Semantics and Morphology of Early Adjectives in First Language Acquisition
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Edited by
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and Sabrina Noccetti
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INTRODUCTION

ADJECTIVE ACQUISITION ACROSS LANGUAGES

ELENA TRIBUSHININA, MARIA D. VOEIKOVA AND SABRINA NOCCETTI

1. A challenge to a language learner

Imagine a two-year-old walking with her mother in the zoo. The mother is pointing to an elephant and saying *Look, it is blickish!* How does a young child come to understand what the novel word *blickish* refers to? We know that language learners are initially inclined to interpret novel words as labels of whole objects (Markman 1990). In this case, the toddler would interpret *blickish* as meaning ‘elephant’. However, there is a good chance that the two-year-old child already knows that the animal the mother is pointing to is called *elephant* and not *blickish*. Furthermore, by the age of 24 months children are (at least to some extent) able to use morphosyntactic information, such as the absence of a determiner in the predicative position, the absence of plural inflection and the presence of the adjectival suffix *-ish* to conclude that the novel word *blickish* means a property rather than a category (Taylor and Gelman 1988; Waxman and Klibanoff 2000; Waxman and Markow 1998). But even if the child understands that *blickish* is an adjective, i.e. a word denoting a property of an elephant, how does she decide which of the whole range of properties is meant? Is it something about colour, size, position or internal state? Thus, it is not surprising that adjectives are acquired by children later than other content-word classes (nouns and verbs in particular) (Booth and Waxman 2003, 2009; Stolt, Haataja, Lapinleimu and Lehtonen 2008; Waxman and Booth 2001).

Adjectives present a great challenge to young language learners not only because they are conceptually complex, but also because they are far less numerous than nouns and verbs in parental input (Sandhofer, Smith and Luo 2000). Furthermore, adjectives depend on nouns in both their form and their meaning (Ferris 1993; Siegel 1980; Taylor 1992; Vendler 1968). As far as form is concerned, adjectives in many languages agree with their head nouns in number, gender and case. Semantically, the
same adjective can denote quite different values depending on the comparison class denoted by the head noun (e.g. big elephant vs. big mouse).

Research on the acquisition of word classes has primarily concentrated on the development of nouns and verbs, but the acquisition of adjectives has received relatively little attention. The studies of adjective acquisition have focused by and large on issues such as acquisition of attributives vs. predicatives (Nelson 1976; Ninio 2004; Saylor 2000), extension of adjective meanings (Graham, Cameron and Welder 2005; Mintz 2005; Waxman and Klisanoff 2000), development of comparative and superlative forms (Gathercole 1983; Graziano-King and Smith Cairns 2005), interpretation of size adjectives (Barner and Snedeker 2008; Bartlett 1976; Maratsos 1973) and colour terms (Bornstein 1985; Soja 1994). It is also noteworthy that the majority of studies were done on English data; investigations of other languages are scarce and cross-linguistic studies virtually non-existent.

The time now seems ripe for an integrated approach examining the emergence and development of the adjective category (its form and meaning) across languages. Cross-linguistic research is crucial in the domain of adjective learning, since adjectives are not a universal category (some languages map properties to nouns and some to verbs) and reveal a lot of cross-linguistic variation (Bhat 1994). There is some evidence in the literature that children learn to map adjectives to properties faster in languages that have unambiguous adjectival morphology (Waxman and Guasti 2009; Waxman, Senghas and Benveniste 1997; Yoshida and Hanania 2013). For example, learners of Spanish were shown to map adjectives to both properties and taxonomic categories at the age that children acquiring English and French already map adjectives specifically to properties. The reason is probably that Spanish adjectives are commonly used in nominalized constructions (e.g. el suave ‘the smooth’), which makes them less distinguishable from nouns (Waxman, Senghas and Benveniste 1997). It is plausible to assume that children acquiring languages with rich adjectival morphology which is clearly different from noun (and verb) morphology (e.g. Croatian, German, Lithuanian, Russian) learn adjectives faster in comparison with children whose language contains (relatively) scarce adjectival morphology and/or adjectival morphology that is a subset of the noun inflection classes and not clearly distinguishable from them (e.g. Dutch, Italian, Turkish).

Another typological feature that may influence adjective acquisition is word order. Yoshida and Hanania (2013) report a word-learning experiment demonstrating that English-speaking 2-year-olds are better able to map adjectives to correct properties if a novel adjective is preceded by a
noun denoting the object category (e.g. elephant vap), i.e. in an order that is ungrammatical in English. Based on these findings, it might be expected that children acquiring languages allowing a postnominal position of attributive adjectives (e.g. primarily French, but also Italian, Lithuanian and Russian) have an advantage in the process of adjective acquisition.

A first attempt of a systematic cross-linguistic analysis of adjective form, function and meaning in child language has been undertaken within the framework of the Crosslinguistic Project on Pre- and Protomorphology in Language Acquisition coordinated by W.U. Dressler (Austrian Academy of Sciences). The present book is a result of this international collaboration (see also Tribushinina, Van den Bergh, Kilani-Schoch, Aksu-Koç et al. 2013; Tribushinina, Van den Bergh, Ravid, Aksu-Koç et al. 2014). It is a collection of papers studying early adjective acquisition in languages belonging to different morphological types (isolating, fusional-inflecting, agglutinating) and having different genetic affiliations – Germanic (German: Korecky-Kröll and Dressler; English: Noccetti), Romance (French: Kilani-Schoch; Italian: Noccetti), Slavic and Baltic (Russian: Kazakovskaya and Balčiūnienė; Tribushinina; Voelkova; Croatian: Hržica and Kovačević; Lithuanian: Kamandulytė-Merfeldienė; Kazakovskaya and Balčiūnienė; Slovene: Petrič, Ljubičič, Oblak, Korecky-Kröll and Dressler), Greek (Greek: Stephany), Finnic (Finnish: Laalo) and Maya (Yucatec Maya: Pfeiler).

The development of the adjective category in the longitudinal transcripts of spontaneous parent-child interactions is studied across languages, focusing on the age range between (approximately) 2 and 3 years. This period is known to be as the most intensive one for adjective acquisition starting with an adjective spurt around the age of 20 months and ending in stable adjective use by the age of 36 months (Tribushinina and Gillis 2012; Tribushinina et al. 2013; Tribushinina et al. 2014; Voelkova 2003, 2011).

For all of the languages investigated in this book, the development of adjective semantics is studied in tandem with the development of morphology. More specifically, the chapters test two hypotheses that will be presented in the following sections, the semantic hypothesis and the morphological hypothesis.
2. The semantic hypothesis

How does a child know which of the whole range of properties in an object is referred to by means of a novel adjective, such as blinkish? One way adults can make the meaning of adjectives clear to young language learners is to rely on contrast information. Prior experimental studies demonstrate that under laboratory conditions children benefit from perceptual contrast information in adjective learning: They only succeed in extending the meanings of novel adjectives to objects of a different category (‘transparent’ from transparent plates to transparent cups), if they are offered a within-category contrast (e.g. a transparent plate and an opaque plate) in the training phase (Au and Laframboise 1990; Au and Markman 1987; Klibanoff and Waxman 2000; Waxman and Klibanoff 2000).

Not only perceptual contrast, but also linguistic contrast in parental input seems to play a facilitating role in the acquisition process. Previous corpus studies reveal that in adult language antonymous adjectives co-occur within sentences more often than would be expected by chance (Jones 2002; Justeson and Katz 1991; Lobanova 2012). The same is noticed for child speech (CS) and child-directed speech (CDS) (Jones and Murphy 2005; Murphy and Jones 2008; Voeikova 2003).

A longitudinal study of spontaneous parent-child interactions reported in Tribushinina et al. (2013) demonstrates that if caregivers use a lot of co-occurring opposites (e.g. This car is big and that car is small), their two-year-old children also use many co-occurring antonyms and members of contrast sets. And, more importantly, children of heavy contrast users increase adjective production (measured in tokens) much faster than children of parents using few explicit contrasts. Of course, token frequencies do not say everything about acquisition. No attempts have yet been made to relate the use of co-occurring opposites to the quality of adjective use (e.g. diversity of the adjective vocabulary, appropriateness in the use of specific adjectives). The studies reported in this book do just this.

Using longitudinal data from children acquiring different languages we test the hypothesis that co-occurrence of antonyms (e.g. good – bad) and members of contrast sets (e.g. red – green – blue) in the same utterance or in a broader context (defined as five utterances preceding the target utterance) facilitates the acquisition of adjectives by toddlers. This may be contrast use in CDS or in CS, as the child’s own use of co-occurring opposites appears to have a positive effect on the development of adjective production (Tribushinina et al. 2013). We also expect that semantic contrast (antonymy) is more informative to a language learner than semantic similarity (synonymy), as children initially assume that two different
forms must be semantically distinct (Clark 1987) and that labels are mutually exclusive (Markman 1990). For a detailed description of the method and coding scheme see Tribushinina (this volume).

The studies in this book reveal remarkable differences in the ratio of contrast use among children (and caregivers). The main findings from the chapters in this volume with regard to the semantic hypothesis will now be summarised. For the order of presentation of the chapters we follow a typological criterion which only serves the purpose of grouping together the results for each language group represented in this volume. Voeikova’s contribution on Russian will be dealt with in Section 3, where the main findings for the morphological hypothesis will be summarised.

To start with, two general observations must be made. First, the analysed data generally support the hypothesis that semantic contrast plays a prominent role in the acquisition of adjectives. In the majority of samples analysed in this book, antonyms play a more prominent role than synonyms in CS and CDS. Occasional preferences for synonyms (as in the German data, see below) can be related to differences in individual cognitive styles. Second, quantitative and qualitative differences can be related to different contexts of interaction as well as to the parental speech to which the children are exposed. Namely, the children appear to have different learning styles, which reflect the caretakers’ different styles of interaction. From the analysis of the languages studied in this volume, it emerges that the differences in the input languages possibly reflect not only individual, but also cultural differences. In some of the languages in our dataset (e.g. Russian) parents seem to be actively trying to elicit adjectives and contrastive language from their children, whereas caregivers in other samples (e.g. Yucatec Maya) seem barely to do that.

In the chapter The role of paradigmatic semantic relations in adjective acquisition: Evidence from two Russian-speaking children (E. Tribushinina), production data show that the ratio of adjectives in the speech of the Russian children is higher than in their caretakers’ speech. The analysis of the speech of the two children confirms the hypothesis that semantic contrast is more important than semantic similarity. Co-occurring contrastive adjectives are more numerous than synonyms in the data of the two children. However, differences in the proportion of antonymic adjectives are observed which reflect different rates of co-occurring antonyms in CDS, as well as differences in the emphasis given to contrast relations in the course of the interactions. One of the children is exposed to contrast-emphasising input and appears to rely on contrast extensively. The other child is instead exposed to a more varying input (both contrast-emphasising and contrast-minimising frames); her speech features light
The findings reported in the chapter *Acquisition of adjectives in Croatian: Morphological and semantic features* (M. Palmović, G. Hržica and M. Kovačević) show the relevance of contrast use in CDS for CS. In the early period of data collection, the three Croatian children produce a small number of adjectives with a limited number of nouns. One of the children, for example, uses three colour words to refer to the same toy. At the age of 1;6 and 1;9 some oppositions emerge in the corpora. The analysis of CS reveals that the children learn adjectives in pairs of opposites (e.g. ‘big’ vs. ‘small’) or contrast groups, guided and encouraged by their caretakers’ input. Interestingly, in the three children the percentage of semantically related adjectives increases with age along with the overall growth of adjective frequencies. The authors conclude that both the age and the number of adjectives in CS are predictors for the number of related adjectives. In addition to the fact that in the three corpora there are no occurrences of synonymic relationship, such results fully support the semantic hypothesis.

Analogously, in the chapter *Acquisition of Slovene adjective inflection and semantics by a Slovene girl* (T. Petrič, M. Ljubič, V. Oblak, K. Korecky-Kröll and W.U. Dressler), it is shown that contrast is preferred to similarity. The study analyses the data of one Slovene girl and her input. Data show that the girl makes use of more semantically related adjectives than unrelated ones and reveal a clear preference of the girl for contrastive adjectives, which she opposes explicitly. The first adjectives belonging to contrastive set are colour terms. Although the most frequent adjective relations in both CS and CDS are repetitions, used as a strategy to learn new words, antonyms are not infrequent. In CS the first ones to occur refer to size (little and big). CDS shows a distinct preference for adjectives belonging to contrast sets and antonyms, which is also reflected in CS. The dominant use of the latter and, at the same time, the rare use of synonyms, suggests that contrast is strategically used to learn adjective meaning.

It has been found that the input language guides the acquisition of adjective semantics, and the chapter *Adult contribution towards early adjective acquisition: Evidence from Russian and Lithuanian longitudinal data* (V.V. Kazakovskaya and I. Balčiūnienė) shows how child production is both quantitatively and qualitatively related to CDS. The study focuses on two children, a Russian boy and a Lithuanian girl, and the input language to which they are exposed across one year of recordings, more precisely the first year of adjective acquisition (from 1;8 to 2;8). The research takes into account the types of communicative (conversational)
Adjective acquisition across languages involves the tactics and strategies of caregivers which are used to stimulate the acquisition and production of adjectives in spontaneous dialogues. The adult contributions to the acquisition of adjectives were coded considering: a) their position (elicitation/reaction), b) the communicative type (statement/question/directive/exclamation), c) their pragmatic role (conversational/metalinguistic), d) the structure of elicitation (single/double/triple/triple (+)) and reactions (pure repetition/focus repetition/reformulation/expansion/correction). As for the position of contributions, both Russian and Lithuanian adults tend to produce them in reactive contexts. Elicitations are more numerous in the Lithuanian corpus, which records three peaks corresponding to adjective growth in CS. In Russian, the only peak in the use of elicitations observed similarly corresponds to a rise in adjectival increase in CS. The dominant communicative types of elicitations are questions, followed by statements. The caretakers elicit adjectives generally through so-called open questions (which do not contain the target word and are prevailing in Russian) and closed questions (containing the target word and dominant in Lithuanian).

The analysis of the elicitation types reveals that single elicitations are the most frequent ones in both Russian and Lithuanian. In Russian CDS, though, there are more double, triple and triple (+) elicitation types, which bear witness to a predominant didactic function, even in consideration of the fact that Russian adults are more persistent when asking for a specific word. The study of the reactions in the CDS of two languages shows that statements are more numerous than questions. In general, as far as the acquisition of adjectives is concerned, Lithuanian and Russian adults show conversational rather than metalinguistic reactions, namely they react more to what is said rather than to how it is said. Moreover, Russian adults display more positive reactions in the form of compliments and encouragement, even in reaction to erroneous utterances. Lithuanian adults, instead, show more numerous negative reactions—disagreement, ironic remarks. However, their reactions to CS are usually represented by expansions and pure repetitions and only rarely by corrections.

The chapter *The acquisition of Lithuanian adjectives: Lexical and morphological features* (L. Kamandulytė-Merfeldiėnė) presents longitudinal data of four children, two boys and two girls. The data show that children start using adjectives before they fully understand their meaning, which they begin to disentangle at the time at which they are exposed to contrastive pairs or sets of adjectives in CDS. The author finds support for the semantic hypothesis. She points out that the acquisition of adjectives belonging to contrasting sets or antonymic pairs is more precocious and easier than that of adjectives without an opposing member. Evidence in
support of this claim is found in the frequency of specific semantic groups of adjectives in CS, namely size and colour adjectives (that are inherently contrastive).

Data from Austrian German, instead, partially reject the semantic hypothesis, at least its strongest formulation that antonymic relations facilitate the acquisition of adjectives and synonymic ones are less informative to the child. The chapter *Acquisition of German adjective inflection and semantics by two Austrian children* (K. Korecky-Kröll and W.U. Dressler) presents data of two German-speaking children, a boy and a girl. The authors admit that children learn adjectives via semantic relations, but maintain that, besides antonyms, also synonymic relations and repetitions can play a role in the acquisition of adjective semantics. They support this claim by showing the different styles of acquisition displayed by the two Austrian children. The boy prefers contrasts, just as his caregivers. But, interestingly enough, the girl, although exposed to similar proportions of antonyms and synonyms, prefers synonymic relations.

Similarly, a different strategy of acquisition has been observed in English and Italian children. In the chapter *Adjective learning in English and Italian children: A comparison* (S. Noccetti), adjective production of two English and two Italian children is analysed. The children are shown to follow different patterns in the acquisition of adjective semantics, which can be related to morphological and syntactic differences in the two languages as well as to their maternal input. The English children show two different ways of learning adjectival meaning. Only the boy prefers antonymic relation as a strategy to learn the semantics of the adjectives, while more variability is observed in the girl’s output. Interestingly, the differences displayed by the two children are independent of the frequency of contrastive adjectives in the input, which is similar in the two corpora. In the English data, the parallel increase of comparative forms and size adjectives suggests that comparison supports the acquisition of dimensional adjectives. As for the Italian children, they instead show a parallel development of nominal morphology and an increase in the proportion of contrastive adjectives, which suggests the interplay of morphological and semantic development (see also Kilani-Schoch, this volume). Moreover, diminutives and augmentatives seem to help the two Italian children to sort out the meaning of the early size adjectives.

In the chapter *Development of adjectives in two French-speaking children: Relation between inflection and semantics* (M. Kilani-Schoch), the focus is on the acquisition of the semantic categories to which the adjectives belong. Apart from idiosyncratic preferences, early adjectives principally belong to the semantic types of size, physical properties, colour and
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Among them, *petit* ‘small/little’ is dominant. The adjectives in CS are not generally related in the input, but some of those which are related to CDS do occur in the form of antonyms and contrast colour. Only one synonym is produced in the speech of one of the children. The data also show that the children start to use adjective oppositions independently of their quantity in the input, which does not change in the course of development. Interestingly, a parallel between gender inflection and semantically central adjectives is observed (see Section 3).

The chapter *Adjectives in early Greek language acquisition* (U. Stephany) is cast within a cognitive, constructivist and usage-based theoretical approach to language acquisition, analysing data of four Greek children, three girls and one boy. The author first reports the order of emergence of the semantic types of adjectives, following Dixon’s classification into core and peripheral types. It is found that in the Greek corpora the core semantic classes of evaluative and dimensional adjectives emerge early and are the most frequent ones in both CS and CDS. The positive examples of such adjectives are more common than their negative counterparts. The evaluative and dimensional adjectives found in CS carry a general rather than a more specific meaning and are thus more useful in view of the children’s limited early lexical inventory. The meaning of colour adjectives, which also belong to the core group, is acquired later than that of evaluative and dimensional adjectives, probably for cognitive reasons. Although adjectives belonging to peripheral semantic types may also emerge early, they are much more rarely used. Adjectives occurring in pairs of antonyms in CS and CDS are the evaluative adjectives ‘good’/’bad’, the dimensional ones ‘big’/’small’, and the pair describing a physical state, ‘dirty’/’clean’. Their meaning seems to be acquired quite early. Since the number of contrastive adjectives in the Greek data is limited, no evidence confirming the hypothesis that such pairs speed up the acquisition of adjectives can be found, even though antonyms are likely to assist the development of adjective meanings. Initially limited to use with a few specific nouns, evaluative and dimensional adjectives are gradually extended to a wider range of referents.

The chapter *Adjectives in Finnish child Language: Morphological and semantic aspects* (K. Laalo) presents data of two children, a boy and a girl. The first adjectives of the Finnish children are repetitions and semantically unrelated adjectives. Gradually, as the children grow older, they start producing pairs of antonyms, beginning with the size adjectives ‘little’ and ‘big’. Due to their limited lexical inventory, some adjectives in CS show a certain degree of creativity, being used with meanings that are wider than
the corresponding meanings in the adult language. Among such adjectives are those expressing physical states (e.g. ‘warm’, ‘boiling’) and colour terms. Interestingly, the colour ‘red’, one of the first colour words to appear in the two corpora, is used to refer to other colours with an overextension of its meaning, until the children learn other colour terms. The overextension of colour terms is also attested in the other languages of our selection.

The Finnish data support the hypothesis that the input language furthers the acquisition of adjectival meaning. The type of interactions between the children and their caretakers shows that expansions of the children’s utterances and repetitions of adjectives produced by the adult help the children in the early acquisition of adjectives. When the Finnish children start to use contrasting adjectives, they get access to the adjectival meaning. Such findings support the semantic hypothesis.

The chapter *Where less is more: The case of missing adjectives in the acquisition of Yucatec Maya* (B. Pfeiler) reports the data of two Yucatec Mayan children, a boy and a girl. Again, there is evidence that the input language influences children’s production, both in terms of overall low frequencies of adjectives compared to other word classes and with respect to the most frequent adjectives in CDS and CS. The adjectives in the speech of the two toddlers, even if with slightly different percentages, belong to the same semantic classes of physical properties, human propensity, value, age and colour. As for the semantic hypothesis, the data cannot provide any support as CDS and CS only display semantically unrelated adjectives. This is the only language in our sample where caregivers do not seem to rely on contrasts at all.

Since sample size in the longitudinal corpus studies is not large (one to four parent-child dyads per language), we do not know whether the differences in contrast use observed can be related to cultural peculiarities of CDS or to differences between individuals. Future research will benefit from large-scale studies studying individual variation in contrast use within a language/culture.

### 3. The morphological hypothesis

Adjectives usually serve as a target of agreement being congruent with their head nouns. Noun-like adjectives may take the same number, gender and case as their controllers. In some languages adjectives are verb-like and are marked for number and person, or even get temporal or modal marking (Dixon 2004: 11). They may also combine nominal and verbal
features, as in Yucatec Maya (see Pfeiler, this volume). The other languages from our selection have noun-like adjectives. Agreement patterns are highly language-specific and children master them rather late.

A set of congruent features between a noun and its target adjective depends on the syntactic position of the adjective. In Corbett’s (2003: 115, 2006: 211-214) Agreement Hierarchy the interplay of syntactic and semantic features of different types of controllers is taken into account. The likelihood of agreement with greater semantic justification increases from left to right:

attribute < predicate < relative pronoun < personal pronoun

In the present context, we are, however, interested in the reverse implication of this scale, namely in the fact that syntactic agreement increases from right to left. Thus, in Russian, attributive adjectives agree with their head nouns in number, case and gender, whereas the concord of predicative adjectives with their controllers is limited to number and gender. Agreement requires the acquisition of rather sophisticated patterns without any kind of semantic bootstrapping. It may therefore be expected that children will make use of other indicators and, for example, exploit the phonological resemblance of nominal and adjectival inflectional endings where possible.

As an initial hypothesis for the development of adjectival inflection the languages under investigation may be grouped according to their different adjectival forms and agreement patterns:

a. languages having a default form (e.g. Dutch, presumably German) or a “split” default for specific gender or inflectional classes;

b. languages in which at least some adjectival inflections are nominal-like (Russian, presumably Lithuanian);

c. languages with a verb-like adjectival class (not represented in our data);

d. others (e.g. Yucatec Maya in which adjectives share inflectional endings with both nouns and verbs).

We hypothesize that children acquiring a language of type (a) will start with a default and use the unmarked or the least marked form in all positions. Children acquiring languages of type (b) are likely to proceed from noun-like forms to adjectival forms contrasting with noun-like forms. The early erroneous forms will increase the similarity of the target to its controller.
The findings reported in the present volume show that the hypothesis concerning languages of type (a) will probably need revision since a pure default strategy was not found in our language sample. Early agreement patterns of adjectives and nouns in German and Greek CS share features of types (a) and (b) in being partly noun-like (Greek) and partly tending to a (split) default (German) (see below).

The idea of a morphological hypothesis based on the phonological resemblance between adjectival and nominal inflection for languages belonging to type (b) comes from several investigations which show that children exploit the phonological similarity of inflectional endings between nouns and adjectives. Thus, Finnish children enhance this similarity by adding one and the same suffix to adjectives and nouns (Laalo 1995). Similar errors have been found in Russian (Voikova 2003: 231-234). In both languages, children may even add an adjectival ending to the noun in order to preserve their phonological resemblance. Although such errors are very rare, they clearly demonstrate 1) that the inflection of nouns and adjectives is not strictly distinguished at this point, and 2) that children exploit rhyming inflectional endings prior to making syntactic distinctions.

Such findings may be qualified as phonological bootstrapping (Weis- senborn and Höhle 2001: xi). The theory of bootstrapping elaborated in a generativist framework implies that children may use the parallels between different language levels. Bootstrapping mechanisms provide a linkage between input properties and abstract linguistic phenomena (Höhle 2009: 361), e.g., the linkage between prosodic cues and the recognition of the lexical and syntactic boundaries (Christophe, Guasti, Nespor, Dupoux and Van Ooyen 1997; Christophe, Millotte, Bernal and Lidz 2008) or the role of accent in disyllabic English words helping to distinguish nouns and verbs (Kelly 1996). These empirical findings have also been checked by connectionist models of language acquisition. In a machine-learning experiment, Durieux and Gillis (2001) show that a combination of the prosodic cues reported by Kelly yields significantly better results than every cue taken separately. They also conclude that “from a point of view of acquisition, phonological bootstrapping seems to be a helpful strategy in principle” (Durieux and Gillis 2001: 223). Still, bootstrapping mechanisms seem to be optional and their specific type will be language- and even subject-specific. It cannot, however, be claimed that such mechanisms are completely insignificant for first language acquisition.

A number of phonological cues to syntactic categories have been found which represent “a potential learning strategy” for distinguishing syntactic categories (Ambridge and Lieven 2011: 205), i.e., different parts of speech, such as nouns and verbs (Ambridge and Lieven 2011: 206). On the
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contrary, we would like to propose phonological bootstrapping as a possible ‘starter strategy’ for the acquisition of syntactic constructions such as noun phrases containing an attributive adjective. In certain languages, the phonological similarity of the endings of adjectives and nouns agreeing with each other in such constructions may lead children to consider agreement as consisting in phonological identity rather than grammatical concord. Since only 2–4 children per language have been investigated, this hypothesis needs to be tested with data from more children and more languages.

The morphological sections of chapters in the present volume will now be summarised.

The analysis of speech samples from four Russian-speaking children in the chapter Acquisition of Russian agreement patterns: General strategy and individual differences (M.D. Voeikova) seeks answers to the main questions regarding the acquisition of adjectival morphology raised in this volume. The author observes that at an early stage of language development, adjectives are only sporadically used by children and that they are mostly produced in isolation, without a noun. This period is followed by an adjective spurt when children significantly reduce the number of adjectives occurring without the noun, providing evidence that they have started to dissociate the two categories syntactically, since they co-occur in the same utterance. At this point in time, the Russian children start to mark case, number and gender on both nouns and adjectives, whereas initially they produced erroneous or truncated adjectives. In order to trace the development of the complex Russian adjectival declensional system, the latter has been classified according to its similarity with the types of noun declension. Four types have been identified: similar, partly similar, reduplicative and contrastive inflectional endings. Results show that the children tend to reduce the inflectional paradigms of adjectives by using only some of the numerous cells of the paradigms, namely the ones which are most similar to the declension of nouns. The children thus show a clear preference for endings which are reduplicative and similar or partially similar to the endings of the nouns. These overextension errors demonstrate that children rely on total or partial phonological similarities between noun and adjective inflections, basing themselves on the nominal inflection already developed in order to acquire the adjectival system. Morphological preferences, thus, seem to be strengthened by phonological features.

Like Russian, Lithuanian (L. Kamandulytė-Merfeldienė) is a morphologically rich language. Adjectives are inflected for case, gender
and number, and some of them share their inflectional endings with the nouns. For this reason children are expected to start from the inflected forms of adjectives which are similar to those of nouns and to expand the initial morphological patterns by more contrasts at a later stage of development. The Lithuanian children studied use agreement from an early age and make only few gender errors, mainly replacing the feminine with the unmarked masculine nominative (which is probably related to the children’s sex; see also the Slovene data). In the last months of observation, between the age of 2;5 and 2;8, children still make agreement errors, substituting the less frequent and more marked inflectional classes with the most frequent and least marked ones. More errors are found in rarer inflectional paradigms where noun and adjective inflection differ, which also supports the hypothesis that phonological similarity between noun and adjective provides the children with a clue to learn the inflectional systems.

Slovene (T. Petrič et al.) is also a morphologically rich language where adjectives agree with their head nouns in case, gender and number, with a marginal distinction between definiteness and indefiniteness. It is a language of type (b), where the adjectival inflections are either noun- or pronoun-like. Adjective inflection is homogeneous and corresponds to the most productive noun and pronoun inflectional classes of each gender. Adjectives have a default base form – the masculine nominative singular, which is unique to this part of speech. Slovenian data illustrate the gradual development of the adjectival system in CS. Adjectives emerge later than nouns and verbs in CS, and adjective inflection (for gender and number in the nominative case) emerges after noun inflection has become productive. The child starts to use adjectives at 2;1 with a few forms in the nominative case (‘little’ is dominant, like in French) and gradually expands adjective production both quantitatively and qualitatively, although a productive use of adjectives is only recorded at 2;3. The predominant form of the adjectives in CS and in the child’s input is the feminine form ending in -a, probably due to the sex of the child. However, the first adjectives produced by the child are in the default form (the masculine nominative singular). The analysis of the few errors in CS reveals that there are some overextensions of the masculine form to the feminine gender and of definite forms to indefinite contexts (probably due to articulatory problems). Along with the growth of the frequency of adjective use, the child gradually introduces other grammatical forms of the three genders.

Data from Croatian (M. Palmović et al.) show that children are sensitive to the usage of the grammatical forms in the adult language. Croatian is a language of type (b), where more than half of the adjectival forms are