Acta Universitatis Wratislaviensis No 3377
Studia Linguistica XXX Wrocław 2011

ZOFIA CHŁOPEK
Wrocław, Poland

Lexical transfer in the written production in a third language – the case of content words and function words

1. Introduction

Since third (or even further) language appropriation[1] and multilingualism have become common world phenomena, there has been a growing interest in the psycholinguistic processes which take place during the appropriation and use not only of a second language (L2), but also of a third or additional language (L3+). Many researchers have particularly focused on cross-linguistic influence (CLI) which takes place in a multilingual mind, since it provides interesting insights into these processes. One area of investigation is the transfer of content words (CWs) and function words (FWs) from the mother tongue and any other language to the target (i.e. currently appropriated) language (TL).

2. Background

2.1. Cross-linguistic influence in L3+ appropriation

'Cross-linguistic influence' (CLI) is a wide term which covers various (positive/negative, intentional/non-intentional, synchronic/diachronic) interactions

[1] In the present paper, like in Paradis (2009), the term '*appropriation*' is used to mean both *acquisition* and *learning* (Krashen 1981, 1982). This is because it is often difficult to draw a distinct borderline between the situation where a person unconsciously develops language competence in natural communication and the situation where they gain conscious knowledge about the language as a result of formal instruction. Only in those parts of the text where either an unconscious or a conscious process is explicitly referred to, I use the terms (respectively) 'acquisition' and 'learning'.

between the (inter)languages present in one mind. These interactions may be observed in the production and reception in any (inter)language,[2] as well as in the efficiency and effectiveness of language development. CLI comprises such phenomena as: 'transfer, interference, avoidance, borrowing and L2-related aspects of language loss' (Sharwood Smith/Kellerman 1986:1), code switching, over-/underproduction of certain language elements, induced by the knowledge of another language, and even the speed of target language appropriation, if it is affected by the knowledge of some other language(s). Some of these phenomena are typical of naturalistic communication in multilingual and multicultural settings, while others are characteristic of the foreign language classroom.

Psycholinguists have investigated CLI in L3+ appropriation at the levels of lexis, syntax, morphology, orthography, phonology and phonetics, and pragmatics (for an overview, see De Angelis 2007:41–63, Jessner 2008, Chłopek 2011:196–243). Several factors have been identified which may shape the direction and intensity of CLI; these are:

(1) typological distance between languages: the closer languages are related, the higher the possibility of interactions between them (Ringbom 1987, 2001, Dewaele 1998, Williams / Hammarberg 1998, Bouvy 2000, Ecke / Hall 2000, Cenoz 2001, De Angelis / Selinker 2001, Hammarberg 2001, Odlin / Jarvis 2004, De Angelis 2005, Gabryś-Barker 2005);
(2) psychotypology, or the appropriator / user's perception of the similarity between the TL and another language known to them (Kellerman 1977, 1983); psychotypology often refers to particular language elements, not whole languages (Stedje 1976, De Angelis 2005) and changes with proficiency (Ringbom 2001, 2007:8, 54–58); it is usually in accordance with the actual typological distance between languages (Ringbom 1987, 2001, Dewaele 1998, Williams / Hammarberg 1998, Cenoz 2001, De Angelis / Selinker 2001, Hammarberg 2001, De Angelis 2005), though some language appropriators make use of less related languages (Schmidt / Frota 1986, Ecke 2001, Muñoz 2007);
(3) level of proficiency in each language: low target-language proficiency and fluency in non-target languages are generally believed to prompt CLI; as appropriators' L3+ proficiency progresses, the amount of CLI decreases (Schmidt / Frota 1986, Ringbom 1987, Williams / Hammarberg 1998, Bouvy 2000, Dentler 2000, Lindemann 2000, Hammarberg 2001, Odlin / Jarvis 2004, Navés / Miralpeix / Celaya 2005, Muñoz 2007);

[2] For stylistic reasons, in the remaining part of the text the term 'language' is used to mean both a language appropriated at a low level of competence (an interlanguage) and a (relatively) fluently mastered language.

(4) recency of language use: the most recently activated languages are the more likely candidates to influence the TL (Dewaele 1998, Williams / Hammarberg 1998, Dentler 2000, Lindemann 2000);
(5) context of language appropriation and use: a formal context of communication induces appropriators to suppress language mixing (Dewaele 2001), though persons who have the possibility to regularly communicate in the TL outside the classroom mix their languages less frequently during an informal conversation (Dewaele 2001); moreover, school-based instruction in a previous language facilitates the development of a new language in formal conditions, probably because of heightened metalinguistic awareness (Thomas 1988) and also because appropriating languages in similar contexts may induce transfer of learning (Williams / Hammarberg 1998);
(6) native vs. foreign language status of each language: CLI is more likely between two foreign languages than between a native and a foreign language (Stedje 1976, Schmidt / Frota 1986, Williams / Hammarberg 1998, Cenoz 2001, De Angelis / Selinker 2001, Hammarberg 2001, De Angelis 2005) – this so-called 'foreign language effect' (Meisel 1983) may be connected with the two above-mentioned factors (recency and context);
(7) functions performed for the speaker by each of their languages: the kind of CLI depends on the function (subconsciously) ascribed by the appropriator / user to each of their previously appropriated languages (Williams / Hammarberg 1998, Hammarberg 2001, Cenoz 2003).

2.2. Content words vs. function words

One of the classifications of the lexical items stored in the mental lexicon is into content and function words. Content (or lexical) words are open-class words (most nouns, verbs, adjectives and adverbs), which convey denotative-referential meaning; they refer to people, objects, actions and abstract concepts. These words are responsible for the semantic content of an utterance. They 'have identity outside of any syntactic context though actual usage may limit the possible meanings an item can have in a specific utterance' (Field 2002:60). Function (or grammatical) words are closed-class words (conjunctions, determiners, pronouns, auxiliaries, etc.). They carry little meaning, but they are involved in the morpho-syntactic construction of sentences; their main role is to 'bind' content words into meaningful strings (e.g. Field 2002:57–70, Aronoff / Fudeman 2005:40–41, Finegan 2008:172–213).

There is some psycholinguistic evidence that function and content words are differently processed in the mind. In his well-known study, Garrett (1975,

1980) analysed lexical errors in the speech of monolinguals and concluded that they hardly ever involve function words. He also noticed that both word classes participate in different kinds of errors and do not appear together in lexical errors, which involve either CWs or FWs.[3] A study by Bell et al. (2009) shows that function and content words are accessed differently in production; some of their findings are that, in contrast to CWs, FWs have shorter relative articulatory realisations and their processing is less sensitive to their frequency. Studies of comprehension point to the fact that lexical access for function words is faster than for content words – language users spend less time reading FWs than CWs (Rayner 1998, Segalowitz / Lane 2000). Aronoff and Fudeman (2005:40) point out that function words are less easily 'noticed' by language users; looking at the example provided by the authors:

Paris
in the
the spring

people usually do not notice the double article 'the', 'because we tend to take words like that for granted' (ibid.). As the authors point out, the same effect would not be possible if the doubled words were the content words 'Paris' or 'spring'. The difference in the processing of FWs and CWs may be explained by the differences in the semantic load of the two word types; moreover, compared to CWs, FWs occur more frequently in speech and writing, have shorter forms and are typically unaccented in a sentence.

It also turns out that the links between each word type and the conceptual system may be different. Using word association tasks, Gabryś-Barker (2005:59–85) noticed that semantically transparent words call forth conceptual associations and grammatically complex words activate lexical connections. This suggests strong links between CWs and their conceptual representations.[4]

The difference in the processing of function and content words is supported by neurolinguistic research studies which show that the CWs and FWs of the native (or dominant) language are subserved by different neural structures and differently processed (Neville / Mills / Lawson 1992, Pulvermüller 1999, Paradis 2004:177, 2009:18, Ullman 2007). Native language CWs are part of the (conscious) declarative memory, whereas native language FWs are subserved by the (automatic) procedural memory (Fabbro 1999, Paradis 2004, 2009, Ullman 2007).[5] On the other hand, both CWs and FWs of a non-native (non-dominant)

[3] E.g. *I have to fill up the gas with car*; *Everytime I put one of these buttons off, another one comes on* (Garrett 1975:155).

[4] However, these links depend on the degree of abstractness / concreteness of a given word (e.g. de Groot 1992, de Groot / Hoeks 1995, Dong / Gui / MacWhinney 2005).

[5] For this reason, L1 FWs are very similar to the L1 morpho-syntactic information, which is also stored in the procedural memory system.

language (i.e. a less fluent language, appropriated after early childhood under formal instruction) are located mainly in the declarative memory (Paradis 2004, 2009). Using the event-related brain potentials technique, Weber-Fox and Neville (2001) found that while the processing of closed- and open-class words is similar for an L1 and L2 if both were acquired in early childhood, different cortical areas are involved in the processing of closed-class words (but not open-class words) in an L2, depending on the age of appropriation. However, with rising proficiency and frequency of use, non-native FWs may also become part of procedural memory (Paradis 2004).

2.3. Interlingual transfer involving content and function words

Does the different status of content and function words in the mind have implications for cross-linguistic influence? In the field of L2 appropriation, Poulisse and Bongaerts (1994) analysed non-intentional lexical code switches, identified in the oral production of Dutch appropriators of English. One of their discoveries was that less advanced appropriators used more FWs than CWs from their L1. Moreover, the participants corrected themselves more often in the case of a CW problem. Poulisse and Bongaerts believe that L1 FWs are likely to be used during L2 production because of their frequent occurrence in the L1, and hence easier access to them (in line with word frequency effect; Oldfield / Wingfield 1965). Following Giesbers (1989), they also argue that CWs are selected correctly more often than FWs because they are typically more meaningful, for which reason appropriators focus more attention on them. Finally, they consider the possibility that since FWs are usually shorter than CWs, they are less noticeable when erroneously used in L2 production. While the last two explanations seem plausible, their first comment regarding the frequency of occurrence seems less applicable to L3+ production. In a study conducted by De Angelis (2005), the respondents' L2 competences were not very advanced, which means that they must have known more L1 than L2 function words. In spite of this, their L2s were significant donors of FWs for the TL.

A few studies conducted with L3+ appropriators deal with cross-linguistic lexical influence observed in written production. In the above-mentioned study, De Angelis (2005) worked with multilingual university students appropriating Italian as an L3 or L4. The respondents transferred more CWs than FWs from the non-TLs. The choice of non-target FWs seemed to be induced mainly by (perceived) cross-linguistic similarities, much less by language proficiency; the choice of non-target CWs seemed to be driven more or less equally by both (psycho)typology and proficiency.

Ringbom (1987, see also 2001, 2007:78–88) analysed English examination essays produced by students with Finnish as an L1 and Swedish as an L2,

or with Swedish as an L1 and Finnish as an L2. Complete language shifts took place mainly from (typologically related) Swedish to English. FW transfer from the Finnish language to the TL was hardly present. Many errors were traceable to the students' L2 Swedish; among them, 18% comprised FWs.

Like Ringbom, Odlin and Jarvis (2004) conducted their research in Finland. Their participants had different constellations of Finnish, Swedish and English. Analysing the appropriators' errors in their production in English as an L2 or L3, the researchers concentrated on four function words which have cognates in Swedish, but not in Finnish (*instead*, *for*, *some*, *what*). In their study, 'both the Finns and the Swedes used their knowledge of Swedish to form hypotheses about the target language, English' (ibid.:138). The appropriators' proficiency in Swedish turned out to be an important factor for FW transfer.

In her research study, Lindemann (2000) worked with Norwegian university students with advanced knowledge of English, appropriating German as an L3. Analysing the results of a translation task and a think-aloud-protocol, she identified several transfer errors consisting in an incorrect use of prepositions and conjunctions, induced by the English language, which she explains by the existence of (perceived) cross-linguistic similarities. Additionally, it is worth noting that since both Norwegian and English are typologically related to German and both of them were the appropriators' proficient languages, Lindemann's results point to the importance of the foreign language status as a factor affecting FW transfer.

The research by Navés, Miralpeix and Celaya (2005) was conducted with Catalan-Spanish bilinguals appropriating English. Concentrating on borrowings and lexical inventions originating in both L1s, the researchers found similar proportions of CWs and FWs. However, when they compared the results obtained by Cenoz (2001, see below) with their own results obtained for these respondents who received the same amount of instruction as Cenoz's subjects, they found (like Cenoz) more CW transfer than FW transfer. It must be mentioned that Navés, Miralpeix and Celaya analysed instances of lexical inventions and borrowings only; no doubt the outcomes would have been different had they analysed all instances of lexical interlingual transfer.

A few research studies analyse oral production in an L3+. Working with Basque-Spanish bilingual children, Cenoz (2001) discovered that they produced more non-target CWs than non-target FWs in their foreign language – English. For both word types, the preferred source of linguistic information was Spanish, which confirms the role of (psycho)typology. Fewer FWs than CWs were borrowed from Basque and only younger appropriators transferred CWs from Basque, probably because of their low awareness of the linguistic distance between Basque and English. Cenoz also supposes that part of the obtained results can be explained by the transfer of a communication strategy applied by Basque-Spanish bilinguals, i.e. their tendency to borrow Spanish CWs rather than Spanish FWs while speaking Basque.

Another interesting research study was conducted by Williams and Hammarberg (1998), who examined the Swedish production of an English L1 speaker (i.e. the first author) with high proficiency in L2 German and some knowledge of French and Italian. The researchers identified several switches without an identified pragmatic purpose, with 92% of these switches originating in the L2; the majority of them involved FWs. This study shows that in the case of three typologically close languages and native-like proficiency in both L1 and L2, the appropriator may favour their non-native language over their mother tongue for FWs. This finding is in line with the outcome of Lindemann's (2000) research study.

Like Navés, Miralpeix and Celaya (2005), Muñoz (2007) worked in the Catalonian context. Her Catalan-Spanish bilinguals had French as an L3 and English as an L4. Only slightly more FWs than CWs appeared in the appropriators' oral production in their L4 and after the exclusion of gambits, transferred by more proficient appropriators, this difference disappeared. Neither the similarities between French and English, nor the foreign-language status of French, influenced the intensity of CLI. The bilinguals' most proficient languages, Catalan and Spanish, were the main source of both CW and FW transfer. These results are in fact similar to those obtained by Navés, Miralpeix and Celaya (2005), even though their respondents had only one foreign language (English).

As the brief overview of the research studies shows, there is no agreement as to which kind of words – content or function – get transferred more often. During written production, content word transfer seems to be more intensive (Ringbom 1987, De Angelis 2005 and Navés / Miralpeix / Celaya 2005 for one group of respondents), but no consistency can be observed during oral production (Cenoz 2001 – more CW transfer; Poulisse / Bongaerts 1994 and Williams / Hammarberg 1998 – more FW transfer; Muñoz 2007 – similar proportions of CW and FW transfer).

For CW transfer, the intensity of CLI seems to be determined by both (psycho)-typology (Ringbom 1987, Cenoz 2001, De Angelis 2005) and some other factors, such as non-TL proficiency (De Angelis 2005, Muñoz 2007) and the transfer of specific communication strategies (Cenoz 2001). For FWs, (psycho)typology seems to play a decisive role (Ringbom 1987, Lindemann 2000, Cenoz 2001, Odlin / Jarvis 2004, De Angelis 2005), though non-TL proficiency is also an important factor (Williams / Hammarberg 1998, Odlin / Jarvis 2004, De Angelis 2005, Muñoz 2007). If (psycho)typology and proficiency factors are equal for a native and a non-native language, the latter may become the main donor of FWs (Williams / Hammarberg 1998, Lindemann 2000).

Moreover, FW transfer seems to be induced by the fact that, compared to CWs, they are usually less 'noticeable.' This is because FWs are typically shorter and carry less meaning than CWs, so their production is less carefully monitored, i.e. more automatised (Ringbom 1987, Poulisse / Bongaerts 1994, Wil-

liams / Hammarberg 1998). As Ringbom (1987:128) explains, 'with FWs […] the attention given to control procedures tends to slacken, since the learner gives only peripheral attention to them, normally focusing on those other words in his utterance which are communicatively the weightiest'. Neurolinguistic research partly supports these opinions, by pointing to the mainly procedural character of FWs belonging to a native/dominant (though not a foreign / non-dominant) language (see above).

A word of caution is needed as to the above-described research results. First of all, some of the studies seem not to compare the ratio of all the produced CWs and FWs to the erroneous CWs and FWs, which may cause interpretation errors. They also differ as to the language tasks their respondents are engaged in. Moreover, the respondents vary in respect of age, proficiency in each language, the age of the first contact with each language, etc. One may also suspect that the word type classification methods vary between the different research studies. Therefore, no definite generalisations based on the comparison of the above-mentioned research studies are possible.

3. Method

3.1. Participants

The participants in the present study were 87 Polish students from the German Department of the University of Wrocław, participating in an English language course. Their ages ranged from 19 to 27 (M = 21.8). They had appropriated German as an L2 at the C1–C2 level and English as an L3 at the A1–B2 level (Council of Europe 2001). The levels were estimated on the basis of the internal, end-of-term tests taken at the university.

The participants had acquired their mother tongue in natural conditions and they had been learning their L2 and L3 mainly in artificial classroom conditions. Thus, while Polish had a native language status for the students, both German and English had mainly a foreign language status for them. Polish and German were the students' active (recently used) languages, though Polish was used more often; the students' exposure to English was rather limited. Polish also performed a supportive role in the study of their L2 and L3 (both teachers and students typically use the L1 as a metalanguage during foreign language classes).

3.2. Procedures

The data corpus comprises 95 free written assignments (essays, book / film reports, learner journals and written projects), most of them written out of class.

Most students wrote just one assignment, but some wrote two or three assignments; a few assignments were written by groups of students.

A free composition is a relatively natural task, since it means the use of words in context for the purposes of communication of meaning. The more authentic language use, the higher the probability that both the procedural and the declarative lexical knowledge is activated, as well as the relevant conceptual representations (Mazoyer et al. 1993, Friederici / Opitz / von Cramon 2000, Paradis 2004, 2009). Only natural language tasks may constitute a basis for generalisations about language processing in the mind.

All identified instances of erroneous (or non-normative) use of words were classified according to the type of word involved (CW vs. FW). Nouns, lexical verbs, adjectives, adverbs, numerals and exclamations were classed as CWs; auxiliary verbs, prepositions, pronouns, conjunctions, particles and determiners were classed as FWs. Numerals were counted along with CWs because – although they belong to the closed class of words – they are usually semantically significant.[6] As Field (2002:64) points out, some words, such as *before*, *after* and *until*, may be differently classed, i.e. as adverbs, particles, adpositions or conjunctions, depending on their function within a sentence; this fact was taken into consideration while making classification decisions.

The identified instances of errors were further divided into interlingual transfer errors and errors induced by intralingual or other factors (e.g. transfer of training or learning). Interlingual lexical transfer is understood here as the use of a non-target-language word or the erroneous (or non-normative) use of a target-language word (at the level of form and / or meaning), caused by the knowledge of some non-target-language(s). Interlingual transfer can be either dynamic or static (Grosjean 1994, Paradis 2004:188);[7] unfortunately, it is very difficult to distinguish between those non-target elements which were only momentarily activated and those which had become part of the target-language system. Intralingual lexical transfer is the erroneous (or non-normative) use of a target-language word caused by the knowledge some target-language elements or features.

Examples:

Transfer from L1:

(1) […] *women, who want to understand the old* <u>*historys*</u> (L1 *historie* = L3 *stories*)

(2) […] *I learnt a bit* <u>*to*</u> *my exam at pedagogical course* (L1 *uczyć się do egzaminu* = L3 *learn for the exam*; the usual equivalent of L1 *do* is L3 *to*)

[6] Consider the examples: *He is forty-four*, *She gave me a hundred zlotys* (see also Navés / Miralpeix / Celaya 2005:129).

[7] Dynamic interference (transfer) is temporary activation of some non-target element(s) or feature(s) during target-language production; static interference (transfer) means permanent presence of some non-target element(s) or feature(s) in the target-language system.

Transfer from L2:

(1) *I can read the books many times and I make* <u>*notices*</u> *when I read them* […] (L2 *Notizen machen* = L3 *make notes*)

(2) *Obviously I can't* <u>*stay up*</u> *in the morning* […] (L2 *aufstehen* = L3 *get up*; L2 *stehen* [L3 *stand*] is similar to L3 *stay*)

(3) *I'll leave you alone* <u>*when*</u> *you do something for me* (L2 *wenn* = L3 *if*)

Transfer from L1 or / and L2:

(1) […] *it's* <u>*actual*</u> *even in the 21st century* (L1 *aktualny*, L2 *aktuell* = L3 *up to date; current*)

(2) <u>*Tell*</u> *something about yourself* (L1 *mówić*, L2 *sagen* = L3 *say, tell*);

(3) […] *it comes easier to them to admit that they* <u>*hadn't right*</u> (L1 *mieć rację*, L2 *Recht haben* = L3 *be right*)

Intralingual (L3) transfer (or other causes):

(1) *But I know that Christmas* <u>*greetings*</u> *and dreams come true* (possible target: *wishes*; probably some kind of intralingual association)

(2) *Reaching a* <u>*summit*</u> *takes a lot of effort but it's worth it* (possible targets: *top*, *peak*; intralingual association or the use of a poor-quality dictionary)

3.3. Hypotheses

Taking into consideration the current research outcomes, as well as the characteristics of the respondents and the production mode (written), it was hypothesised that:

(1) function words are more often affected by interlingual transfer than content words, though content word transfer is also strong;

(2) L2, rather than L1, is the main transfer basis for both word types.

The rationale behind the first hypothesis is that (as neurolinguistic studies show) FWs belonging to a fluent language (thus, both L1 and L2 of the respondents) are subserved mainly by procedural memory, and so may be subconsciously activated during the production of a less fluently mastered L3. The use of FWs is automatised, they are less 'noticeable' and less likely to be self-corrected during L2 / L3+ production (Ringbom 1987, Poulisse / Bongaerts 1994, Williams / Hammarberg 1998). Moreover, target FWs may activate direct lexical connections with the non-target language, without the mediation of the conceptual system (Gabryś-Barker 2005:59–85). There is also a possibility that the students corrected themselves more often in the case of a content word error, like the appropriators in Poulisse and Bongaerts' (1994) study, especially as written production allows for self-correction. On the other hand, because of the many content word similarities between German and English, and probably weak connections between the German language and the conceptual system (because of formal contexts of learning), one can also expect intensive L2 CW transfer at the direct lexical level.

The second hypothesis was dictated by the typological closeness between the L2 and L3, the foreign-language status of the L2, the students' high proficiency in the L2, the recency of L2 use and similar conditions of L2 and L3 appropriation, plus my own observations of language errors made by similar persons.

4. Results and discussion

The numbers and percentages of the erroneous and omitted CWs and FWs are included in Table 1. Overall, the students produced 6,233 CWs, among which 461 (7.4%) were erroneous, and 7,700 FWs, among which 299 (3.88%) were erroneous. Moreover, as many as 165 (2.14%) instances of FW omission were identified. The high intensity of the FW omissions, which result mainly in morpho-syntactic transfer, points to the fact that appropriators indeed pay little attention to FWs (Ringbom 1987, Poulisse / Bongaerts 1994, Williams / Hammarberg 1998). Thus, even though more CWs than FWs were used erroneously, it cannot be stated with certainty that one type of word is more troublesome for language appropriators – both CWs and FWs are, though the reasons are different.

Table 1. The number of content and function words identified in the written compositions – total, erroneous and omitted

	CWs		**FWs**	
	Raw values	**Relative values (% of all CWs)**	**Raw values**	**Relative values (% of all FWs)**
All	6233	100	7700	100
Erroneous	461	7.4	299	3.88
Erroneous – interlingual lexical transfer	211	3.39	173	2.25
Erroneous – intralingual lexical transfer (or other causes)	250	4.01	126	1.64
Omitted	4	0.06	165	2.14

Table 1 also shows that intralingual transfer (and other factors, such as transfer of learning or training) is a significant source of lexical errors. Here, a lot more CWs (250 – 4.01%) than FWs (126 – 1.64%) were erroneously used. The fact that these numbers are high is not surprising – many other studies show that the already gained TL knowledge is an important basis in the appropriation of this language (e.g. Dewaele 1998, Williams / Hammarberg 1998, Ecke 2001). The fact that more CWs than FWs take part in intralingual operations shows that the lexical network of a language system contains strong links between CWs. This is most probably because these words can be connected with each other by both formal and semantic links (at the syntactic, morphological, phonological / orthographic, semantic and pragmatic levels; see e.g. Singleton 1999:14–38), and also via con-

ceptual representations. A lexical search in the case of a production problem may lead to the activation of these various connections.

Table 2. The number of interlingual lexical transfer errors involving content and function words, according to language source

Lexical transfer	CWs		FWs	
	Raw values	Relative values (% of all CWs)	Raw values	Relative values (% of all FWs)
from L1	50	0.8	27	0.4
from L2	115	1.8	99	1.3
from L1 or / and L2	46	0.7	47	0.6
Total	**211**	**3.3**	**173**	**2.3**

As Table 2 shows, interlingual lexical transfer affects CWs a little more than FWs – there is a slight difference between the number of CWs (211 – 3.3%) and FWs (173 – 2.3%) transferred from the L1 and the L2 to the L3. This outcome disproves the first hypothesis, but is in line with these research studies which deal with written production (Ringbom 1987, De Angelis 2005 and Navés / Miralpeix / Celaya 2005 for one group of respondents). It suggests that the characteristics of FWs (little meaning, grammatical information, automatisation) do not make them the main source of interlingual lexical transfer. In fact, these characteristics are admittedly true of the fluent non-target languages of the respondents, but a non-fluent L3 – both the English CWs and FWs – was probably processed mainly by means of the declarative (conscious) memory (Paradis 2004, 2009) and this fact may have influenced the outcome. Also, an L3 appropriated at a low level of proficiency is probably linked with the other languages predominantly by direct lexical connections (without the mediation of the conceptual system) not only at the level of FWs (Gabryś-Barker 2005:59–85), but also at the level of CWs (de Groot / Hoeks 1995, Paradis 2004:192–195). Contrary to conceptual links, lexical connections are stronger in the 'backward' direction, i.e. from L2 to L1 (e.g. Kroll / Stewart 1994, Pavlenko 2009); a lexical search in the case of a problem with an English CW or FW may have activated lexical connections with the respondents' L1 and L2, triggering cross-linguistic influence. Of course, part of the CW transfer may have been mediated by the same or similar conceptual representations linked with two (or more) CWs belonging to different languages (Gabryś-Barker 2005:59–85). Moreover, it is worth noting that the CWs stored in the mental lexicon typically contain more information than FWs (e.g. Singleton 1999:14–38) – hence richer and stronger (inter- and intralingual) links may be created between them than between FWs. Finally, even though CWs are considered easier to monitor (thanks to their denotative-referential meanings), in the case of written production (as compared to spoken production), and especially in the case of assignments produced under formal classroom instruction, cognitive control may be similarly efficient for both word types.

As Table 2 also shows, the L2 is the main donor of both CWs and FWs – there are 115 instances (1.8%) of CW transfer and 99 instances (1.3%) of FW transfer from the L2, as opposed to 50 instances (0.8%) of CW transfer and 27 instances (0.4%) of FW transfer from the L1. Thus, the students rely extensively on the German L2, which confirms the second hypothesis. The fact that the fluency and recency factors were equal for Polish and German points to the importance of (psycho)typology for both content and function word transfer, as well as the (formal) context of instruction and the foreign language status. The fact that the L3 CWs and FWs were mainly processed in a conscious (declarative) way may have prompted the respondents' metalinguistic judgements of cross-linguistic similarities between their languages. Of course, the mother tongue influence is not insignificant, which is most probably due to it being the students' most fluent and active language and also due to its supportive role in L3 appropriation.

There is no big difference between CW and FW transfer from the L2 (115 – 1.8% vs. 99 – 1.3%, respectively), which is in line with the general conclusion about both word types being problematic for language appropriators. The somewhat stronger CW transfer, compared to the FW transfer, from the L1 (50 – 0.8% vs. 27 – 0.4%, respectively), results from the fact that in many cases the equivalent of an English FW is a morpho-syntactic feature of the Polish language (it should be mentioned that as many as 112 out of the total number of 165 FW omissions were induced by the morpho-syntactic transfer from the Polish language). This outcome is in line with Cenoz (2001), in whose study fewer FWs than CWs were borrowed from the Basque L1 to the English L2 by her Basque-Spanish bilingual respondents, and with Ecke and Hall (2000), who found strong syntactic transfer from L1 Spanish and content word transfer from L2 English to the German L3.

It is worth noting that a lot of errors were classified as instances of transfer from the L1 or / and L2 – there are 46 (0.7%) CW errors and 47 (0.6%) FW errors of this type. The possibility that at least part of this transfer is combined (double) cross-linguistic influence cannot be excluded. However, it is also possible that only one language was the donor for some of these errors, which means that the proportions of L1- and L2-induced CW and FW transfer may be somewhat different.

5. Conclusions

The present study analyses content and function word transfer in free written production in English. The participants were Polish appropriators of English as an L3 with prior knowledge of German as an L2.

The obtained results indicate that both content and function words belonging to an L3+ may pose problems to language appropriators and may be influenced

by non-target-language and target-language lexical knowledge. However, content word transfer may be slightly stronger, at least during written production.

The reasons of cross-linguistic lexical influence involving CWs and FWs seem to be different. Contrary to CWs, FWs belonging to a fluent language are automatically processed by language appropriators / users, which may contribute to their intensive participation in interlingual transfer. In the case of a relatively low level of proficiency in the target language, both CWs and FWs are processed mainly by means of the declarative (conscious) memory; this may shape interlingual transfer, e.g. by drawing appropriators' attention to both groups of words and by affecting their metalinguistic judgements of languages. Both CWs and FWs of such a language are probably linked with non-target-language words predominantly by lexical connections (without the mediation of the conceptual system); since such connections are especially strong in the 'backward' direction, CW and FW transfer is inevitable. Part of the CW transfer may, however, be mediated by (partially) shared conceptual representations. Because CWs typically carry more information load than function words, stronger inter- and intralingual links may be created between them than between FWs; these links are then activated during a lexical search. It also seems that the language task (written or spoken production in formal / informal conditions) may influence cognitive control devoted to target CWs and FWs and hence shape inter- and intralingual transfer.

The main factors which influenced the interlingual transfer of both content and function words were (psycho)typology, language status and the context of language appropriation (for the L2 transfer), as well as language proficiency and recency of use (for both the L1 and the L2 transfer). The supportive role of the mother tongue in L3 appropriation may have been an important factor, too. However, it must be underlined that the direction and intensity of CW and FW transfer depend to a large extent on the structural characteristics of each language a given person have at their disposal.

It should be emphasised that the obtained results have been discussed as if the observed instances of CLI were exclusively an outcome of dynamic transfer. However, it is possible that some of them resulted from static interference. Moreover, part of the cross-linguistic influence classified as 'transfer from L1 or / and L2' was most probably transfer from only one of these languages, which means that the actual numbers of interlingual transfer errors are somewhat different.

It is clear that a lot more psycholinguistic research into function and content word transfer is needed. Studies ought to be conducted with multilingual participants with different language constellations and with different characteristics. The role of such factors as (psycho)typology, proficiency, recency of use, context of appropriation / use, language status and functions performed by each language should be further investigated. Research studies should take into consideration the recent neurolinguistic achievements.

References

Aronoff Mark / Fudeman Kirsten Anne, 2005, What Is Morphology?, Malden, MA.

Bell Alan / Brenier Jason M. / Gregory Michelle / Girand Cynthia / Jurafsky Dan, 2009, Predictability effects on durations of content and function words in conversational English, in: Journal of Memory and Language 60, pp. 92–111.

Bouvy Christine, 2000, Towards the construction of a theory of cross-linguistic transfer, in: Cenoz J. / Jessner U. (eds.), English in Europe: The Acquisition of a Third Language, Clevedon, pp. 143–156.

Cenoz Jasone, 2001, The effect of linguistic distance, L2 status and age on cross-linguistic influence in third language acquisition, in: Cenoz J. / Hufeisen B. / Jessner U. (eds.), Cross-linguistic Influence in Third Language Acquisition: Psycholinguistic Perspectives, Clevedon, pp. 8–20.

Cenoz Jasone 2003, The role of typology in the organization of the multilingual lexicon, in: Cenoz J. / Hufeisen B. / Jessner U. (eds.), The Multilingual Lexicon, Dordrecht / Boston / London, pp. 103–116.

Chłopek Zofia, 2011, Nabywanie języków trzecich i kolejnych oraz wielojęzyczność: Aspekty psycholingwistyczne (i inne), Wrocław.

Council of Europe, 2001, Common European Framework of Reference for Languages: Learning, Teaching, Assessment, Cambridge, www.coe.int/t/dg4/linguistic/Source/Framework_EN.pdf.

De Angelis Gessica, 2005, Interlanguage transfer of function words, in: Language Learning 55, pp. 379–414.

De Angelis Gessica, 2007, Third or Additional Language Acquisition, Clevedon.

De Angelis Gessica / Selinker Larry, 2001, Interlanguage transfer and competing linguistic systems in the multilingual mind, in: Cenoz J. / Hufeisen B. / Jessner U. (eds.), Cross-linguistic Influence in Third Language Acquisition: Psycholinguistic Perspectives, Clevedon, pp. 42–58.

De Groot Annette M.B., 1992, Bilingual lexical representation: A closer look at conceptual representations, in: Frost R. / Katz L. (eds.), Orthography, Phonology, Morphology, and Meaning, Amsterdam, pp. 389–412.

De Groot Annette M.B. / Hoeks John C.J., 1995, The development of bilingual memory: Evidence from word translation by trilinguals, Language Learning 45, pp. 683–724.

Dentler Sigrid, 2000, Deutsch und Englisch – das gibt immer Krieg!, in: Dentler S. / Hufeisen B. / Lindemann B. (eds.), Tertiär- und Drittsprachen: Projekte und empirische Untersuchungen, Tübingen, pp. 77–97.

Dewaele Jean-Marc, 1998, Lexical inventions: French interlanguage as L2 versus L3, in: Applied Linguistics 19, pp. 471–490.

Dewaele Jean-Marc, 2001, Activation or inhibition? The interaction of L1, L2 and L3 on the language mode continuum, in: Cenoz J. / Hufeisen B. / Jessner U. (eds.), Cross-linguistic Influence in Third Language Acquisition: Psycholinguistic Perspectives, Clevedon, pp. 69–89.

Dong Yanping / Gui Shichun / MacWhinney Brian, 2005, Shared and separate meanings in the bilingual mental lexicon, in: Bilingualism: Language and Cognition 8, pp. 221–238.

Ecke Peter, 2001, Lexical retrieval in a third language: Evidence from errors and tip-of-the-tongue states, in: Cenoz J. / Hufeisen B. / Jessner U. (eds.), Cross-linguistic Influence in Third Language Acquisition: Psycholinguistic Perspectives, Clevedon, pp. 90–114.

Ecke Peter / Hall Christopher J., 2000, Lexikalische Fehler in Deutsch als Drittsprache: Translexikalischer Einfluss auf drei Ebenen der mentalen Repräsentation, in: Deutsch als Fremdsprache 37, pp. 30–36.

Fabbro Franco, 1999, The Neurolinguistics of Bilingualism: An Introduction, Hove.

Field Fredric W., 2002, Linguistic Borrowing in Bilingual Contexts, Amsterdam/Philadelphia, PA.

Finegan Edward, 2008, Language: Its Structure and Use, Boston, MA.

Friederici Angela D. / Opitz Bertram / von Cramon D. Yves, 2000, Segregating semantic and syntactic aspects of processing in the human brain: An fMRI investigation of different word types, in: Cerebral Cortex 10, pp. 698–705.

Gabryś-Barker Danuta, 2005, Aspects of Multilingual Storage, Processing and Retrieval, Katowice.

Garrett Merrill F., 1975, The analysis of sentence production, in: Bower G.H. (ed.), The Psychology of Learning and Motivation: Advances in Research and Theory, vol. 9, San Diego, CA, pp. 133–177.

Garrett Merrill F., 1980, Levels of processing in sentence production, in: Butterworth B. (ed.), Language Production, vol. 1,. Speech and Talk, San Diego, CA, pp. 177–220.

Giesbers Herman, 1989, Code-switching tussen dialect en standaardtaal, Amsterdam.

Grosjean François, 1994, Individual bilingualism, in: Asher R.E. (ed.), The Encyclopedia of Language and Linguistics, Oxford, pp. 1656–1660.

Hammarberg Björn, 2001, Roles of L1 and L2 in L3 production and acquisition, in: Cenoz J. / Hufeisen B. / Jessner U. (eds.), Cross-linguistic Influence in Third Language Acquisition: Psycholinguistic Perspectives, Clevedon, pp. 21–41.

Jessner Ulrike, 2008, Teaching third languages: Findings, trends and challenges, in: Language Teaching 41, pp. 15–56.

Kellerman Eric, 1977, Towards a characterization of the strategy of transfer in second language learning, in: Interlanguage Studies Bulletin 2, pp. 58–145.

Kellerman Eric, 1983, Now you see it, now you don't, in: Gass S. / Selinker L. (eds.), Language Transfer in Language Learning, Rowley, MA, pp. 112–134.

Krashen Stephen D., 1981, Second Language Acquisition and Second Language Learning, Oxford.

Krashen Stephen D., 1982, Principles and Practice in Second Language Acquisition, Oxford.

Kroll Judith F. / Stewart Erika, 1994, Category interference in translation and picture naming: Evidence for asymmetric connections between bilingual memory representations, in: Journal of Memory and Language 33, pp. 149–174.

Lindemann Beate, 2000, "Da fällt mir immer zuerst ein englisches Wort ein." Zum Einfluß der ersten Fremdsprache beim Übersetzen ins Deutsche, in: Dentler S. / Hufeisen B./ Lindemann B. (eds.), Tertiär- und Drittsprachen: Projekte und empirische Untersuchungen, Tübingen, pp. 57–65.

Mazoyer Bernard M. / Tzourio Nathalie / Frak V. / Syrota André / Murayama N./ Levrier O. / Salamon G. / Dehaene Stanislas / Cohen Laurent / Mehler Jacques, 1993, The cortical representation of speech, in: Journal of Cognitive Neuroscience 5 (4), pp. 467–479.

Meisel Jürgen M., 1983, Transfer as a second language strategy, in: Language and Communication 3, pp. 11–46.

Muñoz Carmen, 2007, Cross-linguistic influence and language switches in L4 oral production [Special Issue], in: Vigo International Journal of Applied Linguistics 4. Current issues in second language acquisition, pp. 73–94.

Navés Teresa / Miralpeix Immaculada / Celaya M. Luz, 2005, Who transfers more… and what? Crosslinguistic influence in relation to school grade and language dominance in EFL, in: The International Journal of Multilingualism 2, pp. 113–134.

Neville Helen J. / Mills Debra L. / Lawson Donald S., 1992, Fractionating language: Different neural subsystems with different sensitive periods, in: Cerebral Cortex 2, pp. 244–258.

Odlin Terence / Jarvis Scott, 2004, Same source, different outcomes: A study of Swedish influence on the acquisition of English in Finland, in: The International Journal of Multilingualism 1, pp. 123–140.

Oldfield Robert C. / Wingfield Arthur, 1965, Response latencies in naming objects, in: The Quarterly Journal of Experimental Psychology 17, pp. 273–281.

Paradis Michel, 2004, A Neurolinguistic Theory of Bilingualism, Amsterdam/Philadelphia, PA.

Paradis Michel, 2009, Declarative and Procedural Determinants of Second Languages, Amsterdam / Philadelphia, PA.

Pavlenko Aneta, 2009, Conceptual representation in the bilingual lexicon and second language vocabulary learning, in: Pavlenko A. (ed.), The Bilingual Mental Lexicon: Interdisciplinary Approaches, Bristol/Buffalo/Toronto, pp. 125–160.

Poulisse Nanda / Bongaerts Theo, 1994, First language use in second language production, in: Applied Linguistics 15, pp. 36–57.

Pulvermüller Friedemann, 1999, Words in the brain's language, in: Behavioral and Brain Sciences 22, pp. 253–336.

Rayner Keith, 1998, Eye-movements in reading and information processing: 20 years of research, in: Psychological Bulletin 124 (3), pp. 372–422, http://wexler.free.fr/library/files/rayner%20%281998%29%20eye%20movements%20in%20reading%20and%20information%20processing.%2020%20years%20of%20research.pdf.

Ringbom Håkan, 1987, The Role of the First Language in Foreign Language Learning, Clevedon.

Ringbom Håkan, 2001, Lexical transfer in L3 production, in: Cenoz J. / Hufeisen B. / Jessner U. (eds.), Cross-linguistic Influence in Third Language Acquisition: Psycholinguistic Perspectives, Clevedon, pp. 59–68.

Ringbom Håkan, 2007, Cross-linguistic Similarity in Foreign Language Learning, Clevedon/Buffalo/Toronto.

Schmidt Richard W. / Frota Sylvia Nagem, 1986, Developing basic conversational ability in a second language: A case study of an adult learner of Portuguese, in: Day R.R. (ed.), Talking to Learn: Conversation in Second Language Acquisition, Rowley, MA, pp. 237–326.

Segalowitz Sidney J. / Lane Korri C., 2000, Lexical access of function versus content words, in: Brain and Language 75 (3), pp. 376–389.

Sharwood Smith Michael / Kellerman Eric, 1986, Crosslinguistic influence in second language acquisition: An introduction, in: Kellerman E. / Sharwood Smith M. (eds.), Cross-linguistic Influence in Second Language Acquisition, Oxford, pp. 1–9.

Singleton David, 1999, Exploring the Second Language Mental Lexicon, Cambridge/New York, NY/Melbourne.

Stedje Astrid, 1976, Interferenz von Muttersprache und Zweitsprache auf eine dritte Sprache beim freien Sprechen – ein Vergleich, in: Zielsprache Deutsch 1, pp. 15–21.

Thomas Jacqueline, 1988, The role played by metalinguistic awareness in second and third language learning, in: Journal of Multilingual and Multicultural Development 9, pp. 235–46.

Ullman Michael T., 2007, The declarative / procedural model of lexicon and grammar, in: Journal of Psycholinguistic Research 30, pp. 37–69.

Weber-Fox Christine M. / Neville Helen J., 2001, Sensitive periods differentiate processing of open- and closed-class words: An ERP study of bilinguals, in: Journal of Speech, Language, and Hearing Research 44, pp. 1338–1353.

Williams Sarah / Hammarberg Björn, 1998, Language switches in L3 production: Implications for a polyglot speaking model, in: Applied Linguistics 19, pp. 295–333.