Delayed Acquisition of Irregular Inflectional Morphology in Hebrew in Early Sequential Bilingualism

Schwartz, Kozminsly, Leikin (2009)

Objective: To see how young Russian heritage speakers (L1 Russian/L2 Hebrew) cope with irregular noun pluralizing in Hebrew compared to native-Hebrew monolingual children.

**Background**

Theories about acquisition of inflectional morphology:

1. **Single-route** – regular and irregular inflectional morphology are acquired through the same system based upon frequency of exposure (Bybee, 1995, 2001; McClelland & Patterson, 2002)
   - Patterson (2002) – the two inflectional types arise from a “parallel distributed processing or connectionist framework” – cognitive processes are graded, probabilistic, interactive, context-sensitive, and domain general

2. **Dual-route** – regular and irregular inflectional morphology are treated as two separate system, lexical and grammatical (Pinker & Ullman, 2002)
   - Regular forms – acquired in a grammatical fashion (ie, learn the rule, not the specific inflectional morphology of each word)
   - Irregular forms – acquired in the form of lexical items that are added to the database

** Both theories claim that acquisition of irregular inflectional morphology is subject to frequency of exposure

** Both theories predict that children will overgeneralize if they do not remember the correct irregular inflectional morphology

** Single-route also predicts overgeneralizing with irregular rules, ie bring/brang instead of brought based upon sing/sang rule which is a relatively frequent irregular rule.

Since acquisition of irregular inflectional morphology is based upon frequency of exposure, it is suggested that bilingual children will display initial delays in acquisition of these forms since they are subjected to less exposure time to either language.

Studies:
• Welsh & English (Gathercole, 2006) – claim that as children gather a critical mass of linguistic information, gap between monolingual and bilingual children decreases.
  
  o Study of grammatical gender in children who speak only Welsh, Welsh and English, and only English at home. All children live in Welch or Welch-English settings. Gender marking in Welsh is complex. Study showed that all children were near ceiling on production of non-mutated forms, but monolingual Welsh children outperformed the other two groups with regards to mutated forms. As the children grew older, this gap lessened.

• French & English (Paradis et al, 2007) – suggest forms with opaque structure create “inflectional islands” and predict both monolingual and bilingual children acquire these later that transparent structures, with bilingual children having more difficulty.
  
  o Study of English dominant bilinguals and French dominant bilinguals compared against a base of French monolinguals and English monolinguals showed both groups acquired the opaque structures in English later with no significant difference between the bilingual and monolingual children with past tense usage. English dominant bilinguals scored higher than French dominant bilinguals on irregular verbs, but lower than monolingual children. In French, the same delay of opaque structure acquisition was noted, but no significant difference in irregular form production.

• French & English (Nicoladis et al, 2007) – difference between regular and irregular verbs in French is less clear than in English, they are comprised of small families of irregular verbs which occur in higher frequency that regular verbs, although there are more regular verbs in the language. Therefore, acquisition of irregular verb form in French may not depend on frequency.
  
  o Study compared French-English bilinguals with French monolinguals and English monolinguals. When asked to tell back the story of a cartoon they watched, in either language depending on the group, all children speaking French produced a higher token number of regular verbs, while the opposite occurred in English. Also, the bilingual children displayed less accuracy when producing past tense verbs and this was attributed to less exposure to either language.

• German & English (Schelletter, 2007) – examined whether acquisition of irregular morphology in bilingual children was based on frequency effect of degree of marking
Study compared English-German bilingual with English monolingual. Bilingual children were less accurate in producing regular and irregular inflectional verb forms, and slightly less accurate in producing noun forms.

** Problems with studies: sample sizes relatively small, all children were very young (preschool age), languages have similar structural properties (subject to cross-linguistic transfer)

**Hebrew Plural System**

Hebrew uses derivational morphology. Nouns consist of a 3-4 letter consonantal root and a word pattern which include place holders for the root, vowels, and affixes. The root, which is the semantic core of the word, is inserted into the word pattern creating the word. Nominal word patterns, mishkalim, usually signify a specific type of noun.

- For example, the mishkal MiCCaCa signifies a place where a certain action (depending upon the root) takes place.
  - Root: /t’p’r’/ (pertaining to sewing) → Mitpar – a sewing house
  - Root /s’p’r’/ (pertaining to haircuts) → Mispara – a hair salon
  - Root /c’b’s’/ (pertaining to laundry) → Micbasa – a Laundromat

Hebrew nouns are also marked for gender (masculine and feminine) and for number. Pluralizing in Hebrew is a linear process of stem suffixation which incorporates information about number and gender. The general rule applies “im” to masculine nouns and “ot” to feminine nouns.

- For example, Cova (hat) → Cova-im (hats) OR Dira (apartment) → Dir-ot (apartments)

Plural suffixation always shifts the noun stress to the new final syllable.

Hebrew native speakers acquire regular plural noun morphology by the age of 2 or 3.

Some plurals are irregular, with feminine nouns taking masculine endings and vice versa. According to Ben Or (1967) Modern Hebrew contains over 200 masculine nouns that take the feminine suffix and around 50 feminine nouns that take the masculine suffix.

- For example, Mila (word, f) → Mil-im OR Kir (wall, m) → Kir-ot

Native Hebrew speaking children often over-regularize plural noun endings using the regular form instead.

Some Hebrew nouns have morpho-phonological alterations when produced in plural form, these are usually seen with vowel deletion or change.
For example, Simla (dress, f) received the regular plural suffix of “ot” but changes the vowels $\rightarrow$ Smallot.

Since Hebrew is based on word patterns (Mishkalim), words based upon one mishkal are very similar phonologically. This allows one to predict the morpho-phonological structure of the plural form when the stem changes.

For example, all nouns in CeCeC pattern, when pluralized become CCaC-im (begged (article of clothing) $\rightarrow$ bgadim (several articles of clothing)).

The most complex category is nouns that have a full stem change and unpredictable suffix when pluralized. There are very few nouns that fall into this category, and they need to be memorized separately from any grammatical rules (dual-mechanism model).

For example, Isha (woman) $\rightarrow$ Nashim (women)

**Delayed Acquisition and role of Literacy**

According to Ravid (2007) there is a connection between acquisition of irregular plural usage in Hebrew and child-directed speech and child literature.

Ravid and Schiff (2009) found that native Hebrew speakers reached ceiling at age 6 with regards to regular pluralized nouns. Irregular nouns were still being acquired in first grade, but improved significantly during this time.

- Growing frequency of input
- Heightened phonological awareness
- More lexical knowledge
- Consolidation of information about morphological and phonological structure of words

**The Study**

Assumptions:

1. Young bilinguals have limited exposure to L2 at home. If acquisition of irregular plurals depends on frequency, they are likely to perform at a lower level than monolingual children their age.

2. Bilingual children are heterogeneous in their language dominance and preferences, sequence of exposure to languages, and type of educational system.
3. Bilinguals close the gap with their peers due to exposure to written texts and increased L2 input.

Predictions:

1. Bilinguals will be less accurate in producing irregular pluralized nouns
2. Both monolinguals and bilinguals should improve their irregular noun production between data collection points
3. Both groups will show a similar pattern of difficulty in producing pluralized Hebrew nouns

Method

A sample of 7 to 8 year old Russian heritage speakers (L2 Hebrew) was chosen. Children were tested on receptive vocabulary knowledge and plural tasks at the beginning of second grade and the beginning of third grade. All students attended school in Northern Israel and were selected from 12 different schools and 24 different classrooms, minimizing teacher and school effects.

The following tests were used:

- Raven’s colored matrices (general cognitive ability)
- Peabody picture vocabulary test (receptive vocabulary knowledge)
- Plurals task
  - Only words determined by students’ teachers to be very common and familiar to students were used

Results

The results supported the researchers’ predictions:

- Both monolinguals and bilinguals improved use of irregular plurals over time
- Both groups were near ceiling with usage of regular plurals at both times
- Bilinguals closed gap to monolinguals with use of irregular plurals from first time to second time
- With regards to receptive vocabulary, both groups improved over time with monolinguals outperforming bilinguals. This gap did not close over time
• Nonverbal IQ and gender did not seem to affect ability to produce irregular noun plurals

• Receptive vocabulary accounted for a large variance in production of irregular plural forms, suggesting the importance of vocabulary knowledge in acquisition of irregular plurals in Hebrew

Discussion

• Findings support hypothesis about link between limited L2 Hebrew input and delayed acquisition of irregular noun plurals by bilingual children versus their monolingual peers
  - During time 2 monolinguals were near ceiling with irregular suffixes and changing stems with irregular suffixes
  - Irregular suffixes:
    - bilingual children applied canonical rules of morphology more than monolinguals showing less familiarity
    - seems they tried to memorize words as opposed to relying on phonological properties of similar words
  - Issue with Kaf – Kapot → can possibly be attributed to a meaning issue versus a knowledge issue

• Findings support hypothesis that bilinguals close the gap with monolinguals over time
  - Monolingual results improved by 2% while bilingual results improved by 4% from time 1 to time 2
    - Can be attributed to more output over time
    - Can be attributed to heightened metalinguistic awareness of morphological and phonological patterns

• Pattern of learning presented by bilinguals is very similar to that of monolingual peers
  - Both reached ceiling levels with regular plural nouns first
  - Both demonstrated the most difficulty with stem-change/irregular suffix (the most difficult plural nouns)
  - Specific similar mistakes over overgeneralizing typical plural forms were made by both groups (example: Sharvit → Sharvitot, instead of Sharvitim)
Both groups used irrelevant linguistic operations (example: Bat → Yeladot, instead of Banot)

Changing stems with irregular suffixes – several children used plural for different word which is phonologically similar (example: Lev → Levivot, instead of Levavot)

Conclusion

• Limited L2 Hebrew exposure for bilinguals affects receptive vocabulary and opportunities for trials of particular irregular plurals

• Monolinguals and bilinguals are quite similar in development for linguistic abilities with regards to plurals – could be due to growing metalinguistic abilities

• Nouns that have predictable stem changes depend on both input frequency of the form and understanding of “minor rules”

• Sequential bilinguals show a higher rate of over-regularization than their peers, although in a very similar fashion

• Sequential bilinguals follow the same path of development as their monolingual peers in terms of long-term acquisition of irregular noun plurals in Hebrew