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The development of L2 inflectional morphology and cross-language interference effects

Vývoj flektivní morfologie druhého jazyka a mezijazykové interferenční efekty

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1. Introduction

Second-language morphology is the centre of attention of many theories and studies on second-language acquisition. Two areas of research have proved especially fruitful to the investigation: (1) the specificity of second-language morphology acquisition and the issues that are connected with it, and (2) its difference from the acquisition of morphology in the learner's mother tongue. So far, researchers have been unable to give a clear answer on which specific problems underlie the second-language acquisition of morphology and how the mother tongue actually influences this acquisition. Particular attention has been paid to the mechanisms involved in the processing of both monolingual and second-language morphology in real time and its role in the organization of the mental lexicon.

So far, only a few studies have focused on the study of second-language morphology at the sublexical level with no access to the lexical meaning, employing only the generalization mechanism and focusing solely on the grammatical form (e.g., Murphy, 2000; Cuskley et al., 2015). Even fewer studies have aimed to investigate both second-language morphological production and perception. Still, a substantially smaller number of studies have previously attempted to describe the development of second-language morphology from the initial stages of L2 learning to near proficiency (usually involving only two or three proficiency groups, e.g., Jiráňková, 2017). This thesis, therefore, aims at (at least partially) filling this gap by investigating the development of inflectional morphology in second-language learners of English with Czech as L1 at different stages of proficiency ranging from the very beginners to nearly proficient speakers and describing potential cross-language interference effects. My main research area was the storage of inflectional morphology and its online processing. In addition to that, I tried to investigate the role L1 Czech might play in this acquisition. The thesis, therefore, focuses both on the perception and production of English inflectional morphology and attempts to bring new insights into a major and long-standing psycholinguistic debate about a speaker's ability to (a) perceive and (b) produce (novel) morphologically inflected forms and (c) the role of L1 in it.

In order to investigate the complexity of L2 morphology acquisition, three experiments were carried out: (1) one concentrating on the sublexical perception of morphologically inflected forms, (2) one concentrating on the production of novel morphologically inflected verbs, and (3) one concentrating solely on the possible cross-language interference effects from Czech. The dissertation is, therefore, organized as follows: Chapter 1 offers a brief introduction to the topic. Chapter 2 provides a theoretical overview of inflectional morphology, its acquisition in L1 and L2, the specifics of acquiring L2 morphology, information on the two (alternatively three) models of processing, a brief overview of past research on L2 perception and production, along with the aims of the thesis, the means of their attainment, and hypotheses. The following three chapters then describe each experiment in detail. Chapter 3 introduces the perception experiment with a theoretical background specific to the experiment, our hypotheses, methodology, practical analysis, and the discussion of the findings. A similar structure is found in Chapter 4, which presents the production experiment, and Chapter 5, which provides a detailed description of the lexical decision task. Chapter 6 then offers a

section on a general discussion and conclusion with a brief overview of the findings, their relevance in association with previous studies, a reflection of the limits of the study, directions for future research, and a suggestion for a new teaching method concerning the acquisition of L2 past-tense morphology.

The outcome of this thesis is twofold. Our findings are relevant from the theoretical perspective since we get a closer look at how the sublexicon operates for L2 learners of all language levels, how inflectional morphology is stored and processed by L2 learners of English, and how L1 Czech influences the performance. Implications for L2 acquisition of inflectional morphology are addressed using the findings of our experiments. The results are also relevant for pedagogical practice and L2 learning. Our findings help us view L2 acquisition of inflectional morphology in a new light – this includes the specifics of L2 acquisition of inflectional morphology and the role of L1 Czech – and new methods of instruction are proposed as a consequence.

2. Theoretical framework and experiments

Word-final positions are interesting both morphologically and phonologically since they are generally prone to deletion and assimilation (Roach, 2009; Harris, 2011) and can carry morphological information (Pater, 2004). English word-final inflectional suffixes *-(e)s* and *-(e)d* also follow specific morphophonological rules of pronunciation. Czech bound inflectional morphemes occupy the word-final position as well; yet, in Czech, the morphological repertoire is much more varied. Since Czech is a morphologically richer language, it has a greater repertoire of bound morphemes that express inflection, and it is therefore very interesting to compare Czech, which is morphologically rather rich, and English, which is in general much poorer in terms of inflectional morphemes with which it operates.

Previous experimental and longitudinal studies show that children acquire their L1 grammar in a natural order (Brown, 1973). The morphological order of acquisition seems to extend both to L2 children (Dulay and Burt, 1973) and L2 adults (Bailey et al., 1974), while L1 does not appear to influence the acquisition order (Dulay and Burt, 1974; Bailey et al., 1974). However, previous research (Hakuta, 1976; Guasti, 1993; Luk & Shirai, 2009; Guasti, 2017) has shown that the language background might, in fact, influence the acquisition of inflectional morphemes – for instance, that speakers of morphologically poorer languages tend to acquire proper inflectional morphology later than speakers of morphologically richer languages. There has been extensive effort to explain the L2 inconsistencies in using L2 morphology and the challenges L2 learners confront. The thesis thus briefly describes the consonant cluster reduction hypothesis (Bliss, 2006), the prosodic transfer hypothesis (Goad et al., 2003), the failed functional features hypothesis (Hawkins & Chan, 1997), the shallow-structure hypothesis (Clahsen & Felser, 2006), or the missing surface inflection hypothesis (Haznedar & Schwartz, 1997).

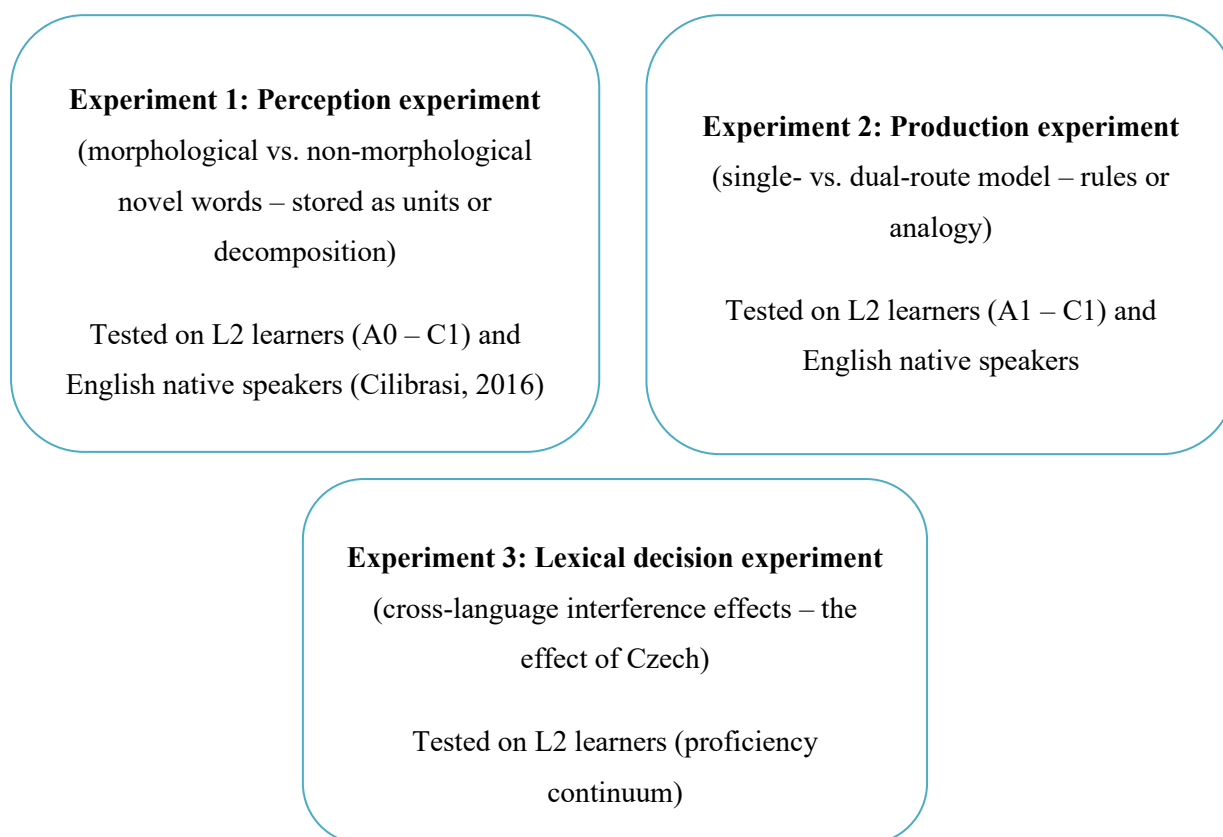
Traditionally, two approaches to explaining morphological processing are regarded as direct opponents: (i) the single-mechanism approach, which posits that all morphologically inflected forms are stored and processed through one mechanism based either on analogy to stored forms (Bybee, 1995) or solely on the online use of morphosyntactic rules (Halle & Mohanan, 1985) and (ii) the dual mechanism (Prasada & Pinker, 1993; Chialant & Caramazza, 1995; Clahsen, 1999), which posits that the processing of regular and irregular forms is governed by two different processes – while irregulars are stored as units in our memory and retrieved as wholes during production, regulars are processed and produced online through the use of rules (Clahsen, 2006). Sometimes, a third “hybrid” mechanism of morphological processing is cited (e.g., Albright & Hayes, 2003), which “makes use of multiple, stochastic rules” (Albright & Hayes, 2003: 120), combining associative processes and phonological micro-rules into a structural analogy.

In order to test the use of a generalization mechanism and not activate semantics, the thesis employs novel verbs that were deemed phonotactically legal in English to test the perception and production of inflectional morphology in second-language learners of English, most specifically to look at how inflectional morphemes are stored and whether morphologically-inflected forms are produced through rules or analogy. The aim of this dissertation is, therefore, to look more closely into the development of second-language inflectional morphology both in perception and production, find evidence for either the single- or dual-route model (or both), and describe the role L1 has in this development. To test our hypotheses, three experiments were carried out:

1. The first experiment attempts to answer the question of whether L2 learners use morphological decomposition (also known as morpheme stripping) during language processing. In order to find evidence, we explored the perception of morphological contrasts applied to the endings of novel words. For these purposes, we recruited 9 L2 learners at the A0 to C1 levels and conducted a reaction-times experiment in which the subjects were supposed to decide whether the items in the presented minimal pairs of novel words were identical or different. To see if the findings also apply to other languages, the study was compared to Cilibrasi’s study (2016), which tested 30 adult native speakers of English.
2. The second experiment attempts to answer the question of whether L2 learners use rules or analogy when producing past-tense forms and whether this strategy changes during the course of language acquisition. In order to inspect this issue, we tested how L2 learners generate novel morphologically inflected forms, using an elicitation task to examine which of the two previously-mentioned models best accounts for L2 learners’ morphological productivity. 88 adult English L2 learners at A1-C1 proficiency levels and a control group of 9 native speakers heard sentences about someone performing a novel activity (e.g., *The baby likes to dize. Look, there he is dizing. Everyday he dizes. So yesterday he...*). Produced forms and reaction times were recorded. To see if the findings once again apply to other languages, as well, L2 learners were compared to native speakers.

3. In the third experiment, we aimed to look at any potential cross-language interference effects to see if Czech could be used as a facilitator in L2 performance. In order to do that, we recruited 30 participants that created a continuum of language proficiency and presented them with a lexical decision task. The participants were asked to decide whether a series of items they heard were real English words or not. The stimuli consisted of real English words and novel words, which were divided into two halves: one phonotactically legal both in English and Czech and one phonotactically legal in English but not in Czech. This was done in an attempt to understand any possible transfer effects from L1 Czech.

A schematic summary of the experiments is provided below:



With these experiments, we attempted to provide a useful insight into the processing of inflectional morphology and the acquisition of the English past tense in L2 learners. The analysis of transfer effects also enabled us to look into the role of L1 Czech. Since our findings offer not only theoretical contributions but also pedagogical ones, the dissertation also discusses the potential consequences of our findings for L2 teaching methodology.

3. Experiment 1: The perception experiment

The processing of regular morphologically inflected verbs in English has been strongly debated since the advent of psycholinguistic research. One line of studies (e.g., Stemmer & MacWhinney, 1986; Bertram et al., 2000; Tomasello, 2000) proposes that regular morphologically-inflected items are stored as whole-word representations (i.e., units consisting of both the stem and the bound morpheme) in the mental lexicon (and accessed as such during perception). The other line of research (e.g., Berko, 1958; Pinker & Ullman, 2002; Guasti, 2004; Post et al., 2008) proposes that regular morphologically inflected items are stored as stems and affixes, not as whole units, but as separate items. During language perception, such inflected words would be divided into two parts in a process called morpheme stripping (Cilibrasi, 2016).

Recent monolingual studies show that morpheme stripping may not be taking place only in the processing of lexical items but also sublexically without the influence of semantics (see Grainger and Ziegler, 2011 for reading and by Post et al., 2008; Cilibrasi, 2016; or Cilibrasi et al., 2019 for the first-language perception). Having previously extended Cilibrasi's study (2016) to more proficient L2 learners of English (B1 to C1) with Czech as L1 (Jiráňková, 2017), I have shown that L2 learners perform similarly to monolingual native speakers – both groups were sensitive to the presence of morphosyntactic information in novel morphologically-inflected forms, decomposed them during perception into stems and affixes even sublexically, and implicitly analysed the phonetic quality of the stem (making a distinction between forms that followed basic rules of English morphosyntax and those that did not). Interestingly enough, frequency effects were similarly accurate in predicting reaction times, which gives some evidence for the (at least partial) use of the single-route mechanism. Previous research on the influence of L1 has also shown that morphologically richer L1s tend to produce morphological facilitation and greater accuracy in L2, with L2 learners being more sensitive and aware of morphology in L2 due to the influence of their L1 (see, e.g., Lehtonen & Laine, 2003; Lehtonen et al., 2006; Portin et al., 2006). Since studies usually do not test across a wide range of proficiencies, it is interesting to look even at lower-proficiency learners in this thesis and investigate the potential influence of morphologically rich Czech on morphologically poorer English to see if the difference in the morphological richness of L1 or the level of proficiency matters.

91 learners of English with Czech as L1 at A1 - C1 proficiency levels and 4 A0-level learners with zero or very little knowledge of English (to account for possible transfer effects) were, therefore, recruited and presented with a same/different decision task that contained minimal pairs of novel words with (i) potentially morphosyntactic information (e.g., /vɪld/ - /vɪlz/, with a voiced phoneme following a voiced stem-final phoneme in line with the basic rules of English morphophonetics), (ii) non-morphosyntactic information in which the bound morpheme can be morphological but not in the given phonetic context (e.g., /vɪlt/ - /vɪls/, with a voiceless phoneme following a voiced stem-final phoneme), and (iii) a voicing control condition (e.g., /vɪlb/ - /vɪlm/). The participants were asked to determine whether two consequent sounds were the same or different.

The reaction-times analysis has shown that morpheme decomposition was applied by all L2 learners even in the absence of word meaning. Since the participants took longer to discriminate novel words with potential morphosyntactic information than those without it, we can assume that all analysed language levels might have decomposed inflectional morphology into stems and affixes during perception. Given the difference in reaction times between novel words with and without potential morphosyntactic information, the results have also suggested that morphological decomposition is not blind (i.e., the participants realize that, for instance, the non-morphological condition violates the rules of English morphophonetics) and that L2 learners also seem to implicitly analyse the phonological quality of the stem and the affix simultaneously, suggesting that morphology and phonology go hand in hand in morpheme stripping and word parsing. However, the duration of the stimuli also had a significant effect on reaction times, which partly undermines this claim, suggesting that not only the morphosyntactic information but also the stimuli duration affects the performance. Apart from duration effects, the morphological decomposition was also accompanied by frequency effects (more specifically, by positional segment frequency of the stimuli) and a more embracing explanation of the observed perception is, therefore, needed.

Those findings extend previous support of monolingual morpheme-stripping processes associated with morphological perception (e.g., Post et al., 2008; Cilibrasi, 2016; Cilibrasi et al., 2019) to second-language learners of English. My findings suggest that a similar strategy might be used by L2 learners during perception. The participants seem to have used morphological decomposition and stem analysis from the very beginning of L2 acquisition, implicitly and apparently as a result of automatic language processing. They appear to do so in the absence of any lexical word meaning, which suggests that even for L2 learners of English morphological decomposition and stem analysis might occur sublexically, similarly to English native speakers. L2 perception of English inflectional morphology, therefore, seems to be nicely explained by the morpheme-stripping hypothesis with parallelly activated frequency effects, in line with the dual-route model (with important limitations related to duration effects).

As far as transfer effects are concerned, the reaction-times analysis has shown that even A1 learners preserved a similar overall reaction pattern to other proficiency groups and native speakers and were sensitive to the presence of English inflectional morphology. Since Czech is a highly inflected language, its native speakers seem to be overall sensitive to inflectional rules. My findings suggest that Czech as an L1 has facilitatory effects on the perception of English inflectional morphology, but the knowledge of English inflectional morphemes is needed for its proper perception and consequent production (based on the performance of A0 learners who did not distinguish between the conditions and were generally less accurate in distinguishing the minimal pairs). This clearly hints at the inflectional awareness related to L1 playing a role in the performance, as suggested, for instance, by Ku & Anderson (2003).

4. Experiment 2: The production experiment

The second experiment complements the first one and analyses similar phenomena but in production. The discussion of whether novel morphologically-inflected forms are generally produced by the application of rules (e.g., Prasada & Pinker, 1993) or by analogy based on stored examples (e.g., Bybee & Slobin, 1982) is continuously addressed. Special attention is being paid to the difference between regular and irregular inflection, particularly of the English past tense, since English encompasses a relatively clear-cut distinction between the two forms and, therefore, suits perfectly to the purposes of deciding between those two approaches.

As a consequence, two models have been proposed for past-tense production: (i) the single-route model (see, for instance, Bybee & Moder, 1983), which assumes that both regular and irregular past-tense forms are produced analogically to the word forms that already exist in our mental lexicon, and (ii) the dual-route model (e.g., Prasada & Pinker, 1993), which assumes that the two past-tense forms are produced by two different processes: The generation of regular past-tense forms is governed by the use of a basic rule for past-tense inflection (i.e., adding *-ed* to the verb stem), while irregulars are stored as units and used in analogical generalization. To ensure the use of generalization and avoid effects related to the lexical access, the predictions of the two models are generally tested with novel words (e.g., Prasada & Pinker, 1993; Albright & Hayes, 2003; Ambridge, 2010; Blything et al., 2018).

Studies in this field are numerous; the answer to the question of how morphologically inflected forms are generated, however, still remains unclear. The proponents of the dual-route model (e.g., Berko, 1958; Prasada & Pinker, 1993; or Pinker & Ullman, 2002) suggest that verbs are generally inflected by the application of a rule and offer evidence of participants producing more irregular past-tense forms with novel words resembling real irregular verbs and a high number of regularly inflected forms, seemingly independently of the novel verb's similarity to existing regular verbs. However, studies of frequency effects (e.g., Alegre and Gordon, 1999) also show that even regular morphologically-inflected words can be produced as whole units when their frequency exceeds roughly 6 per million. The proponents of the single-route model (e.g., Albright & Hayes, 2003; Ambridge, 2010; Blything et al., 2018) then show that a single mechanism of analogy application might be actually used with both regular and irregular forms.

This experiment builds on two of those previous studies. Both Albright and Hayes (2003; testing adults) and Blything et al. (2018; testing children) used an elicitation production task to examine which of the two models is better at describing morphological productivity in native speakers of English. They have shown that both past-tense forms of novel verbs are generated analogically to the existing word forms stored in our mental lexicon and ruled by their similarity to these stored forms (Ambridge, 2019). The findings in the field of novel-verb studies provide us with tentative evidence that the single-route model might be better at describing the morphological production of novel forms in comparison to the dual-route model and, consequently, that (structural) analogy prevails over rules in regular past-tense production. Previous studies on L2 learners show that the dual-route model is not capable of fully explaining and describing the production of L2 learners (see, for instance, the evidence of

frequency effects on regular verbs in Beck, 1997, or Ellis & Schmidt, 1998). Murphy (2000), Cuskley et al. (2015), and Agathopoulou (2009) also found that their L2 participants showed sensitivity towards phonological similarities between the novel and existing verbs, offering evidence for an alternative, associative model instead of the dual-route model. This experiment aims to explore a similar step in the acquisition of past-tense production and aims to explore (i) the development of morphological productivity of second-language learners of English and (ii) the effect of their L1 on L2 production.

In order to do that, 88 English second-language learners with Czech as their first language at A1 – C1 proficiency levels and a control group of 9 native speakers were recruited and presented with a production task with the 32 novel verbs adopted from Albright and Hayes (2003) and Blything et al. (2018) along with their similarities to existing regular and irregular verbs. The participants were told they would hear sentences in which someone would perform an activity described with a novel word. They were then instructed to finish the sentence when the recording stopped playing. The participants were thus prompted to say what the agent “did yesterday,” (e.g., *The baby likes to dize. Look, there he is dizing. Everyday he dizes. So yesterday he...*) and past-tense forms elicitation was ensured. Moreover, the 32 novel verbs were further divided into 16 phonotactically legal and 16 phonotactically illegal novel words for Czech to enable an L1 transfer analysis.

The analysis of the produced forms has shown that for the native speakers, the novel verb’s similarity to existing regular verbs played a significant role in the production of past forms, in line with the single-route model. In comparison, L2 acquisition of the English past tense was characterized by a progressive development from the mastery of mechanistic rules at the A1, A2, and B1 levels (by the default rule of adding *-ed* to the novel verb’s stem, seemingly irrespective of the novel verb’s similarity to existing regular verbs) to the refinement of their application by spotting analogical patterns of existing verbs at the B2 and C1 levels (already possessing a morphological system in which the production of regular past forms depends on the novel verb’s phonological similarity to existing verbs based on analogy). The second-language speakers thus show progressive changes in the development of inflectional morphology that come closer to native speakers with the higher proficiency of B2 and C1 levels.

Further analysis of the reaction times has also shown that for the A1-level learners, alongside the A2-level learners (although with a weaker effect), Czech implicitly functions as a facilitator in their performance, with participants being faster with novel words that are phonotactically legal in both Czech and English. For more proficient levels, there are no interference effects at play, and Czech functions neither as a facilitator nor as an inhibitor. The qualitative analysis of the produced forms has also shown some specific pronunciation issues, such as the use of full pronunciation of bound morphemes where a single phoneme is expected, that need to be addressed didactically. For L2 learners, the results of my research, therefore, propose a gradual progression from rule application to the use of analogy with facilitatory effects of Czech at the lower proficiency levels.

5. Experiment 3: Lexical decision experiment

Previous studies have found evidence for L1 transfer onto L2 across many language areas, and the initial reliance on the L1 does not seem to develop into a completely independent use of L2 even with higher L2 proficiency. Recent findings show an effect of L1 on L2 processing, even in proficient bilinguals (Kroll et al., 2002). The role of L1, therefore, does not seem to be easily separated from the processing in L2, and it is necessary to study its effect on the whole process of L2 acquisition.

Research on transfer effects generally offers two alternatives of how the two languages interact in the mental lexicon: the word association model, which posits that “L2 words are mediated via direct connection to their translation equivalents in L1” (Kroll et al., 2002: 137), and the concept mediation model, which proposes that “L2 words are connected directly to their meanings without L1 mediation” (Kroll et al., 2002: 137–138). Previous L2 studies have shown that L2 learners seem to decrease their dependence on L1 with higher proficiency and access L2 words directly (Kroll et al., 2002). In connection to the relation between the two lexica and their storage, van Heuven et al. (1998) proposed a distinction between language-dependent lexica in which “bilinguals possess one integrated lexicon for both their languages,” and language-independent lexica in which bilinguals operate with “two separate lexica, one for each language” (Van Heuven et al., 1998: 458). Concerning the online processing of words from the two lexica, another concern of transfer studies lies in the dilemma of how the two lexica are accessed, and more specifically, on whether the access to the two languages is selective or non-selective. The problem revolves around the following: When perceiving or producing words in one language, do L2 learners activate words in both languages that they have a command of (as proposed by the language non-selective access view), or do only words of that specific language triggered by the stimuli get activated in isolation (as proposed by the language selective access view) (de Bot et al., 1995). Several research findings show that during language processing, L2 learners seem to activate the lexica of both languages in non-selective language access (Van Heuven et al., 1998; Lemhöfer & Dijkstra, 2004; Brenders et al., 2011). Previous studies have also shown that proficiency is a decisive factor in the organization of the two lexica, with higher interference in less proficient L2 learners (see, for instance, Kroll, 1993; Talamas et al., 1999; or Harrington, 2006).

To investigate the (in)dependence and (non)selectiveness of lexica in the language processing of L2 learners, I decided to study how L2 learners of varying language proficiency process novel English words that were either phonotactically legal or illegal in their L1. For those purposes, 30 English second-language learners with Czech as their first language were recruited. In contrast to the previous experiment, I aimed at creating a continuum scale of language proficiency (from a low language score (21%) to high proficiency (94%)) rather than dividing the proficiency into separate categories such as language levels. The participants were then presented with the 32 novel verbs adopted from Experiment 2 and other 32 real English words imported from the British National Corpus in an auditory lexical decision task. They were told to decide whether the word they heard in each trial was a real English word or not by pressing one of the assigned keys on the keyboard when the recording stopped playing.

The reaction-times analysis has shown the Czech might have had a weak facilitatory effect on the reaction times since the participants reacted quicker in absolute value to the novel words phonotactically legal in Czech. The accuracy analysis, too, has shown that some transfer effects might be at play: The participants were more accurate when presented with novel words that were phonotactically legal in Czech. My data, therefore, suggest that Czech functions as a mild facilitator of performance, speeding up reaction times to presented stimuli and promoting higher accuracy.

Building on the findings of Experiment 2, which has suggested that lower-proficiency L2 learners use Czech as a facilitator of their production performance, with higher-proficiency levels and native speakers paying no apparent attention to the language transfer, my current findings also suggest that Czech has facilitatory effects even in L2 perception and more proficient L2 learners. Thus, the mother tongue seems to facilitate (to some small extent) the processing both in reaction times and accuracy. Referring back to the theories of language (in)dependence and (non)selectiveness, the findings of this experiment seem to speak in favour of two dependent (integrated using van Heuven et al.'s terminology) lexica, even though the result is certainly not clear-cut, and the transfer reported is relatively mild.

6. General discussion and conclusion

The three experiments have enabled us to look more closely into the perception and production of inflectional morphology in L2 learners of English and simultaneously comment on its storage, online processing, and the effect of L1. Having recruited participants at different language levels, I was also able to look at their development from the initial stages of L2 acquisition to near proficiency.

With this set of experiments, I have shown that when it comes to morphological perception, even L2 learners seem to be sensitive to the presence or absence of potential morphosyntactic information in sublexical items. My data suggest that morphological decomposition runs parallel to frequency and duration effects, showing that morpheme stripping operates irrespective of the word's meaning and that certain words might be processed as units while other words are decomposed on the spot. Concerning morphological production, my findings have shown that L2 production of novel morphologically-inflected forms is characterized by a progressive development from the application of default morphological rules at the lowest language levels to the application of analogy based on stored examples at more proficient levels. The language learners, therefore, set out on the same morphological journey as adult native speakers with rising proficiency. As far as language transfer is concerned, some L1 effects have been found in all three studies. Experiment 1 has shown that even learners with the lowest proficiencies were sensitive to the presence of English morphology, hinting at the influence of morphologically richer L1. Experiment 2 has shown that the lowest language levels (A1 and A2) were influenced by their L1 even in the production of past-tense forms. Experiment 3 has then shown a mild effect of L1 on the whole proficiency scale.

In this respect, my findings do not offer a clear answer to the question of how morphologically units are stored (as units or as stems and rules) and generated (using single-route or dual-route model). In Experiment 1, I have found evidence both for morpheme decomposition and frequency effects; in Experiment 2, we saw a progression from rule application to the use of analogy. My data, therefore, suggest that both processes are in each case active in parallel, and their application is governed, for instance, by word frequency, and the process used is chosen accordingly. Therefore, this thesis has attempted to offer a less dividing conclusion, very much in line with so-called “redundant models” (e.g., Schreuder et al., 1999). These models assume that the two types of analyses (i.e., rote storage and rule application) operate in parallel and in a complementary way, but each system has varying importance connected to how frequent the presented item is in the language: while frequent items (or, when speaking of novel words, items with high phonotactic probability) are to be parsed and produced with the rote-based system based on storing words as units, less frequent items (or, when speaking of novel words, items with low phonotactic probability) are to be parsed and produced with the rule-based system based on rule application (Cilibrasi et al., 2019). Using Schreuder et al.’s proposal, we can justify the simultaneous activation of morphological decomposition and frequency effects in Experiment 1 and a progressive transition from the application of rules to the use of analogy in L2 participants tested in Experiment 2. The most descriptive answer enveloping all my research findings might be simply that both mechanisms work in parallel, and each of them serves its own purposes.

The final chapter of this thesis also includes the limitations of the study, ideas for future research (e.g., investigating L2 learners with a morphologically poorer L1), and suggestions for the pedagogical implementation of my findings. In response to the data, a practical teaching material has been suggested, and a list of past-tense verbs based on structural analogy has been proposed. My data and previous research show the potential of promoting the use of analogy from the initial stages of L2 learning, implicitly encouraging the creation of similarity connections and accomplishing an even more effective learning process. Both regular and irregular English verbs were, therefore, divided into similarity groups that could be imported into a mobile learning application. Recommendations for self-study, classroom learning, and coursebook implementation have been suggested.

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8. Research activities

Publications

Jiráňková, L., & Cilibrasi, L. (2021a). Second-language acquisition of the English past-tense: From rules to analogy. *Linguistica Pragensia* 31(2). In press.

Jiráňková, L., & Cilibrasi, L. (2021b). Reaction times to morphologically inflected nonwords: A study of second language learners of English. *Journal of Monolingual and Bilingual Speech*. In press.

Jiráňková, L., & Cilibrasi, L. (2021c). Language proficiency and L1 interference effects on L2 word recognition. A study of Czech learners of English. *English Teaching & Learning*. Under review.

Jiráňková, L., Gráf, T., & Kvítková, A. (2019). On the relation between L1 and L2 speech rate. In *Widening the Scope of Learner Corpus Research. Selected Papers from the Fourth Learner Corpus Research Conference*, Louvain-la-Neuve: Presses universitaires de Louvain: 19-41.

Conferences

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| 2020 | Konference Oborové didaktiky a pregraduální příprava učitelů na FF UK (Prague)
passive participation |
| 2019 | Learner Corpus Research 2019 (Warsaw, Poland)
poster: Dynamic changes in the development of L2 inflectional morphology and cross-language interference effects |
| 2019 | Linguistics Prague 2019 (Prague)
poster: Dynamic changes in the development of L2 inflectional morphology and cross-language interference effects |
| 2018 | Linguistics Prague 2018 (Prague)
talk: On the relation between L1 and L2 speech rate, Perception of inflectional morphology in Czech second-language learners of English |
| 2017 | Learner Corpus Research 2017 (Bolzano, Italy)
talk: On the relation between L1 and L2 speech rate |

Grants

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| 2019 – now | PRIMUS (“Jádrová syntax u bilingvních dětí s rozdílnou mírou jazykového vstupu”) |
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2016 – 2017

GA UK FF/VG/2017/85 (“Doplnění žákovského korpusu LINDSEI o paralelní korpus v češtině”)

Pedagogical activities

02/2021 – now

Member of the TEFL Club

05/2019 – now

Assistant at the Department of the English Language and Methodology

2018 – now

Member of the teaching platform at the Faculty of Arts