bread,

NATION: eagle, soldier, justice,

COLOURS: white, red.

The categories were also ascribed the characteristics of being either daily (concrete, literal) or metaphoric:

DAILY: RELIGION and HOME category,

METAPHORIC: NATION and COLOURS category.

The associations to the selected culturally loaded words demonstrate similarities and differences in beliefs, values, attitudes and feelings between group A and group B, as was reflected in the associations generated.

The hypothetical model of multilingual memory representations adopted in this study is based on the two different types of connections learners make while functioning multilingually:

- **lexical links**: within the same language referring to the form as a factor and across languages using translation equivalents;
- **conceptual links**: within the same language and across languages manifested as a semantic field search, e.g. coordination or superordination (Fig. 1).

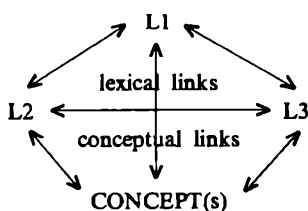


Fig. 1. A model of multilingual memory representations (G a - b r y ś 1999: 3)

The access to words in memory either via lexical links or conceptual links seems to be determined by a whole set of variables, such as:

- language dominance in the multilingual competence and performance of a learner/user,
- language proficiency in all the languages (L1, L2 and L3),
- the form of a linguistic task (e.g. degree of automaticity),
- the type of a linguistic stimulus (e.g. concrete versus abstract word categories).

Also, the main variable of focus in this study cannot be neglected, namely, the conceptual and connotative meanings of a word.

2.2.2. Data presentation and analysis of results

Association test data

All the types of tests – both mono-lingual and multilingual – were each administered separately in one session with several days' break between the subjects' performances. Consequently, the total number of sessions for each group was nine. The subjects received the list of stimulus items in a written form and were instructed to perform the association task by responding automatically without any kind of elaboration (thinking) with the first item that came to their minds. They were asked to leave empty spaces if a given item did not bring any association and never to come back to fill in the missing responses. The same procedure was repeated for each type of test. The responses received are here presented and analysed according to type of test: a mono-lingual (a single language) test or a multilingual (mixed languages) test.

Single language tests

L1 → L1 test

The received responses of all the subjects were very unoriginal and stereotypic for both of the groups of learners, which is not surprising since the stimulus words were highly frequent lexical items and conceptually loaded, carrying connotative meanings (Table 4).

Despite markedly universal responses, certain examples of difference can be observed between the two groups. They illustrate different BELIEFS, VALUES, ATTITUDES and FEELINGS.

HOME: the universal responses were: *shelter, protection, warmth*. However, in the case of Portuguese students the stress was put on the personal aspect by means of the use of personal pronouns, e.g. *my home, my garden*, which cannot be observed in the Polish responses which were much more general.

RELIGION: in the case of Polish learners there are references made to the Catholic religion (almost solely) and tradition. A positive attitude is being expressed. Whereas Portuguese students respond with all sorts of associations: *Islam, Buddhism, variety, lots* and attitudes that are quite often negative: *taboo, dogma, ignore, unsatisfactory*.

The values expressed show the changing reality of Portugal (expressed mainly by the younger generation), often perceived as a conservative and Catholic country stuck in the past but which is very much less true these days. Having joined the European Union, Portugal has worked hard on changing its image. However, some of the values of the past are still very strong even for the younger generation, notably those in association with *family*.

Category Word	Similarities	Differences	
		Polish	Portuguese
RELIGION			
Bible	<i>religion, God, priest, church</i>	<i>good, sacred, tradition</i>	<i>unsatisfactory, ignore</i>
religion	<i>God, priest, church</i>	<i>Catholicism</i>	<i>taboo, dogma, Islam, Buddhism, separate</i>
priest	<i>church, uniform, black, mass</i>	0	<i>wedding</i>
HOME			
house	<i>family, garden, protection, shelter, warmth</i>	0	<i>white, my flat</i>
bread	<i>food, butter, good, eat</i>	0	<i>solidarity</i>
NATION			
eagle	<i>fly, bird, liberty, freedom</i>	<i>white, emblem</i>	<i>bird of prey, hawk, falcon, Benfica</i>
soldier	<i>army, war, troop, warrior</i>	<i>"wojak", cavalry</i>	<i>II war, my boyfriend</i>
justice	<i>law, judge, court, lack of injustice, doesn't exist</i>	0	<i>American, blind, utopia</i>
COLOURS			
white	<i>black, snow</i>	0	<i>wine, pure, innocent</i>
red	<i>blood, dress, rose</i>	<i>spiderweb, flag, curtain, ribbon</i>	<i>Benfica, heart, sexy</i>

0 - no response given

Table 4. Mother tongue (L1) associations: similarities and differences

As far as the group of metaphoric words is concerned, some of them are richer in strong associations than others. The word *justice* brings out universally cynical connotations: *blind, no, non-existent* in both groups. A good example of culturally loaded words is the word *eagle* (category NATION). Polish responses are very marked: *white, Poland, emblem*. The Portuguese examples are either affectively neutral: *hawk, condor, falcon* or loaded: *Benfica*, the name of a Portuguese football club with an eagle as its symbol, football being an important aspect of Portuguese life. The word *soldier* was only marked by historical associations in the case of Polish subjects: *cavalry* (the Polish army regiments fighting bravely in September 1939). Portuguese students (mostly girls) would produce repeatedly the association *my boyfriend*, thus reflecting their age and the short period of national service which their male counterparts must undergo (the personal level of association).

The most visible examples of differences can be found in the category of colours, perhaps the richest in connotative meanings. For Polish learners, they were historically based and connected with communism: *red - ribbon* (decor-

ation), *flag, carpet, spiderweb*, while Portuguese subjects would produce: *red – wine, heart, sexy, Benfica* or *white wine*, so the associations very much grounded in their daily life experience.

It seems that the L1 based test, although unoriginal in terms of responses, is very rich in data concerning cross-cultural similarities and differences between the different nationality groups observed, even in the case of such a small sample of subjects and lexical material analysed. The mother tongue associations were then content based and clearly represented the ideas and conceptual representations in the L1 lexicons of the subjects.

L2 → L2 test

In the majority of cases the responses produced in L1 and L2 tests are very similar and again unoriginal, indeed universal for both groups of subjects. On the other hand, however, another type of mediation can be observed, i.e. different types of links seem to be activated as a response to some of the lexical items. Whereas in the case of the L1 test conceptual links were basic, here, for the first time, lexical links are operating.

The examples of associations absent from the L1 test are, among others:

home: *my home – my castle, detached,*
 eagle: *USA, Indians,*
 white: *lie, musk,*
 red: *herring, tape.*

While perhaps *USA, Indians* can be treated as conceptually mediated, the other associations are typical examples of phrases that the learners acquired as idiomatic when learning their L2, e.g. *white lie* or *red tape*, acquired as chunks and recovered as such. They are instances of the lasting effects of language training, i.e. transfer of training, and, more precisely, the techniques of overlearning through intensive exposure and vocabulary drills to lead to full internalisation and automatization of their production.

L3 → L3 test

The data gathered from the L3 test is the least interesting as far as conceptual representations and cross-cultural differences are concerned. The associations are always literal, no metaphoric meaning is expressed as in the case of L1 and partly of L2 tests. Besides, the absence of evaluative associations expressing attitudes, values and feelings is also noticeable. The associations are almost identical for both of the groups (Table 5).

In the case of the abstract categories (NATION), a high percentage of no associations at all is discernible. It seems that the associations in the least proficient language produced fewer responses, and in the cases when they were registered they did not express conceptual representations or connotative

meanings as they did in the L1 tests or even in the L2 ones but were mostly lexical translation equivalents or near-equivalents. Table 6 presents types of associations received in the single language tests.

Category Stimulus word	Response	
	Polish	Portuguese
RELIGION		
Bible	0 (25%), <i>God</i> (10%), <i>priest</i> (8%)	<i>God</i> (50%), <i>religion</i> (25%)
religion	<i>church</i> (25%), <i>priest</i> (10%)	<i>church</i> (20%), <i>Bible</i> (20%)
priest	<i>church</i> (70%), 0	<i>church</i> (70%), <i>religion</i> (10%)
HOME		
house	<i>family</i> (50%), <i>warmth</i> , <i>love</i>	<i>family</i> (20%), <i>warmth</i> , <i>comfort</i>
bread	<i>eat</i> (50%), <i>butter</i> , <i>good</i>	<i>eat</i> (50%), <i>butter</i> (25%)
NATION		
eagle	0 (60%), <i>freedom</i> , <i>fly</i>	0 (60%), <i>fly</i> , <i>king</i>
soldier	0 (30%), <i>war</i> (30%), <i>army</i>	<i>war</i> (50%), <i>army</i> (15%), <i>fight</i>
justice	0 (70%), <i>judge</i> , <i>law</i>	0 (40%), <i>judge</i>
COLOURS		
white	<i>black</i> (30%), <i>snow</i> (30%)	<i>black</i> (70%)
red	<i>blood</i> (30%), <i>rose</i> , <i>white</i>	<i>blood</i> (30%), <i>car</i> (7%), 0 (7%)

0 - no response given

Table 5. L3 associations

Test type	Group A	Group B	
Single	L1 → L1	*coordination, collocation	*coordination, collocation
	L2 → L2	*coordination, antonym, collocation	*coordination, synonym, collocation
	L3 → L3	*coordination, collocation, 0	*coordination, collocation, 0
Mixed	L1 → L2	*coordination, transl., collocation	**translation, coordination
	L1 → L3	**coordination, colloc., transl. (few)	**translation, coordination
	L2 → L1	*coordination, transl., collocation	**translation, coordination
	L2 → L3	*translation, colloc., coord. (few)	**translation, coordination (few)
	L3 → L1	translation, coord., 0, collocation	**translation, coordination
	L3 → L2	translation, coordination	*translation, coordination

*20%–60% of responses, **over 60% of responses, 0 - no association given

a - single language tests, b - mixed language tests

Table 6. Types of associations

Mixed language tests

In the case of mixed stimulus and response words, the prevailing types of associations received give no evidence of any cross-cultural interaction between the languages involved in the task (Table 6, mixed test type), i.e. there is no indication of conceptual links being activated. The responses are mainly translations, produced automatically. Examples:

<i>biblia</i> (Port.)	→ <i>Bibel</i> (Ger.)	(L1 → L3)
<i>casa</i> (Port.)	→ <i>Haus</i> (Ger.)	(L1 → L3)
<i>religion</i> (Ger.)	→ <i>religião</i> (Port.)	(L3 → L1)
<i>rot</i> (Ger.)	→ <i>red</i> (Eng.)	(L3 → L2)
<i>Gerechtigkeit</i> (Ger.)	→ <i>justice</i> (Eng.)	(L3 → L2)
<i>soldier</i> (Eng.)	→ <i>Soldat</i> (Ger.)	(L2 → L3)

It could be assumed, as Brosig (1996: 323) claims, that: "It (spontaneous translation) might be indicative of an associative learning under L1 (formal) conditions by closely connecting L1 and L2 items". At the same time, though the number of translation associations is proportionally high, the amount of translation equivalents differs in both groups of subjects. For the less proficient (group B) the percentage is much higher. It might be concluded that the structure of the mental lexicon is developmental in nature, as is language competence.

The reliance on another language source is visible, which may be assumed to demonstrate the interdependence (integration) of the lexicons at lower level of language competence. Lexical mediation seems to diminish with growing competence in the language, as can be seen in group A responses: fewer instances of translation-type associations. It is especially evident in the case of the tests where the stimulus word is in L1. In group A there are instances of different types of associations (mainly the coordination type) with reference to L2 tests, in which the learners are much more competent than in L3.

Another phenomenon observed is that there seems to be a certain asymmetry in the type of mediation observed, especially in the case of the higher proficiency subjects. In the L1 stimulus tests – a Polish or a Portuguese stimulus word, i.e. in L1 → L2 and L1 → L3 tests, the L1 word connects to the conceptual representation in L2/L3 (for group A, higher proficiency). The associations are mainly of the coordination or collocation type. Examples:

<i>chleb</i> (Pol.)	→ <i>Butter</i> (Ger.)	(L1 → L3)
<i>orzel</i> (Pol.)	→ <i>Polen</i> (Ger.)	(L1 → L3)
<i>vermelho</i> (Port.)	→ <i>Wagen</i> (Ger.)	(L1 → L3)
<i>branco</i> (Port.)	→ <i>Haar</i> (Ger.)	(L1 → L3)

In the case of L2/L3 stimulus tests, the L2/L3 word access to the mental representation of the word is via L1 equivalent so through lexical links, i.e. more examples of translation associations are observed (see Table 6, mixed test type).

In the tests based solely on L2 and L3, the mediation process is more complex since the subjects seem to go through the translation chain, e.g. in the test L3 → L2, the chain of connections could be hypothesised as: L3 → L1 → L2. Examples:

<i>Bible</i> (Eng.)	→ <i>Kirche</i> (Ger.)	(L2 → L3)
<i>eagle</i> (Eng.)	→ <i>fliege</i> (Ger.)	(L2 → L3)
<i>Haus</i> (Ger.)	→ <i>mother</i> (Eng.)	(L3 → L2)
<i>Brot</i> (Ger.)	→ <i>cheese</i> (Eng.)	(L3 → L2)

However, even the mediation through L1 equivalents does not activate conceptual links and does not produce responses similar to those in the L1 test.

Multilingual learners' perspective (retrospective questionnaire data)

The association tests were supplemented with a short questionnaire in which the subjects were asked to evaluate the degree of difficulty of different types of tests and to comment on their performance.

Unanimously all the subjects found single language tests the easiest, with the exception of the L3 → L3 test, which can be explained by it being their lowest competence on the one hand, and the most complex processing on the other. One of the learners commented that:

I had to translate from German to English, then to Portuguese and in the end, from Portuguese to German.

A complex cross-referencing process is then consciously and intentionally employed by the subject: L3 → L2 → L1 → L3. All the languages are being activated in the lexical search.

Most of the learners pointed out that the major difficulty lay in mixing languages:

I think in English and Portuguese, it is difficult to write in German.

It is difficult to read in one language and associate in another.

I felt confused because of two different languages.

Artificial – I am not used to mix languages.

The above comments show that the thinking processes influence the language outcome. It is believed that “the thinking processes predispose the learner to use the L1 to conceptualise experience” (Alonso-Alonso 2002: 54). It can also be any other language (e.g. L2) where the competence is high enough to make the learner choose this language to think in (as demonstrated in the above comments). The “thinking for speaking” notion is considered to be one of the major principles of language transfer in monolingual language production.

The close distance between German and English in the field of lexis was often seen as a factor in word processing, both impeding and facilitating language performance, just to quote one of the subjects:

Similarity between English and German caused difficulties but sometimes easiness.

The subjects admitted that the first association that came to their minds was a translation equivalent:

I wrote mostly the translations that came to my mind.

Translation automatically comes.

We tend to translate.

When functioning in two or more languages translation seems to be a natural task to perform, so even association tests bring about translation as an automatic and unintentional choice for languages that are not fully internalised and still in the process of being learnt. The fact that the subjects felt their competence in German to be lower than in English was remarked on:

We do not hear this language every day. (L3)

Written forms of L3 are difficult.

Some words can't make me think of anything. (L3)

The language frequency factor both in terms of passive exposure and active use is perceived as a determinant of language ability and degree of its automatization. That is why both form difficulty and inability to associate difficult items with anything content-wise are observed by the subjects.

The comments made by the subjects participating in the study show them to be learners with a long history of learning foreign languages, who are fully aware of:

- the complexity of word processing in multilingual contexts,
- the influence of language distance (L1 → L2 → L3) on lexical storage and performance,
- the language competence being a decisive factor in the type of lexical processing and degree of L1 activation in this process.

2.2.3. Conceptual and cross-cultural interactions of languages of a multilingual learner: conclusions

According to Aitchison (1994: 356):

It is clear that in the mental lexicon there is no fixed meaning, that is, there are no necessary and sufficient conditions (...), we are probably dealing with a fuzzy lexicon, in which people work with some kind of prototype, and then have to actively match what they are dealing with against the prototype using some type of preference rule system.

The data collected by means of these association tests does not fully comply with the above statement. The L1 **mental lexicon** can very well give evidence of certain universally present links in the human mind, based on common experience across different groups of people, e.g. different in terms of their nationality. At the same time, it can give evidence of certain manifestations of the uniqueness of being either Polish or Portuguese. The high frequency words, such as the ones used in the present study, will always yield responses determined by the **universality** of human experience and the **exceptionality** of a specific language group, especially in the case of culturally loaded lexical items.

However, it seems that there do exist a lot of **constraints on the transferability** of the conceptual links observed in the learners' L1 across their multilingual stores. As already stated and shown in the evidence from the study, the cross-cultural interaction of languages and access to the concepts depend on:

- **language proficiency**: it was observed that with growing fluency in a foreign language the mappings tend to develop between L2 (and L3 in the case of proficient users) words and concepts, and lexical links are gradually dispensed with;
- **language dominance**: certainly exposure to language and functioning in a foreign language may develop conceptual links characteristic of the TL (e.g. in multilingual communities), while in the context of formal instruction in the classroom the focus is on the lexical links, promoted by the fact that learning a foreign language is seen more as a learning experience and not as the development of certain values or the preservation of L1 values; formal instruction is also more structural than conceptual in its form;
- **the form of a linguistic task**: an automatic recall that is a subconscious recovery of the lexical representation versus an elaborate task such as translation consisting in a deliberate lexical search by means of various strategies may determine different links' activation in a multilingual mental lexicon;
- **the type of a linguistic stimulus**: concrete words will bring about concrete associations, experiential in nature versus abstract words, denoting more connotative meanings and being more affectively loaded, will not be structured in the same way as in the L1.

As mentioned earlier, association tasks data produces evidence for stereotypes, however, this was only observed here in the mother tongue-based tests. Also, unmarked forms (responses universal for both groups) formed a significant part of the data.

The hypothesis that connotative meanings of words are reflected in the subjects' mother tongue was illustrated by means of the L1 test, however it turned out that those meanings are L1 specific and are not carried across to the other languages (L2 and L3) of the subjects.

Once again, the data in this study demonstrated the influence of language proficiency in the multilingual lexicon structure: a conceptually based L1 mental lexicon, separation of the lexicons with growing lexical competence (L2) and strong connections between high proficiency L1 and L2, and L3 (the lowest level proficiency) lexicons, in other words, integration between these lexicons. The influence of these factors will determine the structural differences in lexical storage of a multilingual language user.

2.3. Form focus in multilingual lexical storage (study 1)

2.3.1. Research design

Another aspect of multilingual lexical storage concentrated on in study 1 is the storage of **grammatical words**. It may be hypothesized that the linguistic category of a word will to some extent determine its position in the mind map or structure of the mental lexicon. Study 1 data can be analysed from the perspective of the linguistic characteristics of stimulus words used in the association tasks as belonging to a specific word category (word class). The words of any language are usually classified into certain functional categories, though not all languages represent all of them in the same linguistic form (Fig. 2).

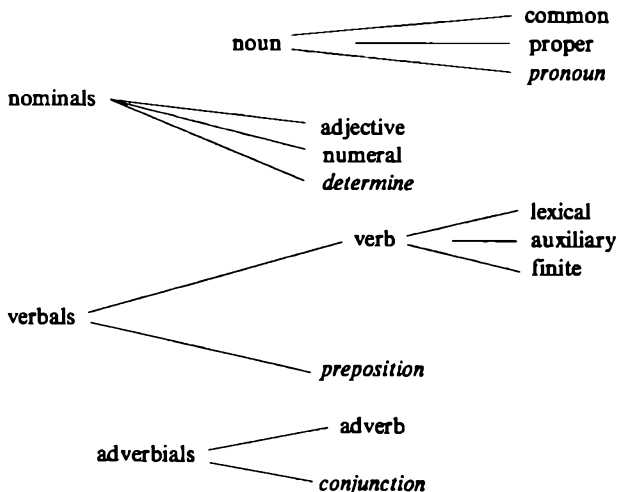


Fig. 2. Word classes (after Halliday 1985: 91)

Traditionally, the above categories are described in terms of: **CONTENT** versus **FUNCTION WORDS**, or **LEXICAL** versus **GRAMMATICAL WORDS**,

i.e. nouns, verbs, adjectives versus pronouns, prepositions, determiners, etc. Words labelled as content words are often viewed as the lexical units that carry substantial meaning even when decontextualised, whereas grammatical words seem to have very little or no meaning independent of the context and seem to perform only a certain grammatical role when combined with the content words. Such an explanation is, of course, too simplistic. If we consider grammatical words such as *although* or any pronoun, we cannot fail to observe that they carry meanings.

When comparing the class of grammatical words, it can be clearly seen that they represent different degrees of complexity:

- **semantic complexity:** transparency of meaning (e.g. out of context, pronouns are much more meaningful than, for example, articles or some conjunctions),
- **grammatical complexity:** a load of grammatical information carried by an item and a number of specific restrictions on its use (e.g. in conditionals, clauses or determiners).

Conjunctions and connectors are good examples of complex function words because: “(they) cannot be assigned in a one to one correspondence to the logical or semantic goals readers or speakers have in mind” (Hatch & Brown 1995: 239). Another variable involved in the acquisition of function words is their “unequal status” in different languages, e.g. in German connectives are far more common in speech than in written discourse. Different languages have different numbers of pronouns; genders of those differ, as well as certain pragmatic constraints on their use. Certain perceptions beyond language, such as the perception of space, are only to some degree universal which may influence for example the acquisition of prepositions (Hatch & Brown 1995: 245). It can be observed that function words are more commonly observed in cases of code-switching (language mixing): we tend to insert “little words” from another language (not necessarily our L1) more often than “big words” (content words).

These different degrees of complexities (semantic and grammatical) and the factors described above undoubtedly affect language acquisition and learning processes, as well as storage and retrieval of function words. Besides this, the learner’s perception of function words has to be considered as well. The perceived importance of meaning being carried out by the major category of words (i.e. content words) may make learners neglect the grammatical words (especially when focus is habitually put on fluency practice in communicative language teaching):

Rina: Yeah, but people talk with these words.

Zoila: Yeah, pero /es, eh/ I’m hear and put more attention the big words. You know and ... something house. I know house is the casa for me. And /es es/ and little words is no too important for me.

(Hatch & Brown 1995: 247)

The learning process of function words may become either incidental or, on the contrary, heavily determined by the method of formal instruction the learner is exposed to in the classroom, that is to say, explicit deductive metalinguistic explanation. Developing learners' conscious linguistic and metalinguistic awareness may help the processes of acquisition of grammatical words.

As already pointed out, the present discussion deals with the phenomenon of **storage and retrieval of grammatical words** by multilingual (trilingual) language users. Accordingly, the **research questions** put forward are as follows:

- What links does retrieval through automatic association activate in the case of grammatical words?
- Are the associations of the same type for all the languages involved?
- What factors might we hypothesise influence activation?

As described earlier, the research method used is that of a simple stimulus-response association; a battery of tests administered to the subjects under a time limit. The tests used in the study were both single language tests (stimulus and response in the same language) and mixed language tests. The lexical material of the test used in study 1 consisted of both content and grammatical words of high frequency mixed together. The lexical storage of content words has been discussed earlier. For the purposes of these analyses, only grammatical words were selected. They represented various word categories: pronouns (*she, they, hers*), conjunctions and connectors (*and, although, if*), demonstratives (*these*) and prepositions (*outside*).

Like in the case of content words, the typology of associations adapted for the purposes of the study consisted of the categories of CONTENT FOCUS associations, that is, **semantic associations (paradigmatic)**, such as coordination, superordination, synonym, antonym, translation and **syntactic associations (syntagmatic)**, such as collocation, and FORM FOCUS associations, such as phonetic similarity, graphic similarity, clang (rhymes).

2.3.2. Data presentation and analysis of results: grammatical words in multilingual lexicon data

The data is presented here according to the different types of association tests performed:

- single language tests (Table 7),
- mixed language tests (L1 as stimulus or response) (Table 8),
- mixed language tests (only L2 and L3 items) (Table 9).

Stimulus word	Test		
	L1 → L1	L2 → L2	L3 → L3
she	he (55%) woman (30%) girl (10%)	he (25%) girl (10%) her (8%) *PRONOUN	he (15%) woman (12%) we (10%)
although	0 (40%) T (5%)	T (25%) but (10%) however (10%)	0 (80%)
and	as well (40%) T (35%) 0 (5%) *CONJUNCTION	0 (15%) but (10%) or (8%) also (8%) *CONJUNCTION	0 (75%)
if	0 (30%) T (30%) *CONDITIONAL (10%)	whether (15%) 0 (15%) not (8%) unless (8%)	0 (20%) therefore (20%) because (15%)
into	0 (15%) out of (10%) in direction (5%)	0 (15%) out of (15%) T (8%) inside (6%)	0 (45%) out of (25%)
they	we (30%) they – feminine (15%) 0 (10%)	we (35%) people (8%) friends (7%)	0 (25%) he (25%) *PRONOUN
hers	his (50%) 0 (8%) mine (4%)	his (32%) 0 (15%) she (6%) mine (6%)	0 (30%) house (25%) your (15%)
outside	inside (30%) 0 (8%) to home (8%) world (8%)	inside (36%) 0 (12%) house (7%) freedom (7%)	0 (80%)
these	they (35%) those (30%) 0 (29%)	those (60%) 0 (14%) *PLURAL	0 (30%) that (15%)

T – synonym (in a single language test), 0 – no association

Table 7. Single language tests

The data collected gives evidence of how grammatical words are stored, when single languages (L1, L2 or L3) are involved in the lexical activation:

- lexical connections are apparent in the metalinguistic comments observed in L1 and L2 (word category, grammatical characteristics), however no comments of the kind are made in L3 tests;
- L1 and L2 tests: a high proportion of paradigmatic associations (synonyms and antonyms) is observed;

- L2 test: examples of syntagmatic associations (collocations), it shows that function words are being acquired as chunks (contextually);
- high proportion of zero answers (0) in the case of grammatically complex words, e.g. *although* and *if*, i.e. not semantically transparent when decontextualised and grammatically marked;
- high proportion of zero answers in the case of the L3 test in general, except for the frequently used pronoun *she*, the meaning of which is transparent even out of context;
- mostly conceptual links are being activated, except for the grammatically complex items *although* and *if*, which seem to be perceived by the subjects as such.

Stimulus word	Test			
	L1 → L2	L2 → L1	L1 → L3	L3 → L1
she	T (45%) he (15%)	T (50%) he (15%) woman (8%)	T (30%) he (25%) woman (12%)	T (25%) he (12%)
although	T (80%) 0 (15%)	T (60%) *CONDITIONAL	0 (50%) T (10%)	0 (80%) *CLAUSE
and	T (80%) or (10%)	T (65%) as well (10%)	T (50%) 0 (16%)	0 (30%)
if	T (80%) 0 (15%)	T (80%) *CONDITIONAL (10%)	0 (29%) T (15%) *CONDITIONAL (12%)	T (40%)
into	T (45%) from (10%)	T (60%) in (15%)	0 (20%) T (18%)	T (25%) inside (25%)
they	T (75%) we (10%)	T (70%) 0 (12%)	T (20%) friends (15%) we (12%) 0 (12%)	she (25%) (T?) he (25%)
hers	T (75%)	T (65%) 0 (15%) his (4%)	T (30%) 0 (15%)	T (30%) 0 (12%)
outside	T (80%) inside (10%)	T (30%) inside (10%) 0 (10%)	0 (30%) T (10%)	0 (70%)
these	they (50%) T (15%) 0 (15%)	T - fem. (30%) T - masc. (30%) 0 (15%)	0 (30%) they (25%)	T (20%) 0 (20%)

T - translation (in a mixed language test), 0 - no association

Table 8. Mixed language tests with L1 as a stimulus or response item

From the mixed language tests in which L1 is being activated either as input (stimulus) or output (response), the following observations can be made:

1. Metalinguistic comments are made but only few of them, and only in the case of L2 and L3 stimulus word, which might mean that the subjects activate their metalinguistic awareness in cases where languages learnt (foreign languages) are engaged but not with the mother tongue.

2. The greatest amount of metalanguage is used in response to the *if* item, which can be assumed to be grammatically complex and opaque.

3. The high proportion of zero answers in response to grammatically complex words may mean that the subjects either attempt to activate conceptual links, but fail or are not metalinguistically conscious.

4. Mostly **lexical links are being activated (translation equivalences)** with the exception of the high frequency pronouns *she* and *they* (acquired at the early stages of learning), which are semantically transparent and do not require a context.

Stimulus word	Test	
	L2 → L3	L3 → L2
she	T (70%) he (10%) woman (10%)	T (50%) they (30%) (T?)
although	0 (30%) if (30%)	0 (50%)
and	T (90%) but (10%)	also (30%) 0 (30%)
if	T (50%) 0 (12%)	0 (30%) when (30%)
into	T (35%) 0 (12%)	in (50%) inside (30%)
they	T (80%)	she (30%) (T?) they (30%)
hers	T (50%) 0 (20%)	T (80%)
outside	T (30%) 0 (25%)	0 (80%)
these	T (70%) 0 (20%)	this (50%) T (30%)

T – translation (a mixed language test), 0 – no association

*PRONOUN, etc – metalinguistic comment made by the subject

Table 9. Mixed language tests with L2/L3 stimulus/response items only

In the tests where the mother tongue of the subjects was absent, the data demonstrates:

1. The absence of metalinguistic comments, which is surprising, especially in the case of L3, since it constitutes the subjects' recent learning experience through formal metalinguistic and grammar translation instruction.

2. Most of the responses are either translations (T) or zero answers, which indicates that the lower language competence entails longer association/retrieval processes which under the time constraint fail to bring about any response.

3. Very few conceptual links are observed again for *she* and *and*, items that are semantically transparent. In the majority of cases, **lexical links are being activated**.

2.3.3. The storage of grammatical words: conclusions

On the basis of the data obtained by means of association tests, the following answers to the research questions posed above can be ventured:

1. On the **types of links activated** by the subjects during an automatic retrieval of the grammatical words: the dominance of **lexical connections** made via translation or conscious metalinguistic comments is observed in the case of frequent but grammatically complex items.

2. On the **types of associations**: no form focused associations are present in the data; a clear predominance of paradigmatic associations is noticed in all languages (synonyms and antonyms); frequent syntagmatic associations (collocations) appear in L2 tests (transfer of training: function words taught in phrases); translation equivalents are the most frequent responses in grammatically complex items; there is also a high proportion of zero answers (compared with content words retrieval; G a b r y ś 1999: 8).

3. On the **factors affecting the type of retrieval**: apart from the factors mentioned earlier such as language proficiency and language dominance, it seems that the degree of semantic transparency activates conceptual links, while grammatical complexity activates lexical links, often in the form of consciously made metalinguistic commentary.

4. Other observations: in terms of **word categories**, it can be observed that in paradigmatic associations stimulus words of one word category yield responses of the same kind, i.e. pronouns are associated with pronouns, prepositions with prepositions, etc, which is true of both the single language tests and the mixed ones. What is more, in some cases the subjects mix languages, i.e. code switch, however the responses produced are still within the same word category. It can be tentatively concluded therefore that grammatical words are stored within the boundaries of the same grammatical categories, which is different from content word retrieval in the case of which word category boundaries are clearly more flexible (G a b r y ś 1999).

2.4. The storage of "content words" versus "form words"

2.4.1. Comparing content and form words: discussion

The following exposition takes up the data collected in the course of study 1 and analyses the results of the association tests from a comparative perspective. In other words, it attempts to understand the extent to which the word category of a stimulus word determines the response in terms of the word category produced, and the type of association received. The selected items of the complete corpus were initially categorised into lexical (content) and grammatical (function) words. Of course, it can be assumed that it is not only word category but other variables such as the proficiency level and method of learning which would determine the mode of storage. However, at this point of the discussion it is just the factor of a word's category that is being considered.

So, in this section I will be analysing the extent to which lexical word storage overlaps with and differs from the storage and retrieval of the function words in the automatic association tasks, what links are formed (content versus form-based ones), and to what extent different languages (L1 versus L2 versus L3) influence the networks formed in the subjects' minds. The data collected in the association tasks is once again presented in a tabular form (Tables 10a–10c), according to the different test types administered.

The following symbols were used for the purposes of describing the data:

MC – a metalinguistic comment,

** – more than 60%,

* – between 20 and 60%,

other – less than 20%,

none – none response received.

Test	Lexical words	Grammatical words
L1 → L1	*coordination, collocation	*antonyms, *none, coordination, MC
L2 → L2	*coordination, antonym, synonym, collocation	*antonyms, coordination, none, MC
L3 → L3	*coordination, collocation, none	*none, coordination, antonyms

Table 10a. Single language tests

Test	Lexical words	Grammatical words
L1 → L2	*coordination, **translation, collocation	**translation, antonym
L1 → L3	**coordination, collocation, *translation	**none, *translation, superordination, antonym, MC

Table 10b. Mixed language tests (L1 stimulus)

Test	Lexical words	Grammatical words
L2 → L1	*coordination, *translation, collocation	**translation, antonym, none, MC
L2 → L3	**translation, collocation, coordination	**translation, none
L3 → L1	*translation, coordination, none, collocation	**none, translation, MC
L3 → L2	*translation, coordination	**none, *translation, coordination

Table 10c. Mixed language tests

It was hypothesized at the beginning of the study that the language of input will affect language processing. It could be assumed that mother tongue associations would be more conceptual (content focused, not affected by linguistic variables such as word category) and more experiential (idiosyncratic), while in the case of the foreign languages (L2 and L3), the responses would be less automatic and more influenced by the language itself (e.g. word category) and other linguistic factors. Additionally, it might be assumed that single language tests might bring different responses from mixed ones.

Comparing the results obtained, it can be noted that:

- **lexical words:**
 - in the single language tests the associations were either examples of items belonging to the same semantic field (in all languages) or collocations (storage in chunks, again not only in L1);
 - in the mixed language tests translation associations prevail, giving evidence of either direct (bilingual), dictionary-like links or transfer of training (formal instruction, learning in chunks);
- **grammatical words:**
 - in the single language tests the responses were in the majority antonyms (for the more semantically loaded words, e.g. personal pronouns), zero associations (no semantic load) or metalinguistic comments (MC), which is evidence of linguistic awareness of the subjects and their learning history (transfer of training);
 - in the mixed language tests the observed responses were: translations (as in the case of content words), zero associations, especially in L3 (where there is lower competence, less flexibility, links not established formally so yet to be accessed automatically), as well as metalinguistic comments as responses to more grammatically complex items.

Irrespective of the language of input, the most commonly observed association types are:

- for the lexical words: coordination, collocation and translation;
- for the grammatical words: “none”, translation, antonyms and metalinguistic comments.

The least frequent associations:

- for the lexical words: metalinguistic comments (absent from the corpus) and no associations;
- for the grammatical words: collocations (absent from the corpus).

How then can this data be explained in terms of variables that possibly affected the type of lexical processing and access observed?

Lexical words

As has already been mentioned, the lexical words carry their meanings independently of the context (though, of course, they are context sensitive in actual language performance). The coordination-type associations are the best example of semantic field lexical search, which would imply that words are stored according to some conceptual links (which may be language and culture specific, cf. G a b r y ś 1999).

The collocational associations may result from:

- the exposure to language (certainly in the case of L1) and degree of rigidity of the phrases (fixed/restricted versus open collocations);
- transfer of training (learning the fixed phrases as chunks in L2 and L3);
- selection of word categories that are more collocation-prone than the others, for example adjectives.

The translation associations observed in all mixed types of tests were especially prominent in L3 tests (either in the case of L3 stimulus or L3 response). They can be accounted for, again, in terms of transfer of training and the nature of the task (classroom-like). It was commented on by the learners themselves, for instance:

Translation comes automatically.

We tend to translate.

Grammatical words

As stated previously, the grammatical words when decontextualised carry no, very little or simply imprecise or ambiguous meaning. This characteristic has probably determined the type of data received.

The focus on content in the case of adult learners observed in other studies on association patterns may explain the appearance of the “none” associations (no associations) here, where there was no possibility of relying on the clear meaning of the stimulus words out of context. The translation associations once again show the influence of the transfer of training and non-automatic processing of very frequently used (and certainly known to the learners) words.

Another example of how formal instruction influences the process of lexical access and recall is the use of antonyms. Some of the grammatical words when presented to the learners are shown in opposite pairs, e.g. prepositions,

demonstratives or even pronouns. The use of metalinguistic comments, with their focus on form, brings even more evidence of how much the methods used in teaching a foreign language control and modify performance. The reliance on grammatical explanation (here, mostly categorisation of the items into word classes and functions) brings about the associations that show the metalinguistic awareness of the learners.

2.4.2. Conclusions

On the basis of the data presented it can be noted that an overwhelming emphasis on content associations is recorded in both groups of words, however, it is much more pronounced in the case of lexical words. The only examples of form associations manifested as MC (metalinguistic comments) are to be found in the grammatical words. This tendency would probably be observable only in the adult learners, when conscious processing, analytical thinking and the use of explicit linguistic knowledge are being made use of in learning.

A lot of examples of associations that show the transfer of training, it can be hypothesised, indicate that the task itself was viewed as a learning experience. One of the subjects commented:

Artificial – I am not used to mixing languages!

This shows that the language tasks themselves were viewed as learning experiences rather than anything else. An overwhelming percentage of missing ratings (“none” associations), especially in the L3 tests, may indicate that the lexicon of L3 (the lowest competence level of the learners) is the smallest and the links between their L1, L2 and L3 have not been established yet and do not allow for automatic access, even though the words are elementary and frequent: the awareness of meaning itself does not account for the firmness of mental lexicon links. The organisation of the lexicon still seems to be fragmentary.

In the mixed language tests, the percentage of translation associations may allow us to hypothesise that the learners associate through the more available lexicons (i.e. L1 or L2) by means of association chains:

I had to translate from German to English, then to Polish and from the Polish translation to associate into German.

This learner performed the whole association chain: L3 → L2 → L1 → L3. The mediation was through the lexicon of L2 which may mean that it was more deeply rooted and easily accessible, or more available than L1 because of certain similarity of words between German and English.

Growing language proficiency seems to be associated with fewer instances of translation associations (less translation in L2 than in L3 associations). The networks of links develop and become more native-like, which was observed in

my earlier studies (e.g. G a b r y ś 2000). Associations to grammatical words cross the boundaries of word categories, e.g. the most common associations to the pronoun *she* are the nouns *girl* and *woman*. The reverse tendency is not observed, that is to say, lexical words always bring paradigmatic associations within the same word categories. This finding may exemplify the clear tendency of the mental lexicon to be built around the content principle. So to sum up:

1. Lexical words are stored in the mental lexicon in conceptual stores that are interrelated (across the languages). The interrelatedness seems to strengthen with developing language proficiency and frequent exposure to a certain language. The storage is also affected by the transfer of training (e.g. learning by chunks). So, it can be assumed that content words are more language-specific and form certain patterns:

- in L1 the experiential, idiosyncratic and cultural load of a stimulus word determines the storage and links between the words,
- in L2 the associations do not reflect the same concepts but are more indicative of ways of learning (antonyms, binomials, chunks),
- in L3 (the lowest lexical competence) mostly lexical links like translation, not semantic/conceptual ones, are observed.

2. The grammatical words mostly in L2 and L3, in the majority of cases, seem to be stored as grammatical concepts (MC associations), which results from the explicit linguistic knowledge and metalinguistic awareness of the subjects, which in turn derives from explicit classroom instruction (transfer of training). These links are of a more universal character, i.e. they do exist across the languages and are not conceptually based, but are perceived as linguistic entities with no specific semantic meaning as such.

The above observations are based upon the study of subjects who learnt rather than acquired two foreign languages, which must have affected their access and storage patterns. S i n g l e t o n (2000: 183) claims that: "It seems to be the case that the more the first language is involved in the environment in which the second language is learnt, the greater will be the degree of intergratedness between the two mental lexicons". In the case of this study, it is particularly true of the L3 learning situation where the language of instruction is L1, hence the high proportion of translation associations received for the content words. With time and consequently growing L3 competence, it should lead to separation of the two lexicons, as can be observed in the L2 mental lexicon (which has had exposure to instruction in L2 at the advanced level).

The networks built in the subjects' memories clearly show differences for L2 and L3 originating in the difference in competence in these two languages. Language competence or, more precisely, lexical competence, is not only characterised by its size but also its depth, i.e. the stability of interconnections between lexical items. Here, stimulus items were all frequently used words representing familiar concepts, however the links (e.g. schemata) have not been

established yet in the learners' lexicons and thus did not allow for automatic access, accounting for the high proportion of "none" associations.

At the same time, they present a certain washback effect: they reveal the influence of teaching methods on the processing of data and performance (e.g. the numerous examples of antonyms or set phrases commonly used at vocabulary presentation stages). It could be hypothesized that these patterns of storage would be different – and probably more homogenous with L1 mental lexicon patterns, i.e. more native-like in a natural setting – if the languages had been acquired and not learnt through formal instruction, but, of course, this would require another study and subjects with different learning histories.

3. Investigating depth of multilingual storage (study 2)

3.1. Research design

Research focus

Study 1 looked at the way vocabulary is stored depending on its linguistic characteristics, that is to say word category. Here, in study 2 I would like to present and comment on evidence for **lexical depth** in trilingual language users' mental lexicons expressed by the degree of connectiveness between lexical items in different languages.

Most of the studies on the mental lexicon of foreign language speakers focus on measuring lexical richness, which often seems to be equated with the quantity and knowledge of words possessed by the given subjects. What is understood by knowledge of lexical items refers to the whole set of dictionary characteristics each word can be described by, such as: meaning, pronunciation, most frequent syntactic patterns the word enters (collocations), etc. But does this type of knowledge make the learners proficient users of words in actual performance? What seems to be missing is the mutual connectivity between these words as indispensable parts of lexical competence. As *Meara* (1996: 51) claims: "The crucial idea is that lexical competence is probably not just the sum of speakers' knowledge of the items their lexicon contains".

Meara (1996) proposes to view the lexicon from two different, however interconnected dimensions: that of its size and of its organisation (structure). The structure of the lexicon may be defined as the degree of connectivity between the lexical items. There are lexicons that probably exhibit a very high degree of connectivity: those of native speakers and proficient speakers of a FL.

The beginner's lexicon may either be a small-sized dictionary (list) of entries, very loosely connected, and if so, probably representing different patterns of connectivity than that of native speakers. It can be hypothesised that the degree and type of connections existing within the mental lexicon change with the growth of its size and language proficiency. In truth, not much research has been done on this topic.

It has been proposed (Meara 1992) that lexical connectivity can be measured by means of **association chains**, a task in which a subject is asked to connect the input word with a given output item, as in the example: "sea ... weed ... flower ... butterfly" (Meara 1996: 49).

The abundance of patterns observed in L1 production is obviously greater than in L2, and the association link can be created instantaneously. However, in L2 or L3 the process of automatic association is often inhibited because of the fewer possibilities a defective or incomplete lexicon offers. A whole variety of factors can be assumed to influence the degree of connectivity observed. As De Groot (1993: 46) puts it:

In addition to other possible determinants of representational form (e.g. L2 learning history), the storage format may also be dependent on word type (...), concrete words and cognates are relatively often stored in a compound fashion, while abstract words and non-cognates are more likely to be stored in a coordinate form.

She also adds:

A set of words (e.g. L2 words that are still in the early stage of being acquired) may be represented in a subordinate form. (...) Other words' characteristics may also influence storage format (for instance, a word frequency and whether or not a word's meaning is culturally distinct).

To sum up, the following variables may be singled out:

- frequency of occurrence,
- linguistic characteristics such as word category, e.g. nouns acquired earlier in L1 and easier in a FL, concrete versus abstract quality,
- connotations and background knowledge of a speaker (personal references),
- learning mode.

Synectics, i.e. the "science" that observes the ability to associate different areas of perception, for example connecting colours with smells and sounds with colours, etc, assumes that the emotional component is more creative than intellectual, that analogical thinking (a process of consciously looking for similarities among elements in the particular task or reality) is easier in our mother tongue than in other (foreign) languages. The "feeling of recognition" is based on "memories" of reality as lived, whereas in the case of the languages

learnt, this reality is grounded in a formal setting: classroom instruction, where a learning experience may become significant for the way lexical items of a certain language structure the lexicon (transfer of training).

It can be predicted then that the types of connectivity observed may be based on:

- semantic (conceptual) fields organised around a core concept that may be language-specific,
- phonetic coding,
- individual items versus chunks,
- grouping by contrast or similarity.

Research hypothesis

As already mentioned, in numerous studies on the structure of the mental lexicon evidence has been gathered by means of a variety of methods, among them associations with individual lexical items (S → R pattern) and association chains, where the subjects are to connect the input stimulus word and the output word given in the task, e.g.:

table (stimulus) ... *hammer* (the final word).

Analysis of the data collected may show in the case of multilingual speakers a whole variety of responses with respect to the types of associations produced (e.g. paradigmatic versus syntagmatic, semantic versus phonological, abstract versus concrete words), different lengths of the chains and their degree of completeness.

On the basis of the research reported in published literature on the subject, the following hypotheses have been put forward in the present study for confirmation or rejection:

1. Access to the lexical items of a multilingual speaker will depend on his/her language proficiency, i.e. the more proficient the speaker, the shorter the association chains produced will be. In the case of developed language command, the processing becomes more automatic on the one hand and the speaker's lexicon is more extensive on the other, consequently, the chain produced should require less effort on the part of the speaker. The connections are made more directly.

2. There will be a clear and positive correlation between the completeness of the association chains (complete versus no chains and complete versus incomplete ones) and the speaker's language proficiency.

3. The type of associations made will be L1 (mother tongue), L2 (the first foreign language), L3 (the second foreign language)-specific:

- they will be influenced by the context of exposure (the method of teaching/earning), the theme (semantic field), frequency of use in certain contexts in a given language and the idiosyncratic connotations of a given speaker;

- they will be linguistically determined by the word categories of the input and output items (e.g. noun versus verb) and concrete versus abstract characteristics of a given lexical item in the chain.

Characteristics of the subjects

The subjects participating in the study consisted of three groups of multilingual speakers, sixty in total. They were all pretty homogenous university students of English at the advanced level. One group studied German at the lower intermediate level. All of them learnt both foreign languages by means of formal instruction in a classroom setting at school and university and on private language courses. In terms of their academic achievement, they can be evaluated very highly.

One group of students performed two tests: L1 and L2 association chains, whereas the second group did only L3 tests (students specialising in German).

Data collection methods

The study made use of two research methods: association chains and retrospection.

The **association chains** the students were to produce consisted of 20 pairs of words: the stimulus input word and the final output word. The combination of input-output items was random, however, all of them came from an inventory of frequently used words in all three of the languages involved in the study, i.e. Polish, English and German.

The words constituted the following pairs:

- concrete (c) – concrete (c) → 7 pairs,
- abstract (a) – abstract (a) → 2 pairs,
- abstract (a) → concrete (c) → 4 pairs,
- concrete (c) – abstract (a) → 7 pairs.

The classification into **concrete** versus **abstract** was not strictly linguistic. Items labelled as **concrete** referred only to the nouns being either persons or objects, while any item describing quality (e.g. colour, length, etc) was classified as **abstract** (idiosyncratic understanding or conceptualisation by a speaker). De Groot (1993: 46) makes a clear distinction between the abstract and concrete categories of words: “Concrete nouns may be the only class of words that share conceptual representations across languages”, while:

Abstract words, by contrast, have no external referents; their meanings have to be acquired through the dictionaries or inferring their sense from context (...) So abstract words are often represented language dependently (i.e. in a coordinate fashion), whereas concrete words are represented in a compound fashion.

In consequence, it may mean that a multilingual lexicon will have mixed representations.

The students were exposed to twenty pairs of items and instructed to complete them as chains, following the example given. They were not allowed to go back to the chains unfinished at the first attempt. The time limit within which to perform the task was 10 minutes for each test. Some of the association chains had to be rejected since the subjects either clearly misunderstood the instructions, perceived the tests to be impossible to perform (even in L1), or simply neglected the task. The final data collected comes from 20 tests for each language, in total 60 tests or 1200 chains all together.

The task of associating was followed by **retrospective comments** made by the subjects, which were supposed to be impressionistic in nature. The students were asked to comment on the degree of difficulty of each task performed. The two groups which did the two L1- and L2-focused tests were to compare the difficulties encountered in them. However, what was observed was that the comments thus made were arbitrary and insubstantial.

3.2. Data presentation and analysis of results

3.2.1. The quantitative results

Length of the association chains

Table 11 presents the numerical results of the study with reference to the length of the chains produced. The tasks performed are described in terms of:

- none chains (no association made at all),
- one word chains (the shortest possible lexical access),
- four and more words association chains.

The results are presented for each type of input-output pattern. Percentages of the whole (400 chains for each language) for different length chains were calculated.

Comment

Most of the chains recovered in all three tests were on average 2–3 words long, the values for L1 and L2 are the same – 76%, whereas for L3 the value is lower – 62% of 2–3 word chains. So, as can be observed, there were no substantial differences between the performance in all three languages. At the same time, if we look at the other lengths, i.e. none (zero) chains, one word and over four words chains, the following differences can be detected:

1. **None chains.** It is in the case of L3 test that 20% of the 400 chains were zero chains, while the L2 test brought the lowest percentage (7%) of zero associations. This could be easily explained by what has already been stated in the hypothesis – the language proficiency of the learners in the particular

No.	Item type*	L1 test			L2 test			L3 test		
		0	1	>4	0	1	>4	0	1	>4
1.	a → c	0	0	2	0	3	1	3	0	3
2.	c → a	0	0	2	0	3	1	3	0	3
3.	c → a	1	0	1	0	1	2	1	1	3
4.	c → a	1	0	2	2	1	0	6	0	1
5.	c → c	3	0	4	1	3	4	9	0	2
6.	c → c	2	0	3	1	0	7	1	0	3
7.	c → c	1	2	2	2	3	3	8	1	3
8.	c → a	1	1	4	3	2	0	4	1	1
9.	c → a	3	0	1	0	1	0	4	2	2
10.	a → a	3	0	0	0	0	4	5	1	2
11.	c → c	0	0	2	0	1	3	3	5	2
12.	c → a	1	0	2	0	2	1	4	3	3
13.	c → a	1	1	2	0	0	4	1	3	1
14.	c → c	0	3	2	1	2	0	2	7	1
15.	a → c	2	3	2	2	2	2	3	3	0
16.	a → a	5	3	0	3	0	2	5	1	0
17.	c → c	2	1	4	1	0	1	0	2	3
18.	c → c	1	3	0	2	2	3	4	3	1
19.	a → c	3	4	1	0	2	0	3	3	0
20.	a → c	5	1	2	9	0	2	9	0	3
Total		35	22	36	27	28	40	78	36	37
(% of the whole)		(9)	(6)	(9)	(7)	(7)	(10)	(20)	(9)	(9)

*concrete (c), a noun, an object or a person; abstract (a): a quality (descriptive, interpretation prone)

**0: no association chain produced; 1: one word complete chain; >4: a chain of four or more words

Table 11. Length of the association chains (the number of chains for each pair type)

languages (English – advanced, German – intermediate) being responsible for these results. However, L1 tests produced more zero responses (9%) than L2, which obviously cannot be explained by the above-mentioned variable (language proficiency). Perhaps the nature of the task made it more natural as a foreign language exercise, that is, it was perceived as a learning task at a more advanced level (L2 versus L3 results), but unnatural in L1. Another reason might be that the L1 lexicon is more complex (extensive) and loaded with connotations, e.g. emotional ones, which might impede speed of access.

2. **One-word chains.** Again, although the differences are not statistically significant, it is L3 that brought 9% compared with 7% for L2 and 6% for L1 of one-word associations. Does it mean that the smallest lexicon allows for the most direct and automatic connections between the lexical items? And that perhaps such a lexicon is more “directly” structured than L1, in which the lexical store as has already been observed must be most extensive. In L1 the

associations become richer. The processing itself is not only cognitive but affective as well (e.g. engaging personal experiences, childhood memories, etc).

Another possible explanation might be that in L3 the highest numbers of one-word chains are registered for the concrete – concrete pairs of lexical items (examples: 11 and 14), which are probably remembered and stored in a long term memory first and with greater ease than abstract ones. In the case of the none one-word chains, the pairs of words are in most cases mixed (examples: 1, 4 and 20). However, this explanation does not always account for the results in the L2 test and in no way accounts for the L1 test results.

3. **Four and more word chains.** As far as longer association chains are concerned, their distribution in all three tests seems to be almost identical: L1: 9%, L2: 10% and L3: 9%. No pattern in terms of pair combinations can be observed, i.e. no one of the input-output pairs seems to produce longer chains than any other.

The completeness of the association chains

The data collected in Table 12 shows the finished versus unfinished chains with respect to different association pairs. The average completeness for each test and each lexical pair has also been calculated.

No.	Item type	L1 test	L2 test	L3 test	Average for each item
1.	a → c	100	100	75	91
2.	c → a	50	90	80	73
3.	c → a	75	90	98	87
4.	c → a	60	70	50	60
5.	c → c	75	95	50	73
6.	c → c	60	98	75	77
7.	c → c	75	98	50	74
8.	c → a	75	95	80	83
9.	c → a	50	98	80	76
10.	a → a	65	98	80	81
11.	c → c	100	100	95	98
12.	c → a	80	100	80	86
13.	c → a	60	100	98	86
14.	c → c	95	98	80	91
15.	a → c	95	98	95	96
16.	a → a	60	98	70	76
17.	c → c	95	98	98	97
18.	c → c	80	98	80	86
19.	a → c	75	100	98	91
20.	a → c	50	50	50	50
Average completeness for each test		73.75	93.6	78.1	

a – abstract; c – concrete

Table 12. The completeness of the association chains (values given in %)

Comment

The highest degree of completeness of the association chains was detected in the case of the English (L2) test: 93.6%, while the Polish (L1) test manifested a much lower number of completed pairs: 73.75%. Even the German (L3) task was performed in a more satisfactory way in terms of finished chains: 78.1%. So, obviously it is not the language proficiency of the subjects that is responsible for this result. However, it might be the nature of the task again (a classroom type of task) combined with language proficiency: it was the L2 test that brought a significantly higher score for completeness of the chains (see Table 12).

In terms of word category patterns, there does not seem to be any preferred one which scores higher than the other combinations of the input-output word, as far as their abstract versus concrete characteristic is concerned. It is, however, the concrete-concrete combination that brings the highest degree of completeness in the case of each language, irrespective of the other variables. L3 chains show the greatest variety in respect of the highest scores in different word pattern combinations, which may mean the greatest instability of the structure of the lexical network in this language.

3.2.2. The qualitative analysis

In terms of content of the association chains there is, of course, some degree of overlap in the kinds of associations produced, but conversely, certain dominating types and patterns can be discerned in each of the individual language tests. (For understanding, all the associations have been translated into English.)

1. **L1 association chains** are in the majority built as certain scripts, where a script can be understood as: "a unit of meaning consisting of sequences of events and actions that are related to particular situations" (Richards 1985: 251). The association chains represent sequences that focus on a particular situation, usually from the everyday life of a subject. The knowledge of local realia contributes to the association lines. Examples:

gwizd – *policja* – *drogowa* – *balonik* – *whisky*

[whistle – police – traffic – balloon – whisky]

lew – *mysz* – *pułapka* – *zaniepokojony*

[lion – mouse – trap – afraid]

gwizd – *pociąg* – *Wars* – *whisky*

[whistle – train – Wars – whisky]

Certain scripts are based on the subjects' knowledge of the world deriving from such media as films:

gwizd – *pociąg* – *dziki zachód* – *saloon* – **whisky**
 [whistle – train – wild west – saloon – whisky]

or perhaps their personal experience:

gwizd – *oznaka radości* – *alkohol* – **whisky**
 [whistle – sign of joy – alcohol – whisky]

Apart from the scripts, the subjects made references to their knowledge of (Polish) literature and film:

pająk – *robak* – *Pan Tadeusz* – **ksiądz**
 [spider – insect – “Pan Tadeusz” – priest]
złość – *film “The Beauty and the Beast”* – **piękny**
 [anger – “The Beauty and the Beast” – beautiful]

There were also examples of associations made to Polish history:

pająk – *krzyżak* – *Grunwald* – *wojna* – **ksiądz**
 [spider – spider with a cross/Prussian knight – war – priest]

The above quoted examples are all based on scripts, concepts or visual images which conjure up the associations. However, some of the subjects when associating would automatically focus on form. The best examples come from the associations using rhymes:

spragniony – *milość* – **słodka** – **gładka**
 [thirsty – love – sweet – smooth]

ciasto – **miasto**
 [cake – city]

michy – **cichy**
 [pots – calm]

Apart from individual lexical items constituting association chains, fixed phrases (collocations) or sayings were also observed:

krowa – **czarna w kropki bordo** (a popular saying in the past)
 [cow – black with red spots]
ręka – **rękę myje** (a proverb)
 [hand – washes another hand], i.e. “you scratch my back and I’ll scratch yours”

2. L2 association chains are also grounded in some scripts originating in everyday life experiences universally shared:

you – **me** – **love** – **dream**
doctor – **patient** – **death** – **funeral** – **black**
bed – **and breakfast** – **eggs** – **milk** – **cheese**

What is interesting in the above quoted example is the use of the set phrase *bed and breakfast* recovered as a chunk.

Other patterns discovered made use of the subjects' knowledge of literature and film:

spider – *fly* – *literature* – *Puritan* – *priest*
foot – *hand* – *Edward Scissorhand* – *scissors*

Also, some personal memories of the past contributed to the associations:

memory – *past* – *childhood* – *stove*

or present day experiences of a language student:

loud – *repetition* – *practice* – *language* – *command*

A substantial number of chains used some sort of a linguistic device:

<i>whistle</i> – <i>whinning</i> – <i>whisper</i> – <i>whisky</i>	(alliteration)
<i>hand</i> – <i>handbag</i> – <i>handle</i> – <i>hassle</i> – <i>city</i>	(alliteration)
<i>doctor</i> – <i>white</i> – <i>black</i>	(antonyms)
<i>memory</i> – <i>bad</i> – <i>good</i> – <i>stove</i>	(antonyms)
<i>outside</i> – <i>out</i> – <i>side</i> – <i>in</i> – <i>inside</i>	(word formation)

In all the chains recorded in the L2 test, the dominance of nouns as a word category can be observed.

3. L3 association chains represent an equal number of scripts as those observed in the L1 and L2 tests, however, they differ in terms of their linguistic composition. A lot of them make use of fixed phrases, usually grammatical collocations describing certain actions characteristic of a schematic situation:

lang – *die Arbeit* – *waschen* – *das Bad*
 [long – work – washing – bath]
das Bett – *aufstehen* – *das Frühstück* – *das Brot* – *der Käse*
 [bed – getting up – breakfast – bread – cheese]
der Fuss – *spazieren gehen* – *der Frisör* – *die Schere*
 [foot – go for a walk – hairdresser – scissors]
durstig – *coca mit Eis trinken* – *das Eis* – *der Ofen*
 [thirsty – to drink coca with ice – ice – stove]

Compared with L1 and L2 tests that focus on nouns only, the importance of verbs can be readily observed here (reflecting a higher status of verbs in German?).

What is particularly interesting in the German association chains is the extent to which they refer to experiences and knowledge of the world (often having some connection with German culture, history, etc):

die hand – *der Kreisverkehr* – *der Verkehr* – *New York* – *die Stadt*
[hand – roundabout – traffic – New York – city]

das Gedächtnis – *der Krieg* – *das Konzentrationslager* – *der Ofen*
[memory – war – concentration camp – stove]

laut – *schreien* – *die Macht* – *Hitler* – *der Befehl*
[loud – to scream – power – Hitler – command]

or sciences which were created by German speaking psychoanalysts:

du – *die Persönlichkeit* – *Jung* – *der Traum*
[you – personality – Jung – dream]

draußen – *die Persönlichkeit* – *die Macht* – *die Kontrolle* – *drinnen*
[outside – personality – power – control – inside]

Summing up, it could be said that in respect of **similarities**, the associations in all three languages observed refer to:

- scripts (shared general knowledge),
- media knowledge (e.g. films),
- personal experiences.

In terms of **differences**, they focus on:

- background information specific to a language (not crossing the language borders, e.g. references to Polish literature, Polish history),
- form, e.g. language devices (e.g. alliteration for L2 and rhyming for L1).

3.2.3. Retrospective comments: association chains from the learners' perspective

Having performed the association tests, the subjects were asked to comment on the task, amongst other things, on the degree of difficulty encountered. The opinions expressed were not unanimous. In the group that did L1 and L2 tasks, there was no clear majority for those who considered the L1 test easier or more difficult than the L2 one. Some of the learners claimed that:

The L1 test was easier. It is because of the abundance of vocabulary and that we have done similar tests earlier in Polish classes at school

or

It was easier to write in Polish (L1). Maybe because Polish words convey extra emotional background, e.g. childhood memories.

Whereas others would say:

L1 more difficult. L2 more natural as a learning task, playing with the language and

It was definitely easier to write in English, never more than two words.

Still others would agree that:

I can't quite decide which test was easier (L1 or L2), I can only distinguish between the particular examples.

Both tests were pretty difficult.

Of the same difficulty, some words came very quickly, some hadn't come at all. Some associations did not come easily in both tests.

Commenting on the types of associations, the subjects admitted that:

Sometimes they were real, sometimes funny and senseless.

It was easier to find association to the words that derive from everyday life, which are used frequently.

Some of the learners distinguished between the word categories that were more easily accessible for them than others:

Mainly nouns came to my mind and only a few verbs, at the beginning some words seem to have no connection. (L3 task)

Evaluating the tests generally, the subjects admitted that they were interesting to perform and educational; they might be *useful in learning the language*, as somebody added.

Recapitulating, the subjects attributed the difficulties encountered in the task performance:

- to the size of their lexicon(s) rather than to connectivity (structure),
- to the type of task (learning in a FL versus unnatural in L1),
- to individual word characteristics not language itself (either L1, L2 or L3),
- to the lack of connotations (affective) in the case of L2 and especially in L3,
- to word characteristics: their frequency and degree of abstractness.

3.2.4. Answers to the hypotheses

The data shows the complexity of the processes involved in lexical connectivity between the different languages of a multilingual and that confirmation of the hypotheses put forward in the study can only be tentative. There is certainly a need to replicate the study to confirm the views presented. However, it seems reasonable to assert what follows:

1. **The positive correlation between access to the lexical items stored and the language proficiency of the learners.** The data gathered did not fully confirm the above. Good command of language on its own (for example, the results for L1 chains) did not determine the lexical length of access (i.e. the length of the chains produced), or only in combination with other variables.

2. **The positive correlation between the completeness of the chains and language proficiency.** It seems that language proficiency was not the main variable in the scores for completeness, as for example the number of complete chains in the L2 test was significantly higher than for L1. It seems that the type of task and its naturalness to the language learning context contributed significantly to a high degree of completeness together with proficiency in this language. The scores for L1 and L3 being almost the same (73.75% for L1 and 78.1% for L3 data) demonstrate that language proficiency is not a decisive factor.

3. **The associations made are language-specific.** The language specificity described here is by the linguistic characteristics of words – word categories and the quality of concrete versus abstract words, the context and frequency of exposure and use, as well as the affective domain. Each of these factors influenced the lexical processing of the subjects, which was reflected in the content of the associations produced. It needs to be stressed that the content associations, references to the affective domain – i.e. that beyond the linguistic characteristics of language – were especially prominent in the data for each language.

It is difficult to make a clear distinction between L1, L2 and L3 structure in the lexicons of the subjects. Obviously, apart from some patterns, these lexicons are highly idiosyncratic and individual differences can clearly be observed. It should be stated that all three types of organisation of words in memory can be found, i.e. coordinate, compound and superordinate – in each of the three languages in question. So, one observable quality is clear, namely that a multilingual lexicon has mixed representations that are accessed independently – at least in the context of an automatic time constrained task.

Chapter III

Multilingual access and processing

1. Introduction to study 3

1.1. From processing to production

Language production can be described as:

the pathway from nonverbal intentions to expressions of intentions by verbal (spoken) language, written (written text) or nonverbal (body language) means. It describes the preparation of utterances, whereas speech production focuses on the last stage of the pathway, spoken production, i.e. the verbal utterance.

(Burteisen 2001: 1)

In Levelt's understanding (1989), this pathway follows the route:

communicative intentions → preverbal message (conceptually structured)
→ mapping onto the linguistic form (formulating) → articulation

It involves two major processes responsible for language production, namely lexical retrieval and phonological encoding.

To describe the language production of trilingual language users, questions have to be asked about how the three languages are stored, i.e. what the representational system of L1, L2 and L3 is and what the connections between the individual linguistic codes are when individual languages are activated. With regard to the problem of integration or separation of languages (discussed above), it seems reasonable to adapt the tripartite hypothesis (Paradis 1989) claiming that multilingual language competence presupposes – irrespective of the number of languages involved – instances of integration (when the systems overlap), separation (when the systems exist on their own) or partial integration (when they only partly overlap).

Processes involved in (multilingual) language production, be it in a spoken or written form, start with **retrieval**, that is, with processes at the level of preverbal

message which consist in “reconstructing” conceptually the meaning and performing a lexical search in the mental lexicon via lemma selection first and lexeme mapping later. In the context of multilinguality, this process is bound to raise the problem of language selection. At the level of lemma selection, the success of the production process will be determined by which language is **accessed** and which languages are **inhibited** in the search, which Levelt (1993) describes as a process of **narrowing down** of the options initially chosen as possible matches from within a complex network of multiple codes (languages) which enter a network with links of various strength. The syntactic characteristics of the lemma will trigger the activation of an appropriate (or not entirely appropriate in the initial stages of access) lexeme. The process will continue as long as and up until the final match is chosen and articulated at the stage of production.

It is assumed (Hoffmann 2001) that this lexical processing, which is the retrieval of lemmas and their matching with lexemes, determines the success of multilingual production. In the case of a trilingual language user, language processing becomes a very complex process because of, first of all, the multiplicity of languages involved in it which results in the increased load of processing and number of possible links to different languages and to different forms within a language chosen to be activated and/or inhibited in the final choices made. This competition between the sources of processing may lead to either a longer duration of processing or result in inaccurate forms produced, and, in the end, bring about a less fluent and accurate language sample as articulated by the multilingual. In those situations where a multilingual fails to produce a correct message, he/she may resort to various compensatory strategies to transfer the message. These strategies will make use of L1 or any other non-target language for the purposes of processing, which may result in code-switching, foreignizing or word coinage. Alternatively, the multilingual may activate his/her target language (TL) lexical competence and paraphrase or search through the semantic field in the TL to approximate the meaning of the desired lexical entry.

1.2. Multilingual language processing mechanisms

The objective of study 3 in the present project on L3 mental lexicon is to observe trilingual processing of the language sample with respect to the subjects' **approach to a language sample (a text), strategies used in language processing and their consequences** (study 3a) as exemplifications of language interaction and cross-linguistic influences in a multilingual lexicon. At the same time, it is assumed that an important aspect of the study of language

processing does not only refer to the above mentioned phenomena, but should elaborate on the retrieval and production processes in terms of **processing mechanisms** consisting of **activation** and **inhibition** in selecting languages in on-line processing. **Bur te i s e n** (2001: 3) describes trilingual language processing as: “highly based on two processing mechanisms: activation and inhibition, and their movement through the language networks. In order to use a certain language, these two major mechanisms need to be executed by the processing systems”. Following **Green** (1986, 1993) she suggests that there are three states of activation of languages in on-line processing:

- selected (active and used explicitly for communication),
- activated (not selected but used as a resource in processing),
- dormant (deactivated for a period of time).

Research data shows that only one language can be activated at one time (**Green** 1993).

Study 3b describes language activation (or inhibition) at different stages of processing. At the same time, it tries to establish the preference system of activation for different types of comments (e.g. cognitive versus affective comments).

Study 3c (**G a b r y ś** 1999) is a short case study based on the data collected from four selected subjects. Two of these subjects are part of the other studies under discussion (3a and b), whereas two additional subjects were introduced to make it possible to see whether a different L1 background (that of the additional subjects), in other words, a different **language typology** and **language training** would have effects on language processing and lexical choices made in a trilingual context. Study 3c is a detailed description of trilingual language processing and production from the perspective of individual differences between trilingual learners. It merely functions as a supplementary comment on the possible variables involved in multilingual language processing.

Processing mechanisms and strategies are observed on the basis of concurrent verbal reports produced by the subjects when performing a translation task. Study 3 is described here in general terms (see section 2) and then the data analyzed and discussed from the above three perspectives. The data material, the subjects and the method employed are the same.

1.3. Approaches, strategies and errors

1.3.1. Multilingual lexical transfer and factors affecting it

Study 3a looks at the phenomenon of language transfer defined by **O d l i n** (1993: 27) as: “[...] the influence resulting from similarities and differences

between the target language and any other language that has been previously (and perhaps imperfectly) acquired”.

Following Odlin’s understanding of the transfer phenomenon, it can be assumed that the appearance of transfer will be determined by language-related factors and will occur when:

- the TL (target language) element has not been acquired because of insufficient input or no input at all,
- the TL element has been internalized by the learner but he/she cannot access/activate it at the moment of performance (especially in immediate tasks such as speaking),
- the rules acquired are not sufficient/complete and do not account for all necessary applications,
- the rules can only be approximated to e.g. the English system of indefinite and definite articles (G a b r y ś 1999: 170–171).

Numerous studies on language transfer emphasize the role of the typology and psychotypology of languages (real and perceived language distance, respectively), language specificity (language markedness) as well as non-structural factors such as age, metacognitive awareness, learner’s learning history, that is to say, the methods of teaching the learner was exposed to and consequently, the transfer of training or the type of linguistic task multilinguals are used to in their language performance (A l o n s o - A l o n s o 2002).

This study considers the influence of yet another variable in language production that may affect the incidence of language transfer, that is, the language of input. It will comment on one level of language processing, i.e. **lexical processing** and its results in the context of trilingual language users.

In his study on lexical transfer R i n g b o m (2001) observes that lexical transfer errors can relate both to form and meaning and can be classified into five distinctive categories:

- language switches,
- coinages (hybrids and blends),
- deceptive cognates,
- calques,
- semantic extensions.

According to R i n g b o m (2001: 65) **language switches** and **coinages** derive from “insufficient awareness of intended linguistic form, instead of which (a modified form of) an L2 word is used”. They result in the creation of a non-existent item in the TL, a so-called foreignised word, which is an example of foreignizing used as a processing/production/communication strategy. Example:

*The **hillow** was hidden in the cupboard.* (Finnish *hillu* = jam)

Similarly, **deceptive cognates** described as either totally or partially deceptive and known as false friends are manifested in the type of transfer based on

a formal similarity between the two languages: “What happens here is that the linguistic form of the word is very much in the foreground: the learner activates, or is influenced by, a formally similar L1 word or L2 word instead of the intended one” (ibid.: 60). Example:

We had a large number of bulls and several cups of tea. (Swedish *bulle* = bun)

The transfer concept is observed in the case of **calques** (literal translations of complex words or phrases) and semantic extensions (the wrong contextual use of the word, overextension or near synonym). Those types of lexical transfer error are caused by “awareness of existing TL form but not of semantic/collocational restrictions” (ibid.: 64). Example:

My uncle never married: he remained a youngman all his life. (Swedish *ungkarl* = bachelor)

On the other hand, semantic extension of single lexical units results from lack of awareness of restrictions of use of a given item and transfer of meaning. Example:

He bit himself in the language. (Finnish *kieli* = both tongue and language)

Research shows that the proportion of different types of errors observed in bilingual/multilingual language users changes with their growing language proficiency.

Form-focused transfer is mostly dominant in the early stages of language learning since it is believed that vocabulary size (width) and organization (depth) are first determined by formal language characteristics and not semantic ones (Ringbom 2001: 65):

It seems that the differences in error frequency are linked with a gradual progress from organization by form to organization by meaning, as the learner’s L3 proficiency develops. Both dimensions of lexical competence, vocabulary size and vocabulary organization develop as the learner’s proficiency improves. Improved lexical proficiency comprises not only a larger vocabulary but also a more structured organization of the lexicon with a larger number of associative links, predominantly semantic, for each word.

1.3.2. The lexical processing of multilinguals

In the case of language learners who are competent to different degrees in their individually acquired/learned languages, the organization of their vocabulary storage (the mental lexicon) and ways of activation of an appropriate language at the moment of task performance (e.g. translation) demonstrate that

the languages in the multilingual brain are multifariously linked, but can also, to a certain extent, be activated independently. Perceived language distance, proficiency of the user, and the classroom language have presented themselves as factors of interconnectedness, determining the nature and strength of cross-linguistic links and the user's ability to process multiple language separately.

(Herwig 2001: 134)

Herwig (2001) in her study of the lexical processing of multilingual language users observed various instances of lexical selection operating both on the automatic and non-automatic levels performed explicitly through cross-linguistic consultation of the languages the subjects were competent in. The study describes lexical processing as a two-stage process of **lexical search** – defined as the stage of appropriate conceptualization, and **lexical retrieval** – understood as access and activation of an appropriate word in the mental lexicon. Herwig believes that this processing operates according to the so-called spreading activation principle, meaning: “forward and backward flow of stimulation across the system. Activation proceeds along neural traces that detect lexical items on the basis of their semantic, grammatical and formal characteristics” (ibid.: 120).

In the case of several languages involved in processing, it becomes an extremely complex procedure based on elaborate networks of lexical organisation determined by linguistic variables such as word characteristics, what Herwig calls “the internal structure of lexical items”, as well as individual learner variation such as language proficiency.

Following Paradis (1987, quoted in Herwig 2001: 116) and his “Subset Hypothesis” describing the L2 mental lexicon, Herwig strongly believes that languages of a multilingual are not static but flexible and dynamic, and the organisation of languages in the mind changes within each individual across time

In the early stages of acquisition, second language items typically have strong ties to corresponding first language items, forming an extended system. Those interlinguistic links will become looser as, with increasing proficiency, the second language network builds up. Eventually, the two languages are thought to develop into (more or less) independent systems.

(ibid.: 116)

When more than two languages are involved (multilingual language users), the processing becomes even more complex since there are more possibilities of interconnectivity and cross-linguistic consultations open for processing. However, it is logical to assume that the above hypothesis and the role it ascribes to language proficiency will still be valid.

2. Description of the study (study 3a)

2.1. Research design

Research hypothesis

This study focuses on the problem of lexical search as performed by multilingual language users and constitutes part of a larger research design presenting and analyzing the interaction of different languages involved or not involved in the performance of a non-immediate task (i.e. translation) and their influence on the final outcome. The languages involved are those trilingual informants have at their disposal.

The major assumption of the study is that the language of input the informants are exposed to at the moment of performing the task will be the main but not the only variable determining language processing and the final outcome, the translation of the text. In more detail, the language of input is believed to have a major impact on and control language processing as to the choice of languages activated and types of comments made at different stages in text manipulation (G a b r y ś - B a r k e r 2003). Consequently, it is assumed that the final results of new text construction (translation) in, for example, instances of interlexical transfer (types of transfer errors) and types of retrieval strategies employed, will also be affected by the surface language. This section then focuses on the analysis of types of lexical processing (lexical search) observed and the examples of transfer errors resulting from the activation and interaction of the languages involved in the task.

Subjects

The group of 48 informants in study 3a (the present discussion) and study 3b (discussed later) consisted of two homogenous groups of trilingual language users. Their homogenous character refers both to their language competence in all three languages involved in the study as well as their learning history – in the majority of cases, formal instruction for both foreign languages.

All the subjects were students at a foreign language department of a Portuguese university, studying English as their L2 and possessing an advanced level of competence in this language. All of them were also involved in German instruction, however at a lower level, which could be described as pre-intermediate to intermediate.

The constellation of languages involved in the present analysis is:

- L1 – Portuguese,
- L2 – English,
- L3 – German.

Research tools

The task the informants were instructed to perform was a typical classroom activity, the translation of a text. One group was translating the selected text from their mother tongue (Portuguese) into German (L3), whereas the other group was asked to translate the same text from English (L2) into German (L3) (Table 1).

	Input text	Output text
Group 1	L1 (Portuguese)	L3 (German)
Group 2	L2 (English)	L3 (German)

Table 1. The translation tasks

The text selected for this purpose was a short newspaper article on a topic the subjects were quite familiar with, the wine industry in Portugal (Appendix 3). The language level of the text was slightly beyond the subjects' competence in L3, which was chosen on purpose. It was assumed that the relatively high degree of difficulty the learners might experience when translating the text, given that their language resources (mainly lexical competence) were lacking, would allow them to perform a more conscious and more elaborate lexical search using various domains of their knowledge, strategies and language awareness.

The major research method used in the whole project was simultaneous introspection, a verbalization of language processing concurrent with the performance of the translation task. The subjects were presented with a text and while translating it, they verbalised all their thoughts directly connected with language processing, the task itself and its manipulation as well as the emotions that they experienced while performing it. The verbalizations were recorded and subsequently transcribed as so-called TAPs: thinking aloud protocols.

Simultaneous introspection, although criticized for its drawbacks, seems to be more appropriate and exhaustive as far as the data collected is concerned, since it allows us not only to analyse the product data (the translation itself) but to follow the processes involved in the construction of the text, namely the process of lexical search (the focus of this study). It is precisely translation tasks which allow us to use this method successfully, as a written translation is a non-immediate task that involves mostly conscious processing, in other words, is open to verbalisation as was observed in my earlier study (G a b r y ś 1993). One of the criticisms of the thinking aloud method points out to reactivity as a significant factor in language processing, which means that thinking aloud may disturb and trigger different cognitive processes during the verbalization task. However, as other research shows (L e o w & M o r g a n - S h o r t 2004), reactivity is minimal and cannot be considered a significant factor in distorting thinking aloud as a process.

The informants in study 3 were trained in performing verbalisation by being exposed to sample TAPs used in different studies. The anticipated difficulties such as inhibition about verbalising or operating within the time limit set for the task were discussed in advance with both groups.

2.2. Data presentation and discussion

2.2.1. Lexical selection

For the purposes of structuring the analysis of the lexical search performed by the subjects, a selection of either individual lexical items or lexical phrases (collocations) was made. Table 2 presents the original lexical entries both in the task 1 (L1 input – Portuguese) and in task 2 (L2 input – English translation equivalent), as well as a correct translation into L3 (German). The words in bold were the focus of the analysis.

Portuguese (L1)	English (L2)	German (L3)
um alerta (...) foi dado	call attention to	betonte die (...) Notwendigkeit
tomada de posse	to be sworn in	(...) als neuer Präsident
entre três elementos que representam	one of the three representatives	einer der drei Repräsentanten
um conhecido elemento ligado ao PS	known to be connected to the PS	J.T., der in der PS bekannt ist
continuar a tarefa de F.	to continue the work started by F.	die Arbeit die sein Vorgänger F. begonnen, weiter machen
ceremónia de tomada de posse	inauguration ceremony	die Zeremonie zur Amtsseinführung
foi marcada pelo discurso	was marked by the speech of (...)	zum Höhepunkt wurde die Rede von (...)
ter mercado os vinhos Dão profundamente	has affected Dão wines profoundly	Dão-Weine in den letzten Jahren entscheidend beeinflusst hat
balanço necessariamane te positivo	a necessarily positive summing up of his actions	gab einentsprechend positives Resumee
A.d.F. que se congratulo u ainda (...)	A.d.F. who congratulated himself on (...)	A.d.F., der sich selbst zur (...) beglückwünschte
que produzem o já afamado vinho (...)	who produce the already famous wine	die den bereits berühmten Wein aus (...) herstellen

Table 2. Lexical selection

The selection of the lexical items for this analysis was made on the basis of their linguistic characteristics with reference to their degree of similarity in terms of form and content, and it was anticipated on the basis of this analysis which of the items might bring about a more elaborate lexical search or perhaps result in interlexical transfer.

In the analysis of the language processing of the text and translation equivalents given to the selected items or phrases, attention was paid to lexical accuracy and the ability to manipulate the text in the case of lexical deficiency, and not to the grammatical correctness of the produced chunks. However, in some cases syntactic processing influenced lexical processing and affected the final lexical choices made by the subjects. All the language produced by the subjects was not edited (not corrected).

2.2.2. Lexical processing in the L1 input task

Patterns of lexical search

Verbalization data received in the L1 task is very scarce. Although the level of verbalization observed is higher than in the L2 task by 22%, the comments made do not refer directly to processing the language but they are evaluative of the task difficulty or of one's performance, e.g.:

para mais tarde ("I will leave it for later".)

weiss nicht ("I don't know".)

Ai não faz a mínima ideia de como se diz (...) ("I haven't got the slightest idea how to say (...)").

Não sei – não sou capaz. ("I don't know – I'm not able to (...)").

As a result, what is being observed is the lack of a translation equivalent, which is commented upon in the following way:

(1) *Não sei se traduzir – e super-difícil.* ("I don't know how to translate – it is very difficult".)

There is no attempt made to try and reformulate the text or use any other strategy available.

Some of the subjects, however, try to overcome the difficulty level by performing more elaborate processing, usually relying on their L3 competence, no matter how incomplete it may be, e.g.:

(2) *ceremónia de posse – das willkommen (...)* *das will kommen den – não der – das Präsident – die president – weiss nicht – so ich glaube der Vortrag von A.d.F (...).*

- (3) (...) *entre très elementos – zwischen – zwischen drei elemente – pronome relative – die – que representam tambem a sector cooperativo – die auch den cooperativo – auch bereich – das bereich – der bereich der – die – die aus Kooperativ und privat Bereich.*

It can be observed in the extracts above (2 and 3) that task performance is primarily focused on grammatical correctness, such as the appropriate use of articles in German, and not on lexical choice itself.

What came as a surprise in the verbalizations recorded is the subjects' inability to manipulate the text in L1 or lack of awareness that L1 text manipulation might facilitate lexical search. Secondly, there were (surprisingly) only two subjects who used their much more advanced competence in L2 (English) as a facilitative variable more or less consistently throughout the whole task performance, e.g.:

- (4) (...) *mercados – mercados – mercados (...) market – market – business – auf die immer grossere – abaixo do ligar – auf die immer grossere – gewordene mercados (...)*

- (5) *the change of power Zeremonie von den neuen President – von CV – CVRD – war bei den – den (...)*

In neither of the cases (4 and 5) in which L2 was activated, however, did it facilitate the performance. In (4) it led to code-switching into L1 (*mercados* selected as the final version). In (5) it resulted in code-switching into L2 (*change of power* as the translation equivalent of *tomada de posse*).

The set of patterns of lexical search observed in the L1 input task – highly unsatisfactory as it is – can be summarized as follows:

	Input	Search	Output	TAP sample	Comment
Pattern 1	L1	0	0	(1)	no verbalisation
Pattern 2	L1	L3/L1	L3	(2, 3)	L3 activation, syntactic processing
Pattern 3	L1	L1/L2/L3	L1/L2	(4, 5)	code-switching

Table 3. Lexical search patterns in the L1 input task

A holistic analysis of the subjects' performance in the L1 task demonstrates that the most characteristic features of the processing were:

- with reference to the task as such (verbalization and translation):
- the lack, incompleteness or fragmentary character of verbalizations and of the translated text,
- discontinuity of verbalization (extremely long pauses),
- erratic approach to the text (word by word translation, fragmentary, "jumping across the text"),

- with reference to language processing:
 - failure and lack of persistence in the lexical search and as a result, no translation equivalent given or L1 insertion made (code-switching),
 - focus more on grammatical than lexical processing,
 - no strategies of achievement (relying on various sources of competence), mechanical repetition used extensively,
 - no L1 awareness manifested in the performance;
- with reference to affective level of performance:
 - negative evaluation of the task (the perceived degree of difficulty too high),
 - negative evaluation of oneself (the perception of inability to perform correctly, hence giving up).

2.2.3. Lexical choices made (types of errors)

The translation equivalents of selected lexical items and phrases will be analyzed and classified according to an extended version of Ringbom's typology (2001):

B – hybrid/blend (coinage),

FF – deceptive cognates (false friends),

C – calques,

SE – semantic extension,

CS – code-switching,

F – foreignizing (an aspect of B; for example adding L2/L3 endings to L1 form),

P – paraphrasing (often resulting in simplification),

O – not complete in meaning (omission of an element: either semantic or formal).

Word/phrase (L1)	Translation		Type of error
	Correct version	Student's version	
alerta	Notwendigkeit	<i>Hinweis</i> <i>alerta</i> <i>Anmerkung</i> <i>Wärnung</i> <i>Alert</i> <i>Achtung</i> <i>Notwendig</i>	SE CS (L1) SE SE FF/CS (L2) S O
elementos que representan	Repräsentanten	<i>Elementen</i> <i>Personen</i> <i>Mitgliedern</i>	FF correct SE

cont. Table 4

Word/phrase (L1)	Translation		Type of error
	Correct version	Student's version	
um conhecido elemento ligacao ao PS	in der PS bekannt ist	<i>bekannte Element</i> <i>bekannte Mitglieder</i> <i>bekannte person</i>	FF SE correct
continuar a tarefa	weiter machen	<i>weiterführt</i> <i>weiter gehen</i> <i>weiter zumachen</i>	B B B
ceremónia de tomada de posse	die Zeremonie zur Amtseinführung	<i>Fest von (...)</i> <i>wilkomen</i> <i>Cerimonia</i> <i>Ceremonie</i> <i>Zeremonie von...</i>	SE SE F F correct
foi marcada pelo discurso	zum Höhepunkt wurde (...)	<i>(...) markiert</i> <i>marcada</i>	correct CS (L1)
profundamente	beeinfluss hat	<i>viel</i> <i>sehr wichtig</i> <i>vielen glauben</i> <i>viele (...) gemacht</i>	P P P P
balanço	Resumee	<i>Zusammenfassung</i> <i>balance</i> <i>balanco</i>	correct CS (L2) CS (L1)
se congratulou ainda ...	(...) sich selbst zur (...) beglückwünschte	<i>sich gratuliert</i> <i>sich kongratuliert</i> <i>sich congratuliert</i>	F F B (L2 → L3)
o já afamado vinho	bereits berühmten Wein	<i>bekannte Wein</i> <i>bekannte vinho do Dão</i> <i>already known Wein</i>	O/correct O/CS CS (L2)

Table 4. Selected examples of translation equivalents produced by the students (L1 input)

2.2.4. Lexical processing in the L2 input task

Retrieval strategies and patterns of lexical search

Although the level of verbalization in the L2 input task, i.e. the average percentage of the number of subjects who verbalized at different stages of language processing (73% in the L1 versus 51% in the L2 task) is significantly higher in the former one, however, as already mentioned, the comments made

in the L1 task give very little evidence on language processing itself. On the other hand, the L2 performance demonstrates more explicitly linguistic processing data.

As a result, the observed lexical search shows a whole range of recall strategies employed in the process. The inadequate lexical competence exhibited by the subjects is well reflected in the most commonly used strategy of simplification:

- (1) *hm – pointed out – called attention – ok say it the other way – hat gesagt – das ist – es ist sehr wichtig*
- (2) *punctuated – don't know – oh-oh-oh-punctuated – to be punctuated – punctuated – in a speech – speech – speech (...) let's say that A.F. delivered a speech – why not – it is the same thing.*

The examples (1) and (2) demonstrate how the subjects manipulated the text by means of simplifying the required marked phrases to make the final lexical choices which are unmarked and formally reduced.

In other examples of lexical search, this L3 lexical deficiency led to the production of samples that could be described as examples of foreignising (producing a word that would resemble an L3 lexical item in spelling or suffix, etc):

- (3) *how do you say inauguration – I will put Inaugurazion*
- (4) *producers I don't know – Produktoren – Produktoren – so für die cooperatives and private – (...) oh – für die – hm – I don't know – der Dão Wein Produktores*
- (5) *the inauguration ceremony – ceremony – ceremony – Zeremon (...).*

The most commonly observed manipulation of the L2 text in language processing resulted in instances of lexical search performed via semantic field search in L2, focusing on synonyms or near-synonyms or using semantic extension:

- (6) *called attention to the need to develop markets – emphasized – emphasized – reminded – ennerte von – stressed – stress – não*
- (7) *Here it comes (...) Notig (...) to increase – to develop zu – verbessen to improve markets*
- (8) *who is well-known in the PS – der (...) der (...) hm – I don't know – der – der – hm (...) is important – recognized – den rerühm.*

The search through semantic field strategy is performed via L3 lexis as well – though less frequently since the lexical competence of the subjects in L3 is incomparably lower:

- (9) *weiteren zu führen – zu weiter führen – der Arbeit beginnen – begonnen – angefangt – angefangt (...).*

The subjects' linguistic awareness of L3 is manifested via metalinguistic comments made which are mostly on grammatical features of German, e.g. the use of articles, appropriate prepositional phrases and declension endings both for nouns and articles, as well as by means of the course the lexical search takes, that is, a focus on the syntactic aspects of language and not on lexical ones (choice of an appropriate word). However, there are instances of lexical awareness in terms of morphology demonstrated, in other words, instances of word coinage and the creation of long – typically German – complex words:

- (10) *to continue the work (...) weiterentwickeln die Arbeit (...) hat es versprochen weiterzuentwicklung*
 (11) *wine producers – wie sagt man dass – Weinmachers – Weinmachers – I don't know if this word exists in German – Weinmacher.*

As was the case with the L1 text, examples of code-switching are present in the produced data as well; however, they are less numerous than in the L1 task and, of course, as would be expected, the intrasentential insertions made are from L2 (there is only one example of an L1 insertion):

- (12) *Zeremon – Ersten Tag – let's say inauguration ceremony für den neuen Präsident der CVRD*
 (13) *des drei representatives – representanten für (...) die Government – die Government.*

The lexical search observed can be expressed in the following patterns:

	Input	Search	Output	TAP sample	Comment
Pattern 1	L2	L2	L3	(1, 2, 5)	L2 activated as a source
Pattern 2	L2	L2/L3	L3	(12)	semantic field search via L2 and L3
Pattern 3	L2	L3/L2	L2	(12, 13)	CS into L2
Pattern 4	L2	L3	L3	(9)	semantic search via L3, approximation of meaning
Pattern 5	L2	L2	0	(6)	no final lexical choice is made
Pattern 6	L2	L1/L3	L3	(14, 15)	the subject who acquired L3 in a naturalistic setting

Table 5. Patterns of lexical search

The last pattern of language processing refers to the three subjects whose learning history is different from the others, since they acquired German while

living in Germany. Although their competence in German was not high or, at least, not in the performance of the translation task (the text translated is not significantly more correct than the others), the entire processing is performed in these cases via L1 and L3. When approaching the text, the subjects tend to translate it automatically into L1 so no verbalization is observed, as if the input text read aloud was actually in their L1. In the second stage L3 is being activated and again no explicit processing is manifested:

- (14) *Gestern (...) deve ser (...) acho que é outra palavra mas – Eröffnung – Eröffnung von J.T. (...) neue Präsident*
- (15) *agricultura também não me lembro (...) agricultura – não me lembro – deixo um espaço – food é essen – outro verbo*
- (16) *neue Kommission – neue Weinkommission – Não – es muss Kommission sein – não tenho a certeza*
- (17) *C.L. – der Minister – der – nein – wie heist Dão – Landwirtschaft – Landwirt – schafte – und Ernährung – die Ernährung schreibt man Dão (...).*

As a general comment on the type of processing described in the L2 input task, it can be noted that:

- with reference to the task as such (the level of verbalization and translation as such):
 - more verbal processing is observed and data richer than in the L1 task,
 - text analysis is at a higher level (e.g. chunking and manipulation of language);
- with reference to language processing:
 - a more elaborate lexical processing search is observed (fewer instances of no translation or code-switching),
 - cross-linguistic consultation is commonly noticed between L2 and L3,
 - a range of L2-based recall strategies is used for the purposes of lexical search,
 - little use is made of L1 competence and language awareness,
 - the importance of metalinguistic awareness in L2 and L3 is clear;
- with reference to the affective level of performance:
 - as in the case of the L1 task, evaluative comments describing the task difficulty and one's performance are frequently produced,
 - the comments activate L1 for negative evaluation (criticizing oneself) and L2 for positive remarks (praising oneself for the performance).

2.2.5. Lexical choices made (types of errors)

Table 6 presents a selection of translation equivalents supplied by the informants in the L2 input task.

Word/phrase (L2)	Translation		Type of error
	Correct version	Student's version	
1	2	3	4
attention	Notwendigkeit	<i>achtet darauf (...)</i> <i>Aufmerksamkeit</i> <i>sägte wichtige über (...)</i> <i>sehr wichtig</i> <i>Achtung</i> <i>sprach über (...)</i> <i>aufpasst für die (...)</i>	B SE P P SE P P
representatives	Repräsentanten	<i>representantes</i> <i>Representatives</i> <i>Personen</i>	B CS (L2) P
known to be connected	in der PS bekannt ist	<i>gut bekannt</i> <i>viel gut bekannt</i> <i>berühmt</i> <i>ganz berühmt</i> <i>sehr bekannter person</i>	C C SE SE P
to continue the work of (...)	weiter machen	<i>weiterzumachen</i> <i>weiter führen</i>	B corrected
inauguration ceremony	die Zeremonie zur Amtseinführung	<i>Inauguration fest</i> <i>Vorstellung's fest</i> <i>Zeremonie die Eröffnung der Inauguration Ceremony</i> <i>die Ceremony Inauguration</i> <i>Ceremonial von Inauguration</i> <i>Der Inaugurationfest</i> <i>Inauguration</i> <i>Inauguracão</i> <i>Eröffnuingfeier</i> <i>Inaugurations</i>	C C P C C ? C CS (L2) CS/F B F
was marked by speech	zum Höhepunkt wurde (...)	<i>hat interesant als (...)</i> <i>Gesprach von (...)</i> <i>Vorlesung von (...)</i> <i>ein gesagt von (...)</i> <i>Rede gegeben</i> <i>Vorstellung (...) punktiert</i>	P P P P P FF (L2)
affected profoundly	beeinfluss hat	<i>tiefbar affected</i> <i>viel</i> <i>hat affentier</i> <i>viele wichtige gemacht</i> <i>eine wichtige Role</i> <i>influenziert</i> <i>muitos (...) afestos os vinhos</i> <i>viel glück denken hat</i> <i>influentierte</i>	B/CS (L2) P ? P correct B CS (L1) P B/F (L2)

cont. Table 6

1	2	3	4
summing up	Résuméé	<i>summe positives sprechen Diskourse von sein Aktion Punkt gegeben Zusammenfassung</i>	B/FF (L2) P P P SE
congratulated himself	(...) sich selbst zur (...) beglückwünschte	<i>sich congratuliert congratulered er selbst sich selbst kongratuliert gratuliert hat</i>	B (L2) B B/F corrected
the already famous wine	bereits berühmten Wein	<i>Weltbekanntes "Wein von Dão" jetzt der beruhmt Dão Wein die schön guten Wein die schön bekannte Wein</i>	C (L2) C P correct

B – hybrid/blend (coinage), FF – deceptive cognates (false friends), C – calques, SE – semantic extension, CS – code-switching, F – foreignizing, P – paraphrasing, 0 – not complete in meaning

Table 6. Selected examples of translation equivalents produced by the students (L2 input)

2.3. Cross-linguistic influences in L3 production: summary of findings

2.3.1. L1 input versus L2 input task

Comparing the two tasks performed, some observations can be made with reference to the nature of lexical processing observed and types of errors produced in the **context of the L1 input versus L2 input task**. The observed characteristics will allow us to draw out some implications for the practice of second/foreign language learning and teaching. The observations refer mainly to the following aspects of language processing:

- automatic versus explicit processing,
- languages activated in the two tasks,
- approach to the task,
- lexical search strategies used by the subjects,
- types of errors (transfer versus non-transfer errors).

Generally, processing in both tasks (L1 versus L2 input task) differed in the **degree of automaticity** involved. It seemed that the mother tongue source text limited the explicit language activation (verbalization) of the subjects and the processing was much more automatic. The subjects would either automatically come up with a lexical solution in the target language (L3) or performed

a one-step search through L3, so the lexical search was much shorter and did not activate learners' prior knowledge of either L1 or possibly L2, which could have facilitated the search. In the L2 input task, the processing appeared to be much more elaborate, both in terms of the length of the lexical search and the types of strategy used to perform the task. It was more conscious and deliberate showing learners' awareness not only of lexical sources, but their metalinguistic knowledge as well.

Languages activated for the purposes of performing the task of translation seem to have been dependent on the language of input. In the L1 task, all comments made in the course of processing the language were mostly made in L1 with occasional cognitive comments (mostly metalinguistic ones) in L3. The other language of the learners, i.e. their L2, does not seem to have been accessed at any stage of processing – with the exception of a few individual instances.

The L2 tasks seemed to have triggered mostly the source language (L2) and the target language (L3) to a lesser degree. The subjects made conscious use of their L2 competence for the purposes of the lexical search. Only 10% of the subjects processed through their L1 on the onset of the task, i.e. translating the L2 items into L1 and then performing the lexical search mostly in L3. So, in these cases the source (input) language was eliminated. Those subjects, however, were the learners who had acquired their L3 in natural settings – like their L1 – so they seemed to process through these two languages exclusively. In the remaining majority of cases, only surface languages (task 1: L1 and L3, task 2: L2 and L3) were activated.

The observation of the **approach to the text (task)** differed in the two tasks. In L1 input translation it was much more a “word-for-word” process and the performance focused on either automatic solutions to individual words offered or a very limited search for individual lexical items, focusing on their semantic equivalence. On the other hand, the L2 task made the subjects process the text itself, not the individual items in question. It was properly chunked, that is, certain collocational phrases for example were recognized as fixed in L2 and consequently, processed as such. The learners' concern for correctness is seen here in their focus on the form of the searched for phrases/words – for example spelling and appropriate use of German articles are emphasized as well as word-building. This may be caused by the perception of the task as a classroom exercise in the two languages learnt rather than acquired.

The **strategies** of retrieval employed in both tasks differed with respect to quantitative and qualitative features. As already mentioned, the L1 task was mostly performed in an automatic way so no detailed comments on the strategies adopted were possible; only affective comments expressing the difficulty of the task were observed. The lack of verbalized strategies was reflected in the “give-up” solutions (no solution found, no translation) or foreignizing and

frequently code-switching into L1. At the same time, in the L2 task, the lexical search – quite elaborate at times – gives evidence of a whole range of achievement strategies used in the search. These strategies were mostly based on the L2 lexical competence of the subjects: a semantic field search, synonyms, paraphrase, circumlocution, blends and occasionally, code-switching into L2. In the case of 10% of the L3 “acquirers”, the activation of L1 was observed and strategies based on L1 used. They were language transfer examples of false friends and approximation.

The **marked structures** (e.g. fixed phrases/collocations) are perceived as different in the source and target language so the subjects either code-switch into their L1 for the lack of L3 equivalent marked item, give no answer (L1 input), or as in the case of L2 input, create unmarked phrases or simplified language by paraphrasing (the strategy of simplification).

Code-switching seems to appear in both tasks, however, the embedded language is always the language of the input text, i.e. in the L1 task the subjects tend to use intrasentential switching of words/phrases from their L1, whereas in the L2 task, the embedded language is their L2. This might be revealing that the learners are unable to access/activate the language that is not a surface one, i.e. L2 in L1 input and L1 in L2 input task.

2.3.2. Transfer versus non-transfer errors

The proportion of **transfer** versus **non-transfer errors** varies across the two tasks. Exposure to the **L1 input text** brought approximately 87% of transfer errors observed in the selected areas of transfer-prone lexical items/phrases and only 13% of other types of incorrect translations. It may be assumed that the focus on individual lexical items in processing the text resulted in the subjects' reliance on their mother tongue competence or L3 lexical knowledge, no matter how deficient it was. The types of transfer error brought about by the word-for-word approach to the text are mostly examples of:

- **semantic extension (SE)**: the lexical search through the L3 semantic field, resulting in incorrect forms because of insufficient knowledge of semantic restrictions, e.g. *Achtung* instead of *Notwendigkeit*;
- **blends (B)**: mostly in a form of foreignising the use of which can be explained by the subjects' awareness of the basic lexical characteristics of German words, such as spelling, e.g. capital letters for nouns as in *Ceremonie* instead of *Zeremonie*, or conjugation endings for verbs characteristic of German, e.g. *congratuliert*;
- **code-switching (CS)**: when the subject does not seem to be able to use any other strategy, he/she inserts an L1 word, e.g. *alerta* for *Notwendigkeit*

or *marcada* for *zum Hohepunkt wurde*, embedded directly (and without any comment) into the target text.

The incorrect translation equivalents described as non-transfer errors are all examples of paraphrasing and constitute only approximations of the intended meaning, e.g. *sehr wichtig* instead of *beeinfluss hat* (Portuguese: *profundamente*, English: *profoundly*). The proportion of transfer to non-transfer errors in the L2 input task is as follows: transfer errors constituted 60%, whereas non-transfer ones 40% of all erroneous translation equivalents produced by the subjects in the process of translating the text. And again, it may be assumed that the high number of non-transfer errors (compared with the L1 task) is due to the type of text processing observed in this case. As already mentioned, the subjects manipulated the text using their L2 metalinguistic awareness and lexical competence in the source language, i.e. English. Paraphrasing, which was observed in the former task infrequently, here is the major strategy in text processing. The unknown lexical items usually perceived in their contexts (approached as chunks) are paraphrased into unmarked translation equivalents, e.g. *viele wichtige gemacht* for *profoundly marketed*, or *sprach über* for *call attention to*, resulting in a less idiomatic (marked) text in the TL.

Apart from non-transfer error, the chunking approach to the text resulted in transfer errors such as:

- **calques (C)**: unobserved in the L1 input processing, they show the subjects' unawareness of collocational restrictions, e.g. *gut bekannt* for *well-known*; they often become a coined phrase consisting of L2 + L3 items, e.g. *Inauguration fest* for *inauguration ceremony* or *Weltbekanntes Wein von Dão* for *world famous Dão wine*;
- **blends (B)**: these translation equivalents demonstrate the major influence L2 has on processing since the coined phrases or individual lexical items use either grammatical features of L2 such as verb endings, e.g. a non-existent form in German *achtet* (English *-ed* suffix to mark the past tense) as the equivalent of *called attention*, or free morphemes (the stem of the word) from English and a German ending, e.g. *sich congratuliert* for *congratulated*;
- **code-switching (CS)**: as far as this type of error is concerned, the embedded words/phrases are seldom taken directly from the input text, one such example is the use of *inauguration* to stand for *die Zeremonie zur Amtseinführung*; other instances of L2 code-switching are always synonyms (or near synonyms) of the input items, e.g. *affected* to render the translation of *profoundly* (in the meaning: *widely*) which can be understood to be the result of the text manipulation in L2; examples of CS are less frequent in the case of the L2 input;
- **semantic extension (SE)**: very few examples found in the target text, one such example may be the use of *Achtung* (a very frequent and familiar

word) for *attention*; it can be hypothesized that SE was quite uncommon in this task because of the extensive use of the strategy of lexical search via the L2 and not the L3 semantic field, which often led more to paraphrasing than synonym or near-synonym selection as the final lexical choice made by the subject.

The analysis of the errors detected in the selected corpus of lexis in the two tasks shows very little evidence as far as **deceptive cognates (FF)** are concerned, as there were not many examples of these in the surface language combinations, i.e. L1 (Portuguese) – L3 (German), and L2 (English) – L3 (German), despite the fact that English and German are close typologically. The most outstanding example of a false friend was in the L1 input Portuguese *elementos* meaning *persons/people*, which in German stands for *elements*, which a vast majority of the subjects translated as *elementen* instead of German *Personen* or *Repräsentanten* (according to the context of the sentence).

To sum up, the errors detected in the L1 versus L2 input task differed first of all in terms of the proportion of transfer – non-transfer ones, which is hypothesized to be due to the different processing strategies employed by the subjects in the case of mother tongue input and L2 input. They were similar in that they both **focused on form** – blends and code-switching observed in both tasks and **meaning** – semantic extension in L1 input and calques in L2 input processing. In both cases, it was the language of input that “served” as the source for the lexical transfer observed, which can be exemplified by the instances of code-switching into L1 in L1 input processing and into L2 in L2 input processing. The results of this study coincide with what Ringbom (2001) observed in his research on cross-linguistic influences in trilingual comprehension, pointing to the perceived language distance, formal cross-linguistic similarity, the language of input and language proficiency as determinants of the processing strategies and types of errors occurring.

3. The language of thought (study 3b)

3.1. Description of the study

3.1.1. Research focus

Private and inner speech phenomena are examples of language processing. It was the Russian psychologist Vygotsky (1962) who first asserted the now generally held belief that all our thinking is done via language. All the mental

processing of our thoughts and ideas involves language use. Sometimes we voice our thoughts (i.e. say them out loud), which is considered to be a facilitating factor in organising our thinking into coherent sequences. These instances of verbalisations are called **private speech** and are, in fact, quite commonly observed in young children, who act as if carrying out a dialogue with themselves. This quality of speaking aloud our thoughts seems to disappear with age – with our cognitive (and language) development. However, it does not disappear altogether; it turns into so-called **inner speech**, which is still grounded in language but is not vocal.

Private speech seems to function in a similar fashion in foreign language use to L1 language processing, especially in the case of communicative tasks. McCafferty (1998: 73) discusses the concept of private speech in the context of L2 use. He describes private speech as: “vocalised forms of speech for the self that function metacognitively to help the learner plan, guide, and monitor a course of activity”.

The functions that private speech/inner speech perform in L2 use seem to be fundamental to intentional language processing and are most visibly expressed in learners’ editing their language before performing it. Other researchers Frawley and Lantolf (1985) emphasise the similarity of private speech in L1 children and L2 adults. In L2 adults, it is observed that PS (private speech) performs the role of an instrument in gaining control over one’s performance (**self-direction**), and especially during the early stages of learning a language it is a consciously employed form of mediation, which with growing language competence becomes more automatic and subconscious, an observation I made earlier (Gabryś-Barker 2003). PS, described as the performing self’s regulatory function, operates on various stages of language processing and focuses on different aspects of language performance (Frawley and Lantolf 1985), such as **object-regulation**, **other-regulation** or **self-regulation** (see Table 7).

Stage	Characteristics
object-regulation	the learners’ reflections on the task performed, comments on the language processed, conceptualisation;
other-regulation	expression of the need for cooperation with the “knower”, dialogical aspects asking questions “how to say (...)”, conceptualisation/formulation;
self-regulation	showing understanding, arriving at the solution, evaluating the solutions/one’s performance, articulation

Table 7. The self-regulatory function of private/inner speech at different stages of processing

As can be seen from the above description, different instances of PS can be perceived as different stages of thought (language) processing. At the stage of object-regulation the task and its language are being reflected upon, conceptual demands are being considered (macro-planning) as well as seeking a focus on form (micro-planning). The other-regulation stage can exemplify the phase of searching for linguistic solutions (e.g. lexical search or grammatical information) by asking questions of “the knower”, as if consulting oneself with a “How can I say this?”-type question. Self-regulation, on the other hand, is like the articulation stage when final solutions (linguistic choices) are being made, evaluated and the task itself performed.

So, it can be assumed that the comments expressed by PS and IS

give evidence of thinking involved in language processing, thinking understood as a very complex process which draws upon learner’s cognitive and linguistic competence, his metacognition and various perceptions: of the task itself, language, affective aspects, etc.

(Gabryś-Barker 2003, forthcoming)

The data offered by recovering samples of the subjects’ inner speech would be indisputably rich but also difficult to investigate. However, inner speech expressed in the form of private speech via simultaneous introspection, exemplified by so-called **thinking aloud protocols (TAPs)**, can stand in for this function very effectively, I would argue. As has already been mentioned, instances of private/inner speech, that is to say verbalizations, allow the researcher to observe the different stages of language processing as they occur and various specific aspects of the process itself. Additionally, one of the areas of interest in introspective data is the informant’s **choice of language** for the purposes of verbalization, i.e. the **language of thought**. In a multilingual context, this choice is made from either the stimulus language (input) or the target language (output), or perhaps another language L3 or Ln known by a given subject. It can be assumed that success at performing a task – or in a broader sense in learning a language – may depend on the language choices a learner makes for his or her own learning/processing purposes (Cohen 1998: 157).

As observed in various studies using introspective methods (Gabryś-Barker 2003), the choice of languages activated in the process of verbalization may vary between different levels of processing, i.e. it may be different at the level of conceptualisation, at the level of the formulator (encoding; selecting syntactic, lexical or morphological information) and at the articulation stage (the final language choices made).

Grosjean (2001) assumes that a bilingual (multilingual) language user operates on a certain **language mode continuum**, either monolingual when only one language is selected for processing, or bilingual (multilingual) when the

user moves between languages, activating (proactive activation) and de-activating them. A whole array of factors contribute to selection/inhibition decisions: “At any given point in time and based on numerous psychosocial and linguistic factors, the bilingual has to decide, usually quite unconsciously, which language to use and how much of the other language is needed – from not at all to a lot” (ibid.: 2).

Apart from language proficiency, attitudes, status of languages, content of the message and mode of interaction with the language, it is the user’s expectancy of the task and type of instruction that sets him or her in a selected language mode at a given moment of processing. Grosjean emphasizes then the importance of context-sensitivity in his language mode framework. According to him, when processing a bilingual (multilingual) may select the base, most active language at one point, inhibiting the remaining ones, but finds it natural to switch back to the other language(s) depending on the given situation, so his or her position on the language mode continuum varies. Evidence comes from the data on code-switching. Only to a certain extent can this changing language mode be controlled by the user. This can be observed in non-automatic tasks such as translation, but not in spontaneous speech production. Green (1998) in his discussion of language activation in bilinguals (multilinguals) points out the inhibitory control mechanisms in processing that operate at various levels, that of attention (SAS – a supervisory attentional system), schema establishment and competition (inhibition) between various schemas, and matching the lemma and language tags through selective inhibition. The contradictory results of research on language activation/inhibition do not yet allow us to create a model for it (for a discussion of the competing models, see Dewaele 2001 and Dijkstra & van Hell 2001).

In this study the discussion will focus not so much on the mechanisms underlying the processing in different languages, but on language status in the sense of its role in different types of commentary at different stages of processing. It is not concerned with final language solutions but with thinking itself as an expression of certain cognitive and affective processes.

The **languages involved in processing** will be described as:

- active: involved in the processing of the language sample when performing a task,
- selected: which controls the language of output,
- dormant: passive, not activated in the process.

In my earlier study (G a b r y ś - B a r k e r 2003) I observed that languages L1, L2 or Ln may be **activated intentionally**, i.e. consciously and deliberately, when for example the language user perceives a similarity between two languages and finds it to be a facilitative factor, that is, when it delivers greater ease of expression. There may also be **unintentional** switches between the

languages which occur automatically and are not verbalized to explain the language choice. This is manifested for example in the case of

L1 language transfer, when a language user mentally translates directly from his mother tongue into L_n. If he is lucky, he arrives at a correct solution (positive transfer), if not, an instance of negative transfer (interference) can be observed.

(ibid.: 3)

We may safely assume that the major factor which will determine the language choices made will be the learners' language proficiency in different languages. This entails a possible elimination of verbalizations in L1 when L2 competence is high enough. However, various studies focusing on language selection made by the informants emphasize the facilitative role L1 performs in verbalizations. For example, Macaro (2000: 103) writes:

There are clearly some benefits in not putting too many obstacles in the way of the L1 as the language of thought. It is used both for semantic comparison, for storage of lexical items and for some aspects of syntax.

It is the proficient command of a native language (L1) that makes it possible to express more verbally and this expression is often far more precise in describing ongoing processes. At the same time, Macaro (2000: 105) believes that: "(...) there is a threshold of L1 use which, once crossed, the L2 is no longer involved in thought. Up until then the L2 is involved in the thinking process alongside the L1" (ibid.: 105).

Apart from the proficiency level, the choice of "the language of thought" may be determined by a **type of comment** made at a given moment of thinking/processing determined by the degree of naturalness involved in the choice of language. For instance, it may be more natural for the learner to comment on his or her feelings when performing a language task in his/her mother tongue, or, quite the contrary, the use of L2 may be perceived as safer as already seen in my study (Gabryś-Barker 2003).

Various types of verbalized comments such as **cognitive, metacognitive and affective** ones exemplify different functions in language processing (see Table 8). These different types of comment will overlap and reoccur in the course of language processing and at the different stages of self-direction (self-regulation), i.e. object-regulation, other-regulation and self-regulation and they will allow the learner to gain control over processing at the level of conceptualisation, formulation and articulation. They constitute a piece of interactive discourse, as in the case of an L1 child who: "produces private dialogue and uses this private dialogue in planning solutions to problems (...) and in difficult situations, the individual can externalise his inner speech in order to gain control of himself in a task situation" (Lantolf and Larca 1987: 197).

Cognitive comments	<ul style="list-style-type: none"> – focus on the cognitive processes occurring at a certain moment of language performance, – refer to language processing at the level of language subsystems (e.g. lexical search or a syntactic pattern choice), – make references to linguistic sources the language user has at his or her disposal, i.e. L1 or some other Ln, – include the presence of non-comments, i.e. pauses (filled – such as “uh”, “um”, “well”, and unfilled ones) or hesitation (evidence of a prolonged search).
Metacognitive comments	<ul style="list-style-type: none"> – verbalizations of the learner’s awareness of language structure (declarative knowledge, metalinguistic awareness), – manifestation of knowledge of how to manipulate language, procedural knowledge (e.g. learner’s strategic competence and the ability to self-repair), – evaluation of effectiveness of the strategies used, – demonstrate the learner’s approach to the language task and language sample (e.g. either holistic or based on individual chunking of the text into sentences), – may reflect the general knowledge of the domain and its contribution to correct language solutions.
Affective comments	<ul style="list-style-type: none"> – show the learner’s evaluation of his or her performance, a belief in his success or failure, – expressions of self-confidence and self-esteem.

Table 8. Types of verbalized comments

3.1.2. Research design

As was mentioned earlier, study 3 consists of two parts both aiming at discussing language activation in the case of linguistic processing in non-immediate tasks, i.e. translation and looking at the role the language of input plays in language selection and type of processing. The two groups of language users (informants in the study) and the task performed were the same.

The first part of the study 3 (study 3a) discussed earlier focused on the interaction of languages in the lexical search of informants and demonstrated cross-linguistic consultation observed when processing the texts and its influence on the types of errors produced in both tasks. In short, it was observed that the language of input influenced the task performance significantly.

First of all, the approach to the task in both cases was different, which affected the type of processing performed. For example, the L1 input text stimulated automatic processing, while in the L2 input task a whole range of L2 strategies were observed in the lexical search. The influence of the input language was very visible in the types of errors that occurred in the produced translations. L1 stimulated transfer errors, while L2 registered non-transfer errors.

The second part of the study 3 (study 3b) to be presented in this analysis looks at language processing when more than one language is involved – as was the case in study 1. It is to show the interdependence between the three languages at the subjects' disposal – L1 (Portuguese), L2 (English) and L3 (German) – at the stage of language comprehension (conceptualisation), formulation and production (articulation).

Firstly, it is hypothesized once again that the **language of input** will influence the way language processing develops; it will either promote or inhibit the processing. Secondly, it is believed that not all the three languages will be equally accessible for processing: some will be **active** and others **dormant (passive)** at different stages of language processing: in the object-regulation versus other-regulation versus self-regulation sequences.

Thirdly, it may be anticipated that different languages will be used for **different types of comments**. Thus, it may be expected that affective comments will be made in the subjects' L1 more frequently than in their L2, whereas cognitive comments will draw more upon L3 knowledge.

Observations and analysis will be offered on the degree of explicitness and the subjects' ability to verbalize in the three languages. As mentioned earlier, the private speech data comes from the verbalizations produced by the subjects when performing the translation task. When processing the text, both of the groups were asked to think aloud, i.e. to verbalise all the processes they were involved in when translating the text, as well as their own evaluative and affective comments. The verbalizations were taped and transcribed following a set transcription code. When verbalizing, the subjects worked individually in closed laboratory booths, but with the possibility of contacting the researcher in the case of doubts. To make the informants aware of what verbalizations were, they were exposed to sample TAPs (thinking aloud protocols) – which were verbalizations used in another study – for the purposes of training.

3.1.3. Data presentation and analysis: language processing in the translation tasks

The L1 input task (language activation/language selection)

As far as language activation in language processing is concerned, certain tendencies can be observed in different sequences of verbalisation.

1. Object-regulation

The comments made refer to task and language difficulty, meta-knowledge of the subjects and their affective reaction to the task and their own performance. All types of comments, i.e. cognitive, metacognitive and affective are

discovered in the TAPs. However, as far as language activation is concerned, it can be noticed that different types of comment are expressed in different languages. L3 (German) is most commonly used to express cognitive comments focusing solely on the language itself. The following examples illustrate the above:

das – die – der Industrie (subject 10, focus on articles)

Neue kommission – den Dão Wein – den Dão Wein – in der Wein von Dão
(subject 9)

Ich weiss nicht (.1) CVDR hat gestern – gestern – die – den Chef (subject 4)

Metalanguage comments, or, more precisely, metalinguistic comments, are expressed in the subjects' L1 (examples to follow):

Ve – quem – accusativo – não (subject 2, declension)

Acho eu – für die für die – feminino (subject 6, gender)

Não tenho que pôr adjetivo antes das (subject 6, word order)

The mother tongue (L1) is also and most commonly activated when affective reactions are recorded in TAPs at the stage of object regulation:

Ai não faz a mínima ideia de como se diz (...) ("I haven't got the slightest idea how to say (...)"), subject 9)

Não sei não sou capaz ("I do not know if I am capable of (...)"), subject 5)

Ai meu Deus! ("Oh, my God!", subject 4)

2. Other-regulation

This sequence of thoughts reflects dialogical aspect of our private speech, cooperation with "the knower", expressed as questions asked to oneself. As such, it is mostly cognitive in nature. The examples found in the study mainly relate to the lexical search performed by the subjects and are formulated as a question: "How do I say/How does one say/What is it in (...)?". The language activated on this dialogical level of processing is almost exclusively the mother tongue (L1) and the questions asked are always the same. The following examples demonstrate this tendency:

Como é que se diz Comissão? (subject 1)

Como é que se diz alimento? (subject 6)

3. Self-regulation

In the studies of private speech, the language of thought at the level of self-regulation describes the stage at which the subject arrives at the solution or changes the direction of his or her thinking. These are often expressed by non-verbal means, unobserved in this study, such as gestures or facial expressions. The verbal way of self-regulation is demonstrated by comments

expressing understanding, lack of verbalisation in the form of filled and unfilled pauses and all the affective comments on one's performance and its evaluation. Although the sample data is not extensive, an interesting phenomenon can be observed in this sequence. The subject's self-evaluation comments in the majority of cases are negative and express a critical view of their ability (or rather inability) to perform the task or a negative evaluation of the task once performed, or even an expression of the wish (carried out in many cases) to give up. These comments are mostly made in the subjects' mother tongue:

Não sei se traduzir – e super – difícil (“I don't know how to translate – it is very difficult”, subject 1)

Não sei – não sou capaz de traduzir mais – não sei mesmo (“I don't know – am not capable of translating more – I really don't know”, subject 5)

Summary of findings (L1 input)

As has already been mentioned, the data received in TAPs is not equally distributed for the three private speech sequences of self-regulatory acts (see Table 9).

Stage	Object-regulation	Other-regulation	Self-regulation	Average
Level of verbalization (approximation)	100	40	80	73

Table 9. The level of verbalization in L1 input task (% of the subjects who verbalized)

Table 9 is introduced merely to illustrate the general distribution of tendencies. The above data can be explained by the nature of the language task to be performed, the subjects' need to evaluate their performance and the dialogical aspect of the private speech. The translation task calls for a focus on language properties and language manipulation, i.e. cognitive and metacognitive comments, which can easily be verbalized (100%). The analyses are in most cases non-automatic and consciously carried out, thus this stage of thinking aloud brings more data than the remaining ones. The self-regulation stage consists mostly of the subjects' comments on the final decisions they have made and their evaluation, in most cases negative, showing learners' dissatisfaction with the results (80%). The other-regulation stage, which is essentially the expression of the dialogical aspect of the task, produces the smallest amount of data (40%).

Language activation observed in language processing as reported in the TAPs for the three stages can be summarized as follows:

- object-regulation: L3 used for cognitive comments (80%), L1 used for metacognitive and metalinguistic as well as affective ones,

- other-regulation: L1 used for cognitive comments (dialogical questions on language, 90%),
- self-regulation: L3 used for cognitive comments on language decisions (60%), L1 used for affective (evaluative) comments (30%).

The distribution of language activation may allow for the hypothesis which assumes that the process of language analysis and manipulation is performed in the target language (L3), which is true of both the object- and other-regulation sequences. The only exception is the other-regulation stage, where a communicative aspect is being introduced, namely the subjects ask (themselves) for assistance in solving a particular language problem. This seems more natural in L1. The metalinguistic awareness of the subjects is also manifested in their L1. This can possibly be explained by the fact that their language instruction is bilingual, i.e. the theory and resources used (e.g. grammar books) are often Portuguese. Naturally, self-valuation, which is affective in itself, is bound to be expressed in L1 (the self-regulation stage).

The L2 input task (language activation/language selection)

As was the case with L1 input, language activation data recovered from the second group of subjects in the three different sequences of object-regulation, other-regulation and self-regulation present certain patterns and regularities:

1. Object-regulation

Only four subjects seem to be using their L1 as a resource for processing and it is mostly in their affective comments expressing their attitude to the task and language sample (e.g. subjects 6, 14, 27):

Não deve ser nada disso ("Can't be like that")

Pergunto – pergunto ("I wonder (...) I wonder (...)")

Passa a frente ("Skip and go on")

Falta outra vez ("Missing again")

English (L2) was used for metacognitive, metalinguistic and cognitive comments (for example, subjects 1, 3, 4, 12 and 13), which gives evidence for processing in a foreign language, exemplified by conscious linguistic analysis (much more than was the case in the L1 input task – group 1). Here are selected examples of L2 use in object-regulation:

Needs to develop – über das – über der Entwicklung (C)

speech – speech – speech – let's try that – A. de Figueira delivered a speech – why not – it is the same thing (lexical search in L2)

Markt – Markte – Marketen plural

von Jorge Teixeira als – als – dative – no – accusative

The presence of verbalized data in German (L3) was observed in the majority of cases in metacognitive and cognitive processing (for example, subjects 2, 5, 8, 11 and 26):

Als neue – President – Dão Geberg (direct translation into German)
neuer Wein Gruppe – Ich weiss nicht wie Man commission auf Deutsch sagt
Deklination – den Sekretar des Staates
mit einem agressiven – dativ – agressiven Marketing
für Agriculture – und Essen – das Essen – und das Essen

The presence of L3 is also marked by the affective comments made by the subjects (for example, subjects 1, 11 and 28), however these are less numerous than comments on linguistic processing itself (i.e. metacognitive/metalinguistic comments):

Mein Gott – this is kein Deutsch (“Oh, God – this is no German”)
Oh – mein name ist Christina
Ach Gott – das liert so komisch (“Oh, God – this is funny”)

2. Other-regulation

In the other-regulation sequence there is a visible increase of L1 use for cognitive comments (for example, subjects 1, 6, 7, 10 and 30) which can be in most instances interpreted as asking for assistance: *Como é (...)?*, which is a direct communication strategy:

Como é que se diz vinho (“How do you say wine”)
Como é que se diz Governo (“How do you say government”)
Como que traduziste isto (“How do you translate it”)
Komission é com dois emes (“Commission is with two ‘m’s?’”)
food é Essen (“food is Essen”)

There are a few similar examples of “asking for help” performed in L3 (for example, subject 1 and 20), but fewer compared with the mother tongue use:

Wie sagt Man das – wollte – oh Gott (“How does one say – oh God”)
es ist sehr schwierig – wie sagt Man auf Deutsch (...) (“This is so difficult – how does one say in German (...)”)

The other-regulation stage does not seem to present many observable examples of L2 use, in fact, only in the case of two informants. The absence of English might give evidence of learners’ experience of classroom interaction in their L1, e.g. in the context of asking for teacher’s assistance when a language problem arises.

3. Self-regulation

Self-regulation naturally gives rise to affective verbalizations which are responses to the informants’ achievement in the task performance. So, it is not

surprising that affective comments abound here: out of 20 subjects who verbalized at this stage only three do not present affective responses. The affective comments are almost exclusively performed in the two foreign languages, English and German. Only two subjects used their mother tongue (subjects 6 and 14).

Comparing all three stages in terms of affective responses, the self-regulation one is the richest in this type of data, for example:

Attention–nein (...) pass–nein–hm–hm (subject 3)

This cold is not helping (subject 5, a comment made on the conditions in the room)

I don't know again (subject 8)

es gibt kein Übersetzung ("This is bad translation", subject 11)

Summary of findings (L2 input)

Table 10 shows the approximate level of verbalizations expressed by the subjects in the three sequences: object-regulation, other-regulation and self-regulation. As was the case with group 1, the level of verbalization varies here from 44% to 70%, which, however, is only an illustration of certain tendencies.

Stage	Object-regulation	Other-regulation	Self-regulation	Average
Level of verbalization (approximation)	70	40	44	51

Table 10. The level of verbalization in L2 input task (% of the subjects who verbalized)

One fourth of the whole sample, i.e. 9 subjects, did not produce any verbal data, or only the briefest of comments in one of the stages, and these were generally affective in nature, so they did not reflect cognitive processing of language in the task performed at the moment. The amount of verbalizations in the three sequences varies but it is not significantly different. However, it can be observed that the comments made are more numerous in object-regulation, both in terms of quantity and quality. It is interesting to note that the subjects who did not verbalise in this sequence tended to give up commenting on their performance in the other sequences, too – with the exception of subjects 15 and 31, whose comments, however, were only made in the self-regulation stage and were purely affective in nature. The choice of language in the object-regulation stage covered all three languages at the subjects' disposal. Of course, once again the quantity of use of individual languages was not equal.

In terms of language choice and language activation in each of the processing sequences, they can be presented as:

- **object-regulation:** 30% of the subjects did not verbalize at all. Out of the remaining ones, the highest number of comments were made in L3 (over 40%) with the exception of affective responses which were slightly more often expressed in L1, but it has to be emphasized that all the languages were present in the verbalization in the following order of frequency:
 - metacognitive comments: L3, L2/L1 (equal amount of L1 and L2),
 - cognitive comments: L3, L2, L1,
 - metalinguistic comments: L3, L2, L1,
 - affective comments: L1, L2/L3.

The approximate distribution of different types of comment was 29% out of 100% for each: metalinguistic, cognitive and affective (simultaneously the highest L3 use) and 21% of metacognitive comments (almost equal choice of language of verbalization).

- **other-regulation:** the highest number of comments was made in L3 (60%) and was significantly higher than the other language choices, L2 seemed to be almost absent in this sequence of verbalization (only two subjects verbalized in L2). There was a high percentage of no verbalization at all (over 60%). Language choice was distributed in the following way:
 - metacognitive comments: L3 only (one exception in L1),
 - cognitive comments: L3 (50%), L1 (49%),
 - metalinguistic comments: none observed,
 - affective comments: only one in L3.

The prevailing type of response noted was cognitive in nature: almost 80% of all comments. The remaining ones were metacognitive comments in L3.

- **self-regulation:** in terms of language choice L2 processing dominates in this sequence (60%), whereas both L1 (20%) and L3 (20%) are performed at a much lower level of activation. Like in the object- and other-regulation sequences, again there is a rate of 40% lacking verbalizations altogether (16 subjects). The responses collected were distributed in the following way:
 - metacognitive comments: very few examples (3): two in L2 and one in L1,
 - cognitive comments: very few examples (5) mostly in L2 (3 instances),
 - metalinguistic comments: none observed,
 - affective comments: most numerous (over 75% of all comments), expressed in L2 (60%), L3 (20%) and L1 (20%).

It is the affective comments that are most visible in the sequence of self-regulation, which can obviously be explained by the fact that only at this

stage do the subjects evaluate their performance and this very act is often more affective than cognitive in nature – especially when the task is challenging and the results often unsatisfactory.

Language activation in L1 and L2 input tasks: a comparison

A comparison of L1 and L2 input processing will focus on the following aspects:

- the level of verbalization in both tasks,
- language activation at different processing stages to express different types of comment,
- an overall pattern for language choice in each task.

1. Level of verbalization

Table 11 summarizes the data demonstrating the tendencies in the level of verbalization performed in L1 and L2 tasks.

Input	Object-regulation	Other-regulation	Self-regulation	Average
L1	100	40	80	73
L2	70	40	44	51

Table 11. Comparison of L1 and L2 input levels of verbalization (in %) (Gabryś-Barker 2002)

It can be observed that verbalization in the L1 task is higher by 22%, which can be accounted for by the fact that L1 competence allows the subjects to express their thoughts more easily.

In the case of both tasks, the highest verbalization occurred in the object-regulation sequences, which can be explained by the fact that it is, then, that direct attention is paid to language itself, its comprehension and analysis, and that it seems to be particularly focused. At the same time, this very sequence is rich in pauses (unfilled and filled), as evidence of automatic processing which is inaccessible to verbalization at that very moment.

There is a significant difference in the self-regulation sequence where the L1 task produces almost twice as many comments compared with the L2 task. As mentioned above, the affective-evaluative comments found most frequently here are easily expressed in L1, which is the language of affect/emotion.

2. Language activation

The data collected reveals the unequal status of L1, L2 and L3 in language processing as demonstrated by means of verbalizations (see Table 12).

Input	Object-regulation			Other-regulation			Self-regulation		
	L1	L2	L3	L1	L2	L3	L1	L2	L3
L1	M		C	C			A		C
	Mc								
	A								
L2	A	M	M	C		M		C	
		C	C	C		C		A	
		Mc	Mc					Mc	
		A	A						

M – metacognitive, C – cognitive, Mc – metalinguistic, A – affective

Table 12. Language activation for different types of comments for both tasks (bold print means the greatest number of comments)

General activation (irrespective of which sequence) forms the following patterns of language choice and hierarchy of use (from the more dominating to the less frequent):

L1 input: L1 → C, A (significant %), M, Mc (low %),
 L2 → none,
 L3 → C (significant %)

The hierarchy of language activation is thus: L1 → L3 → (L2 = 0).

L2 input: L1 → A (significant %),
 L2 → C, A (significant %), M, Mc (lower %),
 L3 → M, Mc, C, A (significant %).

The hierarchy of language activation is thus: L3 → L2 → L1.

What can be observed from the general patterns of language access and processing in the two tasks is the dominance of the surface languages, i.e. either input or target languages in language processing on the cognitive and metacognitive levels. The activation of all three languages is present at the affective level of the performance and not in the direct processing of the language itself.

3.1.4. Summary of findings: language activation at different stages of language processing

The major focus of interest in study 3b was on the following:
 – the influence of the language of input on language processing when performing the task,

- the languages activated in both tasks at different stages of linguistic processing,
- language choice in different types of comments,
- the position of L3 (another foreign language) in language processing.

Drawing together all the observations made above, the following summary of findings can be offered:

1. Language of input

It can be firmly stated that the language of input (here: L1 and L2) in a non-immediate production task influences language processing in the task performed. First of all, more variety and a greater number of comments appear in the L2 input task, which could be explained by transfer of training/learning and perception of the task as a learning task. At the same time, comments not directly related to language processing are made in L1 (mainly affective ones). This observation confirms the findings of study 1, in which it was noted that the language of input most vividly influenced the approach to the task and types of errors produced. It has to be emphasized, however, that these observations come from a translation task only, which is a non-immediate production task. The results could well be different for an immediate task.

Secondly, it is mainly the surface languages (the source and the target ones in each of the tasks) that are selected when the language is being comprehended (the stage of conceptualisation), manipulated (the stage of formulation) and the final output produced (the stage of articulation). Even though learners' competence in the dormant or not activated language (L2 in task 1) is higher than that of the target language (L3), it is not accessed in the course of processing the L1 input text, even when it might have assisted task performance.

However, it may be assumed that different types of data will emerge from a study of, for example, speech production – or any other task in which time constraints for processing are present. In such cases, it might be expected that access will be non-selective and will result in such linguistic occurrences as unintentional code-switches or tip of the tongue phenomena – but this assumption can only be verified by further research.

2. Languages activated

The languages selected are different in different processing sequences, when the explicit focus is on:

- the **task itself** (object-regulation): L2 and particularly L3 are significantly more frequent than L1, which may be assumed to demonstrate the learners' treatment of the task as a learning experience – hence processing done only in the learnt languages. It shows lack of metacognitive awareness of L1

and its possible contribution to language processing of the L1 text – such as was observed in the L2 input task (with reference to L2 awareness). This lack of awareness frequently results in incomplete translations or direct code-switching from L1.

- **dialogical aspects** (other-regulation), i.e. asking “oneself” for help when a problem occurs: in L1 input both L1 and L3 (the output language) are activated for comments, whereas in L2 input the language of input remains dormant (un-activated) and only L1 and L3 comments occur. L1 seems to be the most natural language choice for expressing the need for consultation, as is commonly observed in a learning situation when the learner asks the teacher, or when one consults a reference source such as a dictionary. On the other hand, the use of L3 here might indicate the intentional use of the target language to reinforce or facilitate the activation of, for example, the lexical item searched for (thinking in L3 when looking for solutions) and at the same time, expressing the intention to exclude other languages as possible sources of interference.
- **final language decisions**: at the level of articulation and evaluation (self-regulation), all the languages are activated, however, affective comments of self-evaluation are expressed either in L1 (negative) or L2 (positive), while cognitive ones focusing on the final articulatory language decisions rely on L2 and even more significantly on L3 expression. The language choice for comments made at this stage might reflect the learners’ approach to the task and their strategic competence, such as their ability to manipulate the text in L2 by using either L2-based strategies, such as paraphrasing or word-coinage, or L3-based strategies, such as overgeneralization.

3. Different types of comment versus language choice

As far as language choices made in the different types of comment are concerned, the following was observed:

- L1 was activated for affective comments in both tasks because the mother tongue is the intimate language of affect/emotion, and for cognitive comments in the L1 input task because greater fluency in L1 than in L2 and L3 facilitates explicit verbalizations;
- L2 was used predominantly for affective comments and expressing positive aspects of one’s performance (L2 is a distancing language) and for cognitive comments in the L2 input task only, for the purposes of strategic text manipulation. As has already been mentioned, it is dormant in the L1 task;
- L3 was activated for all types of comment in both tasks where the focus was on the target language itself and on task performance. It showed the greatest variety and activation – especially in the context of another learnt language L2 (see object-regulation in the L2 task, Table 9).

4. Individual factors in language processing: a four-person case study (study 3c)

4.1. Description of the study

As mentioned earlier, study 3c (also described in G a b r y ś 1999) is based on the data collected from four individual subjects, two originally participating in studies 3a and 3b and two additional ones with a different L1 (Polish) background. It focuses on transfer and lexical search strategies in a L3 language learning context.

It comprises a discussion of the phenomena of both syntactic and lexical transfer between L1, L2 and L3 with the purpose of determining the proportions of these two levels of cross-linguistic influence. It also looks at language typology and its role in the subjects' performance. Another variable which is included in the study is the influence of the subjects' learning history, namely acquiring L3 in a naturalistic setting (living in Germany) versus L3 classroom instruction.

The data was collected on the basis of the translation of the text used in study 3a and 3b, and of thinking aloud protocols delivered by the subjects in individual sessions. As before, the first two subjects were translating the text from their mother tongue into L3 and the remaining two from their L2 into L3. The variables considered in the study were:

- source of language transfer (either L1, L2 or intralingual transfer from L3),
- areas of language transfer (syntax versus lexis) and their proportions,
- transfer of training (a natural setting for L3 acquisition or the formal conditions of classroom learning).

Table 13 presents the personal data of the subjects and the language task they were asked to perform.

Subject	L1	L2	L3	Input text in
A	Polish	English	German	L1 (Polish)
B	Polish	English	German	L2 (English)
C	Portuguese	English	German	L1 (Portuguese)
D	Portuguese	English	German	L2 (English)

Table 13. Personal data of the subjects

The additional two subjects A and B were also university students of an English Department with German as a second foreign language. Their competence in English was advanced, while their command of German was at an intermediate level. The data on the learning history of all four subjects

was gathered through an informal interview or a personal questionnaire and showed all of the subjects to be a compatible group of learners, not only in terms of level of their multilingual competence, but in terms of motivation, attitudes and personal experience of learning. Only subject D differed from the group since she acquired her L3 (German) while living in Germany in her childhood.

The subjects were confronted with the task of translating a linguistically quite challenging text into the learners' L3 (German). In the case of learners A and C, the text was in their L1, while in the case of B and D – in L2 (Table 13). During the translation the subjects were verbalising their thoughts, both comments on the linguistic processing and affective remarks were recorded, and later transcribed as thinking aloud protocols.

4.2. Data presentation and analysis

The case study data is presented according to the following categories observed:

- types of errors made by the informants (qualitative and quantitative),
- instances of language transfer and their origin (L1, L2 or L3),
- lexical search performed,
- general comments on performance.

The focus of the analyses falls on the lexis, however, there were also comments referring to other sub-systems, especially syntax, since both sub-systems contribute to language processing.

1. Types of errors and language transfer

Table 14 shows the types of errors observed in the translated texts.

Error	Subject			
	A	B	C	D
word order	7	2	5	4
grammar	14	12	9	3
wrong word	5	6	13	16
collocation	2	1	1	1
spelling	2	6	8	18
total number	30	27	35	42
transfer from/in				
lexis	L1	L3	L1/L2/L3	L3
syntax	L1	L3	L1	L3

Numbers in bold refer to lexical errors.

Table 14. Types of errors produced by the subjects

The number of lexical errors made by the subjects varies from much lower in the case of the Polish learners (A – 9, B – 13) and much greater in the case of the Portuguese students (C – 22, D – 35). The lexical search observed in verbalizations of all four informants makes it possible to explain the instances of transfer observed.

2. Lexical search and lexical transfer

The TAP data shows a variety of strategies used by the subjects in searching for lexical equivalents in which references are made, both to L1 and L2, and even L3.

SUBJECT A

Most of the incorrect forms produced result from L1 direct translation. Direct translation is employed as a conscious strategy in processing the text on the lexical level. Examples:

(reads) *Die neue Kommission (.3) – do spraw win (.2) wino to będzie Wein, sprawa – die sache (.10) to może będzie die neue Kommission für Weinsachen (.2) in der region Dão (.5)*

((reads) “Die neue Kommission (.3) – for wine matters (.2) wine it will be Wein, matter – die Sache (.1), so maybe die neue Kommission für Weinsachen in der Region Dão”)

Jorge Teixeira bekannt (.2) w kręgu – może in Kreise (.2)
 (“Jorge Teixeira bekannt (.2) in the circle – im Kreise (.2)”)

der aggressiv Markt (.3) kontynuować – wydaje mi się, że brzmi podobnie do polskiego – chyba kontinuierieren
 (“der aggressiv markt (.3) continue – I think it sounds like Polish – it may be kontinuierieren”)

In the absence of direct translation from Polish, the subject tries to transfer from English. Examples:

przewodniczący – chairman – to po angielsku (.3) – nie znam tego słowa (.2) – sprawdzę w słowniku
 (“chairman – chairman – it is English (.3) – I don’t know this word (.2) I will check in the dictionary”)

potrzebę (.3) – od razu kojarzy mi się z need – ale po niemiecku to na pewno co innego (.1) – nie wiem naprawdę – sprawdzę w słowniku
 (“need (.3) – I immediately associate it with need – but in German it must be different (.1) – I really don’t know – I will check in the dictionary”)

das Klima – stagnation to po angielsku – das Stagnationklima
 (“das Klima – stagnation, it is in English – das Stagnationklima”)

When the subject does her lexical search through L2 (English) in the majority of cases, she comes up with no translation equivalent and gives up (she refers to the dictionary). The TAP data demonstrates the learner's insecurity in transferring from L2 into L1. Other examples of the lexical search observed describe the learner's helplessness when she cannot find any associations in any of the languages known to her:

przedstawiciele spółdzielni – nie znam tych słów – z niczym mi się nie kojarzą
 (“co-op representatives – I don't know these words – I don't associate them with anything”)

Subject A seems to demonstrate strong links between L1, L2 and L3 lexicons (consistent with the dependency theory).

SUBJECT B

The most characteristic feature of this subject's performance is her heavy reliance on the metalinguistic knowledge of L3 rules operating in grammar. Even in her lexical search, the examples of translated lexical items are evaluated more in terms of correct endings than lexical choices. She makes extensive use of morphology rules, e.g. word formation:

develop – entwickeln – noun Entwicklung

or focuses on the use of appropriate articles:

ale jaki to będzie rodzaj – dieser or dieses?
 (“but what gender is it – dieser or dieses?”)

or a correct use of prepositions with a certain verb:

promise jest z zu
 (“promise is used with zu”).

The subject checks her intuitive knowledge of German by saying:

it won't be a German sounding sentence.

In the case of learner B, the influence of language training (grammar-based formal instruction) seems to determine not only her competence in grammar but her lexical strategies as well. The fact that the input text is in L2 (English) may be a determining factor in the perception of the task performed: an artificial, classroom type of activity. Both L2 and L3 are featured as languages learnt by means of formal instruction, in which metalanguage awareness is stressed.

SUBJECT C

A high percentage of incorrect forms in this subject's translation can be observed in the area of lexis (22 out of 35 total number of errors), which

contributes heavily to the incomprehensibility of the text produced. Whole segments of the text are being translated directly from L1. The instances of L1 transfer noticed are manifest in the use of prepositions: *entre* – *zwischen*, or *a* – *to*.

The lexical search recorded in the TAP gives evidence of L1 and L2 transfer contributing to incorrect lexical solutions. The lexical choices made are examples of:

- code-switching: *attention für die Entwicklung* (attention)
- word coinage: *politik Mann* (politician)
- foreignizing: *Agricultur* (agriculture)
- paraphrasing in L2 (L2 synonym search): *brutal marketing* (*brutal for aggressive*)

Subject C demonstrates a full repertoire of transfer strategies in which a knowledge of L1, L2 and L3 is being consciously used in the lexical search.

SUBJECT D

Although the text produced by this subject is full of errors (mostly lexical ones: 35 out of 42), it is fully comprehensible. Lexically incorrect forms do not manifest any influence of L1, the subject translates directly from L2 (the input text in L2) into L3. The incorrect forms result mainly from:

- wrong prefixes selected: *ansführen* (zuführen), *angepasst* (angepasst),
- lack of complex nouns (so characteristic of German): *Fläschen Produzenten*,
- no capital letters are used for nouns: *keller*,
- carelessness (incompleteness, omissions): *der sekretar* instead of *der Staatssekretar*.

The TAP information is very sparse. Most of the lexical search is performed automatically and no comments are made on the lexical choices. The only comments are those expressing emotional states (all in German or English). The style of the translated texts and comments are more representative of a careless oral discourse than a written text. These characteristics can be assigned to the fact that the subject acquired rather than learnt her German living in Germany for a couple of years and was not instructed formally.

Table 15 summarises the lexical search detected in the thinking aloud protocols of the four subjects.

Subject	Strategy
A	<ul style="list-style-type: none"> - word choice based on a literal translation from L1: L1 → L3 (L1 transfer), - conscious/unsuccessful processing through L2: L1 → L2 → 0, - automatic performance on the level of syntax (word for word translation)
B	<ul style="list-style-type: none"> - conscious and successful application of L3 rules to syntax, - use of L3 word formation rules in the lexical search: L2 → L3
C	<ul style="list-style-type: none"> - direct translation from L1, - a conscious strategy of L1 and L2 transfer on the lexical level, - examples of code-switching (e.g. L2 words in L3 sentences), - models of the lexical search: L1 → L3, L1 → L2 → L3 L1 → L1 → L3, L1 → L1 → L2 → L3
D	<ul style="list-style-type: none"> - automatic translation of the whole phrases (chunks): L2 → L3, - lack of precision resulting from simplification, - omissions in the text

Table 15. Strategies of lexical search (TAP data)

4.3. General comments on the performance

The texts produced by the four subjects expose the degree of influence of different languages a multilingual learner has at his or her disposal and the way these languages are consciously or unconsciously used. The translation task in which the input text was in the L1 of the subject resulted in texts which were difficult to comprehend (evaluation of text comprehensibility was done by a German native speaker). On the other hand, the translations of the text presented to the learners in their L2 were fully comprehensible, despite the incorrectness of many of the forms recorded.

Evaluation of subject A:

- the text difficult to understand (wrong word order and case endings),
- focus solely on the lexical level of the text processed and produced,
- no awareness of text structure (no processing),
- comments in L1 only.

Evaluation of subject B:

- a fully comprehensible text,
- very few examples of language transfer (from L1 or L2),
- reliance on L3 (incomplete L3 rules are applied consciously),
- L3 learning perceived as a separate experience from L2 learning,
- both metalinguistic and affective comments entirely in L2 (English).

Evaluation of subject C:

- impeded comprehension of the translated text,
- word order transfer from L1 impedes understanding,

- a variety of lexical strategies used consciously (e.g. calques, code-switching, paraphrasing, synonym search),
- comments made both in L1 and L3,
- frequent comments on linguistic insecurity.

Evaluation of subject D:

- a fully communicative text despite the abundance of errors,
- informal style (as if in oral discourse),
- most of the processing automatic,
- evidence of acquisition rather than learning,
- expression of confidence in L3 competence.

4.4. Summary of findings and conclusions

The above observations concerning these four subjects can be drawn together in the following findings:

1. Cross-linguistic influences operated both on the syntactic level and the lexical level, consciously employed as a production strategy. They operated unconsciously on the syntactic level, whereas in the case of **lexical search** they were used **consciously**. Collectively, the subjects used the whole repertoire of transfer strategies, such as: code-switching, foreignizing and paraphrasing.

2. The fact that the Polish subjects produced fewer lexical errors (21) compared with the Portuguese (57) may allow us to conclude that perhaps the greater objective and **perceived typological distance** between Polish/English/German was more significant than the proximity of Portuguese/English/German at the level of their lexical subsystems.

3. The lexical search observed was carried out either via subjects' **L1 mental lexicon** or **L2 lexicon**, which was determined by the **language of the input text**. In the case of the L1 text, the tendency would be to use mother tongue lexical source, while in a context of the L2 text the subjects would tend either to process lexical items through all three languages (L1, L2, L3) or to use mainly a L3 lexical search (paraphrasing, approximation).

4. The influence of the language of the input text is noticeable when the two pairs of subjects are compared: A and C (L1 input) focus on the **lexical level** of the text, which could perhaps be explained by the **real and perceived distance** between the two languages involved in the translation task (L1 and L3). The lexical level of the text might have been perceived as the main means of communicating the message, hence entailing conscious processing. On the other hand, the B and D pair concentrated on syntactic processing, relying on their knowledge of the grammatical rules of their L3, which were nonetheless still imperfect.

5. Another variable which seems to be quite significant in the case study is the **mode of training**. It is most evident in subjects B and D. Subject B learnt both L2 and L3 by means of a formal instruction, from a heavily grammar-oriented syllabus. Her language processing is like "filling in the grid" (Sajavaara, 1986) according to the learnt rules. Subject D acquired her L3 in a natural setting with no exposure to any kind of formal instruction, so she does not refer to her L1 or L2 knowledge but processes the text automatically, using all kinds of strategies of approximation and not only in her lexical search. The observed **transfer of training** seems to have a decisive influence on the type of language processing employed by the learners in the cases when they are involved in a linguistic task and not in a natural speech act. The task is perceived and strongly reflects this perception, as a learning experience. Consequently, transfer of learning is also observed in the cases when the subjects accessed their L2 knowledge to perform in L3.

The above comments support the findings of study 3a and 3b, and additionally emphasize the role of perceived language proximity. They also stress the importance of learning history, not only distinguishing between the effects of naturalistic versus instructed language learning, but also the type of instruction received by the subjects. The traditional approach to teaching languages created methods which focused on explicit grammatical instruction and neglected language discovery and experimentation. It also seems on this evidence that the mother tongue could be playing a more explicit and facilitative role in multilingual language processing, in the more extensive employment of L1-based strategies, provided that the subjects were made more linguistically aware in their L1.

Chapter IV

Multilingual language learning through problem solving and language awareness

1. Introduction to study 4

1.1. Defining a problem solving cycle

Being a form of behaviour – verbal behaviour – language learning and performance in a bilingual or multilingual context follows all the characteristic patterns of a problem solving task. Anderson (1980) defines problem solving activities as:

- Goal-directed: an individual has a certain destination to reach. In language learning and use it may be, for example, a communicative one or a translation task.
- Reaching the goal means involvement in a sequence of mental operations. In the case of language performance, it is linguistic and non-linguistic processing (often affective) at various levels.
- The processes in problem solving are cognitive in nature. In language learning they are some form of either inductive or deductive thinking, some use of analogy and transfer that contribute to language performance and use.

Problem solving as described by cognitive psychology (for example, Sternberg 1996) consists of seven well-defined stages (see Fig. 1).

Research in this area looks at the way two groups of subjects perform in a problem solving task, specifically the gifted as compared with the average, and experts as compared with novices. Five major cognitive processes have been identified as the components of successful problem solving by the gifted and experts (Sternberg 1998, Rabinowitz & Glaser 1986):

- encoding (the way the solver extracts information necessary to arrive at a solution),
- combination (the way the solver retrieves and interprets his or her knowledge),

- retrieval (the solver's activation of the concepts and schemata to allow for interpretation of information),
- comparison (the solver's way of searching for patterns on the basis of the extracted information and past experience),
- goal directness (the solver's selection of the appropriate from among irrelevant information).

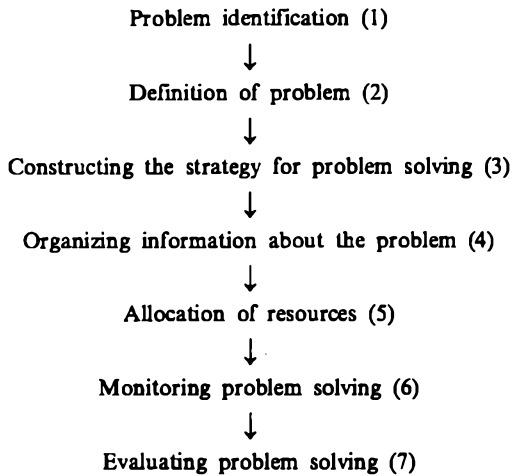


Fig. 1. A problem solving cycle (adapted from Sternberg 1996: 347)

The above characteristics are used to describe the solution profiles of subjects. Each of the sub-processes is measured in terms of its degree of selectivity. It is observed that the greater the selectivity, the greater the efficiency and sophistication of understanding and of the solution applied (Gorodetsky & Klavir 2003: 305–325). The Most Selective Profile (MSP) is defined as

the one in which the solver encodes deep structure items, retrieves deep structure information relevant to the interpretation of the problem, performs an integrative combination in a process that is directed to the final goal, and reports on the comparison of only deep-structure relations with an analogical problem from past learning.

(*ibid.*: 310)

The model of problem solving described within a semantic frame of the five processes can be presented as a six-stage process (see Fig. 2), the sixth being the completed state of the task. Within each of the sub-processes different levels of selectivity are observed, marked from the most to the least selective (and consequently, least effective):

Encoding →	Retrieval →	Combination →	Goal directness
- deep structure	- deep structure	- integrative	- directed to the final goal
- deep and surface structure	- surface structure	- replicative	- systematic search
- surface structure		- distortive	- random search
→ Comparison →	Correct solution		
- deep structure	- correct		
- deep and surface structure	- partially correct		
- surface structure	- incorrect		
- none			

Fig. 2. A semantic frame for a problem solving task (adapted from Gorodetsky & Klavir 2003: 310)

Gorodetsky and Klavir (2003: 319) believe that this understanding of the problem solving process can become an important didactic tool: “in assessment and instruction in problem solving. It provides the teacher and the learner with a detailed analysis and understanding of the solution process and highlights points of strength and weaknesses that can be attended to”.

One can argue that in the context of formal language instruction, the model can also contribute to successful foreign language development. In a FL performance (learning or language use itself) irrespective of the task – whether it be an act of communication or of translation – the above stages can be observed, with the only differences being in time constraints and the degree of explicitness of the performed act or of the processing stage.

It seems that success at a language problem solving task is a demonstration of the learner’s

- language awareness, e.g. at the level of problem identification or definition,
- his/her metacognition, e.g. organizing relevant information or monitoring progress and evaluating solutions (Fig. 1).

It will also be determined by the degree of selectivity and the depth of encoding and retrieval (deep structure processing), its integrative character, goal directness (ignoring the irrelevant data) and systematicity, and by comparison with past experience (use of analogy).

The following chapter looks at the importance of multilingual language awareness and metacognition, and multilingual’s perceptions of these phenomena in their learning practices, in particular, in the area of multilingual lexical development.

1.2. Variables in language acquisition models

Various language acquisition models discuss possible ways bilingual language users develop their language competence. Each of them emphasizes

different variables, often complementary to each other, that enable and enhance language acquisition and learning processes. It is the Acculturation and Accommodation Theories that ascribe the major role to socio-cultural competence and integration with the out-group (L2/Ln group), emphasizing the importance of flexible ego boundaries and the ability to overcome one's L1 limitations and psychological barriers. Other theories and models focus on the importance of discourse competence in a FL and acquisition/learning via interaction with a native or non-native interlocutor (the Discourse Theory). Others consider exposure to a second/foreign language(s) to be decisive, together with affective factors and the learner's ability to self-monitor (Krashen's Monitor Model). Still, others look for explanations in our brain structure and its functioning, thereby seeing language acquisition/learning as a neuro-linguistically determined process (a neuro-functional model of Lamandella).

These models and theories all have a consequence on what happens at the application level, i.e. in a FL classroom context, that is to say, what methodologies are created and how they are applied in formal language instruction. Looking through the history of FL teaching, the most obvious rejection of behaviouristic theories of language learning is the declaration that there is more to language-learning than just a mechanically repetitive practice through intensive exposure, imitation and reinforcement. This rejection incorporates the realization that language is a gift only human beings have been endowed with, so the spheres of emotion (the affective domain) and the cognitive (reasoning, analysis and synthesis) must be the foundations of the learning processes, as well as the context and function the language acquired/learned is to be performed in and through. Modern methodologies emphasize all the above factors. The best example of this is **communicative language teaching**, which aims at creating a learner that will be fully communicatively competent, that is to say, he or she will possess communicative competence or its non-native equivalent, labelled by Hymes as communicative effectiveness (K o m o r o w s k a 2001).

The concept of communicative competence is highly complex and consists of linguistic competence (knowledge about the language – declarative knowledge) and performance competence (knowledge how), the latter of which is (or, at least, was at the time of the rise of communicative language teaching) of major importance. It means the ability to manipulate language in a situation of difficulty, e.g. language deficiency, which is defined as strategic competence and holds a very important position in the teaching of languages these days. Performance competence also means awareness of context in terms of discourse appropriacy (discourse competence) and its socio-cultural constraints (socio-cultural competence). In its early form, communicative competence meant the ability to understand and produce messages that would be understood in a given communicative context. Hence, the emphasis placed on the message and its content at the expense of correctness of form. Maybe there

are certain advantages to such a position – certainly in natural settings. Intensive exposure, the need to communicate and enough motivation to acquire the language all make language acquisition processes successful in those settings only.

What comes out at first as incorrect is verified through constant intensive and extensive contact with the language, both passive (exposure) and active (though in a simplified form at first). In the classroom context, formal instruction is usually very limited in terms of language contact hours, and genuine motivation is often not present either. So, there have to be other ways to enhance the language learning experience even, or especially when a natural context in which the language is a necessity cannot be reproduced. A lot has been written about developing learners' motivation but this study will not deal directly with that issue. However, it has to be stated and understood that the methodology learners are exposed to in their language classrooms is the major determinant of their willingness or, otherwise, to learn the language. Introducing language awareness as an important variable in successful learning and making it an interesting learning adventure for the learners will certainly make a positive contribution to developing their motivation.

Communicative language teaching derives from Terrell's Natural Method and follows the major assumptions of Krashen's Monitor Model of SLA. However, the results of the methods based on this approach suggest that in the context of formal instruction – and therefore **learning not acquisition** (though some elements of language acquisition can be observed in the classroom learning) – they do not create very successful language users but rather those who can communicate with very limited language, which is often incorrect, fossilized and pidginized. But, to become literate in a foreign language means much more.

The question is, can we achieve this aim focusing as we do in the case of CLT, on fluency and message and neglecting form? The forceful claim that KAL (Knowledge About Language, quoted in van Lier, 1995) has its place in language instruction has to be taken more seriously. At this stage, one might want to raise the question as to whether a return to old-fashioned ways of teaching languages is implied: through grammar translation and through explicit presentation of rules. I would argue not at all, but it certainly means a return to linguistic analyses of language but, this time, from a different angle. Present-day linguistics, in its descriptions of the cognitive basis for languages both in terms of semantics (universal and culture-specific concepts and their linguistic realization) and grammar, offers a new perspective on language understanding that can be very beneficially applied in teaching/learning.

Another argument in favour of the introduction of KAL is the fact that these days more and more language development happens outside the classroom. Learners have many more resources available to them to continue

learning in a more autonomous way. This, of course, places new demands on language instructors. One of them is to show learners the resources of independent learning, the strategies they can employ when learning a language and the tools that will allow them to discover by themselves how this language works. Another is that we as language instructors should create a context for **meaningful learning**, a significant part of which is constituted by **language awareness**.

1.3. The concept of meaningful learning

Meaningful learning is often contrasted with rote learning. A general understanding of these two terms mainly reflects the way learning proceeds. The latter means learning by heart, memorizing things given, whereas the former means learning by induction, i.e. learning through discovery. Of course, it can be argued that both ways are necessary and complement each other, but as practice shows, it is still rote learning that is often favoured by learners (e.g. in the case of vocabulary learning a bilingual list learnt by heart is still quite a common learning strategy) and reinforced by newer teaching methods. Even when communicative language teaching prides itself on focusing on discovery, it quite often makes learners do tasks that have very little to do with language discovery and much more with simple exposure to language.

What then are the major assumptions of meaningful learning? According to Bruner (1966) and Ausubel (1968), learning becomes meaningful when it allows the learners to see connections between ideas and concepts, and form relationships between them in his or her own mind, or, in other words, when it allows them to discover something new, not given by explicit analysis and comparison. Of course, to make this possible, to make this happen, another factor has to be there, namely prior knowledge as defined by Doehy (1992: 50):

a person's actual knowledge:

- that is available before a certain learning task;
- that is structured in schemata;
- that is declarative and procedural;
- that is partly explicit and partly tacit;
- which contains content knowledge;
- which is dynamic in nature and part of the prior knowledge base, being the total collection of his prior knowledge.

So, the prior knowledge of a (multilingual) language learner refers to a very broad area indeed: his or her knowledge of the world, of the very domain

in focus, and, last but not least (especially in the case of FL learning), of one's mother tongue or other FL(s). Knowledge of one's mother tongue is mainly native speaker knowledge: it is intuitive. Language intuitions do play their role in language learning but they are not sufficient to make one a successful FL user. What is needed is explicit knowledge of how the L1 functions, so as to be able to transfer positively in the case of synonymity or similarity and to avoid interference (negative language transfer) in the case of differences.

According to my earlier conclusions (G a b r y ś 2002: 32), the role of the language instructor has to be centred in

(...) a certain degree of expository teaching, the framework given by means of which the process of discovery will be monitored (...) by an appropriate selection of tasks consisting of cognitive awareness raising of L1, that is analysis and comparison, drawing on the resources a learner/user has such as the prior knowledge (...).

The expository teaching mentioned above brings about discovery learning which needs to be followed by intensive practice, the so-called traditional elaborative rehearsal by means of a variety of tasks.

The awareness raising cited above does not necessarily refer to the conceptual domain of language functioning only, which is mostly related with the lexical subsystem. It refers to the already mentioned linguistic analysis of form, and not only L2/FL form but L1 as well. The L1 expertise of a learner (prior knowledge), supplemented by explicit knowledge about it (expository teaching and discovery), can become an important variable in FL learning success. What I am arguing for here is the need for language awareness development.

1.4. Language awareness in foreign language(s) learning

As mentioned above, language awareness (LA) is generally perceived as explicit knowledge about language, but language, being a rich and complex phenomenon, does not allow for definitions quite as straightforward as that. Donmall (1985) introduces the concept by describing it as: "a person's sensitivity to and conscious awareness of the nature of language and its role in human life".

What seems to be shared by various definitions of the concept is the element of consciousness or explicitness involved in the very nature of LA, defined by Fairclough (1992: 2) as: "conscious attention to properties of language and language use as an element of language education".

In language education, the development of language awareness consequently has to be comprehended as the way of turning the understanding of language into explicit knowledge. Lier (1995: 10) refers to language awareness development as “an ongoing process of critical examination, and a way of looking at language” and observes that educational linguistics, a part of which is a formal linguistic training, is neglected in language education. It seems apparent even in teacher training programmes how little time and space is devoted to developing explicit LA of language teachers. And, to be an effective language teacher, it is not only language competence which contributes to success but also knowledge – how a given language works, knowledge about that language. It is often observed that expert language users working as language teachers, in many cases native speakers, do not make very successful teachers in a FL classroom context. A linguistically unaware teacher cannot “create” a linguistically aware learner, if he or she does not see the need for LA and the advantages it brings to language development. Thornbury (1997: xv) calls LA “noticing” and assumes that the teacher’s role is to

facilitate the process of noticing. This, in turn, presupposes that the teacher has sufficient language awareness to be able to alert the learner to the features of the language to be noticed and to guide the process of consciousness raising, whether through explicit rule giving or guided discovery approaches.

He believes that the teacher’s LA is required at every stage of language task setting: at the selection, monitoring and checking stages.

The complexity of the concept of LA is best represented by Donmall (1985: 7 quoted in Gabryś 2002: 23) by its multilevel character. LA does not focus on the language as such, out of context and without a well-defined speaker, but also entails:

- awareness of cognitive aspects of language: conceptual (semantic) and formal (grammatical and meta-cognitive),
- emotional sensitivity with reference to affective domain of language use (e.g. influencing attitudes) and determined by not just the interlocutor him or herself but by the cultural norms within which a given language functions,
- social awareness of what is appropriate in a given context.

The complexity of the concept has attracted researchers from diverse fields and contexts with a view to studying its ramifications. Arndt *et al.* (2000: 12) point out that

(LA) draws upon a number of disciplines including language teaching, applied linguistics, and several other related areas such as psycholinguistics, sociolinguistics and anthropological linguistics (...) in a variety of contexts; first language

learning in schools and higher education; teaching and learning second and foreign languages; and the study of socio-cultural influences upon people's use of language.

So, the studies carried out with the intention of demonstrating and evaluating the influence of LA are numerous (for an overview see Leow 2000). Some of them look at form-focused metalinguistic awareness (e.g. Leow 1997), some choose to investigate content – the cognitive (conceptual) aspects of LA (my study – Gabryś 2002). Both of the studies mentioned gave evidence for the facilitating effect of LA (Leow 1997) and the detrimental effects of its lack (Gabryś 2002).

Leow (1997: 560) concluded in his study that:

- metalinguistic awareness appeared to correlate with an increased usage of hypothesis testing and morphological rule formation, which benefit a language problem solving task;
- learners demonstrating a higher level of awareness performed significantly better on both the recognition and written production of the targeted forms.

In my study of LA in translation tasks of metaphoric expressions (Gabryś 2002: 31), I observed that the advanced learners of English as L2:

- showed a minimal awareness of the cognitive structures that form coherent patterns in the learners' L1,
- their intuitive knowledge of L1 did not contribute to the development of L2 lexical competence since it was not explicit enough to be transferred (positively).

The first steps have been taken: both cognitive and applied linguists, educationalists and teachers, especially those dedicated to the idea of learner autonomy, have become aware of the need to develop the language awareness of learners. The next stage is to show the learners themselves how important, what has for quite a while been neglected, or even derided in their language instruction as feebly traditionalist and ineffective, really can be: explicit knowledge about language. There is one caveat, of course, that it should not take the form of re-inserting a rigorous linguistic training based mostly on rule-learning. This study (no. 4) looks at advanced multilingual FL users' **awareness of language awareness** and their perceptions of its importance to them in their own learning context.

2. Survey study on language awareness (study 4)

2.1. Study description

It may be assumed that the first stage in the development of learners' language awareness is reflection on just how aware of the LA concept the subjects are, a kind of consciousness-raising and verbalization of what they as language users/learners do with the language, how they use all the possible resources at their disposal, such as, for example, prior knowledge of the world, a given domain or their L1. The present study focused on this very process of awareness-raising of multilingual language users/learners.

Subjects

The study is a survey of a group of 130 multilingual (mostly trilingual) subjects, which was carried out in the form of a written questionnaire. All the subjects were advanced learners of English as their L2 with elementary, pre-intermediate or intermediate competence in L3, mostly German (English philology university students – group 1) or German and French (English teacher training college students – group 2). Some of them claimed to be more than trilingual and to possess additional languages, however, their competence in them was not found upon further investigation to be very developed (see Tables 1 and 2):

Group 1 university students	L1	L2	L3	L4	L5	Total
Polish	72					72
English		68	4			72
German		4	48	8		60
French			8	12		20
Russian			1	8		9
Spanish			2	4		6
Portuguese				2	2	4
Italian			1	2		3
Finnish				1		1
Arabic			8	3		11
Latin				1	1	2
Total	72	72	72	41	3	

Table 1. Group 1 characteristics

Group 2 college students	L1	L2	L3	L4	L5	Total
Polish	58					58
English		58				58
German			28	6	1	35
French			14	4		18
Italian			13	15		28
Russian			1	5		6
Spanish			2	2		4
Latin				2		2
Total	58	58	58	34	1	

Table 2. Group 2 characteristics

The learning history of all the subjects was essentially homogenous since none of them acquired any of the foreign languages in a context different from that of formal instruction in a classroom setting in similar types of educational institutions. The language teaching they were exposed to, as well as the didactic materials and availability of supplementary materials, were of a similar character, too. Both college and university students covered compatible programs of studies, which included in the case of L2 (English) not only practical language instruction (EFL) but theoretical courses in general and English linguistics, and in the methodology of TEFL. Their instruction in another foreign language (L3) was mainly practical. So, it may be assumed that the subjects do have quite an extensive understanding of language mechanisms and various aspects of language awareness. They should be considered linguistically educated since foreign languages were the major area of their study. Another important variable to be considered in the discussion is the subjects' experience of learning foreign languages, since the period of language instruction they were exposed to was from a minimum 8 years to a maximum of 16 years of study in the case of their L2.

Research questions

The main objective of the study was to observe how linguistically educated multilingual learners perceive language awareness and how they apply it in their own learning experiences. Thus, the major areas of study the questionnaire focused on were:

- the subjects' understanding of the concept of LA in general, irrespective of language subsystem and later understanding of lexical competence in particular,
- the perception of L1 language awareness versus FLA (foreign language awareness),

- the importance of L1 language awareness in FL learning,
- the importance of FL awareness in FL learning,
- the ways of developing language awareness in formal instruction settings: methods, strategies, materials (see Appendix).

The subjects were also asked to evaluate critically their own general language awareness in L1, L2 and L3, which might shed some light on the subjects' **awareness of awareness** and their ability to reflect explicitly on it, which is an important aspect of language awareness itself.

The data collected in the questionnaires is assumed to be valid since the informants are language learning experts with the necessary familiarity with the theoretical background. However, as the fruit of many long years of teaching, my personal observations do not always confirm the above. It seems that even linguistically educated and competent language users and learners are not fully aware of the possibilities their linguistic knowledge gives them to develop their language competence (G a b r y ś - B a r k e r 2003).

Another important variable the discussion will focus on is the lack of explicit L1 linguistic instruction in mother tongue teaching at the school level. L1 programs basically concentrate on literature and culture and not on language. FL teaching methodology (mostly CLT) pressures to eliminate L1 from classroom instruction have deprived FL learners of one of the most important sources of knowledge they could be explicitly (and not merely intuitively, as all native speakers do) employing in their FL(s) learning.

It follows that this study should be supplemented by data coming from linguistically naive learners of foreign languages (e.g. students who major in areas of study other than that of foreign languages) and observe what their perceptions of LA are and how they use it in their learning contexts.

It may be that the data collected in this study only serves the purpose of improving teaching and learning practices in the very context it describes: formal instruction of FL students in FL departments at a university and teacher training colleges. It seems particularly important, however, for teacher training college students who are pre-service teachers at the moment, but after their graduation will enter their own classrooms and will have numerous possibilities as teachers to show the importance of LA and to create the learning context that would facilitate its development. So, it is desirable that they turn themselves into conscious LA learners/users – and into future LA teachers.

2.2. Data presentation and analysis of results

2.2.1. Understanding language awareness

A general perception of language awareness is presented by the subjects in very different ways. Some of them understand it as:

- *the ability to use the language without thinking about it (...) if one's awareness of the language is good you use this language as if it were part of you, your identity;*
- *being aware of the arbitrariness of language;*
- *perceiving language as a system of concepts;*
- *also feeling the language;*
- *possessing linguistic intuitions.*

So, in these cases LA is understood as a subconscious and implicit phenomenon. Other subjects stress the contribution of explicit knowledge to being linguistically aware:

- *possessing knowledge of what is grammatically correct and incorrect;*
- *being aware of some language rules, not only knowing it [language] intuitively;*
- *fluency, high level of language command;*
- *understanding and the ability to communicate;*
- *the ability to learn new concepts;*
- *differentiating between the variety of registers;*
- *recognizing language as a system;*
- *knowing that language is influenced by different factors.*

The element of consciousness is a common descriptive feature of the comments made by the subjects:

- *LA is conscious;*
- *Conscious selection, application and knowledge about the usage (plus context) of the rules of a given language;*
- *LA means consciously operating language system, awareness of restrictions and limits of language, full – constant and complete control over it;*
- *LA is a state in which the learner of a given language applies rules of grammar, vocabulary consciously, and is able to monitor his/her mistakes;*
- *being aware of linguistic choices we make (...) in a particular context;*
- *conscious usage of a language, paying attention to correctness and accuracy;*
- *the combination of different skills and linguistic intuitions.*

The perceptions of LA expressed in the data show the subjects' understanding that it not only means language intuitions, conscious application of the

rules and their monitoring, but also realizing that the knowledge of language mechanisms and their historical development contributes greatly to appropriate use. The need to know what learning a language means was also voiced:

- *awareness of mechanisms and ways of learning/teaching, understanding those processes;*
- *LA is the ability to explain it (language);*
- *knowing about language, knowing meta-language;*
- *meta-knowledge (...) the theoretical background;*
- *historical aspects of language development;*
- *awareness of the processes, interdependencies, relations within the language;*
- *its (language) general rules and idiosyncracies;*
- *thinking and analyzing the rules;*
- *the ability to predict language and create correct hypothesis;*
- *being aware that language has different dialects.*

What is very strongly emphasized by the students is the contextual knowledge of language use as an indispensable part of LA and especially socio-cultural competence:

- *It is the awareness of the language itself (...) connected with the cultural awareness of the people and the country the given language functions in.*
- *LA means knowledge of a target language community, culture, reality.*
- *It means culture and language identity.*

Perceptions of the nature of language awareness are also expressed on the affective level of language use:

- *confidence in using the language;*
- *overcoming obstacles in expressing yourself;*
- *perceiving the world through a certain language;*
- *language sensitivity, flexibility, intuition, open-mindedness;*
- *awareness that you belong to a society (...) that you may communicate with its members;*
- *anxiety;*
- *personal approach to language.*

Language awareness is not seen as a permanent acquisition or possession of an individual but it signifies the **coming of language, transfer of notions through years.**

To sum up, language awareness is seen as operating at different levels of:

- the conscious knowledge of language rules of syntax and vocabulary,
- the ability to analyze and predict language,
- meta-cognition and meta-language,
- inborn linguistic intuitions or based on language experience,

- the conscious application of rules within a given context,
- correctness and accuracy more than fluency,
- knowledge of language background, especially cultural and its historical development,
- a degree of identification with language and “feeling” for it,
- the development of language awareness through the process of learning (LA as a developmental process).

It could be assumed that language awareness is perceived as striking a balance between:

- subconscious (implicit) knowledge versus conscious (explicit) knowledge,
- knowledge of rules versus their accurate application (the focus on contextual appropriacy),
- language identification versus ability to communicate effectively.

It can be observed that language awareness is understood to include language comprehension (perceptions, intuitions, background knowledge), but here is understood primarily in terms of language production (knowledge of rules, predictions, correctness and accuracy in language use). The emphasis on the production aspect of language at the expense of comprehension and its facilitative impact on production (e.g. in terms of positive transfer between languages based on shared concepts) is clear in the comments made or rather lack of attention given to it. Cognitive awareness of how language functions is not much expressed in the data. The subjects do not seem to focus on the importance of the conceptual system within which a given language functions. Being linguistically aware seems to have little or nothing to do with the way the language reflects concepts and what their origins are. Although the elements of culture are mentioned as significant factors in appropriate language use, they relate more to the context and to the participants in a communicative exchange (e.g. register differences) than to the way we conceptualize in a given language – insofar as it is similar to other languages (our universal human experience) or different from it (culture-specific).

When commenting on **lexical awareness**, the subjects defined it as the understanding and knowledge of the appropriate use of words in context:

- *the ability of understanding the meanings of words and using them;*
- *the awareness of using the appropriate words in the appropriate context;*
- *ability to use words in different contexts;*
- *knowledge about which words we use in particular situation.*

Lexical awareness is not commented upon as a complex phenomenon relating to the knowledge of different aspects of “what it means to know a word”, i.e. not just its denotative meaning but the whole array of connotations as well. On the level of form, the grammar of the word does not seem to have been picked out as an indispensable factor in lexical awareness.

The distinction between lexical awareness in L1 and foreign languages is again understood as the phenomenon of:

- *unconscious knowledge and fluent use (L1) versus conscious way and often not fluent use (FL);*
- *subconscious knowledge versus acquired ability;*
- *(L1) knowledge of rather wide range of vocabulary, being able to create new words.*

The distinctions made here refer to the ability to distinguish nuances of meaning in L1 lexical knowledge and the ability to form correct phrases (collocations) in FL:

- *(L1) Being able to distinguish specific words, point out different meanings of the same word;*
- *(FL) knowledge about specific phrases – collocations, comparing with L1 sources, knowing their origin;*
- *(FL) spelling, meaning, collocations and use in a sentence (...) ability to derive new words;*
- *(L1) the ability to guess the meaning of the word;*
- *(L1) awareness of cultural connotations;*
- *(L1) the ability to adjust vocabulary to a particular context.*

L1 lexical awareness is seen as a facilitating factor in developing FL lexical awareness, mostly as a reference system for comparison of meaning (learning by bilingual lists) and common etymological origins (cognates). At the same time, negative lexical transfer in the case of marked lexical items and phrases such as false friends and idiomatic expressions, is seen as inhibiting FL lexical development:

- *When learning FL vocabulary L1 lexical awareness helps in memorizing it, linking it to items in L1.*
- *When learning FL vocabulary, lexical awareness in L1 interferes with learning FL collocations, idiomatic expressions, proverbs.*

These comments are pretty general and obvious. Although linguistically educated, the students do not seem to be able to comment explicitly on what they do when developing their lexical competence in FL. For example, only one subject points out that one's way of dealing with FL lexical deficiency by applying available strategies is an important aspect of FL lexical awareness:

- *the ability to say something in a descriptive way if we do not know the proper word.*

The definitions and comments on LA recorded by both groups of informants are not very different, however, teacher training college students

(group 2) seem better to perceive learning and teaching processes as indispensable variables of changing language awareness through autonomy (learning) and focused instruction (teaching).

2.2.2. L1 awareness versus FL awareness

What is particularly interesting is that the vast majority of subjects look at the general notion of language awareness from the perspective of being foreign language learners and thereby, neglecting the notion of LA in their mother tongue. When defining LA, they refer to learning as a significant process in developing it, as if language awareness related exclusively to FL learning and not to the context of L1:

- *(LA) is your awareness of how well you know a given L2 as the term is associated by me mainly when I think of L2;*
- *awareness of similarities and differences between L1 and other languages;*
- *awareness of diversity and differences between them;*
- *being aware of your stage of L2 development;*
- *no interference of L1 in L2;*
- *your attitude towards the foreign language and your emotions while using.*

Another example of seeing L1 language awareness in terms of L2/L3 is the widely expressed belief that it means:

- *a good command of L1 which may help us in learning foreign languages;*
- *our basic knowledge, thanks to which we are able to learn other languages;*
- *ability to use this knowledge to facilitate learning of L2/L3.*

So, L1 awareness is seen as a positive factor that contributes to other language learning processes.

When defining the concepts of L1 and L2/L3 language awareness, the subjects tend to believe that they are fairly separate concepts. First of all, L1 awareness is defined as an **inborn ability to use the language**, which is illustrated by the following example:

A person speaking in L1 doesn't think how to transfer some messages in grammatical and communicative way,

whereas in the case of speaking a FL, like any other example of language performance, it involves conscious processing of language.

L1 awareness is seen as:

Natural feel for the language with culture and social background,

while L2 awareness is

a kind of artificial awareness, non-native, learnt at school.

It is:

- *intuitive everyday usage and understanding of the language, while L2/L3 awareness is the knowledge of the rules (and culture) that comes first (contrary to L1 awareness) and putting in practice [those rules] at the later stage.*
- *Subconscious knowledge of what forms are right or wrong, L2/L3; conscious knowledge about the nature of L2/L3.*
- *The ability to use the rules without thinking, in L2/L3: the ability to put the explicitly known rules into practice.*
- *It is rather intuitive knowledge (not all aspects of grammar were covered at school, L2/L3: we learn the rules and only then apply them – it is more developed [than L1 awareness].*
- *L1 awareness is something that we acquire effortlessly by observing and existing in L1 society, L2/L3 awareness develops by using L1 meanings.*

The infrequent comments that reflect upon L1 and L2/L3 awareness as fairly similar types of language competence stress, in both cases, the appropriacy of situational language use, conscious knowledge of linguistic rules and the ability to make comparisons between the languages in question. In other words, both in L1 and L2/L3 language awareness stands for

- *the knowledge about the differences/similarities between L1/L2/L3;*
- *awareness of the discrepancy between one's L1 and foreign languages.*

The subjects stress the difference in the developmental characters of LA in FL versus L1 awareness:

I think L2/L3 awareness is more connected with the knowledge of the rules at the beginning and only then with the pragmatics. In L1 the knowledge of rules is largely not taught explicitly – we know how to be correct.

There seems to be a strong emphasis put on the lexical system of the language as the essential factor of language awareness in the context of L1 and on grammar and usage in foreign languages:

- *knowledge of L1 vocabulary and its proper use;*
- *knowledge that certain phrases and words are characteristic for your native language;*
- *being aware of the idiomatic expressions in a given language and how they differ from one language to another;*
- *knowledge how to link words in the native language (...) knowledge of using some phrase in the correct context;*
- *knowledge of the rules that govern FL production;*
- *knowledge of the rules, structures, the awareness of using them while producing the language;*
- *ability to use L2 or L3 structures efficiently and correctly.*

Also, perceptions of the roles L1 and L2/L3 awareness play are different:

- *L1 awareness means the ability to think in L1 which creates a sense of belonging to the L1 community, whereas L2/L3 awareness can be used functionally in a target language community and not only in a classroom.*
- *L1 awareness creates the feeling of identification with a group of people who speak the same language.*
- *It allows me to perceive other languages.*

The subjects stress the difference in the level of awareness in the mother tongue and foreign languages:

- *L1 awareness allows to use language at a proficiency level, L2/L3 awareness means the ability to communicate.*
- *It helps me to express thoughts in a most accurate way, L2/L3 awareness allows me only to become familiar with FL forms.*
- *L1 awareness allows me to be fluent.*
- *L1 awareness is the highest possible awareness.*
- *(...) excellent knowledge of one's own language.*
- *L2/L3 awareness is similar to L1 awareness but still you never achieve it.*

This inability to achieve the **highest possible awareness** in L2/L3 is exemplified by the subjects in the contextualized use of language in situations of humor and irony, which are seen as innate and language/culture specific.

Table 3 summarizes the subjects' perceptions of L1 language awareness (L1A) as compared with L2/L3 language awareness (FLA).

No.	L1A	FLA
1.	inborn faculty	artificial/learnt ability to use the language
2.	intuitive and natural "feel" for language	rule governed performance
3.	implicit (subconscious)	explicit (conscious)
4.	fluency (high proficiency)	communicative effectiveness (lower level)
5.	confidence in language use	gradual progress towards it (never gained)
6.	belonging to the community (ego identification)	instrumental (communicative function)
7.	full mastery	approximation
8.	full control (subconscious)	conscious analyses (monitoring)

Table 3. L1A versus FLA

Interestingly, the subjects put great emphasis on FLA and perceive L1A from this perspective. When defining L1 awareness, they describe it as a factor contributing to FL awareness development, but do not see explicit awareness of how one's mother tongue functions as a separate competence in its own right.

It relates neither to the understanding of L1A in terms of its formal dimensions (the rules of grammar), nor to concepts (the semantic level).

It could be hypothesized that the understanding of one's mother tongue in the case of monolingual speakers (a rare case these days) would, therefore, have a different focus from that of multilinguals.

2.2.3. The importance of L1 awareness versus FL awareness in multilingual foreign language learning

As has already been observed, awareness of the subjects' mother tongue is seen as a significant factor in learning other languages. It is both similarities and differences that are reflected upon as contributing to FL development and generally employed through comparing/contrasting the given languages. Compared with the subjects' evaluation of FLA in learning these languages, this is more often emphasized as an important variable (Table 4).

LA	Group 1 (mean score)	Group 2 (mean score)	Mean score
L1	7	7	7
L2/L3	8	8	8

Table 4. Importance of L1A and FLA in learning other languages

The difference is not significant in terms of the mean score: 7 points versus 8 points on the scale of 10. However, individual responses of the subjects varied from the most extremely focused on L1 and the need to transfer from the mother tongue, to those that believed that transfer is wrong and what is important is awareness of a FL as a separate system of rules that should be the one and only reference system in learning.

This relative importance of L1A may be explained by the subjects' understanding of the concept described as subconscious, implicit, intuitive knowledge and, as such, difficult to transfer in explicit (instructed) learning process, and so consequently neglected. On the other hand, the implicit character of L1A may result in automatic transfer to a FL learnt because of this lack of explicit awareness of it.

There is no difference in these perceptions between the two groups of subjects, the philology students and pre-service teachers.

2.2.4. Individual perceptions of language awareness of the subjects

As could be predicted, the subjects' perception of their language awareness is closely related to their proficiency in the given language which is measured

by the informants by their ability to use a given language effectively. Consequently, it is higher in their mother tongue (native competence) than in L2 (advanced), and higher in L2 than in L3 (pre-intermediate/elementary), etc (see Table 5).

LA	Group 1 (mean score)	Group 2 (mean score)	Mean score
L1	8	8	8
L2	7	7	7
L3	4	3	3.5

Table 5. Self-evaluation of individual language awareness

What is interesting is that native competence in L1 does not make the subjects in their own understanding fully linguistically aware: it delivers a mean score of 8 points on the scale of 10. It seems that they perceive their high proficiency in L1 use, which is determined by implicit and intuitive knowledge, as not sufficient to be considered fully aware of it linguistically.

2.2.5. Ways of developing language awareness

When asked to reflect upon the way and necessity to develop language awareness, only one subject expressed the opinion that:

You acquire L1 awareness in a natural way, there should be no special tasks or methods used to develop LA in L1 and L2/L3 awareness should be developed by listening to native speakers' conversations and speaking with native speakers.

The remaining students see the need to develop LA in all languages and comment both, on the roles the teachers should perform, as well as learners themselves. The teacher's role in the process is:

- *to search and present the learners with examples in which we can find parallel forms, systematizing language rules (...) let the class make hypothesis and reward their efforts – even if failed;*
- *to motivate, provide interesting topics, films, cassettes; to have high language awareness themselves to be able to pass it to their learners;*
- *to design activities that make the learners think about the language, which make them notice certain features of language, which make them analyze the language;*
- *introducing and using meta-language;*
- *creating nice atmosphere, making students more interested in language and motivated through a variety of language tasks.*

Learners, on the other hand, are believed to be responsible for:

- *showing eager anticipation and personal interest in language work, e.g. homework;*
- *to have positive attitude and to treat teachers as experts;*
- *noticing that there are huge differences between languages (learning about the nuances of L1, L2 and L3;*
- *to be interested not only in the given material but also in the culture and the whole context of languages.*

The majority of the subjects, however, clearly distinguish between the ways of developing L1 awareness and FL awareness. A summary of their comments is presented in Table 6.

	L1 awareness	FL awareness
Teacher's role	<ul style="list-style-type: none"> - show the need for development and variety of methods - provide this knowledge - be passive, only control - expose to variety of language and its functions - make aware of identity - teaching grammar explicitly - arouse interests - encourage to think about L1 - elicit awareness - give material to read - show historical facts as important L1A development 	<ul style="list-style-type: none"> - exposure to language model - attract and motivate - compare with L1 - make learners think about language - develop language sensitivity - encourage to use roughly-tuned input - use meta-language - use authentic materials - show real life language
Learner's role	<ul style="list-style-type: none"> - read actively - study cultural issues - learn about how to develop L1A - studying with attention - personal perception of concepts - pragmatic focus of language study - learning L1 rules - willingness to discover L1 - intensive exposure to texts - experimenting with language - self-study 	<ul style="list-style-type: none"> - systematic work - get interested in language individual work - develop reading and guessing strategies - explain FL through L1 - show curiosity about culture - be open-minded - reading in FL - find similarities and differences between L1 and FL - search for contacts with FL

Table 6. The teacher's and learner's roles in developing language awareness

It seems, then, that the teacher's role in developing learner's awareness in their mother tongue consists in creating appropriate attitudes towards this language

and culture, as well as curiosity about language through extensive exposure to language in all its different forms and functions. In a FL context, the teacher's responsibility lies in giving the learners opportunities of exposure to an appropriate foreign language model and in designing activities allowing the learners to experiment with the language through consciously introducing L1 as a reference system.

The learner's responsibility for developing awareness of their mother tongue is described as taking an active attitude towards it, mainly through intensive reading practice and paying attention to characteristic features of the language. In the context of FL awareness, the learners emphasize willingness, open-mindedness and the need for individual study of a FL, as well as the advantages L1 brings to the development of FL awareness.

2.2.6. Additional comments of the subjects

In their additional comments, the students highlight other significant aspects of language awareness in general by stating the following:

- Language awareness is a thinking process.
- To learn a foreign language, we have to be aware of our mother tongue first.
- Fluency in a FL correlates positively with its awareness.
- The context and proper contextual usage demonstrate our linguistic awareness.
- The more languages we know, the more linguistically aware we become.
- Our language learning experience develops with the number of consecutive languages learnt.

The understanding of language awareness as a **thinking process** implies its developmental character and explicitness. Explicit verbalizations about language processing, mostly observed in the case of a FL in the form of editing the message, allow people to control and monitor the process of language use – and before that, language acquisition/learning. It also implies that various reference systems (e.g. L1) and types of knowledge (e.g. conceptual analysis) contribute and are, indeed, indispensable to LA development. These perceptions were not explicitly identified by the students in their comments.

The belief that **L1 awareness** is indispensable in FL linguistic development expressed as a general comment was only exemplified as a need to use the implicit, intuitive knowledge of the mother tongue in FL learning, which, as has already been mentioned, actually has a very limited influence. Again, what is missing in this perception of the role L1A plays in FLA is the need to analyze conceptually and formally the already known system (L1). Of course, to be able to do that a certain degree of meta-linguistic awareness of L1 as a system has to be present, that is, learners need explicit knowledge of the rules

and their exceptions. This entails that contrastive analysis should make a return to the FL classroom. On the level of semantics (content), it is the transferability (or otherwise) of L1 concepts that is the meaningful factor in the development of FL linguistic awareness. This conceptual awareness in L1 on the part of the subjects does not seem to figure in the data at all. A similar situation obtains in respect of L2 (the more advanced level) conceptual awareness, which does not seem to play a role in L3 learning, and which could – especially in the case of languages close typologically – greatly enhance L3A progress. In the case of multilingual learners, the reference systems multiply by the number of languages acquired/learnt.

FL fluency is marked as indicative of a developed awareness in the given language. FL instruction is a process in which (unlike in the case of L1 acquisition) the learner's development progresses from explicit knowledge to implicit, internalized language behaviour. Certain language mechanisms and habits become automatic and that is why they are not consciously transferred into another language learning context, that of L3, L4, or Ln. However, it has to be understood that explicitness about what we do with language in terms of learning it, processing and performing in it would greatly facilitate progress in a new language, as stated by the subjects themselves:

Our language learning experience develops with every new foreign language we learn.

Indeed, it cannot be denied that the learning experience develops with every new foreign language; however, it does not follow that the learning experience is being transferred into another learning context. Again, the students' belief seems to remain on the level of fondly held convictions but is not mirrored in their learning practice, which could hardly be called reflective.

The processes involved in **L1 acquisition** are **implicit** from the very beginning: intensive exposure to L1 in the silent period, the child's hypothesis-forming and testing in the consecutive stages of language development, culminating in when the child reaches the stage of cognitive development which allows him or her to be fluent speakers of their mother tongue. The intensive exposure to L1 continues throughout one's life and allows us to develop language not only as a communicative but also as a creative means of self-expression. At no point does L1 competence usually become an explicit phenomenon – not even in the case of foreign language students, perhaps only in that of professional linguists.

It could be argued that one can become a successful bilingual or multilingual speaker without much attention being paid to one's L1 awareness. But wouldn't such a state of affairs be more frequent in the case of the acquisition of those FLs in a **naturalistic context** than in that of formal instruction? The naturalistic context creates facilitative conditions for L2/L3/Ln acquisition

because it is very much like L1 acquisition: intensive and extensive exposure to language models, strong motivation – often that of survival in a given environment and the necessity of interaction with native speakers. In such conditions, L1 has no role and, to put it even more emphatically, it may actually interfere with FL acquisition if for example the learner's identification with it is too strong (to mention just one aspect). In FL classroom instruction, the learning process is artificial and various measures have to be taken to substitute naturalness by explicit awareness and using other reference systems available to the learners, i.e. their mother tongue or another FL. This creates some scope for the introduction of, for example, L1 awareness-raising tasks in terms of form (e.g. grammar rules) and content (cognitive analysis of language).

To summarize the above comments on the data and their interpretation, it could be argued that what is needed in multilingual formal instruction is more emphasis put on **conscious attention to language**, be it L1 or L2 in L3/Ln learning. Language awareness has to be perceived as entailing that kind of attention.

2.3. Beyond the study data

2.3.1. The concept of conscious attention to language

Noticing is described as a necessary condition for the input to become intake in language learning (Schmidt 1990, Gass 1997). Noticing is understood as a mechanism which allows the learners to select from the abundance of language data they are exposed to at one moment what is appropriate for their processing/learning purposes.

Gass (1997: 4) relates the concept of noticing as **apperception** and defines it as: “the process of understanding through which newly observed qualities of an object are related to past experiences. (...) apperception serves as the priming device for learning”. At the same time, she does not believe that it is an automatic process; even if noticed, some elements of the input do not necessarily become intake in an automatic fashion.

A different view is presented by Schmidt (1990) who assumes that noticing equals intake, provided it is perceived as a subjective experience (a personal reference) and is verbalized (reflected upon explicitly).

Gass *et al.* (2003) in their study on the role of noticing in language learning use the psycholinguistic **model of attention** by Tomlin and Villa (1994). Attention is seen as related noticing in language processing and production. According to Tomlin and Villa, attention consists of **alertness, orientation and detection** (see Fig. 3).

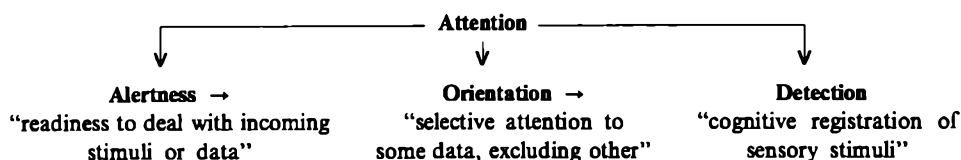


Fig. 3. The components of attention (after Gass *et al.* 2003: 499)

The concept of attention presupposes a certain attitude language learners have to take to language tasks. First of all, it is flexibility and open-mindedness about the language sample (alertness), demonstrated by the awareness of a language problem at hand and willingness to solve it (i.e. learn it). Secondly, it assumes the ability to select what is appropriate, an assumption which is based on prior knowledge of this language or, more generally, on the meta-linguistic awareness of the learner. Thirdly, it consists in the ability to analyze the sample input with a view to the selected data. Such a perception of attention makes it synonymous with **focused awareness**.

Gass *et al.* (2003) carried out a study that was intended to measure the degree of influence attention had on the increased language proficiency of FL learners in the three language subsystems: syntax, morphosyntax and lexicon. The English subjects of different proficiency levels in Italian as L2 were exposed to a variety of tasks, which were either of the /+ focused attention/ or /- focused attention/ type. An example of a focused attention task was one in which the subjects were told what the focus of the task was and the selected language elements were underlined in the text. They were also presented with a set of questions aiming at comparing the selected language items, either vocabulary or sentences. At the same time, another group was confronted with no instruction as to the text, in terms of its language focus. The short term achievement of the subjects was measured by a post-treatment test and the findings showed that:

1. Focused attention influenced the achievement differently in different language areas.

2. In the area of syntax this achievement was higher than in lexicon, which was contrary to the hypothesis of the study. So, it was assumed that “focused attention is better utilized in more complex areas (...) learners cannot use their own internal sources for learning in areas that are highly complex and abstract (...) focused attention may indeed be necessary for learning in these areas to take place” (*ibid.*, 527).

3. The smallest difference between the results of the focused and non-focused task groups was observed in the lexicon.

4. It was assumed that degree of complexity and abstractness determined the effects focused attention had in language performance.

The general conclusion on the significance of attention in language learning was that

- a. Learning can take place with or without attention. Externally induced attention serves the function of magnifying a natural process; it may fill in the gap for what learners cannot do on their own.
- b. The results of the /- focused attention/ condition do not really reflect non-focused-attentional learning, but do reflect learner-driven attention.

(ibid: 531)

Another important finding of the study is that there is a clear relation between the need for focused attention at the early stages of learning a foreign language that it diminishes with the development of competence in this language. It is not only external factors such as the mode of instruction but the learner's internal mechanisms for language learning developed with learning experience and growing language competence that contribute to language success. In the context of multilingual language learning, in which the competence of the learners in different languages varies (for example in this study, from advanced L2 to pre-intermediate in L3 and elementary in L4), effective language instruction will range from implicit and self-study in the case of advanced levels via discovery to explicit form-focused teaching/learning at the elementary stages.

Numerous other studies show empirically the role attention plays in different language areas and at different stages of the language development and learning process (Table 7).

The above quoted examples of studies on the role of attention focus mostly on bilingual learners. No empirical study so far has examined the attentional variables in multilingual learning. There is, therefore, a need for research in this domain. It can, however, be assumed that any additional foreign language the learner is exposed to in a learning context can only enhance attention, for example at the level of detection, where increased language competence will allow him/her to create more elaborate reference systems, both in terms of the quantity of data available and its quality. Learning experience, especially through explicit formal instruction, may also be assumed to be conducive to the development of attention. Form-focused teaching/learning makes learners more alert to language data, more oriented (directed and selective) and more detection can be usefully applied (the cognitive approach to language data).

If attention is considered to be a facilitative factor in FL learning, it is up to the teacher in the FL classroom to be facilitating the process of noticing and focusing learners' attention (Thornbury 1997).

No.	Area of study	Names	Year
1.	Selection of language data for processing	Schmidt & Frota Leow White	1986 1997, 1998 1998
2.	Relation between attention and noticing	Gass Schmidt	1988, 1997 1990, 2001
3.	Role of detection in SLA	Tomlin & Villa Leow	1994 1998a
4.	Partial role of attention	Sinnard & Wong Wong	2001 2001
5.	From input to intake	Shook	1994
6.	Abstractness and complexity	Van Patten De Keyser Robinson Reber <i>et al.</i> Schmidt	1994 1995 1996 1999 2001
7.	Validity of explicit instruction	Ellis Hulstijn & de Graaf	1993 1994
8.	Learning as a developmental process	Elman	1999
9.	Proficiency versus attention	Sharwood-Smith Schachter Spada & Lightbown Aljaafreh & Lantolf Mackey	1991, 1993 1991 1993 1993 1999

Table 7. An overview of research on attention in language learning

2.3.2. Developing language awareness via focused attention

Traditionally, focused attention is understood to be developed by means of form-based teaching, by the application of deductive methods, in which form-focus is foregrounded by a straightforward exposure to language rules or language presentation. However, this form-based teaching may result in a negative effect: in rote learning of the rules and structures and little ability to apply them. It is often assumed that form-based teaching is mainly relevant in teaching syntactic elements of language. However, we have to remember that lexical competence as defined earlier embraces not only the knowledge of denotative and connotative meanings of lexical items/phrases but also their grammar: the syntactic patterns they occur in, their morphology (for example how prefixes and suffixes function), their phonetic realisations, etc. In this understanding, teaching and learning vocabulary is holistic and any attempt to separate it from teaching syntax or phonology is artificial and makes the process of lexical development incomplete. This is also reflected in the way language users pro-

cess language: there is no clear distinction between lexical search and the syntactic processing of the language sample (as I demonstrated in Chapter III). It should be form-based teaching that allows learners to process language and discover the rules and how certain lexical phrases function in a given language, in short, that develops focused attention and the ability to use their prior knowledge. In other words, it is the inductive approach which allows us to **guide learners' research into language** (Thornbury 1997: xii) and turn them into language explorers, and consequently, independent language learners/users.

Thornbury (ibid.: xv) believes that the best way of developing language awareness and attention is via **task-based teaching**. He emphasizes the importance of teachers' awareness in his approach to language and the design of classroom tasks. He suggests that training FL teachers in LA has become a necessity. A variety of possible activities to be implemented in a FL teacher training course, which would develop teachers' language perception, would make a helpful departure from the traditional way FL teachers acquire their knowledge about language (courses in linguistics) and language teaching methods (mainly the communicative approach, the dangers of which have already been mentioned elsewhere in this work). These awareness activities can be grouped according to their object of focus:

- identification/recognition of language elements,
- categorization (e.g. classifying and grouping according to some form-focused or semantic criterion),
- matching (e.g. identifying synonymy, definitions of words),
- explanation/interpretation (e.g. the use of a rule, structure),
- evaluation (e.g. reflection on the usefulness of an activity),
- application (e.g. designing similar tasks appropriate for a given group of learners).

These activities are presented as part of teacher training in language awareness, but they may serve as examples of task-based teaching in the classroom with focus on reflection on the learning process rather than on teaching. They may be applied in the context of bilingual education as well as in a multilingual context. They can operate on all levels of a language system: phonetic, morpho-syntactic, lexical and language use in context, that is, on the pragmatic level.

2.4. The didactic implications of the study

Considering the subjects' perceptions of language awareness in this study and the results of studies focusing on awareness, or, more precisely, on focused attention, the following conclusions can be drawn for the language instruction context.

On the level of mother tongue:

1. The need to develop language awareness of the mother tongue by sensitizing learners to how their L1 functions – both on the level of semantics (context, origins of concepts, etymology of words) and form (knowledge of rules and meta-language).

2. The introduction of elements of contrastive analysis (L1–L2) – the method and degree of use to be determined by the age of the subjects and their level.

3. The need to sensitize learners to the phenomenon of language transfer – both its dangers (interference) and its facilitating aspects (positive transfer) via the design of appropriate tasks allowing for language comparison.

4. The return of translation tasks as activities sensitizing the learners to L1 characteristics on the level of form and concept.

5. The introduction of language tasks in L1 to develop the ability to manipulate the well-known language with the purpose of developing strategies that could be transferred to an L2 learning context (e.g. use of paraphrase).

On the level of L2/L3/Ln:

1. Designing FL language tasks that would allow learners to discover meanings or rules, etc by themselves through induction and the appropriate use of contextual clues.

2. The need to focus on the process of “noticing” in language exposure and comparing it with already familiar material in a given language, as well as comparing it with L1.

3. Explicitly reflecting on language – its rules and conceptual basis.

4. Explicitly “thinking about thinking”, in other words, designing tasks in which learners would be instructed (for example) to think aloud – about the process of solving a language task/problem (some form of introspection) or on how they approach the language, the strategies they use and how successful they are.

5. The need to develop the strategic competence of learners either by overt training or tasks which themselves imply the use of given strategies.

6. In the context of multilingual learners, obliging them to make comparisons between languages and using feasible multilingual tasks.

To sum up, it is in both areas of developing language awareness – that of the mother tongue and of foreign languages that the explicit focus should be on “knowledge about the language(s)” and “knowledge how” (learners’ strategic competence).

The next study discussed (study 5) focuses on the problem of the strategic competence of subjects with reference to expanding their mental lexicons in different foreign languages.

3. Introduction to study 5: application of LA in a multilingual context

3.1. Language processing in a multilingual performance: linguistic analysis and control of language processing

Language processing in the context of an instructed task to be performed, such as for example a translation exercise, consists of the interaction of two skills: knowledge about and the ability to analyse language and the ability to control language processing (Bialystok 1991: 4).

The **analysis of linguistic knowledge** is observed in the way the learner attends to input and how this input is transferred into the representational system of the learner. In the case of foreign language processing (not always true of second language performance), this analysis is often represented in a conscious way. Specifically, there is a high degree of explicitness observed in learner's comments. This explicitness of course varies from individual to individual according to their different cognitive styles, transfer of training and other factors such as personality type. Bialystok (1991) believes that this skill of analysis depends on three factors:

- **self-reflection** in language performance which leads to the discovery of patterns and rules, and helps to organise knowledge,
- **literacy instruction**, mostly applicable in the case of L1 acquisition; in FL learning it may be understood as exposure and language practice,
- **explicit treatment**, that is, methods of teaching which emphasise the role of an overt presentation of rules and the way language functions, which is seen as complementary to the implicit, internal processes the learner develops in the process of learning (analysis of language).

The skill of **control of linguistic processing** is defined by Bialystok (ibid.: 71) as

the ability to control attention to relevant and appropriate information and to integrate those forms in real time. Language presents multiple sources of information, both linguistic and non-linguistic, and part of effective language processing is being able to attend to the required information without being distracted by irrelevant or misleading cues.

Taking up the above concept of control of linguistic processes, Little (1996) proposes to view it as a three-function phenomenon:

- focus of attention (i.e. disregard of irrelevant cues),
- integration (i.e. putting separate pieces of information/cues into a meaningful whole),
- acting within constraints of time (which presupposes different degrees of control for immediate tasks, such as speaking, and non-immediate ones, such as a written task).

Linguistic analysis, as well as **control of processing** is influenced by the learner's declarative and procedural knowledge, both operating under different degrees of awareness when processing language. In the case of advanced language users, it is often observed that this analysis and control operate beyond the level of awareness, i.e. they are internalised and automatized. This implicit processing is mostly observable in immediate tasks, in which time constraints make any kind of conscious or **intentional** planning impossible.

However, in the case of non-immediate tasks, time constraints are much more open and allow one to **mentally rehearse** language performance. For example, a translation task can be viewed as an instance of various stages of negotiation the learner enters into when first analysing, and then controlling his or her language processing in the production of a written equivalent of the L1 text in L2/FL. The learners themselves, as it were, perform the actions of the **speaker** and the **hearer**.

3.2. Metacognition in multilingual processing

One of the factors influencing language performance in other than a mother tongue context and, especially, with reference to those language users that have learnt rather than acquired a foreign language or languages by means of formal instruction is **metacognition**, generally understood as **knowledge about learning**. It is often defined as thinking about thinking, exemplified in such acts as understanding and reflecting upon it, which are a form of language processing control. So, metacognition is a complex concept embracing not only knowledge itself but also the ability to apply it in skills or strategies. In research data gathered by means of verbal protocols or retrospective reflections, this knowledge is explicitly verbalized in the form of metacognitive comments.

Wenden (1998: 519) refers to **metacognitive knowledge** as "information learners acquire about their learning" and classifies it into:

- **person knowledge** focusing on the learner and describing factors that either promote or impede learning and are characteristic of a given individual (e.g. age, aptitude, motivation); these are assumptions and beliefs the learner

holds about effectiveness of learning that are experiential, beliefs concerning his or her own abilities and self-esteem and confidence; they are both cognitive and affective;

- **task knowledge** perceived as learner's knowledge about the purpose of the task, its outcome and the demands it puts on the learner (in other words, how to do it). Wenden distinguishes between task knowledge and domain knowledge, i.e. factual knowledge of the field but which, nevertheless, undeniably contributes to task knowledge;
- **strategic knowledge**, defined as stored knowledge about the learner's ability to perform on the basis of the above-mentioned types of knowledge, i.e. knowledge of oneself as a learner which might determine the choice of strategy that works and the nature of the task undertaken; along with one's ability explicitly to reflect upon strategy itself.

The role metacognition plays in foreign language performance lies in its conscious application to a variety of language tasks when: "the nature of the learning task requires conscious thinking and accuracy, when the task is new, or when the learning has not been correct or complete" (Wenden 1998: 520).

Numerous studies demonstrate that metacognitive knowledge use is always observable in the case of successful language learners; it shows facilitative effects both in comprehension tasks and written production tasks (for the review of these studies, see Wenden 1998).

Wenden emphasises the importance of metacognitive knowledge for learner's self-regulation/self-direction demonstrated as a facilitative factor in **planning, monitoring and evaluating** his or her performance. The above-mentioned three aspects, or rather interacting stages of self-regulation, operate both on a macro-level of learning and a micro-level when a defined language task is being performed by an individual. They contribute significantly to task analysis and learning transfer (ibid., p. 520).

When confronted with a learning task, a learner has to **analyse** it, that is, to decide what the task's goal is and what strategy it is best to adopt to execute it. For this purpose, the learner activates his or her metacognitive knowledge with respect to the possible problems the task will pose both in terms of form (e.g. appropriate register) and content (e.g. comprehension of the ideas presented), to what extent prior knowledge can be utilised and what skills are necessary to perform the task well. So, the three components of metacognitive knowledge (person, task and strategic knowledge) will be actively engaged in task analysis.

The other stage of self-regulation, **monitoring**, is understood on the macro-level of learning as consisting of: "keeping track of how the learning process is going and taking appropriate measures to deal with difficulties that interfere with the process" (Flavell 1981 in Wenden 1998: 523).

On the level of task performance (that is, on the micro-level), monitoring refers to the concurrent regulation of the task performance “online” (as it happens). As in the case of macro-regulation, here too metacognition operates in four distinct but interconnected and sequential stages/ways of monitoring (Wenden 1998: 525):

- through **internal feedback** (i.e. an individual’s awareness of the task difficulty),
- through **internal assessment** (i.e. an individual’s perception of success or failure),
- through **diagnosis of the problems** encountered in the task performance (e.g. lack of vocabulary in a specific field),
- through **guidance** based on response to the feedback, assessment and diagnosis (i.e. revising the solutions chosen or creating new ones), the learner makes choices concerning an effective strategy.

It is not only that metacognitive knowledge facilitates monitoring processes but there is clear feedback between the two. Monitoring contributes to the development of metacognitive knowledge through explicit/conscious testing of prior knowledge and adapting it to the task at hand. In efficient (expert) learners it leads to **transfer of learning**, i.e. the development of the ability to apply knowledge and skills (strategies) used previously to new tasks both in the initial stages of task analysis and in monitoring task performance.

3.3. Metacognitive awareness and awareness of metacognition

Shraw and Dennison (1994: 461) in researching successful language learners observed that: “metacognitive awareness appears to be independent of intellectual ability and academic achievement”. Bruno (2001) in his study of metalinguistic awareness of trilingual language learners identified different degree of awareness in the case of L1 versus FL text processing (reading comprehension). FL awareness, or rather awareness of a certain deficiency in their L3 languages, made the learners use a greater variety of strategies in foreign language reading than in L1 reading. He emphasizes the need to develop learners’ attention, in other words, the promotion of explicit reflection on the performed task in all languages to facilitate the transfer of abilities. Such training should lead to the use of prior experiences when performing in another language and to make cross-linguistic comparisons to compensate for language inadequacies. The learners’ ability to approach and analyse the task, their familiarity with learning strategies that work for them, and the ability to see how the knowledge of one language can facilitate (or interfere with)

performing a task in another language, are all different aspects of metacognition that the learners need to be made conscious of in order to apply them successfully.

So, development of metacognition has to be an **explicit and conscious process** for learners. The ability to apply appropriate linguistic analysis and to control language processing derives at the early stages of language advancement from the explicit instruction the learners are exposed to. The way explicit instruction will affect the mode and rate of learning may either result in successful learning (when appropriate) or failure to acquire some language element. It becomes successful if the learners are exposed to a variety of methods catering for the needs of different learning styles, for example multi-sensory presentation of lexis, to take account of both visual and auditory styles. It feeds both the teacher's awareness of the need to accommodate different types of learners in his or her instruction, and the learners' sensitivity to what is best for them in terms of learning strategies. Appropriate teaching method(s) will allow for and expedite learning transfer of training. What is more, these positive effects of transfer of training can be carried across into another learning context.

With growing experience – and in the case of multilingual language learners – of learning different languages, it may be expected that a certain degree of **transfer of learning** will occur. This extensive and intensive language learning experience should contribute to the development of metacognition overtly, not only through language practice tasks, but also through **explicit reflection** on the aspects mentioned above: what a language learning process is, choice of successful versus unsuccessful learning strategies, cross-linguistic consultation between languages known and just learnt. Reflection on learning as a process, reflection on language as a system and awareness-raising of how to transfer what is appropriate to be a successful language user allow teachers to create autonomous learners.

4. Study description (study 5)

4.1. Research design

This survey is a partial replication of the first stage of an action research project carried out at Innsbruck University (S p o t t l 2001) and aimed at multilingual learners' training in developing their lexical competence. It focused on the survey of the learners' perspective on vocabulary learning in L2, L3 and consecutive Ln languages, which was carried out by means of oral interviews

with a group of 18 multilingual students of the university translation courses. It looked at the learners' need for strategy training and in a later stage of the project's development such training was introduced. The present study investigated multilingual learners' practices in vocabulary learning by means of written questionnaires, focusing on the same areas and objects of interest as the original survey. The contexts for both studies were pretty homogenous in terms of the learners' characteristics, their learning histories and profiles of studies, as well as the selection and combination of languages learnt.

I believe that the learners' developed metacognitive skills should be evidenced by their ability to reflect upon them verbally. This ability to verbalize is an indispensable part of metacognitive knowledge. Verbalizations help noticing, selecting what is appropriate and integrating the data on the basis of **knowledge of** and **knowledge about**. The participants in this study were exposed to a written survey, which in a descriptive way was to provide evidence of their metacognitive knowledge and the ability to comment upon it.

Subjects

All the subjects, 36 in total, can be described as linguistically aware multilingual language learners, whose major areas of study were foreign languages with English as the L2, studied with the purpose of either becoming qualified teachers of English (group 1), professional translators and interpreters (group 2), or to specialise in literature and culture studies (group 3). The other languages studied through formal instruction were in the main German and French, or Russian studied at school. However, it was only L2 (English) which the learners seem to be reasonably proficient in since their program of studies was run almost exclusively in English. The other languages were taught as additional (for example, Spanish or Portuguese), with the exception of group 2, who received intensive practice in German at the intermediate level because the final goal of their studies was to become bilingual translators and interpreters (see Table 8).

Language	L1	L2	L3	L4	L5
Polish	36				
English		36			
German			29	6	
French			5	7	
Spanish				1	
Portuguese				5	2
Russian				5	
Swedish				1	
Italian				1	
Total	36	36	36	26	2

Table 8. Languages learnt by the subjects

In terms of their learning histories, Table 9 presents the length of learning for each language, their status and form of instruction.

Language	Length (years)	Level	Status	Form of instruction
L2	8–12	advanced	obligatory	school/tutorials/university
L3	4–8	pre-intermediate/ intermediate	obligatory	school/university
L4	1–4	elementary/ pre-intermediate	obligatory/optional	university/tutorials
L5	0–2	elementary	optional	private tutorial/university

Table 9. Learning history of the subjects

At the initial stage of their studies, the students covered basic courses in theoretical linguistics and descriptive grammar, and only later on – in their 5th semester – chose their preferred professional specialisation: teaching, translating or studying literature and culture. It might be assumed that their expressed preferences for certain subject areas and goals of studying at this stage would influence the way they approach their continued language instruction in L2, L3 and, perhaps in some cases in L4, and would be reflected in the way they perceive and talk about L2 and L3/L4 learning.

Research questions

The research questions posed in the study on learners' perceptions focused on their metacognitive awareness as exemplified by comments on:

- the role the subjects assign to their mother tongues (Polish's) influence on:
 - foreign vocabulary learning in L2 versus L3,
 - the strategies employed in both language learning contexts;
- the cross-linguistic consultations between the foreign languages available to the subjects:
 - the role of L2 in L3 vocabulary learning,
 - the impact of L3 on L4 or L4 on L3 vocabulary (in the case of tetralingual learners);
- the metacognitive knowledge and metacognitive strategies used in:
 - L2 vocabulary learning,
 - L3/L4 vocabulary learning;
- perceived level of difficulty of L2 versus L3 (versus L4).

The number of languages, their combination, length of study and their perceived level of advancement were considered to be important variables influencing the subjects' perceptions of their learning practices and experiences. The written questionnaire consisted of open-ended questions allowing the subjects to elaborate on their vocabulary learning and the metacognition involved in this process of lexical expansion (see Appendix).

4.2. Data presentation and analysis of results: learners' report on their multilingual vocabulary learning experiences

4.2.1. The role of mother tongue in FL(s) vocabulary learning

Perceptions of the role L1 plays in foreign language vocabulary learning did not differ greatly between the three groups but various tendencies were observed. Generally, all the subjects emphasized their mother tongue's importance both in the context of L2 and L3 vocabulary learning.

When commenting on L2 vocabulary learning, L1 was referred to as being quite important or having a very big influence. However, different groups attached different degrees of importance to L1. The translators stressed that:

I feel secure with L1 equivalents, definitions in L2 always leave me with a certain degree of uncertainty.

If there is no equivalent one may feel insecure.

L1 has a very big influence when I need to know the equivalent for the purpose of translating and interpreting.

(L1) is the basis for mental processes.

The teachers seemed to be aware that the role of L1 changes with advancing proficiency in L2:

At the beginning it was very important – I translated every word from L2 to L1, but the more proficient I got the more I started using L2 for explaining the words, I started using monolingual dictionaries. Now I come back to L1 when I need to be very precise when I for example translate some texts; spoken and written.

The literature students, on the other hand, believed that:

L1 is important in learning specific names, e.g. animals, plants.

(...) only in learning scientific and technical vocabulary.

In all other contexts the L2-based strategies were evaluated as more significant:

learning L2 vocabulary mostly by definitions in L2,

learning through synonyms, antonyms and collocations in L2.

These sample quotations from the students illustrate differences in the perception of L1 in L2 learning which can be explained by the specificity of each group's profile: in translation precision is important, in teaching – awareness of the changing nature of interlanguage, and in culture studies -- L2's use for best expressing abstract concepts in L2.

The role of L1 in learning L3 vocabulary was described more homogeneously and it was seen as:

*much more important than in L2 vocabulary acquisition,
more important as most of the learning is done by translation,
translating L3 vocabulary into L1, sometimes only into L2,
greater than in L2 as the level is elementary, I rely on L1 to a greater extent,
the role of L1 is very significant.*

Again, the factor which seems to have made these perceptions so positive is low L3 competence, which makes the learners rely on the knowledge they are secure about, their mother tongue.

In terms of strategies used in the context of L2 and L3 vocabulary learning, not much variety between individual cases and language contexts was observed. In L2 learning, the strategies enumerated were achievement ones (relying on L2 itself), for example:

*learning in L2 context,
elaboration,
overgeneralisation.*

But there were also numerous examples of L1-based strategies such as:

*translation, association, rote learning by bilingual lists,
transfer,
etymological comparison,
mnemonic strategies.*

The same L1-based strategies reappeared in the comments on L3 vocabulary learning, but here, what was stressed, was the importance of auditory associations:

*phonetic similarity of words helps,
similarities in sound and graphology,
code-switching.*

Most of the above strategies are more form- than content-based, which is, as the research shows, characteristic of early stages of language development (especially concentrating on the phonetic aspects of a word).

To sum up, the subjects perceive L1 as an important factor in facilitating vocabulary acquisition both in L2 and L3/L4 but, at the same time, their comments do not attest to the possibilities that prior knowledge of the language offers. L1 is regarded almost exclusively in the most traditional way: as a translation equivalent reference for foreign vocabulary learning. For example, no conscious conceptual analysis that could facilitate learning, storage and retrieval of words is revealed. Also, no cognitive effort at processing the lexical items to be learnt was emphasised as a factor that could facilitate their acquisition.

These comments repeat the subjects' beliefs in Spottl's study, who clearly perceived L1 as important in their FL vocabulary development but saw their roles as slightly different. As in this study, there seems to have been a general agreement that L1 is of more importance in L3 vocabulary learning, as L3 lexicon, being at a much lower level than L2, relies more heavily on L1 equivalents and focuses on form more than on content load. This is exemplified not only by the extensive use of translation equivalents but also by searching for associations between L1 and L3 which are based on their **acoustic similarity**. This, of course, shows the interdependence of both lexicons, whereas in the case of L1 and L2, these connections are perceived by the L2 advanced learners as being much looser. It is lexical competence in L2 that becomes the main resource of L2 vocabulary expansion, an example of the independence of L1 and L2 mental lexicons. These different connections between these lexicons point to their having different structures. To quote Schnopflug (2000: 121, cited in Spottl 2001: 166)

The structure of a trilingual lexicon and its underlying representational system is usually considered to be an extended bilingual structure governed by one organisational principle: either interdependence or independence of the language systems involved. The triad of languages may, however, not be organised homogeneously. The three dyads of languages, first and second, second and third, and first and third, respectively, may differ in their organisation.

It may mean that some parts of the lexicon are independent, but there may be a certain degree of overlap and partial interdependence – what Paradis (1995) calls a “tripartite hypothesis” when referring to a bilingual mental lexicon. He believes that there are three memory stores in a bilingual mental lexicon; one universal store responsible for mental representation for both languages and two separate stores for L1 and L2. The degree of relatedness between the lexical stores will depend on a number of factors, for example language distance – also the perceived language distance (psychotypology) on the part of the students – or the nature of the learning process (learning versus acquisition). In the case of a trilingual language learner, this organization of the mental lexicon will be affected by the same factors, however, the number of languages involved being higher will make language processing much more complex and more varieties of patterns in the L3 lexicon's structure will be possible.

It should be said at this point that a FL mental lexicon has not got a static structure, but as Herdina and Jessner (2002) have claimed in their research, it is dynamic in nature. Different variables such as language competence or learning history (transfer of training) have a bearing on the changing character of vocabulary learning, storage and retrieval. As is evident here, the advanced command of L2 allows the subjects to rely on this knowledge more, while much lower proficiency levels in L3 make them dependent

on L1 as a reference source. Of course, it is not only L1 lexical proficiency that the learners may profit from; L2 lexical proficiency too may be seen as contributory to L3 lexical development, a fact which was commented on by the subjects in the next section of the questionnaire.

Apart from their proficiency levels, it is important to consider the subjects' awareness of themselves as learners and their ability to reflect upon what works for them in vocabulary learning. The data does not demonstrate much awareness of their individual learning styles and strategies; there is scant registering of the strategies used in the process of learning. In other words, there is no evidence of one of the most important aspects of metacognition: **person knowledge**. The case may be that the subjects are unable to verbalise their learning processes because at this advanced stage they are automatic. This might impede transfer of learning, i.e. the strategies used in L2 advanced automatized learning are not transferred into less advanced L3/L4 learning. Instead, they rely on L1.

Secondly, there is no distinguishing of strategies that would be based on the linguistic characteristics of the learnt lexical items, which might greatly influence the effectiveness of learning. The only distinction which is mentioned is that of concrete versus abstract words, which seem to be the only metalinguistic terms used by the subjects. So, another characteristic feature of metacognition, **task knowledge**, is not much in evidence, either in the comments made by the subjects.

4.2.2. Cross-linguistic connections in L2, L3 and L4 vocabulary learning

Cross-linguistic connections, or **cross-lexical consultations** (a term used by Spottl 2001) between foreign language lexical systems, are perceived by the subjects but they are not very strongly emphasized as positive factors. One of the subjects even says:

L2 is rather a kind of distractor – when I want to say something in a foreign language automatically comes the word in English (L2) not French (L3). It takes longer to recall a French word.

However, at the same time she stressed the point that it is on the level of language processing only that her English words interfere:

Sometimes the similarity helps me guess what the word will be like or helps me to remember because they differ only in e.g. the ending or pronunciation.

The majority of subjects tend to see L2 as an important facilitating factor in their L3 learning:

(...) when learning L3 I often transfer words from L2.

(...) *yes, both ways, they complement each other: L2→L3, L3→L2. Many words are similar in spelling and pronunciation.*

The fact that the L2-L3 combination (English and German) in most of the learners refers to languages that are close typologically is here very significant. The subjects' being aware of this closeness makes them use L2 as a reference system both formally and semantically. The strategies listed as those most commonly used in L3 and based on L2 lexical knowledge are:

*looking for equivalent words,
making frequent comparisons between the words in terms of spelling and pronunciation,
foreignizing,
overgeneralization from L2,
transfer of L2 into L3 – the use of linguistic intuitions,
relating new vocabulary in L3 to L2 words.*

The L2 strategies used in L3 vocabulary acquisition seem to be much more differentiated and elaborate than those based on L1. It can be assumed that explicit knowledge of L2 as a foreign language the subjects learnt rather than acquired made it possible for them to apply more and better strategies, and not just translation and rote learning – as was the case with the L1-based strategies in L2 and L3 learning.

Another key reason for cross-lexical consultations seems to be the real and perceived distance between L2 and L3. However, this should mean that when learning the vocabulary of a L3 that is distant from L2 cross-lexical connections are not made. More elaborate processing, L3 knowledge itself and the subjects' own L2 learning experience and intuitions about how vocabulary works deriving from their expertise in their native language do not seem to surface in the data. So again, what is registered is the lack of metacognitive awareness.

When commenting on cross-lexical consultations in learning L4 vocabulary (in all cases at an elementary level), the subjects again commented on L1 as a secure system of reference and learning by means of translation equivalents:

elementary level – only L1 translation is possible.

Even when the subject perceives the similarity between words, they are seen as

causing problems in recognition of codes,

in other words, it results in code-mixing and code-switching. Again, the level of proficiency seems to determine the way the subjects deal with this context of vocabulary learning.

4.2.3. The metacognitive knowledge of the subjects

All the subjects responding to the question on their metacognitive knowledge seem to be acquainted with taxonomies of metacognitive strategies (O'Malley *et al.* 1985, Oxford 1990) which constitute an important aspect of metacognition. The strategies enumerated can be grouped (as in Oxford's classification) into those referring to **centering one's learning**, such as directed/selective attention or delayed production, to **arranging and planning learning** expressed as the need to, for example, **create a facilitating context** and to **evaluate one's learning** by means of: **self-monitoring**, **very strict evaluation of progress in vocabulary learning**.

The subjects do not see any difference in the metacognitive strategies used in both L2 and L3/Ln vocabulary learning, however, one of them observes that in L3 learning:

not too many strategies are applied as in L2, too much passivity.

The metacognitive strategies listed are not described in enough detail for one to comment on what the subjects practically do when they talk about using selective attention or advance organizers. It seems that they are produced just as labels learnt in their methodology courses, as in nearly every case they were unable to specify what they mean by the steps taken when learning L2 or L3/Ln vocabulary.

There were very few comments that expressed the students' beliefs in what the successful learning of vocabulary is determined by and what facilitates it for them. Some of those ventured are quoted below. In L2 vocabulary learning they believed it was good to learn by:

*auditory representation and recombination,
reading a lot and doing written translation which helps me to extend and confirm what I know,
listening to anything authentic, when I hear a new phrase or word I try to analyse it and remember,
I also try to think of a context, a sentence as an example,
arrange for the presence of conditions facilitating learning,
collecting language materials,
searching for the oral contact with the code,
deducing from the context,
checking the linguistic origin.*

These strategies are examples of active attitudes taken by the subjects in L2 vocabulary learning, searching for opportunities of contact and use, manipulating the language or using metalinguistic knowledge to some extent.

In L3 vocabulary learning the beliefs expressed are much more traditional:

*revising vocabulary,
traditional methods; translation,
repetition, translation, grouping.*

Only occasionally is L2 mentioned as a facilitating factor, and only when the two languages are perceived as typologically close:

it is easier to learn new words in French by finding words in English that are almost the same in French.

In general, it can be assumed that the subjects, as successful L2 learners at an advanced level of proficiency, reached the stage in L2 learning which allows them to progress without consciously employing their metacognitive knowledge. Certain learning habits become internalized and are automatically applied and that is why only with difficulty can they be verbalized and explicitly reflected upon as responses to a theoretical question. However, this implicit character of metacognitive knowledge referring to learning habits poses the danger of not being transferred into another learning context – in this case of L3/Ln vocabulary learning. The survey responses actually confirmed this impression.

This should lead us to place more emphasis on directing the learners in the explicit application of what they know about learning L2 vocabulary (in which they have been successful) to another language. It is not just linguistic proximity (as perceived by the subjects) but the very nature of learning a FL vocabulary – in other words, effective learning habits – that should be seen as having a positive influence on L3/Ln lexical development.

It is both the knowledge of L2 vocabulary learning processes and L2 lexical competence that constitute a valid area of reference; prior related knowledge is an important facilitative factor in meaningful learning. We are entitled to suppose that the structure of a multilingual's metacognition will be more complex than that of a bilingual.

One of the major concerns of researchers and practicing teachers working in the field of learner autonomy is developing training programmes for "learning to learn" (for an example of one of the first programmes, see Sinclair and Ellis 1989), which are really structured instructions on metacognitive development incorporated into a language syllabus or free-standing as awareness raising programmes to be taken up by learners autonomously.

These programmes are created for bilingual learners and focus on both the development of explicit reflection on the learners' metacognition and of practical abilities in the use of cognitive strategies applied in the development of language skills and language subsystems. These programmes would have to be modified and enriched for the purposes of multilinguals. They would have for example to incorporate the facilitative role a knowledge of one foreign

language may have in learning another at the level of linguistic similarity (language transfer), the applicability of former learning experiences and their evaluation.

4.2.4. The perceived level of difficulty of L2 versus L3/Ln vocabulary learning

If we consider that the factor the subjects emphasized as very important for the way they approach vocabulary learning was language distance, one would imagine the perceived degree of difficulty in vocabulary learning between L2 and L3 should be considered quite low since the most frequent combination of languages of the subjects in this study was: L2 – English, L3 – German, L4 – French (see Table 8). Their L2 and L3 are the typologically close Germanic languages, which in terms of their lexical systems are very similar (at least, semantically). So, theoretically speaking, advanced knowledge of English vocabulary should greatly ease the task of learning German. However, the subjects' perceptions were different.

When evaluating the degree of difficulty involved in L2 vocabulary learning, they say:

easy, quite easy, a low level of difficulty.

In answer to the same question, L3 vocabulary learning is seen as:

not as easy as English, difficult, very difficult.

And what is more, L4 (in most cases French) tends to be perceived as the most difficult. The only exception here is Russian vocabulary learning (L4) which is perceived as easy.

The various reasons given to justify these perceptions of difficulty were:

*greater exposure plays a role,
L4 most difficult because learnt beyond the critical period,
motivation plays a role in vocabulary learning.*

The stress is put on the difficulty of learning connected more with the form of words than their meanings:

it is spelling and pronunciation that are difficult

(quoted with reference to German vocabulary).

It seems, therefore, that although the subjects are aware of the similarities between different languages and occasionally profit from this, the (perceived) degree of difficulty of learning grows with each consecutive language. How can we explain this perception? First of all, there is language level. The fact that the

subjects are advanced in L2 – and all of them evaluate themselves as advanced – may be an impeding factor in learning another language. The affective perception of a high degree of attainment in one language may not stimulate learning another language – especially when one has just started (the elementary level for L4). This awareness of the long and tedious process of learning another lexical system and perhaps belief in not being able ever to reach the same level as in L2 may be de-motivating for many learners.

There is, of course, another factor – even mentioned by one of the subjects – that of age. The learning history of the students shows that all of them started learning their L2 quite early. Their introduction to a first foreign language and the learning process itself were qualitatively different when it was a first experience and in early schooling. The strategies of learning applied then might not work when learning another language much later on. A good example would be the use of mnemonic techniques which prove to be much more effective with younger learners than with adults. So, the learning process needs reconsideration. Those early strategies may not be the most appropriate for these age-groups.

But, of course, learning experiences connected with the students' growing body of knowledge about language itself, how it functions and the principles of effective learning should contribute significantly to their further multilingual development. In other words, their metacognition and analytical skills developed in the later stages of studying languages should replace early experiences of learning strategies. Some of the above-mentioned mnemonics, mostly based on formal, e.g. acoustic similarities between languages, generally affect the acquisition of a word form but not necessarily its meaning if not complemented by explicit learning. If depth of processing and mental-cognitive effort are not employed, the vocabulary learnt may not be long-lasting. The use of imagery and imagination, in general, are characteristic features of early learning and are less effective with adults. In this case, it is their analytical abilities, their cognitive and metacognitive awareness that should significantly add to successful vocabulary learning in a multilingual context.

4.3. Conclusions and implications of the findings

The perceptions of learning experiences expressed by the subjects in the survey carried out have a number of significant implications, both in terms of teaching multilingually competent learners and developing or improving the learning skills of multilinguals.

First of all, it is the **role of L1** that needs to be re-examined in learning foreign languages. With the advent of communicative language teaching, the

mother tongue was banned from a FL classroom – not only as a means of communication (to intensify the exposure to a FL) but as the language of instruction itself. The contrastive analysis of L1 and FL ceased to play its former role, both in classroom practice and didactic materials. In the case of teaching English as a foreign language, the fact that teaching materials such as course-books were published by British publishers and broadly used in various non-English speaking countries promoted this lack of interest in L1's contribution to FL teaching and learning. However, what has been observed over the past few years is that those publications have become more and more adapted to different native language markets and, consequently, have begun to reintroduce L1 language awareness in the form of comparative/contrastive tasks. In my view, this constitutes a good start.

The informants in the study perceive the role of L1 as important in **foreign language lexical development**, especially in the case of lower level competence, i.e. when learning L3 more than L2. However, this perception expresses a very traditional approach to using L1: by employing translation and memorization as the two major strategies of learning. What was observed is a lack of L1 cognitive awareness and the need to look for common origins of words in terms of their meaning, that which cognitive linguistics emphasizes as an important underlying principle for all languages; a common conceptual base. This “conceptual awareness”, as the research suggests (Cameron and Low 2000, Deignan *et al.* 1997, Gabryś 2000), might facilitate the development of FL lexical competence. This idea should stimulate a change of focus in FL classroom instruction from a communicative framework to cognitive-reflective teaching and learning, where L1 would play an important role. Reflective and explicit instruction should enhance the transfer of training/learning between different languages. A multilingual context might even be more advantageous than a bilingual one, since it allows for richer multilingual comparisons.

When discussing the multilingual context of vocabulary development, the observations focusing on the learners' use of their **prior knowledge** – whether it be of L1 or L2 in learning another FL – what is most evident is the fact that the learners find it difficult to self-reflect on their learning experiences. It has already been mentioned that no conscious awareness of L1 is evidenced which can, of course, be explained by the intuitive character of L1 knowledge and no explicit training in L1. The same phenomenon, however, can be observed as far as the use of more advanced lexical competence in L2 is concerned. There does not seem to be very much awareness of L2 learning experiences applied to L3 vocabulary learning. The comments on cross-lexical consultations between L2 and L3/Ln are very limited, indeed. It is L1 that is often seen as more important, as the major source of reference for L3/Ln learning – even in the case of languages distant typologically, such as Polish and German or French.

This suggests that there is a pressing need to make learners aware of **explicit self-reflection** in the context of L2 (advanced) lexical development and the role it may play in the further development of L3 lexical competence. This is a necessary condition for learning transfer to occur.

Apart from encouraging self-reflection in students, the teachers' role should be highlighted in the application of such **explicit methods** of vocabulary teaching as will allow for comparison and contrast between languages and in openly discussing the cognitive – not merely formal aspects of vocabulary knowledge. The development of literacy and the need for exposure and interaction with a written text (in other words, extensive reading practice), designing tasks that would consciously employ cross-linguistic/cross-lexical consultations, may be the path to follow.

The subjects when evaluating their approach to lexical development in L3/Ln emphasize, as mentioned above, their passive attitude and dependence on traditional strategies in learning as resulting from lack of motivation and not enough exposure (which may in reality, in circular fashion, come from the passivity of the learners themselves). Maybe **challenging classroom practices**, such as ones combining the learning of L3/Ln based on L2, may help them to overcome their lack of motivation and provide novel learning experiences. The learners would be able to make explicit use of their advanced knowledge of L2 in learning the other language. The use of for example English (L2) didactic materials and course-books for L3 instruction offers something more than the challenge of novelty. Learning L3/Ln through L2 will allow the learners among other things to unlock their metalinguistic knowledge of L2.

Another important observation that can be derived from the collected data is that even in the case of successful language learners of L2 there is still a need to develop **training programmes** for self-awareness and self-study. The subjects involved in this survey do not seem to be fully conscious of what successful learning – of vocabulary in this case – is for them. The so-called person knowledge defined as knowledge of one's learning styles and strategies does not figure very prominently in the descriptions of learning and metacognitive strategies recorded in the data. There seems to be a universal agreement that there is an inventory of strategies that can always be applied for vocabulary learning, irrespective of level and of which consecutive language. This repertoire of strategies is extremely poor. Perhaps if confronted with a reception task – of selecting one's strategies from a given list – their variety and appropriacy might have been greater. However, what is important here, as I stressed earlier, is the consciousness of their sense of application and the ability to reflect on what one does and how it works in a given learning context. The same observation is true of the data on metacognitive strategies applied by the subjects: the inability to comment on these explicitly and the

mere enumeration of what are general labels for these strategies (selective attention, planning or monitoring) are most conspicuous in the comments.

To sum up, the following more specific guidelines for teachers and multilingual learners can be offered:

1. L1 is an important source of cross-lexical reference in multilingual lexical development. Awareness of it as a teacher and learner should be developed.

One of the ways of doing this for example is by introducing of language tasks focusing on figurative (metaphoric) language in L1 and L2 alike, analysing and comparing concepts across languages and observing how this universality is reflected linguistically in terms of similarity of lexical choices made. The same applies to teaching collocations. Similarly, the emphasis can be put in lexical tasks on differences grounded in culture-specific concepts. In other words, lexical work should focus very much on development of conceptual awareness by discovery tasks. To meet this end existing didactic materials, for example the texts, can be adapted and L1 focus introduced.

2. As a successful L2 learner, reflect on your learning experiences in L2 explicitly to promote learning transfer in L3/Ln.

Nothing facilitates learning success as much as perception of success (here in L2). This is reinforced by the ability to transfer ways of learning in one context (L2) into another (L3/Ln), in other words, explicit reflection on the strategies employed in L2 vocabulary development may add to lexical success in another learning situation. This could be achieved by means of keeping a learner diary. A learner diary can be introduced by the teacher as a regular learning task – homework or an additional language activity. It does not necessarily have to be executed in a foreign language, it can be written in the learner's L1. One of the forms of the learner diary is the dialogical journal, the purpose of which is communication (dialogue) between the teacher and learner, where the teacher responds to comments the learner makes on his/her learning experiences.

3. In classroom practice as a teacher, introduce contrastive aspects of language: L1 – L2 – L3/Ln.

This can be done at the presentation stage when inductive teaching is employed, when learners sensitized by the teacher will discover for themselves facts about language, for example, vocabulary origins, cognates or false friends.

4. Combine teaching/learning of L3 with L2 by means of didactic materials and cross-linguistic tasks.

This is the idea introduced by dual language schools in which teaching of a subsequent foreign language (L3/Ln) is carried out by means of didactic materials and instruction in L2. This, of course, makes an additional demand

on the teacher: he/she must be both linguistically and methodologically competent in two foreign languages. However, this seems to be the future for Polish teachers, since teacher training is evolving in the direction of training teachers in developing professional competence in two school subjects. Why not make it two foreign languages? By teaching L3 via L2 learners' L2 learning experiences can more easily be transferred into another learning context.

5. As a teacher, introduce elements of learner training on the level of metacognition (motivation, attitudes, expectations, needs and awareness of learning styles and strategies) and cognitive skills (strategy training).

Any learner training to be effective needs to embrace two stages: the metacognitive and the cognitive ones. The metacognitive stage may consist of learners' awareness raising in terms of their affective level – by means of a survey of attitudes and needs, not only for the teacher to adapt his/her teaching practices accordingly, but also for the learner himself/herself to formulate explicitly where he/she is as a learner. Also, motivation and its measurement at different stages of learning may constitute a part of learner training. Some training courses introduce “motivation graphs” – a visual record of the individual learner's fluctuation of motivation for learning and reflection in support of it. Also, the discussion of learning styles and strategies together with style and strategy inventories to be filled in by the learners may constitute an important part of awareness raising at this initial stage of a training programme. Of course, the metacognitive stage, and especially this part referring to strategy training, becomes most effective if integrated with language practice, in other words, when incorporated into a language syllabus.

6. As a learner, clearly specify your needs and learning preferences, learn to know yourself (styles and strategies) and design your own ways of monitoring and evaluating your progress.

As the previous point illustrates, a good training programme can facilitate this. Besides, the teacher's emphasis on the need to be autonomous even in the context of “in-classroom learning” should also make learners aware that to become successful language learners/users, they have constantly to reflect on progress made (or not) and emphasise their individual responsibility for it by introduction of, for example, self-correction and self-evaluation on the level of classroom instruction. Self-evaluation should be an essential part of any learner diary entry.

7. Reflect on what you do and evaluate it as a teacher and as a learner.

As far as a teacher's evaluation is concerned, the equivalent of a learner diary, i.e. a teacher diary, would be a form of direct reflection of **how I am doing in my teaching practice**. It can also be incorporated into lesson planning as its last entry. One of the ways of reflection is action research, the research

carried out by teachers in their own classrooms in which teaching problems are diagnosed, analysed and steps to improve practice are taken. This should become a common practice of a language instructor.

To conclude, it seems that both receptive learning through the introduction of advance organizers (abstract concepts expressed verbally) and inductive reasoning (discovery learning) are complementary methods and both contribute to meaningful learning in a multilingual class. If complemented by knowledge “how”, the multilingual language development of learners can be greatly enhanced.

4.4. Comment on L2 metalinguistic awareness in L3/Ln learning

Subliminal language learning, which is the main type of learning (as contrasted with incidental learning) that occurs in a formal instruction context, can happen only when certain conditions are fulfilled: “(...) noticing is the necessary and sufficient condition for converting input into intake” (Schmidt 1990: 129). Noticing, in turn, can only happen if a language learner is linguistically aware – an idea which was extensively explored in Chapter Four.

It has been observed in studies 4 and 5 that the linguistic and metalinguistic awareness of multilingual learners is not equally distributed across the languages they possess. L1, although evaluated as grasped at a more sophisticated level than that of L2 or L3/Ln, is often perceived as an ability to perform in the mother tongue in terms of language expertise. Reflection on how this language works is often inferior to the ability to explain the “workings” of a foreign language (be it L2 or L3) explicitly. This has led to the conclusion that perhaps different attitudes to language instruction and the role of L1 in it should be adopted.

At the same time, however, it is important to remember that L2 learning experiences and L2 awareness are already seen by the subjects (e.g. Hufeisen 1998, and in this study) as activated in L3 learning and constitute, in fact, the main reference system. The perception of how L2 was learnt, with all the limitations that formal instruction has compared with language acquisition in naturalistic settings, makes L3 learning much more compatible with L2 learning than L1 acquisition, both on the level of learning strategies and linguistic awareness. In his interesting study on the “propedeutic effect of Esperanto”, Finger (2001) looks at how the knowledge of L2 may facilitate L3 learning. Generally, the choice of Esperanto was determined by the fact that as a language system it can be characterised by: “its transparent and

regular structure, its international (mainly Romance) vocabulary, and its transitional and multilingual speech communities" (ibid.: 53). Esperantists have long argued for the facilitative role Esperanto might play in learning other foreign languages because of its transparency and freedom from any extra-linguistic reality.

Finger (2001) presents an overview of experimental studies in which control subjects who learnt L3 without instruction in Esperanto were compared with the experimental ones who were formally exposed to Esperanto instruction. The studies demonstrated the superiority of the experimental groups, in other words, confirmed the "propedeutic effect of Esperanto" on learning another foreign language (L3). The studies presented are said to have some methodological flaws, e.g. not all variables in the experiments were controlled, nor was the "propedeutic effect" of other L2s greatly elaborated on. However, they mark an important beginning in the study of the influence of L2 (in this case, Esperanto) on L3.

In his discussion of the facilitative aspects of Esperanto as a reference system for L3 learners, compared with other L2s, Finger (ibid.: 56–57) points out that Esperanto can be a "bridging language" at different levels of language depending on the distance between Esperanto and L3. One example that he quotes is the study conducted by Majerczak (1988) on the combination of L1 Slavonic (Polish), L2 (Esperanto) and L3 (French). This bridging was observed at the lexical level. In the context of a Hungarian learner of any Indo-European language as L3, Finger believes Esperanto can have this propedeutic effect as far as the morphosyntactic level of language is concerned. It serves to introduce concepts unknown in Hungarian in a more simplified way.

Also, on the level of metalinguistic awareness, Finger and other Esperantists see Esperanto as facilitative in its transparency of system (e.g. how to form tenses) or flexibility (e.g. with reference to word order). What he emphasizes also is the creative aspect of Esperanto, the word formation system, which is very flexible and allows for all possible combinations of morphemes. It may be argued that any other L2 metalinguistic awareness will also enhance L3 development, but as Finger (2001: 58) puts it

if the hypothesis is accepted that there is an interaction between the learner's metalinguistic awareness and features of the language system like transparency/regularity, flexibility and creativity, then Esperanto could be claimed to offer a stronger version of these features than most other L2s.

One other factor that Finger stresses as having an important bearing on L2 and L3 interaction is the cultural aspect of Esperanto, whose multilingual-speaking community has created a culture all of its own. Since

success in foreign language learning has a lot to do with the affective domain of the learner's functioning, that of attitudes and ego identification, Esperanto does not pose a threat in this respect. It is multicultural and not dominated by one mother tongue nor mastered by any group of native speakers.

To sum up the possible facilitative effects of L2 Esperanto instruction on L3 learning, Finger (ibid.: 54) points to:

- the intra-linguistic area (comparison of languages at the level of structure and vocabulary, depending on language proximity);
- the metalinguistic area (the simplified structure of Esperanto facilitates understanding of any language as a system);
- the extra-linguistic area (developed cultural awareness through multilingual Esperanto users, easiness of learning).

Finger (ibid.: 60) asks the question – if Esperanto is not introduced as an L2, how could it be incorporated into the development of learners' metalinguistic awareness? His suggestion is to introduce it as a complementary course to the programme of linguistics language students are obliged to take. It would not only illustrate theoretical issues in linguistics but promote reflection on languages and additionally, reflection on foreign language learning and the importance of metacognitive awareness. Of course, exactly the same can be done without the introduction of a new language – and an artificial one at that – by means of a more systematic and explicit analysis of L2/L3/Ln within the framework of formal instruction given in these languages, respectively. Also, the development of contrastive metacognitive awareness in multilinguals might be a contributory factor to the plurilingual development of an individual.

Chapter V

Concluding remarks

1. Introduction

The purpose of this chapter is to give salience to the main research findings of the previous chapters. The research area investigated and the results obtained, together with the conclusions drawn, had to do with the great complexity of multilinguality. Specifically, the main focus of interest of the studies presented has been lexical multilinguality – the way lexical items and phrases are stored by multilingual language users, how they access and retrieve them in both, automatic language tasks such as associations and conscious language production tasks such as translation.

The observations on processes involved in the tasks of lexical retrieval (search) were recorded and discussed on the basis of thinking aloud protocols (simultaneous introspection) and retrospective comments of the subjects. They demonstrated that lexical search processes are not only lexical in nature; they also involve syntactic and phonological processing as important elements in lexical competence. It seems to me that the detail of the earlier chapters may have obscured exactly where further research should go from this point. So, I propose to offer some brief comments on how my studies (and other studies overviewed) can be developed – both in terms of their content focus and the methodology employed – to give a more elaborate picture of the phenomenon of multilinguality, and the mental lexicon specifically.

I also intend to indicate here the areas where certain pedagogical implications can be identified and didactic measures taken to facilitate the multilingual development of learners. However, I have not focused in any detail on what specific classroom practices could be employed, since this task would require a separate monograph on the specific teaching/learning context, taking into account important variables such as age of acquisition, language proficiency or language configuration. This falls, in my view, beyond the scope of the book.

The studies presented here describe the particular context of multilingual development, in which the chronology of languages learnt in sequence was reflected in decreasing language proficiency. Advanced competence in L2 versus intermediate in L3 and elementary in the case of quadrilingual language subjects is most commonly observed in the formal instruction settings described. My findings refer to this instructional context alone. So, the results obtained for example in a naturalistic setting, in which changing language dominance may lead to the processes of attrition of L1 or L2 caused by L3 dominance will most definitely be different. I would contend that different types of motivation and language exposure lead to the development of different multilinguality patterns in terms of storage, access and processing.

2. Multilingual complexity

The major focus of this book has been to present key aspects of how lexical multilinguality is organized and how it might function in a formal instruction context. It was grounded in the belief that multilinguality, here mainly trilinguality, is not comprehended by a mere extension of bilingual models but represents a much more complex phenomenon. This complexity can be observed at different levels of language knowledge and functioning in those languages. This complexity is manifest at the level of:

- cognition (the conceptualizing breadth of a multilingual),
- linguistic resourcefulness (the multiple linguistic reference systems that can be employed),
- educational experiences (an extended learning experience observed in the form of transfer of training and transfer of learning),
- affective functioning (motivational differences in the use of individual languages in a multilingual's possession, different dominance areas for individual languages, attitudes and social functions).

At the same time, the major factors affecting multilingual development interact with each other and this adds to the possible variety of patterns in multilingual development and production. Odlin and Jarvis (2004: 124) in their study on cross-linguistic influences observed once again that in the learning of L3 (English) by Finnish and Swedish-speaking subjects, the following variables significantly shape multilingual production beyond the second language: "(...) language distance, source language proficiency, target language proficiency, order of acquisition of languages, activation of source languages, formality of context, and constraints on verbal memory".

The factors which O d l i n and J a r v i s see as “most prominent” (ibid.: 17) in their data are: psychotypology, proficiency and overgeneralization. They also stress that: “(...) the outcomes of cross-linguistic influence involve more than what a traditional contrastive analysis might predict. The interaction of factors such as proficiency with structural contrasts can lead to a highly diverse set of outcomes” (ibid.: 19).

In the studies and arguments presented in this book, these assumptions were discussed in detail in particular chapters and their general validity demonstrated. However, what came to the fore was the crucial impact transfer of training and learning experience had on an individual’s multilingual production.

The studies in this book were drawn from groups of subjects that were fairly homogenous in their multilingual characteristics; nevertheless, some individual variability could be observed. Different aspects of the complexity of individual multilinguality (e.g. type of learning style or personal characteristics) which were observed in particular subjects contributed, for example, to the emergence of different patterns of lexical processing or different levels of language awareness (based on individual affectivity). This strongly suggests that as Aronin and O’Laoire (2001: 2) put it

Every multilingual possesses a real concrete multilinguality of her own. Understanding the essence of multilinguality, its mechanisms and typical types will serve to enhance language learning and personality enrichment. It gives the researchers the guidelines to investigate the linguistic evolution from within.

Such a perspective was deployed in the approach of this book. A summary of the major findings on different aspects of a multilingual mental lexicon will be presented, as well as on the importance of language awareness which emerged in the course of these studies as a significant factor in multilingual development. These things are highlighted, together with some possible implications for and ways forward in future research and pedagogical practice.

3. A fuzzy multilingual lexicon

The term “fuzzy lexicon” was first used by Aitchison (1994: 356) to indicate that nothing is fixed in the way we store words. It is constantly changing under different conditions and in accordance with variables such as individual learner language proficiency, learning history, and many others, all interacting with each other variously, at different levels in a dynamic fashion

(as in Herdina and Jessner's Dynamic Model of Multilingualism discussed in Chapter One). It is, therefore, difficult to disagree with Singleton's (2003: 176) suggestion that

(...) when we encounter new languages we rapidly make judgements about their relationship to languages we already know and in processing terms exploit the lexical sources in those already established languages accordingly, typically prioritizing those languages which we deem to be most useful and making more selective use of those we see as less relevant.

As is rightly claimed, this prioritization gives evidence of separation of multilingual mental lexicons. At the same time, however, what is observed are varying degrees of interconnectivity between lexical items of different languages evidenced in processing data (see study 3).

In his critical overview of multilingual mental lexicon studies (Singleton 2003), he focuses on different areas of controversy still unresolved in both, confirmatory and contradictory data derived from various studies, pointing out the impossibility at the moment of answering definitively certain questions about the multilingual mental lexicon. These areas are:

- cross-lexical interaction in multilingual performance and the factors contributing to it,
- aspects of integration versus separation of the multilingual lexicon and evidence for it,
- appropriate models of multilingual lexical processing.

As Singleton (*ibid.*: 170) stresses, all the overviewed studies on cross-lexical interaction support arguments illustrating the occurrence of this interaction, which leads to these conclusions about the integration of languages of a multilingual at the lexical level of processing:

1. Jessner's study (2003) of retrieval strategies in L3 production demonstrates the cross-consultation between L1, L2 and L3 of subjects.

2. Gibson and Hufeisen (2003), Hall and Ecke (2003) once again show psychotypology and perceptions of lexical similarity as contributing factors in lexical decisions made by multilinguals.

3. Schnopflug (2003) focuses on the conceptual dimension of multilingual lexical competence (e.g. the concreteness of lexical items) and discusses its contribution to interlingual interaction.

4. Spottl and McCarthy (2003), on the other hand, give evidence of the absence of this interaction at the level of formulaic utterances, but, at the same time, they attribute it to the subjects' lacking idiomatic competence.

5. Franceschini *et al.* (2003) assume on the basis of brain-imaging techniques measuring brain activation during language processing that there are close connections between the lexical activity of subjects in different

languages, as it is the same areas of the cortex that are activated in language activity (such as language production or even thinking).

6. Dijkstra's claim (2003) that lexical items similar in form are activated simultaneously (based on experimental data on word recognition, among other things) supports the integration argument for the multilingual mental lexicon. This, however, has to be viewed with caution because as Singleton (2003: 173) points out contextual constraints bring about different activation patterns and thus, only relevant meanings are activated. Even Dijkstra himself introduces some caution in his initial interpretation of full integration by talking about "different levels of activation".

As far as models of multilingual processing are concerned, various researchers present adaptations of the well-known model of Levelt (1989, discussed in Chapter One). One such adaptation is Muller-Lance's (2003) and Wei's (2003) models of multilingual processing. They adapt Levelt's perception of the separation of lexical and grammatical processing. As Singleton (2003: 174) succinctly puts it, they see a multilingual lexicon as: "(...) represented as a store of declarative (essentially static) knowledge which is separate from the 'knowledge of the world' and from grammatical encoding procedures".

Also Franceschini *et al.* (2003) in their study postulate a unitary system on the level of semantic (lexical) processing and a separate one for syntactic processing. However, this perception is vulnerable to criticism, as further evidence shows (Singleton 1999 and 2000, and study 3 in this book) that lexical and syntactic processing are inseparable in multilinguals, for example, in the context of lower language proficiency in L3.

The studies presented in this book did not set out to build a model of a trilingual mental lexicon, but rather aimed at highlighting the dynamic character of multilingual lexical knowledge due to the continuous interaction of the different variables discussed in each of the studies.

The data gathered in the automatic recall tasks, association tests and association chains (studies 1 and 2) demonstrate certain patterns of storage characteristic of a multilingual mental lexicon and its dynamic character, attributable to the operation of the above factors and to their developmental nature.

Automaticity in the performance of language tasks (studies 1 and 2) does not allow for language processing and elaborate lexical search within a multilingual lexicon. It strongly suggests that the data is produced as if subconsciously and thus, can show the structural organization of the lexicon at the internal level. As mentioned in the description of the studies, several different ways of organizing lexical items as entries in the lexicon were initially considered responsible for its internal structure.

The stimulus words used in the studies were classified according to their grammatical characteristics, in other words, a contrast was implicitly set up between the storage of content and grammatical words, and concrete versus abstract lexical items. Also, the transferability of concepts between languages (i.e. their semantic links) was analyzed in the data collected.

Summarizing the detailed discussion of the studies on multilingual lexical storage presented in Chapter 2 (study 1 & 2), it should be noted that:

1. The **conceptual structure** of a multilingual mental lexicon is different for the different languages of a multilingual. The languages share certain universal and experiential concepts, however, when they carry certain affective characteristics (for example, the concept of *home*), they are very much "coloured" by the cultural background and national values of individual groups of multilinguals (Polish versus Portuguese in the studies discussed here). At the same time, this is only true of the L1 lexicon. It seems that there are constraints on the transfer of concepts. The same stimulus words in L1 versus L2 and L3 bring automatic recall of different words and hence, different concepts. In the case of learnt languages, there are more instances of language chunks recovered, as they were probably learnt in that form and so represent a direct transfer of training. It should also be stressed that lexical competence is dynamic – which means that growing language competence will result in the restructuring of concepts in L2 and L3/Ln, especially if language dominance and exposure change. L1 concepts are separate, whereas L2 and L3 have more overlap. This, however, does not provide evidence for shared conceptuality but rather for the structuring nature of competence and ways of learning, and for a greater degree of integration between these two lexicons.

2. **Different linguistic characteristics of a word**, that is lexical versus content word categories, show distinctive patterns of storage and automatic recall. **Lexical words** form conceptual links, which grow in strength with developing lexical competence. The L1 mental store is experiential, culture-grounded and more idiosyncratic, whereas L2 (advanced level) gives evidence of its mode of lexical acquisition but also reveals its growing conceptuality. L3 (pre-intermediate/intermediate) structure shows lexical links (translation equivalents), which suggests L3 integration with the other two languages (more often L2, since it is perceived as closer to L3 than L1). It seems, therefore, that there is a certain continuum from the most conceptually based, most proficient lexical competence in the mother tongue, through a less proficient and less conceptually based (but still approximating to the L1 model) L2 lexicon to the learner's least developed mental lexicon in L3/Ln. **Grammatical words**, semantically empty or imprecise/ambiguous when decontextualized, bring about antonyms always within the same word category, metalinguistic comments demonstrating

the subjects' degree of grammatical awareness in the respective languages, or translation equivalents when associating across languages as if consulting a bilingual dictionary. No instances of lexical chunks as responses to grammatical word stimuli were recorded in the tests which suggests that they may not be stored as such, or are not activated by a function word stimulus (one which is not fully transparent semantically).

3. **Lexical connectivity** in a multilingual lexicon is seen in literature on the subject as the ability to produce automatically various patterns of associations. The more competent the language user, the shorter the process of connecting words together should be. Association chains, in which both input-stimulus and output-response are given, are used as a method of measuring connectivity (as described in study 2) and can demonstrate the strength of connections by the length and completeness of the chains produced. It was assumed that the shorter/the more complete the chains, the greater the degree of lexical connectivity, reflecting the fact that lexical access is easier and quicker. The hypothesis that the above characteristics correlate positively with language proficiency as the main variable was not confirmed in the study discussed. It seems that it was rather the types of words (concrete versus abstract ones) and the affective domain which contributed to the strength of connectivity between items. They all shared the general characteristics of being grounded in well-known universal scripts, media knowledge and idiosyncratic experiences of the subjects.

In trying to establish a hypothetical model for a trilingual mental lexicon in the case of the subjects participating in the study, their trilinguality has to be characterized in terms of the mutual relations between the languages L1, L2 and L3, whether they be subordinate, compound or coordinate. It can be assumed that two factors will contribute significantly to this characterization, namely language proficiency and the typological closeness of the languages involved. The subjects can be described as co-ordinate bilinguals, whose native proficiency and advanced level of English (L2) allow their L2 mental lexicon to function in a fairly independent fashion from their L1 mental lexicon, which was confirmed by the data.

At the same time, with a much lower proficiency in L3 (German), an additional language learnt will form a system dependent on one of the other languages. Following Singleton (2000) and other researchers, it is reasonable to believe that language typology will determine the direction and degree of dependency. In these studies, L2 and L3 are both Germanic languages and the subordinate character of L3 lexical items to L2 can be observed in the data. The character of the relations will change, however, with growing language proficiency. In his discussion of the L3 dimension of a mental lexicon, Singleton (*ibid.*) proposes to view it at three distinctive stages of L3

acquisition: very early stages, later stages and very advanced stages. The development of a trilingual lexicon will accordingly follow the pattern for L3:

Subordinate → Compound → Coordinate

Relations of a subordinate and compound character will occur between the languages typologically closer.

To apply Singleton's hypothesis to the studies presented here, the development of the L3 mental lexicon may observe the following stages:

STAGE 1 (early acquisition):		
Polish/Portuguese forms (L1)	English forms (L2)	German forms (L3)
Coordinate		Subordinate
Polish/Portuguese meanings	English meanings	
STAGE 2 (later acquisition):		
Polish/Portuguese forms	English forms	German forms
	Compound	
Polish/Portuguese meanings	Shared meanings	
STAGE 3 (very advanced):		
Polish/Portuguese forms	English forms	German forms
	Coordinate	Coordinate
Polish/Portuguese meanings	English meanings	German meanings

Of course, the above model represents a simplified version of a multilingual lexicon, since within each language different representational systems can function depending on other individual factors, such as the mode of acquisition or learning of each of the languages.

The tasks used in studies 1 and 2 looked at the multilingual mental lexicon as a structure via the agency of a time-constrained activity, such as automatic recall. To complement these data, Chapter Three examined multilingual lexical processing, language activation and inhibition without time constraints, where the subjects could freely process the languages and make cross-linguistic references. Furthermore, their thinking processes were registered and observed in introspective (verbalized) comments made at the time of processing.

4. Language activation beyond L2 in multilingual language processing

The study (no. 3) described in Chapter Three elaborated on the activation and inhibition of languages in a trilingual performance task. There has been a lot of research done on language activation (selection) and the roles different

languages play in multilingual performance. Different degrees of language activation – described by Dijkstra and van Hell (2001) as **relative activation of languages** – indicate that there is a whole array of factors that contribute to language selection and speed of activation. One of the studies most prominently quoted is that of Williams and Hammarberg (1998) who investigated language activation in their code-switching data with the view to describing different roles performed by L1 and L2 in L3 performance. Apart from the widely held belief supported by research data that typological similarity and perceived language distance and proficiency level will be decisive factors in cross-linguistic consultations of a multilingual, they demonstrated that: “L2s appear more likely to be activated than the L1 as supplier language during the early stages of L3 acquisition” (ibid.: 31).

Possible explanations for this type of relation between languages were provided:

- an L3 acquisition mechanism is different from that of L1 – learning L3 involves a similar mechanism to be activated as was the case with L2 (learning and not acquisition),
- activation of the mechanisms leads to activation of the language itself,
- suppression of L1 as a “**non-foreign**” and reference to another **foreign language**, i.e. L2 as a learning/processing strategy.

It may be assumed that the activation of L2 in the case of the above study occurred mainly because of the lexical proximity of German (L2) and Swedish (L3), however, other studies also supported the assumption that it is learning experience (learning mechanisms activated) or other factors, but not necessarily language typology that will make L2 a supplier language and suppress L1. Among others, Selinker and Baumgartner-Cohen (1995) observed this in their subject lexical transfer from L2 Hebrew into L3 German and not L1 (English), though English would seem to be a natural candidate for a supplier language in this language constellation.

What was recorded in the studies discussed in this book confirms the above observation on the role L2 English performed in lexical consultations, mostly in the L2 (English) input task, but not in the L1 input task, where L2 did not seem to surface (study 3a). Dijkstra & van Hell (2001) similarly observed the role surface language performs in language selection in their study on the language activation of trilinguals:

Lexical candidates of different languages known by the proficient trilingual seemed to be activated on the basis of an input word (a) irrespective of whether the target language was L1 (Dutch), L2 (English), or L3 (French); (b) in different tasks such as word association (having a production component), lexical decision (visual comprehension), and eye-movement tracking (auditory comprehension); (c) in stimulus lists that were mixed or blocked with respect to language (...).

Dijkstra's and van Hell's and my observations can be explained by the language mode a multilingual sets him or herself in and by bottom-up (signal-based) processing.

Apart from L2 activation at different levels of multilingual performance, what was emphasized in the analysis (study 3) of L1, L2 and L3 selection in verbalized comments during the performance of the translation tasks, was a high degree of L3 activation despite the lowest level of competence in this language. L3 is most often selected at different stages of processing the text, especially at the conceptualisation and articulation stages. This is mostly activated for cognitive purposes, demanding from the learners a certain degree of metacognitive/metalinguistic awareness.

This observation can probably be explained by the personal data of the subjects, specifically their learning histories and levels of competence in L2 and L3. Lower levels of competence in L3 (German) than in L2 (English) make the subjects focus more on form, which is confirmed by the recording of metalinguistic comments. The subjects tend to focus their analysis on metacognitive processing, mainly on the language areas characteristic of German and perceived as difficult: these are processed explicitly and so, formal knowledge of the subjects is employed extensively. Even the metalanguage used is in L3 (e.g. terms for syntactic categories).

One of the factors from the subjects' learning history that may be particularly significant is transfer of training. First of all, the native speaker of German as language instructor, and classroom communication carried out in L3 exert an influence on the subjects' need (or a developed routine as part of the teacher's demands) to use this language. At the same time, it means intensive exposure to L3 and consequently, ascribes a naturalness to its use. Secondly, the subjects were taught by traditional methods as far as grammar instruction is concerned, i.e. explicit instruction in L3 grammar, which resulted in the development of their metacognitive and metalinguistic awareness.

Thirdly, translation is treated as a meaningful learning task, in which prior knowledge of L1 and L2 should be utilised. However, these two language competences are applied differently and have different status in processing. The former is the intuitive knowledge of a native speaker and its use results in automatic processing of the text, whereas the latter is acquired explicitly through formal classroom instruction and is perhaps enriched by a repertoire of learner strategies that they are trained in or they develop with growing learning experience. The contribution of implicit L1 knowledge to the translation tasks seems to be insignificant, and, indeed, what is needed is more explicit metacognitive awareness in the subjects. This would allow them to manipulate the L1 text to much greater effect, as was observable in the translation of the L2 text into L3.

These findings from the study point to the fact that the language processing of multilingual language users is very much determined by individual factors and only partly by innate language characteristics, because even these are often described as psychologically determined and not objectively existing phenomena, e.g. personal perceptions of language distance. This reflection obviously means that the aim of describing models of language processing is a very elusive one and may result in as many different constructs as there are subjects and only certain tendencies can be tentatively indicated. The study discussed in Chapter 3 contributes to the description of the nature and complexity of these processes by showing certain of these tendencies.

5. Multilingual lexical research and pedagogical implications: the way forward

To conclude, what seems to be needed in terms of developing **multilingual (lexical) research** is, first of all, replication of the studies carried out so far to be able to confront certain disparities and anomalies observed in the data received. Of course, it is extremely complicated – in terms of interpreting the complex features of multilinguality and creating homogenous experimental conditions. In short, rigorous and challenging research design is needed. Will we ever be able to create a model of the multilingual mental lexicon? It must be open to doubt. Yet, a set of models for a certain set of variables present in a given multilingual configuration seems more or less feasible.

Secondly, it seems necessary to deal with the two contexts of multilingual development separately: multilinguality in natural settings as opposed to multilinguality through formal instruction. As research has so far pointed out, the mechanisms involved are different or, at least, partly different.

Thirdly, it is a combination of different factors in the research, such as the cognitive, affective and social, that interact as variables contributing to the processes of multilingual development and as a consequence of this, multilingual research is bound to be interdisciplinary.

Fourthly, there is an urgent need to develop longitudinal studies because only such research can substantiate the premise that multilinguality is a dynamic process – not only across the languages involved in acquisition but across a time span, as well.

Fifthly, it seems that not much research has been done into the attitudinal aspects of multilinguality, except perhaps for the studies of Cenoz and Lasagabaster in the Basque Country, and Aronin in Israel. The role of attitude and the so-called AQ (Attitude Quotient) is seen as a significant variable in

educational psychology and second language learning (A r a b s k i 2004), and, consequently, should be incorporated into multilingual studies with their complexity of language constellations interacting with learners' motivations, affective characteristics and social needs.

It also has to be stressed that the research methodology and data elicitation tools that can take account of the complexity of multilinguality have to be multidimensional. Not only a rigorously applied experiment, but also the subjects' perception of the problems aired in their explicit thinking aloud and reflections via self-reports (questionnaires, diaries, etc) are required to create a more holistic picture.

Important **didactic implications** for classroom pedagogy can be derived from the studies analysed in this book following on from the observation that even experienced and successful in L2 multilinguals are not fully aware of how their learning experience and language awareness in their first foreign language (L2) can contribute to the acquisition of another foreign language.

Secondly, the attitude to the mother tongue and perception of its interference with learning foreign languages needs revision. The development of L1 language awareness, as discussed in detail in Chapter Four, can have an palpable and positive effect on foreign language development in formal contexts of instruction.

Thirdly, the understanding of the idea of "language awareness" operating on the level of form (e.g. metalinguistic awareness, familiarity with metalanguage) and on the level of content (e.g. conceptual universality as reflected in languages versus culture-grounded concepts), and its application to multilingual development should find a place of prominence in educational practice through cross-linguistic comparison and experimentation with languages and across-languages.

My closing thought is to emphasize the advantage of going beyond bilingualism by learning a further foreign language, by recalling the words of a distinguished researcher and multilingual himself, Michael C l y n e (2003: 48):

On the basis of experience and observation, I would speculate that the acquisition of a third language could have a positive effect on the languages of bilingual. It can provide both metalinguistic awareness and a kind of intrinsic motivation that encourages a young person to value better the asset that bilingualism is.

I believe that becoming a multilingual recharges a person with extra resources, new concepts, fresh perspectives. Greater understanding, flexibility and creativity flow from this multiplicity.

Appendices

Appendix 1

1. Association task (based on a modified version of the Kent-Rosanoff list of stimulus words) – the English version

Instructions for the subjects

You will find 100 words in English on the following pages, respond to each of the words with the first word that comes into your mind; do not return to your first responses again, do not correct anything – there are no wrong responses. Your time limit is 15 minutes.

- | | |
|---------------|---------------|
| 1. table | 27. river |
| 2. dark | 28. white |
| 3. she | 29. beautiful |
| 4. sickness | 30. window |
| 5. man | 31. rough |
| 6. deep | 32. if |
| 7. soft | 33. foot |
| 8. you | 34. spider |
| 9. mountain | 35. needle |
| 10. house | 36. red |
| 11. black | 37. sleep |
| 12. mutton | 38. anger |
| 13. although | 39. carpet |
| 14. hand | 40. girl |
| 15. short | 41. high |
| 16. fruit | 42. working |
| 17. butterfly | 43. sour |
| 18. smooth | 44. earth |
| 19. command | 45. trouble |
| 20. chair | 46. soldier |
| 21. sweet | 47. into |
| 22. whistle | 48. hard |
| 23. woman | 49. eagle |
| 24. cold | 50. stomach |
| 25. slow | 51. stem |
| 26. and | 52. lamp |

- | | |
|--------------|--------------|
| 53. dream | 77. hammer |
| 54. yellow | 78. thirsty |
| 55. bread | 79. city |
| 56. justice | 80. square |
| 57. boy | 81. butter |
| 58. light | 82. doctor |
| 59. health | 83. loud |
| 60. bible | 84. hers |
| 61. memory | 85. lion |
| 62. sheep | 86. joy |
| 63. bath | 87. bed |
| 64. they | 88. heavy |
| 65. swift | 89. tobacco |
| 66. behind | 90. baby |
| 67. hungry | 91. moon |
| 68. priest | 92. scissors |
| 69. ocean | 93. quiet |
| 70. head | 94. green |
| 71. stove | 95. outside |
| 72. long | 96. street |
| 73. religion | 97. king |
| 74. whisky | 98. cheese |
| 75. child | 99. these |
| 76. bitter | 100. afraid |

2. Learning profile (a questionnaire)

1. Name: Group: Year:
2. Evaluate your competence in English:
 - a. very good
 - b. good
 - c. satisfactory
 - d. unsatisfactory
3. Your strengths in English:
4. Your weaknesses in English:
5. How long have you been learning English (in years)?
6. Your English teachers are/were:
 - a. non-native speakers/at which stage?
 - b. native speakers/at which stage?
7. Your exposure to English:
 - a. a stay in an English speaking country? Where? How long?

- b. English friends in your country?
- c. Mass media (TV, radio, internet), on a regular basis or not
- d. Other (specify):

8. Knowledge of other foreign languages (enumerate them):

- a.
- b.
- c.

9. Evaluate your competence in the other foreign languages:

- a. very good/good/satisfactory/unsatisfactory
- b. very good/ good/satisfactory/unsatisfactory
- c. very good/good/satisfactory/unsatisfactory

10. How long have you been learning the other foreign languages?

- a., where?
- b., where?
- c., where?

11. When did you start learning these languages compared with English learning (before, after, simultaneously)?

- a.
- b.
- c.

12. Your teachers of the other foreign languages were:

- a. non-native speakers, at which stage?
- b. native speakers, at which stage?

13. Comment on your experience of learning other foreign languages:

- a. easier to learn than English?
In what respects? Comment
- b. More difficult than English?
In what respects? Comment

14. Does your knowledge of English:

- a. help you learn other foreign languages? How?
- b. impede your progress in other foreign languages? How?

15. Why have you learnt/are learning other foreign languages? Give your reasons for each:

- a.
- b.
- c.

16. How would you describe yourself as a foreign language learner?

.....

Appendix 2

Association chains task (the English version)**Instructions given to the subjects**

1. Complete the association chains, follow the example given below.
2. Put down the associations that come first to your mind.
3. Do not go back to the association chains you were not able to complete, mark them as unfinished (incomplete). Time limit: 10 minutes.

Example:

Stimulus word: sea Final word: butterfly

Association chain: sea blue sky fly butterfly (from Meara, 1996).

1. dark square
2. lion memory
3. butter red
4. tobacco high
5. whistle whisky
6. hand city
7. outside inside
8. you dream
9. cheese afraid
10. thirsty smooth
11. table hammer
12. light quiet
13. doctor black
14. foot scissors
15. long bath
16. anger beautiful
17. bed cheese
18. spider priest
19. loud command
20. memory stove

Appendix 3

1. The texts used in the translation task (source: *Jornalio de Noticias*, 1996)**L1 input text (Portuguese)**

Nova comissão no vinho do Dão

Um alerta para a 'necessária atenção a evolução dos mercados' foi dado ontem era em Viseu pelo secretário de Estado da Produção Agro-alimentar, Cardoso Leal, durante a tomada de posse de novo presidente da Comissão Vitivinícola Regional do Dão (CVRD), Jorge Teixeira. A CVRD mudou ontem de dirigente máximo – o representante do Governo entre três elementos, que representam também o sector cooperativo e privado dos vinhos do Dão – que era anteriormente Álvaro de Figueiredo e passa a ser Jorge Teixeira, um conhecido elemento ligado ao PS e que agora promete 'um marketing agressivo', para continuar a tarefa de Figueiredo, iniciada em finais da década de oitenta. A cerimónia de tomada de posse do novo presidente da CVRD foi marcada pelo discurso de Álvaro de Figueiredo. Este antigo deputado do PSD, que muitos concordam ter mercado os vinhos do Dão profundamente nos últimos anos, fez um balanço necessariamente positivo da sua actividade à frente da comissão. 'De um clima de estagnação, a região demarcada passou para uma situação de evolução tecnológica e comercial adaptada aos novos tempos', disse Álvaro de Figueiredo, que se congratulou ainda pela existência actualmente de mais de 20 produtores-engarrafadores (que produzem o já afamado 'vinho do quinta do Dão'), de seis centros de vinificação e da reestruturação completa de sete das dez adegas cooperativas de vinhos da Região Demarcado do Dão.

L2 input text (English)

New wine commission for Dão wine

Yesterday, at the inauguration of Jorge Teixeira as the new president of the Dão Region Vintners Commission (CVRD), in Viseu the Secretary of State for Agriculture and Food, Cardoso Leal, called attention to "the need to develop markets". Jorge Teixeira, who is well-known in the PS, has promised to continue the work started by his predecessor Alvaro de Figueiredo with "aggressive marketing". Jorge Teixeira, as President of CVRD, will now be one of the three representatives to the Government for the cooperatives and private sectors of Dão wine producers. The inauguration ceremony of the new president of the CVRD was punctuated by a speech given by Alvaro de Figueiredo. This ex-member of parliament for the PSD, who many will agree has affected Dão wines profoundly in the last few years, gave a necessarily positive summing up of his actions whilst in charge of the commission. "From the climate of stagnation, the official region has moved on to a situation of technological and commercial development adapted to these modern times", said Alvaro de Figueiredo, who also congratulated himself on the existence of more than 20 producers-bottlers (who produce the already famous "wine from Dão"), six wine centres and the complete restructuring of seven of the ten co-operative cellars of the official Dão Region today.

2. Translation into German

Eine neue Weinkommission für Dão Weine

Gestern, bei der Amtseinführung von Jorge Teixeira als neuer Präsident der Dão Region Vintners Kommission (CVRD) in Viseu, betonte der Staatssekretar für Landwirtschaft und Ernährung,

Cardoso Leal, die "Notwendigkeit Märkte zu entwickeln". Jorge Teixeira, in der PS bekannt ist, versprach die Arbeit, die sein Vorgänger in Form von "aggressivem Marketing" begonnen hat, fortzusetzen. Jorge Teixeira wird nun als Präsident des CVRD einer der drei Repräsentanten der Regierung sein, die für die Kooperativen und den Privatsektor der Dão Weinproduzenten zuständig sind. Die Zeremonie zur Amtseinführung des neuen Präsidenten des CVRD bekam ihren Höhepunkt durch die Rede von Alvaro de Figueiredo. Dieses ehemalige Parlamentsmitglied der PSD, das – und dabei werden mir viele zustimmen – Dão Weine in den letzten Jahren entscheidend beeinflusst hat, gab ein entsprechend positives Résumé seiner Amtszeit als Verantwortlicher der Kommission. "Von Klima der Stagnation ging das Amtsgebiet zur Situation der technologischen und kommerziellen Entwicklung über, die der modernen Zeit angemessen ist", erklärte Alvaro de Figueiredo, der sich selbst zur Existenz von mehr als 20 Flaschenproduzenten (die den schon berühmten "Wein aus Dão" produzieren), von sechs Weinzentren und zur Umstrukturierung von sieben der zehn Co-Kellerbetriebe im gegenwärtigen Amtsgebiet beglückwünschte.

3. Thinking aloud protocols (TAPs) – two sample transcripts (unedited language)

A) L1 input task: translation from Portuguese into German (L1 → L3)

Subject 3

(reads) (.5) Tomo um (.4) wein (.5) vinho em alemão e wein (.) temos aqui in der (...) Dão, e ora, não e, agora, não convem traduzir a comissão Dão (.4) in ein (...) isto pode ficar em portugues, não vamos agora traduzir nomes propios – um alerta – um alerta – pode ser um (...) ein – eine (.3) anmerkung (reads) atenção a evolução dos mercados – dos mercados – evoluir (.2) evoluir – atenção (writes) Eine Anmerkung für (1) atenção – für – necessario atenção (...) e melhor passar isto para o fim (...) talvez retira – e um alerta e foi dada (writes) wird gestern in Viseu (...) bei der secretariat für (...) produção agro-alimentar – e agora como e que isto fica – agro-alimentar (.1) (writes) für die – für die – milchproduktion – pode porque (reads) wird gestern bei der Sekretariat der Milchproduktion – esta mal mas não faz mal Sekretariat – não – bei der agro-alimentz (reads) Cardoso Leal – e o nome do homem – wird geben (reads) como e que isto fica (.2) (reads) eine anmerkung (.x) gegeben in (...) (writes) während des neuses präsidnt (reads) während des neuses – agora não sei se präsidnt – e agora a não ser – o genero da palavra präsidnt – vitivinicola agricola e como cada palavra (.x) comissão (reads) während des neuses präsidnt (writes) dieser Gesellschaft (.2) Jorge Teixeira eingenommen wurde – wurde (reads) während des neuses Präsident dieser Gesellschaft – Jorge Teixeira – eingenommen wurde. Ein Anmerkung – gehen eine Anmerkung – falta aqui uma parte (.x) (reads) um alerta para a necessaria atenção a evolução dos mercados – necessaria atenção a evolução dos mercados (.3) möglich aufpassung – aufpassen – Aufpassung (...) (writes) Cardoso Leal vor mudar uma parte da frase se não – ich denke tem de encaixar de de (...) maneira (writes) Cardoso Leal hat (.1) gesagt – das man (.3) man (...) tomada de atenção (...) man muss aufpassen – man muss – das man (.x) man muss aufpassen – man muss dass man darauf aufpassen – auf der immer (...) mercados – mercados – mercados – market – market – business (reads) (...) auf die immer grossere (...) debaixo da ligar – auf die immer grossere (writes) gewordene mercada – mercados – fica para mais tarde – pode porque venho i-pode porque (.x) ponto. (reads the whole paragraph).

B) L2 input task: translation from English into German (L2 → L3)

Subject 3

(reads) at the inauguration of Jorge Teixeira as the new president – hm – of the Dão region Vinters Commission – ok – Gestern während – hm – não sei – die Inauguration – I don't know

– Inauguration – von Jorge Teixeira als – als – dativ – no accusativ – als (...) als (...) what – so, als neuen – não – eh – Präsident – hm – der komition – how should I know – der komition des Vitners Dão Gegend (laughter) – hm – CVRD – komma – in Viseu der – hm – der what – what's he called – Staats hm Sekretar für Landwirtschaft und Essen – essen – ok – und essen – Cardoso Leal (.x) so where was I – Landwirtschaft und Essen Cardoso Leal – call attention (twice) must nach (laughter) hm – I don't know – hm – called attention – Attention – nein – pass auf – nein – (.x) – pointed out – called attention (laughter) say it the other way – hm – hat gesagt das es war – ne es ist (.) sehr wichtig – hm – neu – como se escreve – how do you write neu – neu markets – I don't know – neue – neue – kaufen Platz – Plätze – Kaufen platze – zu bauen oder so was (.3) so (reads) Jorge Teixeira who is well known in – der – den – hm – I don't know – der – well known – is important – hm – recognized – hm – den – berühm in PS ist (reads) has promised to continue the work (...) promised – God – promise – verspr spre – versprochen – ok – Jorge Teixeira hat versprechen – ne – hat – has promised to continue the work started by his prede – hat versprochen – das ein – die werk – main dein sein sein – predecessor whatever – I don't know how to say that – die werk sein – hm – weiter führen – hm – hat versprochen – das die werk sein – etwas – wieter führen – wurde (...) werde wurde werden nein – dass es die werk sein predecessor wieterführen – werd wird – no it is past – has promised to continue – present perfect – to continue the work started by his predecessor – hm (writes) die werk sein predecessor weiter fuhren – let's say wird – oh I forgot something here – hat versprochen – dass es die werk sein (.3) predecesor (...) Alvaro de Figueiredo weiter führen wird mit (laughter) aggressive marketing – right – I don't know – it is probably marketing in German as well – mit aggressive – stark – mit stark marketing (twice) – it's international – isn't it – hom predecessor (laughter) Jorge Teixeira again – als Präsident – der den die – how should I know – Komition die probably – als Präsident (.1) CVRD (reads) will now be one of three representatives (.1) hm (.1) wird jetzt ein der – ein oder – ein der (.10) where was I – I lost myself – where am I – will now be one of the three representatives – ein der drei – drei drei – representatives don't know – für die regierung – regierung – I don't think it is Regierung – whatever – God – für die regierung – für die cooperatives – und privat Sektoren (.1) hm producers – I don't know Produktoren – so für die cooperatives and private (.4) oh – für die – hm – und privat Sektoren der – I don't know – der Dão Wein Produktoren – (reads) the inauguration ceremony – ceremony – ceremony – I don't know – Zeremon (laughter) the inauguration hm (.1) ersten Tag – I don't know (.1) really really really don't know – let's say inauguration ceremony of the new president of the CVRD (writes) the inauguration ceremony für den neuen Präsident der CVRD.

Multilingual language awareness (a questionnaire)

Part 1. Language awareness in general

Personal data

Institution:

Year of studies:

Languages

Level:

L1 Polish – native speaker

L2 –

L3 –

L4 –

1. Your associations with the term language awareness:

.....

2. Your definition of language awareness:

.....

3. What is L1 language awareness?

Give examples:

4. What is L2/L3 language awareness?

Give examples:

5. How important is L1 language awareness in foreign language learning?

Evaluate on the scale of 1–10 points:

Give examples:

6. How important is L2/L3 language awareness in L2/L3 language learning?

Evaluate on the scale of 1–10 points:

Give examples:

7. How does one develop language awareness (methods, strategies, tasks, materials, etc)

in L1:

in L2/L3:

the teacher's role

.....

the learner's role

.....

8. Evaluate yourself as linguistically aware language learner/user (on the scale of 1–10 points)
in L1:
in L2:
in L3/Ln:

9. Other comments

Part 2. Multilingual lexical awareness

Complete the following statements:

1. Lexical awareness is
2. Lexical awareness in L1 means
3. Lexical awareness in a FL can be described as
4. When learning FL vocabulary, lexical awareness in L1 helps in
5. When learning FL vocabulary, lexical awareness in L1 interferes with

Appendix 5

Multilingual mental lexicon: learners' perspective (a questionnaire)

Institution:

Profile of studies:

Year of studies:

1. Languages known (background information)

L2:, level:

L3:, level:

L4:, level:

L5:, level:

2. Importance of L1 in foreign language vocabulary learning

Please comment on the importance of L1 in

L2 vocabulary learning:

L1-based vocabulary learning strategies in L2:

L3 vocabulary learning:

L1-based strategies in L3 vocabulary learning:

L4 vocabulary learning:

L1-based strategies in L4/Ln vocabulary learning:

3. Cross-linguistic consultation in L2/L3/L4/Ln vocabulary learning

Please comment in what way different foreign languages you know (L2, L3, L4/Ln) contribute to your FL lexical development

L2 to L3 vocabulary learning:

L2 to L4/L3 to L4 vocabulary learning:

4. Metacognitive knowledge and metacognitive strategies

Please comment on the importance of metacognitive knowledge in vocabulary learning and metacognitive strategies used in

L2 vocabulary learning:

Metacognitive strategies:

L3 vocabulary learning:

Metacognitive strategies:

L4/Ln vocabulary learning:

Metacognitive strategies:

5. Perceived level of difficulty in vocabulary learning

Please comment on the level of difficulty of vocabulary learning in each of the languages you know

L2:, language:

L3:, language:

L4/Ln:, language:

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Danuta Gabryś-Barker

Aspekty kompetencji leksykalnej u osób wielojęzycznych w zakresie przechowywania słownictwa, jego przetwarzania i strategii odzyskiwania

Streszczenie

Praca poświęcona jest zagadnieniu kompetencji leksykalnej i tzw. słownika wewnętrznego (ang. *mental lexicon*) osób wielojęzycznych oraz wpływu języka pierwszego (ojczystego – L1) oraz języka drugiego (pierwszy język obcy – L2) na język trzeci (drugi język obcy – L3).

W części teoretycznej zostało opisane zjawisko wielojęzyczności i podkreślono jego złożony charakter przez porównanie z dwujęzycznością. Dokonano również przeglądu istniejących modeli słownika wewnętrznego oraz badań nad słownikiem osób wielojęzycznych.

W części badawczej pracy zaprezentowano pięć odrębnych projektów, których celem było opisanie struktury słownika wewnętrznego osób wielojęzycznych (ang. *lexical storage*) (badanie 1 i 2), ukazując tym samym pewne tendencje charakterystyczne dla tego zjawiska oraz sposób przetwarzania danych (ang. *language processing*) i stosowane strategie leksykalne (ang. *lexical search*) (badanie 3). Badania 4 i 5 dotyczyły stanu świadomości językowej studentów oraz umiejętności dokonywania jej transferu do kontekstu innego języka. Badania te potwierdziły niski stan świadomości językowej w zakresie języka ojczystego. Zebrane dane pozwoliły na opracowanie wskazówek dotyczących nauczania i uczenia się języków obcych i roli, jaką odgrywa w nich język ojczysty i pierwszy język obcy (L2). W przeprowadzonych badaniach zastosowano różnorodne metody badawcze: testy skojarzeń swobodnych i łańcuchy asocjacyjne, introspekcję symultaniczną i retrospekcję oraz kwestionariusze.

Danuta Gabryś-Barker

Verschiedene Aspekte der lexikalischen Kompetenz von mehrsprachigen Personen im Bereich der Aufbewahrung, Verarbeitung und Wiedergewinnungsstrategien des Wortschatzes

Zusammenfassung

Die vorliegende Arbeit handelt über die lexikalische Kompetenz und das sog. geistige Wörterbuch (engl. *mental lexicon*) von mehrsprachigen Personen und zeigt, auf welche Weise die erste Sprache (Muttersprache – L1) und die zweite Sprache (erste Fremdsprache – L2) die dritte Sprache (zweite Fremdsprache – L3) beeinflussen können.

Im theoretischen Teil wird das Phänomen der Mehrsprachigkeit angedeutet und deren vielschichtiger Charakter mit dem Bilingualismus verglichen. Hier findet man auch den Überblick von heute auftretenden Modellen des geistigen Wörterbuches und die Ergebnisse der Forschungen über mehrsprachige Personen.

Der Forschungsteil enthält fünf separate Projekte, die als Ziel hatten, die Struktur des geistigen Wörterbuches von mehrsprachigen Personen (engl. *lexical storage*) (Forschungen 1 und 2) zu beschreiben und einige für dieses Phänomen charakteristische Tendenzen, die Datenverarbeitung (engl. *language processing*) und die angewandten lexikalischen Strategien (engl. *lexical search*) (Forschung 3) darzustellen. Die Forschungen 4 und 5 betrafen den Stand des sprachlichen Bewusstseins bei Versuchspersonen und dessen Transfer in den Kontext der anderen Sprache. Die durchgeführten Forschungen haben einen niedrigen Stand des sprachlichen Bewusstseins im Bereich der Muttersprache bestätigt. Die angesammelten Daten ermöglichten, manche Hinweise für den Unterricht und für die Erlernung einer Fremdsprache auszuarbeiten und auf die Rolle der Muttersprache und der ersten Fremdsprache (L2) hinzuweisen. In den Forschungen wurden verschiedenartige Forschungsmethoden angewandt: Assoziationsteste, Assoziationsketten, simultane Introspektion, Retrospektive und Fragebogen.

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Aspects of multilingual storage, processing and retrieval

Errata

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43		9	lexical search model	lexical search model
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