

Multicompetence and L2 users' associative links: being unlike nativelylike

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The study set out to examine the effects of multicompetence on proficient L2 users' associative links. Three groups of 36 participants each were recruited – NSs of English, NSs of Bulgarian, and proficient Bulgarian L2 users of English – who completed a familiarity and word association test. The findings revealed that L2 users' natural drive to main connectivity of their lexicons was the motivation for their building lexicosemantic connectedness – which, however, was unlike the patterns of connectivity maintained by the native speakers of both their languages. This showed that, as a result of their developing multicompetence, the L2 users were unlike nativelylike in that they developed their lexicosemantic associative links favoring diversity over communality and language-neutral idiosyncrasy over L1 or L2 nativelikeness.

Keywords: word associations, multicompetence, L2 lexicon, inter- and intralingual influences

Изследването има за цел да установи влиянието на концепцията за мултикомпетентност върху асоциативните връзки на изучаващите английски език на напреднало ниво на владеење на езика. Три групи участници взеха участие в експеримента – носители на английски език като роден език, носители на български език като роден език и изучаващи английски език на напреднало ниво – които попълниха тест за лексикално познание и асоциативност. Резултатите от анализа показаха, че изграждането на лексико-семантични връзки сред думите, които изучаващите английски език удостовериха, че знаят е естествен импулс към създаване на свързаност на лексикона. Моделите им на асоциативна свързаност, обаче, бяха съвсем различни от тези на носителите на английски и български език като роден. Тези резултати потвърдиха, че в резултат на развиващата им се мултикомпетентност, изучаващите английски език на напреднало ниво на владеење на езика поддържат лексико-семантична организираност на лексикона на втория си език, която насърчава асоциативно разнообразие и неутрална езикова идиосинкратичност пред асоциативна комуналност и англо- или българо-повлияна асоциативна наподобяемост.

Keywords: асоциативни връзки, мултикомпетентност, структура на чуждоезиковия лексикон на английски език, чуждоезиково обучение

Introduction

Recent discussions of lexical competence strongly emphasize two principal realizations. The first is that 'vocabulary acquisition has moved from being a neglected backwater in second language acquisition' (Meara 2002: 393) to a position where its importance has increased as lexical issues have become of a more central interest to second language (L2) researchers and theoretical linguists. The second realization is that lexical knowledge is a complex, multifaceted, and multidimensional phenomenon (McCarthy 1990; Meara 1992; 1996; Nation 1990; 2001; Singleton 1999; 2000; Schmitt 2000; Read 2000), which further complicates the efforts to account for the multitude of factors and their possible combined effects on learners' state of lexical knowledge diachronically and synchronically. By and large, L2 lexical researchers who explore the multifaceted and/or multidimensional nature of lexical knowledge work within two relatively independent yet interrelated research paradigms: the *separate trait paradigm*, which proposes studying word knowledge with regard to several different aspects of knowing a word, as outlined by a number of researchers (e.g. Nation 1990; 2001; Richards 1976; Singleton 1999); and the *global dimensions paradigm*, which puts forward the idea of studying the overall state of learners' lexicons with respect to several measurable dimensions (e.g. Chapelle 1998; Henriksen 1999; Read 2000; Vermeer 2001; Wesche and Paribakht 1996; Zareva, Schwanenflugel, and Nikolova 2005).

Looking at the global dimensions line of research, Meara (1996) has rightly pointed out that studies in this area offer a rich framework for describing different aspects of lexical competence that may uncover some interesting relationships between vocabulary growth and connectivity of the lexicon. He has also suggested that, as the size of L2 learners' vocabularies gets larger – say 5,000–6,000 words – the importance of their lexicons being well-structured considerably increases. Nevertheless, among other factors that may facilitate the organization of the L2 lexicon, we know little about the extent to which the individual's native language (L1) lexical knowledge is a contributing factor, the extent to which the target language (TL) influences the organization of the L2 lexicon, and the extent to which there is a conceptual overlap between the L1 and the TL of which L2 users take advantage in connecting their L2 words. Questions regarding various L1–L2 dependencies have been examined in one form or another within, probably, every aspect of L2 competence, but what makes the lexicon an extremely interesting area of investigation is that it is one of the linguistic systems that never stops developing, whether in L1 or L2 (e.g. Cook 1992; Zechmeister, Chronis, Cull, D'Anna, and Healy 1995). The answers to the above questions will throw more light on the nature of the L1–L2 relationship in the L2 mind with regard to the lexicon, which in turn will help give us a better grasp of the way L2 users' multicompetence influences the organization of the lexicon.

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The idea of multicompetence as a unique state of mind that distinguishes language users who know and use more than one language from those who are largely monolingual was promoted in second language acquisition research more than a decade ago. It was first put forward in 1991 by Cook, who later, in a series of publications (Cook 1992; 1995; 1996; 1999; 2002; 2003; 2007) further developed the concept and elaborated on the evidence supporting it. The crux of his argument is that the L2 user is 'a person in their own right', and that multicompetence concerns itself with the relationships between two language systems in one mind, and 'with the relationships between the language systems and the rest of the L2 user's mind, visualised as an integration continuum between the two language systems' (Cook 2007: 206). Along the same lines, several other researchers (e.g. Coppetiers 1987; Kecskes and Papp 2000; Meara 1983) have also pointed out that there is no reason to believe that a person who speaks two languages should linguistically behave as a monolingual speaker, neither are we safe to assume that passing for a native speaker is the primary goal of L2 learning.

While the idea of an interaction between the two language systems in the L2 user's mind is not new in the field, the notion of multicompetence has added a new spin by shifting the evaluation angle of the interlanguage system (Selinker 1972; Selinker and Douglas 1987) from one being filled with deficiencies, when compared to native speakers' competence, to one that deserves to be studied in its own right. It has also taken a slightly different view of the integration of the language system in the bilingual mind.¹ For instance, one distinctive feature of multicompetence that will be explored in this paper is the notion of uniqueness of 'two inter-permeating systems' (Cook 2002: 12) among highly proficient adult L2 users – which may not sit well with the notion of bilingual adults, for example, as it assumes that the two languages for adult bilinguals are kept independent, even if there is joint activation and shared conceptual representations (Bialystok 2001). Multicompetence, in Cook's (2007) words, reflects a continually changing relationship between the L1 and all subsequently acquired languages, which themselves are constantly changing systems. By the same token, some researchers have emphasized that cross-linguistic influences work in both directions, i.e. from L1 to L2 as well as from L2 to L1 (e.g. Jarvis and Pavlenko 2008; Kecskes and Papp 2000; Pavlenko and Jarvis 2002), and that, as language proficiency increases, the effects of multicompetence at the conceptual level become stronger and more salient (Kecskes and Papp 2000). Thus, to be pedagogically sustainable, comparisons between L2 and L1 users' competence should go beyond discussing differences between the two groups of language users in terms of L2 deficiencies. Rather, comparisons should aim at finding out whether those differences can be considered to be actually L2 users' natural preferences, as evidenced by empirically collected data, which take them 'beyond the bounds of monolinguals' (Cook 2002: 21).

That being said, finding a group of adults in this day and age who are pure monolinguals may turn out to be a daunting task, since more people

have some knowledge of at least two languages rather than just one (Cook 1996; 2002; Pavlenko 2005). Therefore, we should consider the mind with two languages to be the norm rather than the exception, albeit that some systems are more integrated (e.g. the conceptual system) or separated (e.g. the L1 and L2 phonological systems) than others. It follows, then, that when we look at the L2 lexicon, evidence that the L1 and L2 lexicons are at least partially combined, or that they are based on some language-neutral system, would support multicompetence, while evidence for separate lexicons would run counter to the idea of multicompetence (Cook 1992). So at the one extreme we can put models that assume completely separate lexicons at both conceptual and lexical level, evidence for which is currently hard to find; at the opposite extreme, we should place models which assume complete integration between the two languages, which is equally unrealistic. There is a third possibility, however, of having individual L1 and L2 words strongly connected (the connection should not necessarily be between their translations), while other L1 and L2 words are kept separate – a position that seems to have received most support from recent research (De Groot 1995; 2002; Meara 2006; Singleton 1999). This view has also been supported by current psycholinguistic models of the bilingual mental lexicon that propose a three-component hierarchical structure of the lexicon containing a lexical layer (consisting of L1 and L2 word-form representations) and a conceptual layer (consisting of conceptual presentations common to both languages) which may be directly or indirectly linked, depending on various factors (e.g. Kroll 1993; Kroll and Stewart 1994; De Groot 1995). Thus, the idea that L1 and L2 words can be connected in different ways (e.g. via a direct L1–L2 or L2–L1 form representation link, via an indirect link through the L1/L2 conceptually shared node, or the form representations of each language may be directly linked with the L1/L2 conceptual store), and that the various configurations are not static but constantly changing over time with the accumulation of new experiences (as is our conceptual memory store), have raised our awareness of the importance of looking at the lexicon as a dynamic entity in which L1 and L2 words can be connected in various ways, with links of different strength and direction. In this regard, Meara (2006) has pointed out that the idea of the lexicon (be it L1 or L2) being connected in some sort of a network has dominated the field for quite some time – indeed, word association research, among other types of lexical research, offers good reasons to believe that this may be the case. However, what this line of research has not satisfactorily accomplished yet is to provide evidence of the extent to which there is an associative integration or separation of the two languages in a bilingual's repertoire, which will lend support or count against the notion of multicompetence.

By and large, attempts at examining the organization of lexical knowledge by studying individuals' word association (WA) behavior assume that by studying the associative connectivity among words in the mental lexicon we can gain insights into the way semantic information is organized in memory

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(Nelson 1977). L2 researchers who have used WA tests in their studies seem to share the view that L2 learners' WAs can be revealing of their patterns of meaning connections; yet they largely differ in their interpretation of how these patterns can be used to infer organization of vocabulary knowledge (Zareva et al. 2005). Regardless of the nature of the L2 associative patterns being studied – e.g. *quantitative* (measured by the number of common WAs L2 learners share with a L1 norm list or native speaker control group) or *qualitative* (measured by the proportion of different types of associative connections – paradigmatic, syntagmatic, or phonological – L2 users produce in comparison to a NS group) – a central finding in early and subsequent L2 WA research was that adult NSs tend to show stable patterns of associative organization of meaning connections either along paradigmatic-over-syntagmatic lines or along commonly shared associative responses, while L2 learners of different languages fail to develop the same paradigmatic stability in their lexical connections (Greidanus and Nienhuis 2001; Meara 1978; Miron and Wolfe 1964; Read 1993; Vermeer 2001; Wolter 2001) or the same degree of associative communality (Kruse, Pankhurst, and Sharwood Smith 1987; Randall 1980; Schmitt 1998; Wolter 2002), in which they greatly differ from NSs. The interpretation of these findings has however been widely challenged in the last decade or so, which once again has brought to the fore the complexity of the studied phenomenon, the multiplicity of factors that play into it, and perhaps a greater effort to resist the temptation of arguing that L2 users' lexicons are underdeveloped or unstable just because their organization patterns are not nativelike.

The most controversial methodology of examining L2 associative behavior is probably the one comparing the communality of L2 WAs to that maintained by NSs, in an attempt to establish the degree of nativelikeness of the L2 lexicon. This line of research has been largely promoted by L1 studies which repeatedly found that NSs (more so NSs of American English than NSs of other European languages) tend to cluster their associative responses to different stimuli around a small number of associations (Cramer 1968; Kent and Rosanoff 1910; Postman and Keppel 1970); consequently, this high degree of L1 associative communality has come to be interpreted as indicative of the stability of NSs' semantic connections. Along the same lines, Deese (1965) argued that people would not be able to communicate if they did not share common meanings. To put it another way, he argued that common meaning in communication is largely determined by the existence of communality of associative structures shared by different people (1965: 45). In the context of L2 associative research, this line of reasoning has been greatly encouraged by findings that L2 learners tend to have much more diverse and idiosyncratic patterns of WAs than do NSs – although, as their proficiency increases, some aspects of their associative connections develop towards the NS norm (Meara 1978; Randall 1980; Vermeer 2001). Surprisingly, even though researchers used predominantly high-frequency prompt words that were assumed to be familiar to their L2 testees, the much lower

communality and the greater idiosyncrasy of their WAs was interpreted, more often than not, as a mark of underdeveloped nativelikeness of their lexicons. If WAs are in fact encoding experiences, would it not be logical to expect that L2 users would encode into their associative connections experiences that are different from NSs', given that they are experiencing the subsequent language learning and use differently? Also, is it not possible that the higher idiosyncrasy of L2 users' associative domain is a result of their developing multicompetence, which takes them beyond the L2 and L1 communality of associations? If this is the case, can we find evidence that L2 users in fact develop their associative meaning connections for familiar vocabulary along idiosyncratic lines, rather than maintaining a state of nativelike associative communality for such words?

To answer these questions and examine the effects of multicompetence on L2 users' associative connections with a group of proficient L2 users, the following hypotheses were formulated:

- (1) At the higher levels of proficiency, L2 users' mental lexicon organization is largely characterized by unique associative links, developed as a result of their multicompetence rather than as a result of either L1 or L2 associative influences.
- (2) At the higher levels of proficiency, neither the L1 nor the L2 exercises a strong influence on the way L2 users build connections among the L2 words they know.
- (3) At the higher levels of proficiency, the size of L2 users' associative domain is similar to that of NSs.
- (4) Compared to NSs, L2 users at the higher levels of proficiency develop their associative meaning connections for familiar vocabulary along idiosyncratic lines rather than through commonly shared associative patterns.

Method

Participants

To test the hypotheses, three groups of adults of both genders participated in the study – NSs of Bulgarian ($n = 36$), NSs of English ($n = 36$), and Bulgarian L2 users of English ($n = 36$). All participants were age 18 and older. The Bulgarian and English NSs were undergraduate students of different majors enrolled in regular courses at universities in their respective countries – Bulgaria and the USA. The L2 group consisted of Bulgarian L2 users of English who, at the time of the experiment, were enrolled in advanced or higher-intermediate English certificate preparation courses in Bulgaria. They all reported they had learned English through formal instruction in Bulgaria. No proficiency test was administered prior to the experiment, since these

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students were placed into different certificate preparation courses (Cambridge First Certificate of English, Cambridge Certificate in Advanced English, and TOEFL) on the basis of preliminary placement tests, which largely reflected the format of the actual certificate exams. On the basis of the placement tests, the overall proficiency of the L2 group was higher intermediate to advanced. The English and the Bulgarian native speaking participants were asked to rate their knowledge of another language on a 5-point scale (0 = no knowledge, 1 = beginner, 2 = lower intermediate, 3 = intermediate, 4 = upper intermediate, 5 = advanced); the ratings for the L1 English speaking (EL1) group ranged from 1 to 1.70; for the L1 Bulgarian (BL1) speaking group, it ranged from 1.5 to 2.75. Thus, the self-reported ratings revealed a relatively low level of knowledge of another language in both groups of native speaking participants – or, at least, substantially lower than the L2 participants' knowledge of English.

Materials and procedure

Two versions of the same test instrument were compiled – one in Bulgarian and one in English. The test instrument in English contained 36 prompt words (PWs) selected from a larger sample of stimuli. The test items were matched for lexical category and frequency of occurrence by selecting 12 PWs from each of the three lexical classes (nouns, verbs, adjectives), four from each of three frequency bands (low, mid, high). The frequency of each PW was identified by its Standard Frequency Index (SFI), which is a logarithmic transformation of the frequency of a word per million tokens in a corpus of an infinite size (Zeno, Ivens, Millard, and Duvvuri 1995)² (see Appendix A). To avoid noticeable clusters of PWs from the same lexical class or similar frequency in the test, the items were randomized. To ensure comparability of WAs across the three groups and avoid the inherent lexical class ambiguity in the English language, whenever a PW could belong to more than one lexical class, the intended lexical category was listed next to the prompt (e.g. *official* (adj.)).

After the English version of the test was compiled, the PWs were translated from English into Bulgarian by a NS of Bulgarian, and then the translations were double-checked with a dictionary to ensure the words were as equivalent as possible in both tests. The lexical class was completely preserved in the translations and there was only one instance of lexical ambiguity, where the lexical class had to be listed next to the ambiguous item. Unfortunately, the analysis of the comparative English–Bulgarian frequency of occurrence of the PWs did not yield satisfactory results, most probably because word frequencies across languages cannot be easily matched, if at all.

All participants completed their respective versions of the test in writing – the BL1 group took the Bulgarian version of the test, the EL1 and the L2

group completed the English version. To ensure familiarity, since three frequency bands were represented in the test sample, each PW was accompanied by a word familiarity scale similar to that used by other researchers (e.g. Dale 1965; Paribakht and Wesche 1993) in which the participants rated their degree of word familiarity with each PW on a scale of four options. Choosing option I (*I have not seen this word before*) or II (*I have seen this word before but I don't remember what it means*) did not require any further explanation, while choosing III (*I think this word means _____*) or IV (*I know that this word means _____*) required them to verify their familiarity with the PW by writing down a synonym or brief explanation of the test item. After having done this, the participants were asked to write down up to three WAs.

It should be noted here that the test design was based on a number of important decisions. The decision to use a vocabulary knowledge scale instead of a checklist test format, for example, was based on findings that the 'best' set of predictors of lexical knowledge across native speaker and L2 user groups always contains verifiable self-report as a factor, among other variables (Zareva 2005). On the other hand, Zareva (2008) found that, even though adult language users generally have heightened metacognitive awareness which usually results in a high correlation between self-reported and actual knowledge of words, the use of a familiarity scale captures some 5–10% differences between both, which otherwise will go unnoticed. Thus, since the analyses of the data were based only on WAs given to words the participants could acceptably verify that they knew, it was of paramount importance to ensure that the test instrument reliably captured familiarity. Additionally, since the last research hypothesis was intended to test the possibility of L2 users naturally developing their meaning connections along idiosyncratic lines rather than L1- or L2-based communality, it further demanded a reliable measurement of familiarity. The decision to ask the participants to provide up to three responses, instead of just one or as many as they could generate, was motivated by a concern to obtain a reasonable number of WAs for each word and for each participant while avoiding chaining of responses. Thus, overall, a total of 5,910 WAs in response to familiar words were collected ($n_{BL1} = 2,056$; $n_{EL1} = 2,028$, and $n_{L2} = 1,826$), which is a substantial amount of WA data to work with.

The requirement that a familiarity verification should adequately reflect at least one of the meanings of the PW in addition to its syntactic properties was systematically applied to the decisions about the acceptability of the synonyms and explanations provided by the participants. For a synonym to be considered acceptable, it had to be semantically and syntactically relevant to the PW (e.g. *advantageous* (PW) – *beneficial* (acceptable synonym), but not *advantage*). The acceptability of the brief explanations was based on criteria used in lexicography for defining words by part of speech (for more information see Landau 2001), which generally follows the same principal requirement of semantic and syntactic relevance (e.g. *amoral* (PW) – *not being moral* (acceptable explanation) but not *about moral*).

Scoring procedure

Three lists of WAs given to familiar words were compiled – one for each group of participants (BL1, EL1, and L2). Then, the responses generated by each group were lemmatized by applying the following general criteria to both languages, where appropriate:

- (a) Base words and their regularly inflected forms were combined as one item. In English, those included inflectional *-s* for nouns (*boy* and *boys*), inflectional *-s* for verbs (*organize* and *organizes*), and inflectional *-er* and *-est* for adjectives and adverbs (*pretty* – *prettier* – *prettiest*; *fast* – *faster* – *fastest*).
- (b) Suffixes *-ing* and *-ed* (e.g. *cleaning*, *planned*) were treated as derivational, since the task itself (elicitation of single word responses) does not allow for treating them as inflectional.
- (c) Multiword responses (e.g. *bad judgment*, *good opportunities*) were lemmatized on the basis of the head of the phrase (i.e. *judgment*, *opportunities*).
- (d) Derivations were treated as separate items (*pitiful*, *happiness*, *dishonesty*, etc.).
- (e) Irregularly inflected forms (e.g. *children*, *better*, *went*) were also treated as separate forms.

Thus, the three lists contained WAs given to familiar PWs only, with a tally of how often each response was given.

To test the four hypothesis, the data were scored in several ways. First, each L2 participant's WA was coded as Bulgarian-like, English-like, overlapping, or idiosyncratic, and then the proportions were calculated. Table 1 shows examples of how the WAs were coded with respect to the four measures, which are explained in greater detail below.

(1) *Bulgarian-like WAs* was a measure that showed the proportion of WAs in the L2 data which appeared to be direct translations from Bulgarian into English. In other words, those were interlingual WAs that occurred in the BL1 and the L2 group data (as translations), but did not occur in the EL1 associative list.

Table 1. Illustrative cases of interlingual (Bulgarian-like), intralingual (English-like), and overlapping WAs

Measures	PW	L2 group	Bulgarian NSs	English NSs
Bulgarian-like WAs	advantageous	life	живот (<i>life</i>)	–
English-like WAs	advantageous	helpful	–	helpful
Associative overlap	advantageous	good	добър (<i>good</i>)	good
Idiosyncratic WAs	advantageous	successful	късмет (<i>luck</i>)	assisting

(2) *English-like WAs* were intralingual associations that showed the proportion of WAs shared by the L2 and the EL1 group which, however, did not occur in the BL1 associative data.

These two measures were used to account for effects that may be exclusively L1- or L2-based.

(3) *Associative overlap* was a measure that captured the proportion of WAs in the L2 data that could be attributed neither to the participants' L1 (Bulgarian) nor to their L2 (English) influence alone – that is, this measure accounted for the responses that occurred in all three groups' associative domains. This variable was aimed to capture the associative overlap that naturally exists across languages which, if not accounted for, is usually attributed to positive transfer from the L1, though its source may not be clear.

(4) *Idiosyncratic associations* was a measure that accounted for the proportion of WAs that were specific only to a particular group and did not occur cross-sectionally.

(5) *Number of associations* was a numerical value that reflected the absolute number of WAs generated to any familiar PW. Each familiar PW could elicit a maximum of three WAs, and the total number of responses generated by a participant was considered to reflect the size of his/her associative domain.

(6) *Within-group associative communality of responses*. In this study, 'associative communality' refers to within-group shared communality of responses, which is a more meaningful and sensitive index of how well a word is integrated in the lexicon of NSs and L2 users alike than a degree of shared *nativelike communality* of L2 learner associations (see Zareva et al. 2005 for more information). Each participant's response was coded as *common* (if it occurred at least twice in the respective WA list) or *hapax* (if it occurred only once in the respective WA list). To find out the extent to which a participant shared or used idiosyncratic associations compared with his/her membership group, the numerical values were converted to proportions indicating the degree of within-group associative communality or idiosyncrasy.

Results

To evaluate the hypothesis that L2 users' mental lexicon organization is largely a result of their developing multicompetence rather than of either L1 or L2 influences alone, paired-sample t-tests were conducted on the L2 WA data whereby the proportion of idiosyncratic WAs was compared to the proportion of Bulgarian-like, English-like, and overlapping WAs. It was of interest to see whether L2 users' associative idiosyncrasy competed with the other three types of semantic connections or simply contributed more or less equally to them. The results indicated that, for the L2 group, the mean proportion of idiosyncratic WAs ($M = 51.91$, $SD = 23.58$) was significantly greater than the mean proportion of Bulgarian-like WAs ($M = 12.14$, $SD = 9.84$, $t(35) = 9.52$, $p < .05$), English-like WAs ($M = 11.47$, $SD = 10.66$,

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$t(35) = 2.49, p < .05$), and the associative overlap across the three groups ($M = 21.42, SD = 21.29, t(35) = 4.43, p < .05$) – thus suggesting that, at the higher proficiency levels, the L2 lexicon is connected along semantic lines which are tagged neither on L2 users' L1 nor on L2 nativelike associative links. Rather, the lexicosemantic connectivity of the L2 lexicon takes its own path of development, which is probably a result of the L2 users' developing multicompetence.

The second hypothesis stated that, at the higher levels of proficiency, the L1 and L2 exercise a small influence on the way L2 users connect the L2 words they know in their mental store. To isolate the L1 and L2 influences from the associational overlap that exists across languages, which may naturally trigger the same WAs from NSs and L2 users alike, the proportion of their L1-like, L2-like, and overlapping responses were compared. The comparison was intended to reveal whether any of those connections should be expected to have a dominating effect on the L2 lexicon. The paired-sample *t*-tests showed that the proportion of Bulgarian-like WAs ($M = 12.14, SD = 9.84$) did not differ significantly from the proportion of English-like WAs ($M = 11.47, SD = 10.66, t(35) = .26, p > .05$) – which suggested that, at the higher level of proficiency, the associative connections in the L2 users' mental store are influenced by some 11–12% of each of the L2 users' acquired languages, which may safely be considered a relatively small influence. However, along with the L1 and L2 influence, there was an additional proportion of associative overlap ($M = 21.42, SD = 21.29$), which was significantly higher than the Bulgarian-like ($t(35) = 2.12, p < .05$) and the English-like WAs ($t(35) = 2.49, p < .05$) indicating a 21% associative overlap that cannot be exclusively attributed to either the L1 or the L2. Figure 1 summarizes the findings from the two analyses and shows the proportion of influences on participants' associative domains that can be attributed to their two languages, the conceptual overlap across languages, and other influences that result in idiosyncrasy. This finding will be further elaborated on in the discussion section.

To evaluate the last two hypotheses which were related to the size and the within-group consistency (communality) or diversity of the participants' WA domains, a series of one-way ANOVAs were conducted. The independent variable (group) had three levels: Bulgarian L2 users of English, NSs of English, and NSs of Bulgarian. The dependent variables were (a) number of WAs generated to familiar PWs, (b) within-group associative communality, and (c) within-group associative idiosyncrasy. Means and standard deviations are presented in Table 2. The analyses yielded statistically significant mean differences among the three groups on the proportion of their within-group associative communality, $F(2, 105) = 8.778, p < .001$, as well as on the proportion of their within-group associative idiosyncrasy, $F(2, 105) = 10.91, p < .001$. However, there were non-significant differences among the three groups in the size of their associative domains, $F(2, 105) = .646, p > .05$. Thus, the hypothesis that at the higher levels of proficiency L2 users'

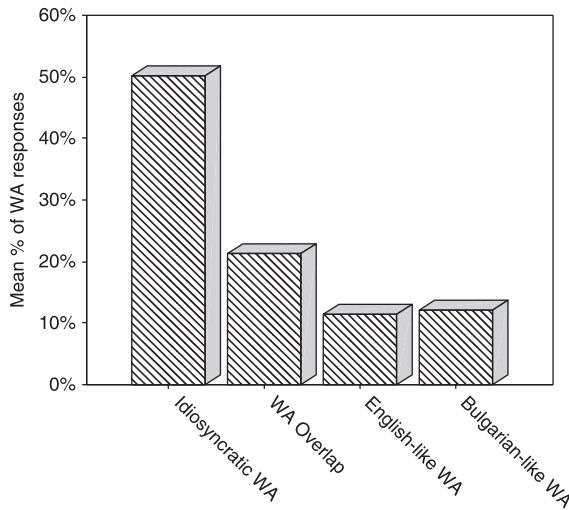


Figure 1. Distribution of the proportion of idiosyncratic, overlapping, English-like, and Bulgarian-like responses in L2 users' associative domain

Table 2. Group means and standard deviations of number of WAs and the proportion of common and idiosyncratic WAs generated by the three groups of participants

Factors	L2 group			Bulgarian L1			English L1		
	No.	Mean	SD	No.	Mean	SD	No.	Mean	SD
No. of WAs	36	50.72	29.51	36	57.11	14.48	36	56.33	30.84
% of common WAs	36	31.53	17.96	36	48.91	15.39	36	42.52	19.81
% of idiosyncratic WAs	36	65.69	20.49	36	51.36	15.48	36	54.72	20.65

associative breadth of the associative domain compares well to NSs was confirmed. The last hypothesis, which stated that unlike NSs who tend to show a high degree of associative communality, L2 users at higher levels of proficiency naturally develop their associative meaning connections along idiosyncratic lines, was also confirmed.

To further explore the differences among the participants' associative organization, post hoc pairwise comparisons were carried out to compare the three groups on their within-group communality and idiosyncrasy. The post hoc comparisons, in which the significance level was adjusted to .05 based on Bonferroni rationale, revealed that there were statistically significant differences between the L2 and the two native speaker groups in all subsets of comparisons. That is, there were meaningful differences between the L2

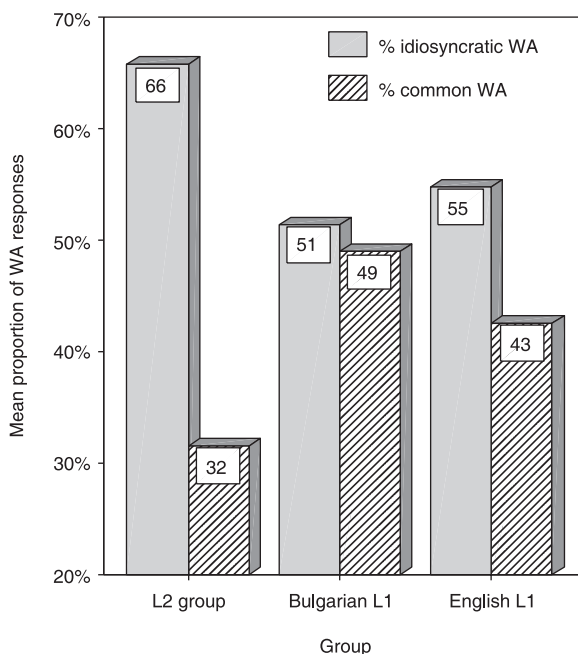


Figure 2. Proportion of idiosyncratic and common WAs among Bulgarian L2 users of English, L1 Bulgarian, and L1 English speakers

and BL1 group in the proportion of within-group communality, 95% *CI* [confidence interval] = (-27.603, -7.174) as well as the proportion of within-group idiosyncrasy, 95% *CI* = (3.423, 25.245). Similarly, there were statistically significant differences between the L2 and EL1 group in the proportion of within-group communality, 95% *CI* = (-21.215, -.786) and the proportion of within-group idiosyncrasy, 95% *CI* = (.062, 21.882). Finally, while the differences between the proportion of idiosyncratic and commonly shared WAs for the L2 group were significant ($t(35) = 5.90, p < .05$), those differences were only chance differences for the BL1 ($t(35) = .48, p > .05$) and EL1 group ($t(35) = 1.98, p > .05$) (see Figure 2). The findings will be discussed in the section that follows.

Discussion

The study set out to explore the notion of multicompetence in the context of L2 users' associative connections. WA tests have for a long time been used by L1 and L2 researchers alike to probe the variety of semantic connections language users develop as native speakers and L2 users. Many researchers (e.g. Greidanus and Nienhuis 2001; Kruse, Pankhurst, and Sharwood Smith

1987; Meara 1978; 1996; Read 1993; Schmitt 1998; Wesche and Paribakht 1996; Wilks and Meara 2002; Wolter 2001; 2002; Zareva et al. 2005; Zareva 2005, 2007) seem to agree that using WA tests can be a valuable instrument for collecting data that are revealing of the way language users organize their lexical knowledge. However, to my knowledge, no study has looked at L2 users' associative meaning connections in terms of their multicompetence, which reflects the constantly changing relationship between the two (or multiple) languages in one mind and leads to a unique state of mind that is neither L1- or L2-like, nor the sum total of all languages one knows. In this regard, interpreting differences between L2 users and native speakers as L2 users' failure to attain nativelike competence without considering the possibility that some of those differences develop naturally (especially when baseline competence is comparatively established), in my view, does not do much service to the ESL/EFL teaching community.

There is no doubt that within every language a fair degree of consistency in the associational patterns of native speakers exists, and this communality may be linked to the way lexical items are organized and stored in individuals' mental lexicon (Clark 1970; Deese 1965; White 1988). This also means that L2 users come into the L2 learning experience with an already developed sense of the value of having their words interconnected, which they readily apply to the new language in several possible ways. One possibility would be to start developing associative connections between the words they have in their L2 repertoire anew, independent of their L1 WA links, in which case we should expect that their WAs would resemble the WAs typical of their L2. Another possibility would be to tag their L2 words along the L1 translations of the same words, in which case we should expect their L2 WAs to be mostly translations of their L1 WAs. A third possibility would be a combination of both, where some of the L2 WAs are translations of L1 WAs and some are linked to typical L2 WAs, in addition to there being associative links common to both languages. A final possibility would be to add to the last model WAs that are neither L1- nor L2-based, yet form part of the L2 associative domain. In general, the last two models would give good evidence in support of the effects of multicompetence on L2 users' development of semantic connections, in that they reflect the combined effects of L1 and L2 on the development of their associative links, in addition to a certain degree of language-neutral path of associative connectivity.

To find out whether this may be the case, one of the goals of the present study was to capture the extent to which the L1 and L2 contributed to the L2 users' development of semantic links between familiar words, and the extent to which their associative connectivity was independent of both their languages. Another goal was to find out whether L2 users' associative domains can be characterized mostly as diverse or whether they show some distinctive associative communality of their own. Thus, to test the research hypotheses related to the goals of the study, three groups of participants (NSs of English, NSs of Bulgarian, and proficient Bulgarian L2 users of

English) were recruited for the experiment. The decision to compare the associative responses of the L2 group to a BL1 group, instead of asking the L2 participants to generate WAs in their L1, was to avoid possible L2–L1 effects on the BL1 WA data. So, the two native speaking groups provided WA baseline data for each of the L2 users' languages. A step that was considered very important in the study design was to ask the participants to verify their knowledge with the PWs before generating WAs to the prompts. This step was a notable improvement on most previous WA study designs in several ways: first, unlike most previous research, which used high-frequency words to ensure familiarity, the test instrument used here contained words from three frequency bands (high, mid and low) which necessitated obtaining evidence of familiarity; second, it was important to control for lexical knowledge across the three groups in order to eliminate possible effects of unfamiliarity with some of the PWs on the associative behavior of the participants; finally, it was necessary to establish reliably a comparable degree of PW familiarity among the three groups before interpreting any meaningful differences in their associative responses.

The next step was to find out how the participants' associative breadth compared in order to see whether their overall connectivity was of similar quantitative stability. The results indicated that on average the L2 users could generate approximately as many associations ($M = 51$) as the BL1 ($M = 57$) and EL1 ($M = 56$) group, which suggested that well-developed vocabularies allow language users to associate every familiar word with at least one other word they know. This lexical interconnectivity results in stable semantic connections which, most probably, facilitate production and retrieval of words in natural language use. Of course, the size of the associative domain develops with proficiency (Lambert 1956; Randall 1980; Zareva et al. 2005), but evidently, L2 users of higher-intermediate and advanced level of proficiency (like the proficiency range of the L2 participants in this study) connect the L2 words they know to as many things and ideas as native speakers do. This finding can also be interpreted in terms of increased meaningfulness of semantic links among words as proficiency increases, meaning that as one progresses in experience with a language, the greater number of connections are called forth by words known to the individual, the more meaningful they become to that individual (Lambert 1956).

Having established similar quantitative connectivity among the three groups in terms of number of associations generated to the PWs, it was of interest to see how multicompetence affects the nature of L2 users' semantic connections in terms of shared semantic communality and distribution of WAs that are L1- or L2-driven or language-neutral. In light of Cook's view (1992), finding evidence of associative interaction between the L1 and L2 associative patterns in L2 users' associative connections would give us evidence of effects of multicompetence at an associational level. Besides, only a few studies (e.g. Kolers 1963; Lambert and Moore 1966; Riegel and Zivian 1972; Rozenzweig 1961; Ruke-Dravina 1971) have looked at the extent to

which each of L2 users' languages contributes to their associative links, and even fewer have compared responses in English to responses in other languages. The results of this line of analysis painted an interesting picture. They revealed that the L1- (12%) and L2-specific associative behavior (11%) contributed almost equally to the associative connections in the L2 lexical store, and this influence seemed somewhat small. In addition, it was possible to isolate another 21% of associative overlap across both languages – i.e. WAs that occurred as responses in each group's data – thus accounting for influences that cannot be specifically attributed to either of the L2 users' languages. So, on average, almost half of the L2 associative links were L1- or L2-influenced, of which only half can specifically be attributed to either the L1 or L2, while the other half (52%) were language-neutral in the sense that they were neither L1- nor L2-like but idiosyncratic in nature. This suggests that a substantial part of the L2 lexicon of higher-proficiency individuals is connected along semantic lines which are tagged along neither their L1 nor their L2 WAs. Rather, as suggested by the notion of multicompetence, the semantic connectivity of the L2 lexicon takes an independent route of development, beyond the L1 or L2 bounds, aiming at building connectivity rather than nativelikeness.

This was further confirmed by the examination of the participants' degree of associative stereotypy or communality, which is frequently argued to reflect stability and nativelikeness (e.g. Schmitt 1998). Overall, the two native speaker groups (BL1 and EL1) showed a tendency towards more or less equally distributed patterns of commonly shared WAs and hapaxes (WAs that were idiosyncratic as they occurred only once in a list), since the difference between both was not found to be significant. It is highly possible that this distribution is a result of the written mode of test taking, coupled with the fact that the participants were not restricted in time during the WA task. However, another possible explanation is that this rather balanced distribution is a consequence of the PW characteristics, since the PWs in the sample were equated for part of speech (nouns, verbs, and adjectives) and word frequency (high, mid and low). Though beyond the scope of this paper, a cursory examination of the communality patterns as influenced by the lexical class and the frequency of the PWs revealed that mid and high frequency nouns evoked on average 52–59% of common responses across the three groups, compared to 33–48% common responses for mid and high frequency verbs, and 38–39% for adjectives. This suggests that associative communality is not just a typical group behavior, but behavior that reflects the subtle interplay of a number of word features (lexical class, word frequency, etc.) which should not be ignored. This further underscores the importance of careful word selection in lexical research – so as to allow for generalization across the lexicon as a whole, and for comparison of findings across different studies.

Looking back at the communality patterns of the L2 group, it should be pointed out again that the results clearly indicated a distinctive pattern of

associating idiosyncratically (66% of the L2 WAs were idiosyncratic) rather than along commonly shared patterns. Apparently, L2 users connect the L2 words they know in a greater number of different ways than native speakers do, resulting in building connectivity in ways that are unlike native-like. Close examination of the data showed that the L2 responses were as relevant to the PW as were the NS responses; yet they probably reflected experiences with the words in contexts that were not commonly shared by the NSs of both languages as well as by the L2 participants themselves.

Conclusions

Ever since Sir Francis Galton (1883, cited in McNeill 1966) invented the WA test, it has been commonly assumed that responses to PWs arise through a process of recall (McNeill 1966). In other words, it has been assumed that associative links between words form as a result of experiences with those words in contiguity which, consequently, gives rise to commonly shared WAs among native speakers of a given language. However, as pointed by McNeill (1966), this longstanding assumption can be challenged on several counts. First, such a claim would predict similar strength of associative communality across different languages, which was not found to be the case even across several European languages (e.g. Lambert and Moore 1966; Riegel and Zivian 1972; Rosenzweig 1961; Ruke-Dravina 1971). Secondly, if association were based entirely on contiguity, then NSs' WA patterns would be dominated by syntagmatic links (broadly speaking, links between words of different lexical classes that may naturally co-occur in strings), which was not found to be the case with adult NSs of English. Instead, multiple past and recent studies have found that the EL1 lexicon is paradigmatically dominated, which could not have happened under the assumption of contiguity. Therefore, it is only logical to conclude that relations between words are formed partly on the basis of contiguity (e.g. *baseball* [PW] – *cap* [WA]) and partly on the basis of possible replacement of same-class words in sentences (e.g. *small* [PW] – *big* [WA] as in the sentence *The house is small/big*). Thus, it seems that NSs develop lexicosemantic links among the words in their mental lexicon by virtue of at least two different types of language experiences: one that largely promotes communality (especially among high-frequency words) which is based on experiences with words in contiguity, and a second one that promotes paradigmatic links which develop as knowledge of words expands. To assume, therefore, that NNSs, especially the ones who have learned another language through formal instruction, would have experiences similar to those of NSs with the L2, is simply ungrounded. Rather, the findings of this study suggest that building semantic connectedness among L2 words is motivated by L2 users' natural drive to maintain connectivity of their lexicons which, however, is unlike the patterns of connectivity of the L1 speakers of both their languages. While the

sizes of participants' associative domains for familiar vocabulary were comparable in breadth, as a result of the effects of multicompetence, the L2 users were shown to be unlike nativelike in that they seemed to have developed their associative connections favoring diversity over communality, and language-neutral idiosyncrasy over L1 or L2 nativelikeness.

Notes

1. It is beyond the scope of this paper to discuss theoretical differences between multicompetence and bilingualism, but it should be pointed out that the two concepts have a lot in common since they both apply to individuals who know more than one language. Moreover, in supporting his claim of qualitative differences between the language knowledge of users of more than one language and that of monolinguals, Cook drew heavily on research on bilingualism claiming cognitive differences between monolingual and bilingual language users (Hall et al., 2006). Despite the similarities, however, the two notions seem to hold some disparate assumptions regarding the integration of the language systems of bilinguals.
2. *The Educator's Word Frequency Guide* (Zeno et al. 1995) is based on over 14 million words from a wide range of texts that students in the United States are likely to encounter during their school and college years. The frequency of each word included in the test was identified by its Standard Frequency Index (SFI), rather than its *u*-value, as it provides a more compressed range of values than the *u*-value, while completely retaining all its advantages (Zeno et al. 1995).

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Appendix A. English PWs

Frequency	Nouns	Verbs	Adjectives
high	experimentation studio hunger (n.) blanket	weaken refuse (v.) sweep (v.) back (v.)	toxic beaten official (adj.) second (nmrl.)
mid	coinage drawback (n.) pillar bracelet	forgo concede fathom (v.) array (v.)	middling (adj.) naïve advantageous defensive
low	rigidity masochism edifice cassava	gambol entrust savor unnerve	putative amoral point-blank (adj.) lackadaisical