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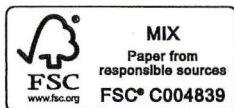
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Developmental sequences

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One of the most significant breakthroughs in second language acquisition (SLA) research was the discovery in the early-to-mid 1970s that second language (L2) learners develop their L2 in very similar ways, irrespective of socio-economic status, education, personality, and even first language (L1). This is not to suggest that everyone learns an L2 at the same speed or with the same ease, nor that they ultimately enjoy the same success, but that people of various ages, origins, and L1 backgrounds seem to follow the same developmental route when learning a new language. A crucial aspect of this discovery was the recognition that the path L2 learners take toward the target grammar closely resembles the natural development that had previously been documented for children acquiring their L1, hence the postulation of the *L2 = L1 hypothesis* (or *identity hypothesis*), which boldly states that (adults') L2 acquisition might actually be the same process as (children's) L1 acquisition.

In several studies, Dulay and Burt (e.g., 1973, 1974) found that L2 children (aged 5–8) of different L1 and social backgrounds acquired English

morphemes in the same order and that this order, while not identical, was quite similar to that of children acquiring English as their L1 (e.g., Brown, 1973). These results were later corroborated for adult L2 learners by Bailey, Madden and Krashen (1975) and others. The findings of these studies contrasted sharply with assumptions that had gone unquestioned during the heyday of *Behaviorism* and *Contrastive Analysis*, namely (1) that L2 learning was constrained primarily (or only) by the learner's previous language habits (causing interference), hence (2) that the character of a person's language development was uniquely colored by the L1 (via transfer), and therefore (3) that L2 learning and L1 development must be fundamentally different and incomparable. Conversely, these findings aligned perfectly with the new mentalist research paradigms, whether in the realm of Chomskyan generative/nativist linguistics or more general cognitive/process-oriented approaches to language acquisition.

An important branch of developmental research in SLA has been the investigation, description, and (to some extent) explanation of *developmental sequences*. In contrast to acquisition order, which denotes the order that *different* features, structures, and elements appear/are acquired, developmental sequences constitute the typical stages in which *individual* features, structures and elements develop/are acquired. In other words, the acquisition order is the order in which different linguistic forms are acquired in relation to each other, while developmental sequences are the sequences of interlanguage variants through which each of these different linguistic forms approximate targetlike manifestations.

Often mentioned in this regard is negation development in L2 English, as shown in (1). At first, learners use an external negator (*no* or *not*) placed either before or after a phrase or sentence. Second, negation is integrated with the internal sentence structure and is manifested preverbally; also at this stage, *don't* is used as a negator with no analysis of its constituents (i.e. *do* + *not*). Third, negation is acquired for modal auxiliary contexts, and at the fourth and final stage, it is acquired for all auxiliary contexts; also during this last stage, *don't* is analyzed by its constituents, as evidenced by the use of inflected forms such as *doesn't* and *didn't*.

(1) Developmental sequence: English negation
(based on Schumann, 1979)

Stage	Example
1. External NEG	* No this one. * No you playing here.
2. Internal preverbal NEG, unanalyzed <i>don't</i>	*Mariana <i>not coming</i> today.
3. NEG w/modal AUX	*Juana <i>don't have</i> job I <i>can't</i> play that one. I <i>won't</i> go.
4. NEG w/AUX, analyzed <i>don't</i> believe me.	He <i>doesn't</i> know anything. She <i>didn't</i>

The developmental sequence for Swedish negation is similarly well documented. As illustrated in (2), learners of L2 Swedish first pass through a general preverbal stage, comparable to stage 2 in the English sequence in (1) above. Second, the negator (*inte*) appears post-verbally in auxiliary contexts, expanding to main verb contexts during the third stage. At stages 4 and 5, negator placement is acquired in subordinate clauses, but in reverse order between auxiliaries and main verbs in comparison to main clauses.

(2) Developmental sequence: Swedish negation
(after Hyltenstam, 1977, 1978; Bolander 1987, 1988a, 1988b)

Stage	Example
1. Preverbal NEG	*Lisa <i>inte</i> går / <i>inte</i> kan gå.
Lisa NEG goes / NEG can go.	
2. AUX + NEG	Lisa kan <i>inte</i> gå.
Lisa can NEG go.	
3. Main verb + NEG	Lisa går <i>inte</i> .
Lisa goes NEG.	
4. NEG + main verb in subordinate clause	... att Lisa <i>inte</i> går. ... that Lisa NEG goes.
5. NEG + AUX in subordinate clause	... att Lisa <i>inte</i> kan gå. ... that Lisa NEG can go.

Another well-documented sequence is the development of English question formation, as shown in (3). The first stage is characterized by Yes/No-questions in declarative form with rising intonation. Next, Wh-questions appear with a sentence-initial Wh-element but without subject-verb inversion. Third, the inversion rule is acquired for main clauses but is overgeneralized to subordinate clauses. At stage 4, the learner differentiates between clause types and can therefore cancel inversion in subordinate clauses, as the target grammar does. Except for a few language-specific features, the developmental sequence for L2 Swedish question formation is very similar to that of L2 English, containing features like uninverted word order in main clauses, as well as overinversion followed by cancel inversion in subordinate clauses (see, e.g., Hyltenstam, 1978; Philipsson, 2007).

(3) Developmental sequence: English question formation
(based on, e.g., Cazden *et al.*, 1975; Cancino *et al.*, 1978)

Stage	Example
1. Canonical word order	*He work today? ↑ + rising intonation
2. Uninverted WhX	*What he (is) saying? question
3. Overinversion in subordinate clause	*Do you know where is it?
4. Sentence differentiation, cancel inversion	Does she like where she lives?

A fairly well-established *phonological* developmental sequence is the acquisition of final consonants/consonant clusters in languages such as English or Swedish, both of which permit relatively complex syllable codas. In the interlanguage development of learners with highly restrictive L1 syllable structure conditions (such as Mandarin Chinese, which allows only /n/ and /ŋ/ in final position), the sequence shown in (4) is typically salient. A simplification process used in principle by all learners, at least to some extent, is final consonant deletion, which is typical for stage 1. At

stage 2, the learner simplifies syllable structure by inserting epenthetic vowels rather than by deleting consonants. At the third stage, the learner manages to launch the final consonant without adding a supportive vowel, but usually at the cost of some internal feature of the consonant being changed instead (through, e.g., devoicing). At the final stage, final consonants and clusters are pronounced without modification.

- (4) Developmental sequence: word-final consonants/clusters (alt. closed syllables) (after, e.g., Abrahamsson, 2003; Hammarberg, 1988; Hansen, 2001)

Stage	Example
1. Consonant deletion	<i>dog</i> →→ [dɒ:]
2. Vowel epenthesis	<i>dog</i> →→ [dɒ:gə], [dɒ:gʰ]
3. Feature change (e.g., devoicing)	<i>dog</i> →→ [dɒ:kʰ], [dɒ:˚g]
4. Target value	<i>dog</i> →→ [dɒ:g]

These developmental sequences have all been observed for L1 acquisition also – that is, L1 acquisition of English and Swedish negation, question formation and final consonants exhibit the same forms, stages and general sequences as in L2 acquisition. However, some research has reported specific sequences differing for L1 and L2 acquisition. For example, Håkansson (2001; see also Håkansson and Nettelbladt, 1993, 1996) claimed that the developmental sequence for Swedish subject-verb inversion, as shown in (5), relates only to L2 learners, since Swedish L1 children rarely show evidence of the second stage (i.e. lack of inversion in topicalized clauses), while child and adult L2 learners frequently do. However, this difference could be explained in that (child) L1 development is generally more rapid than (adult) L2 development. The functionality of topicalization and the formal rule of inversion apparently develop more or less simultaneously in L1 children, or with a brief intermittent delay, hence the rare overt manifestations of non-inversion. In adult L2 learners, conversely, development is slow, and the functionality of topicalization is already fully developed,

while the linguistic rule of inversion is not, hence the prolonged duration at this stage and the numerous manifestations of non-inversion that follow. Evidence supporting this interpretation is that non-inversion *does indeed occur* in normally developed children, although *rarely*, and, furthermore, that non-inversion is quite common in children with Specific Language Impairment (SLI), which, like L2 acquisition, is characterized by slower structural/linguistic development but normal cognitive/functional development. In other words, if we could study normal L1 development in slow motion, or if each stage of the developmental sequence could be expanded temporally, the manifestations of non-inversion would suddenly be observable. For a similar discussion concerning the sparse use of vowel epenthesis by normally developed L1 children compared to adult L2 learners and linguistically delayed L1 children, see Weinberger (1994) and Abrahamsson (2003).

- (5) Developmental sequence: Swedish subject-verb inversion (after, e.g., Hyltenstam, 1978; Håkansson, 2001)

Stage	Example
1. No topicalization	<i>Jag gick till skolan</i> (igår). I walked to school (yesterday).
2. Topicalization without *Igår jag gick till inversion	<i>skolan.</i> Yesterday I walked to school.
3. Topicalization with inversion (= target structure)	<i>Igår gick jag till skolan.</i> Yesterday walked I to school.

Another question concerns whether certain stages exist only for learners with particular L1s. This issue is especially relevant for phonological sequences, where the phonological process at a certain stage, for example, the epenthesis stage in example (4) above, is shared by all learners, but the exact manifestation of it can vary in terms of the quality of the added vowel. For example, rather

than using [ə] (i.e. schwa), L2 learners with Portuguese as their L1 frequently add an [i]-like vowel in accordance with the Portuguese lexical pattern, while for Turkish learners, the added vowel is frequently colored by a preceding vowel, thus following Turkish rules of vowel harmony. However, it is important to remember that developmental sequences are invariant in terms of length, complexity, and stage order as a function of the learner's L1; as Larsen-Freeman and Long (1991) report: "Modifications due to L1 influence (...) may delay initiation of a sequence, delay or speed up passage through it, or even add sub-stages to it, but never seem to involve either omission of stages or changes in the sequence of stages" (p. 96). The same can be said concerning the role of formal instruction: learners with or without formal instruction in the L2 apparently go through identical developmental sequences (see, e.g., Fathman, 1978; Norrby and Håkansson, 2007; Pica, 1983). In addition, experimental studies by Pienemann (e.g., 1984) showed that school children benefited significantly from L2 instruction of grammatical features matching their current developmental stage, while instruction of features from more advanced stages was not effective.

This last issue concerning the (non-)teachability of alternative sequences raises the question of what the underlying explanations are for the shape and existence of developmental sequences. Why are stages sequenced the way they are, and why can they not be altered? Developmental sequences are reported to be universal in nature; therefore, typological markedness relations might shed some light on them. As shown above, the first stages in the acquisition of English and Swedish negation include preverbal negation, while postverbal negation appears later. This is in accordance with the typological finding that most languages have unmarked preverbal negation, while postverbal negation is considered unusual and is therefore relatively marked. Similarly, early stages in the phonological sequence in (4) above produce open, unmarked CV syllables as output, while later stages yield closed and relatively marked CVC syllables. In other words, developmental sequences apparently conform to universal principles, ushering

learners from the relatively unmarked to the relatively marked.

Another kind of explanation is based in cognition and processing. For example, in L2 Swedish, attributive agreement between noun and adjective develops before predicative agreement (see Glahn *et al.*, 2001), and an explanation is offered by *Processability Theory* (Pienemann, 1998). According to this theory, language production involving local grammatical processing (e.g. grammatical agreement *within* the noun phrase) is automatized much earlier than processes involving distant processing (e.g. grammatical agreement *across* phrase boundaries). This also explains why negation is mastered in main clauses before subordinate clauses, since sentence differentiation (involving grammatical exchange across clause boundaries) appears relatively late in development. In other words, both typological markedness and processing seem to be strong factors determining the shape of sequences.

See also: agreement, development in SLA, markedness, morpheme acquisition orders, Processability Theory (PT), Wh-questions

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Dialogic inquiry

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Dialogic inquiry is an approach to pedagogy that considers teaching and learning to be an integrated, collaborative, and purposeful process in which teachers and learners together engage in the construction of knowledge. The curriculum is typically organized around topics or questions for investigation and the central role of teachers is to facilitate and guide students' participation in collaboratively designed activities, which serve to foster exploration of the topic. The goal is not to find the right answer but instead to seek appropriate resolutions to the questions. The activities typically involve whole group teacher–student interaction and small group student–student interaction in which students