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The acquisition of interlanguage morphology
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Chapter 5

General Conclusion

In this conclusion, the model outlined in Chapter 3 will be briefly evaluated in the light of the results of the empirical investigation in Chapter 4. For a more detailed description of the model, the reader is referred to Chapter 3 (3.5.1). After this evaluation, some implications and applications of the model will be listed. Finally, some suggestions are made for further research.

5.1 A brief evaluation

The multidisciplinary approach taken in this book to account for the acquisition and use of L2 morphology resulted in a model with a broad spectrum of implications reflecting the different areas of research on which it was based. The greatest strength of the resulting model is its power to account for the range of empirical data derived from all these areas of research. The core of the model, based on Schreuder & Baayen's (1995) Meta model of morphological processing, can account for the acquisition and comprehension of morphologically complex words. Moreover, it answers most of the questions concerning storage and retrieval of morphemes and words. This is done by referring to the activation metaphor and by emphasising the important position of semantic transparency and morphological productivity. An important notion in this model is the independent representation of (productive) morphological types in the lexicon. Schreuder & Baayen's model was adjusted to account for the role of morphology in speech production by referring to the model of Levelt (1989, 1993). It has been shown that after these adjustments, the model can account for the (L1) acquisition of morphology as this appears from the longitudinal studies reported by Clark (1993) and others. Next, the discussion about the bilingual mental lexicon led to another adjustment, concerning the differences and similarities of the L1 and L2 entries in the mental lexicon. It was hypothesised that lexical entries related to the respective languages have their own representation, but share their relation to extra-linguistic concepts. Finally, data from studies involving L2 morphology, especially regarding the order of acquisition of grammatical morphemes, could be accounted for by referring to the same principles as had been referred to for L1 acquisition. The importance of the learner's L1 in the type-familiar interpretation of morphologically complex L2 words was expressed in terms of the "psychotransparency" of these words. In the model, Psychotransparency is regarded as a crucial condition for the comprehension, acquisition and production of L2 morphological types.

The model presented in Chapter 3 is partly theoretical in nature and not all assumptions and implications are suitable to be empirically investigated. The empirical part of this study has therefore concentrated on the role of the first language in the acquisition and use of L2 morphological types. The main objective of the empirical investigations was to determine the factors that contribute to the psychotransparency of morphologically complex words in the L2. These investigations focused on two important questions raised by the model. First, to what extent does the form-based overlap of L1 and L2 morphological types affect comprehension and production of these types in L2? Second, to what extent does a consistent semantic overlap between L1 and L2 entries affect the acquisition and use of morphological types in L2? In Chapter 3, this overlap was labelled "translation equivalence". In contrast to the influence of these different kinds of L1 similarity, the effect of L2 productivity had been included in one of these experiments.

The effect of form-based similarity of L1 and L2 morphological types clearly showed in the first series of exploratory studies: form-based similarity facilitates the comprehension and production of these types in the L2, if it coincides with semantic overlap. Form-based similarity of L1 and L2 types will increase the psychotransparency of these types, as learners will assume a similarity relationship between affix types that are similar in form. Consequently, if form-based similarity does not coincide with semantic overlap, learners may incorrectly assume a semantic relationship. This clearly showed in the same experiment: types that are similar in form, but not similar in meaning yield more errors in both comprehension and production tasks.

To further investigate the effect of semantic overlap, two studies were conducted: a priming experiment aimed at measuring the amount of activation feedback caused by the conceptual and syntactic overlap of L1 and L2 lexical entries, and an L2 production study including different levels of translation equivalence and productivity. Unfortunately, the first experiment failed to demonstrate the occurrence of activation feedback, which was attributed to an interfering factor that could not be detected. The second experiment convincingly showed the positive contribution of translation equivalence to the production of L2 morphology. In this experiment, a different approach was taken to translation equivalence. Instead of actually measuring the amount of overlap of conceptual representations by activation feedback, the overlap was inferred by calculating the chance that translation equivalence would occur based on a corpus study. The quantification of translation equivalence yielded by this approach perfectly suits the model, because translation equivalence must not be seen as an all-or-nothing affair, but as a continuum. The strong effect of translation equivalence that appeared in this experiment convincingly shows that learners acquire knowledge about the consistency of the relationship between the L1 and L2 affix types.

Contrary to the effect of translation equivalence, L2 productivity appears not to provide a facilitating effect for the production of L2 morphological types. When the interfering effect of frequency had been taken into account, only at the highest level of L2 proficiency in the test the effect of L2 productivity began to show in some contexts. Apparently, the majority of the subjects had not yet acquired the productivity of the L2 types in this test. This effect does not come as a complete surprise. In Chapter 3 it has been argued that in formal language learning contexts, learners

may not be sufficiently exposed to L2 morphological types to acquire the degree of productivity of these types. After all, productivity was defined in terms of the frequency of the morphological type relative to the words in which this type occurs, and is thus strongly dependent on exposure. It is to be expected that the role of L2 productivity will increase at L2 proficiency levels higher than the levels included in these experiments. At the same time, the experiments provided no reason to assume that the role of translation equivalence diminishes as a result of the increase of the productivity effect. In situations where translation equivalence and productivity compete, translation equivalence is bound to be stronger. Additional support for this position comes from the priming experiment. Faster reaction times and fewer errors were found for *-able* words primed by *-baar*, compared to *-ness* primed by *-heid.* The corpus study showed that the affix type -ness is much more productive than --able, but that the translation equivalence between -able and -baar is much higher than that of -heid and -ness.

The experiments reported in this study appeared not to be flawless, mainly because it has not been possible to sufficiently control all interfering factors in all experiments. Especially the failure of the priming effect is rather unfortunate, as this would have provided a strong piece of evidence for the model proposed. However, the strong effect of morphological translation equivalence convincingly shows the importance of a consistent conceptual overlap between types in the two languages. This effect, in conjunction with the effect of form-based similarity, indicates that the L2 learner strongly depends on her first language in the acquisition and use of L2 morphological types. This finding corroborates the model advocated in Chapter 3. Furthermore, an advantage of the model is that it allows for different degrees of semantic overlap between L1 and L2 affix types. This effect could, for instance, not be accounted for by a model positing that L1 and L2 types represent different forms of the same lemma.

Certainly, the multidisciplinary model advanced in this book contains elements that must be specified, and further studies must be devised to investigate this model in all its aspects. Yet, the model provides a framework that is based on a spectrum of different areas of research on which further research can build.

5.2 Some implications and applications

In the introduction, reference has been made to the possible contribution of morphological knowledge to the acquisition of L2 vocabulary. Although this has not been the main issue of this study, some implications of the model in regard to the acquisition of L2 vocabulary will be listed here.

Since many words in a language are morphologically complex and semantically transparent (see Chapter 1), language learning can be enhanced by making use of this fact. By training learners to use morphological types or, in Aitchison's (1994) terms, to teach them to use "the tools" they have in their "toolkit", complex words can more easily be interpreted and produced. Considering the importance of the role of translation equivalence, the morphological types presented to learners should be restricted to the ones that have a high degree of semantic overlap. For types with a

high degree of translation equivalence, relating L2 morphological types to equivalent L1 types can be expected to have a facilitating effect. The results of the corpus study reported in Chapter 4 could serve as an excellent starting point for the selection of affix pairs with different degrees of translation equivalence. To stimulate the acquisition of productive morphological types, learners should ideally be exposed to large amounts of natural L2 data and their input should certainly not be limited to speech of non-native speakers.

It has been noticed in several studies (e.g. Coenen, 1988; Freyd and Baron, 1982) that paying attention to the internal morphological structure of words not only increases knowledge about these types, but induces an increase of the general awareness of morphological types and stimulates type-familiar processing in general. Once learners have discovered the power of morphology, their urge to match (word) form with meaning will be stimulated. This observation was confirmed in the current study. On the one hand, strong individual differences were found between learners in the L2 tasks, while on the other hand a significant correlation was found between the learners' comprehension and production in L1 and L2 morphology. This shows that individual learners have reached a higher general awareness of type-familiar processing. This finding is further confirmed by the surprising observation (in 4.2) that the ability to apply morphological types in L1 increased with the level of L2 proficiency, indicating that the study of a second language may raise morphological awareness more generally.

In second language learning, paying attention to the internal structure of morphologically complex words may have the additional advantage of providing a cue that facilitates learning and that improves eventual attainment of words. This effect need not be limited to productive types (examples of this can be found in morphological types of Latin origin). There is some evidence that words that are inferred through morphological cues are better retained than words that are presented in a highly predictable context (e.g. Haastrup, 1989). When a word is inferred through context, the word itself will not receive much of the learner's attention, as a salient context will invite holistic processing. When the meaning of a word is acquired through morphological inferencing, however, the word will receive maximal attention. There are many arguments against this position (see e.g. Mondria, 1996), but it would at least be worthwhile to incorporate morphology into studies investigating the acquisition of L2 morphology.

Applying these observations to the field of L2 instruction, it can be concluded that L2 learners should be presented with two types of morphological instruction. First, specific attention should be restricted to a limited number of productive morphological types that have a high degree of semantic overlap with L1 types, with reference to the equivalent L1 types. The data show that especially at lower levels of foreign language acquisition, learners have acquired little of the productivity of L2 affix types. Providing sufficient input is the only way to ensure the acquisition of L2 productivity. Second, general attention should be paid to the internal structure of words to raise the awareness of morphological complexity.

Another implication of this study is that findings from this field may provide more insight into general processes of second language acquisition. A preference for transparent structures and the avoidance of opaque formations seems to be a general

tendency in language that may be able to account for both language change and language acquisition. Transparency may be an overall guiding principle of second language learning. Referring to the similarity of the learner's L1 in accounting for SLA data has gone out of fashion since the failed attempts of contrastive analysis. In a different framework, however, accounting for the interaction of several factors (see 3.4.3), cross-linguistic influence should certainly be taken seriously.

5.3 Suggestions for further research

The study reported here gives rise to many questions that merit empirical investigation.

First, it would be worth replicating the priming experiment to determine the cause of the unexpected interaction found between the priming effect and the between-subjects factor. This could be done by including more subject-dependent factors like the subject's level of L2 proficiency as determined by, for instance, a simple vocabulary test.

Second, research methods should be developed to investigate other implications of the model advanced here. For instance, it could be attempted to determine the degree of psychotransparency of a morphologically complex word by comparing reaction times of morphologically complex words based on different types. A pilot experiment[56] demonstrated that type-familiar processing can be measured by comparing reaction times of pseudo words and existing words based on a particular affix type. This line of research could provide an insight in the development of L2 morphological acquisition by comparing the processing of morphologically complex words by groups representing different acquisition levels. In addition, the separate representation of morphological types in the lexicon could be investigated in a repetition priming experiment comparing reaction times of stems and affixes representing different degrees of transparency and productivity.

Third, the current study raises some questions about the role of the productivity of L2 morphological types. Why is it that no effect of morphological productivity could be found in early stages of L2 learning? Can the negative effect found for productivity completely be attributed to the frequency? And does productivity indeed play a role only at very high levels of L2 proficiency?

Fourth, the model does not require a different framework for derivational and inflectional morphology, as this difference can be expressed in terms of productivity. Yet, the empirical studies in Chapter 4 have all focused on derivational morphology. Devising experimental studies incorporating inflectional as well as derivational affixes could provide empirical support for this position.

Fifth, the studies in Chapter 4 raise some intriguing questions concerning the nature of the individual differences between learners in the acquisition and use of (L2) morphological types. Studies including variables like the learner's aptitude, cognitive styles and learning strategies could be conducted to investigate the relation

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[56] Reported in a presentation at the 1995 AAAL annual conference, Long Beach (Ca.), March 26, 1995.

between the acquisition of morphology and these individual differences. It has been suggested (e.g. Singh & Martohardjono, 1988) that cognitive strategies are particularly relevant for the acquisition of morphology. In Chapter 4, it has been suggested that some of the results could be accounted for by referring to the learner's stage of cognitive development.

Finally, for the more practical applications of the model, it would be interesting to include morphological factors into research in the area of vocabulary acquisition. In addition, the effect of different types of morphological instruction (see 5.2) is worth further empirical study.