What research tells us about age effects and its implications in instructed language learning settings

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Outline

1. Age effects in SLA. Research findings

2. Findings from instructed language learning settings

3. Implications

Age effects

- Cognition:
  - Cognitive advantages of **early** bilingualism

- Language*:*
  - Nativelikeness/UA of **early** starters

Cognitive advantages

Claim:

Bilingualism has positive cognitive effects. Therefore… FL learning has positive cognitive effects.

Cognitive advantages of early *bilingualism.* Bialystok's studies

- Bilingual advantage: in tasks that require **inhibitory** control, ability to monitor competing cues over a set of conflicting trials and direct attention appropriately

Martin-Rhee & Bialystok (2008)

- 3 studies to explore bilingual children's advantage over monolingual children in tasks that require inhibitory control

Cognitive advantages of early *bilingualism.* Evidence

- Participants are children in Anglophone Canada
- The school provides **2 hours of instruction** in Hebrew every day

- Bilingual children:
  - those who spoke another language at home (Hebrew or Russian)
  - completely fluent in both languages
  - used both languages every day

- Monolingual children:
  - those who did not use the L2 (Hebrew) outside the classroom
  - their proficiency in the language was extremely limited
  - the language was essentially never used for communication or for conversational purposes

Cognitive advantages of early *bilingualism*

- "Functional" bilinguals > "functional" monolinguals
- Only "functional" bilinguals "must constantly control attention between two active and competing language systems so that communication can proceed fluently in the one that is required"
- "… early bilingualism **and constant daily use of 2 or more languages** leads to precocious development of certain cognitive processes for children…"

- **Cognitive advantages of early bilingualism are context-dependent!**

Language advantage

Claim:

Child starters' ultimate attainment is higher

Language advantage

- Rate vs UA:
  - Older starters have a faster **rate** of learning (initial stages of morphosyntactic development): short-term advantage
  - Younger starters reach higher **UA :** long-term advantage

Krashen, Long and Scarcella, 1979

Why?

- Predominant learning mechanisms:
  - Implicit… in a naturalistic setting
  - Explicit… in an instructed setting

Implicit learning

- Naturalistic … SLA resembles the natural way young children learn their L1, i.e., by implicitly acquiring the language while attempting to use it in communicative contexts for real-world purposes

- *Children are better than adults at acquiring a language implicitly, not at figuring out its structure explicitly*
- *Implicit acquisition processes, however, require massive amounts of input, which only a total immersion program can provide, not a program consisting of a few hours of foreign language teaching per week*.

DeKeyser 2000

Implicit learning

DeKeyser's (2000) modification of the CPH:

- The CPH (*L2 must be acquired within a biologically determined period*) applies only to implicit learning of abstract structures

- … constrained to implicit learning mechanisms that are activated in a naturalistic setting (with massive exposure)

vs. Explicit learning

- Explicit… in an instructed setting
  - adolescents and adults are far better at figuring out the structure of language explicitly because of their higher level of general cognitive maturity

  - The use of implicit or explicit learning mechanisms is largely context-dependent!

In sum,

… age-related advantages cannot be dissociated from context of learning and language use

2. Research findings from instructed language learning settings

1. ES vs LS: Different amount of instruction + same age at testing
2. ES vs LS: Same amount of instruction + different age at testing
3. ES vs LS: Same amount of instruction + same age at testing + different intensity
4. ES vs LS: Long-term effects of starting age

1. Different amount of instruction; same age at testing

- Early starters > Late starters in oral/aural skills
- In the long term, late starters catch up to early starters in literacy skills

Burstall (1975); Oller & Nagato (1974); Harley (1986); Swain & Lapkin (1986); Turnbull et al. (1998); …

1. Different amount of instruction; same age at testing

- When there is enough exposure, older starters show higher learning efficiency in literacy skills as well.

- Are younger starters' higher oral/aural skills an effect of their initial age of learning or of higher exposure or instruction? …

2. Same amount of instruction; different age at testing

- Early starters < Late starters
- In the long term, early starters may catch up but …not observed to surpass LSs
  - Late starters are more efficient learners

The BAF project: Muñoz (ed.), 2006; Navés, 2007; …

The UPV project: Cenoz, 2003; García Mayo, 2003; García Lecumberri & Gallardo, 2003; Lasagabaster & Doiz, 2003; …

"Early classroom learning of French" project: Myles, 2010, 2011

3. Similar amount of instruction; same age at testing; different intensity

- Early starters ≤ Late starters
  - EPAL experiment (Holmstrand, 1982)
  - Canadian immersion (Turnbull et al., 1998)

4. How about in the long**er**-term?

- Remember:
  - In a naturalistic SL learning setting ESs generally outperform LSs in the long term
  - In an instructed FL learning setting, ESs do not seem to outperform LSs in the long term

"… no explanation has yet been provided for why in school settings the additional time associated with an early headstart has not been found to provide more substantial ***long-term*** *proficiency benefits."*

Harley, 1998

More time?

- *Instructed learners need more time to catch up …*

Singleton, 1995

Prediction from the BAF project

- *If younger starters do not benefit from implicit learning they will not have an advantage over older starters, and will not outperform them in the long run,…*

- *"… if the older learners' advantage is mainly due to their superior cognitive development, no differences in proficiency are to be expected when differences in cognitive development also disappear with age."*

Muñoz, 2006

Research on longer-term effects

- Methodological problems:
  - weak control of a very long period of time
  - sampling limitations
- Recent attempts:
  - Larson-Hall (2008)
  - Althubaiti (2010)
  - Muñoz (2011)

Larson-Hall (2008)

- 200 Japanese college students
- Average amount of input:
  - ES: 1923 h.
  - LS: 1764 h.
- Phonemic discrimination, GJT, aptitude test + background questionnaire
- ➢ Modest but inconsistent advantage for ESs:

  _ when range 1600-2000 h = **6/8 h per week**

  BUT NOT when range 2000-4000h.

Althubaiti (2010)

- 132 Saudi Arabic college students
- Average amount of input:
  - ES (child): 1021h
  - LS (teen): 819 h
- Cloze (general proficiency)+ UG-motivated performance tasks + Questionnaire

Althubaiti (2010). Results

- No role for age, exposure, attitudinal variables
- No correlation between starting age and scores on the 4 tasks when whole group

- BUT when disaggregated, significant relation of youngest group (3-6) with general proficiency (cloze test). The youngest group (M=1051h) may have had opportunities of intensive contact (tuition at home, travelling to UK,…)

- "Not reached threshold?" OR is it INTENSITY at a young age?

GRAL study. BAF follow-up

Participants:

- N = 159 (< 30 yrs; > 10 yrs LoE)
- Modern languages & lit. / English undergraduates

- Age mean = 21.2
- AO mean = 7.7
- LoE mean = 13.8

- L1-Sp = 41%; L1-Cat = 33%; L1s-Sp + Cat = 15%; L1-Other = 11%
- "More comfortable with": Sp = 40%; Cat = 27%; Both = 33%

- 4 lgs = 50% [3-8 languages]

BAF follow-up

Instruments:

- Questionnaire (input and biographical information)
- General Proficiency Test
- X-Lex/Y-Lex
- Phonetic Perception Test
- Written composition

In addition, for a subsample:

- Oral interview (personal L2 learning experience)
- Oral film retelling (*Modern Times*)

- Reading span task
- Non-word repetition task
- Lexical access task

Long-term results. Age

- No significant correlations between AO and outcomes measures after a minimum of 10 years of exposure

- No significant differences between pre-puberty group and post-puberty group. Nor with other cut-off points (e.g. AO<7; n = 63 and AO>7; n = 92).

No differences in the long(er) term

Expectations based on age effects on naturalistic settings are not fulfilled

GRAL. Input effects

Participants:

- N = 159
- Age mean = 21.2
- AO mean = 7.7

- LoE (yrs) mean = 13.8
- LoE (hrs) mean = 2206.5
- + SA (n = 75) (hrs) mean = 520, [300-3180]

GRAL. Input effects

Input measures:

- **Amount of curricular/extracurricular instruction hours** (15 measures)
  - Primary
  - Secondary compulsory
  - Secondary optional
  - University
  - Total
- **Intensity of curricular/extracurricular instruction hours** (15 measures)

GRAL. Input effects

- Amount of naturalistic exposure (SA)
  - Information from participants' stays abroad

- L2 contact
  - Watching TV, films
  - Writing
  - Reading
  - Other intensive exposure (conversations with NSs, videogames, …)

A<30 LoE>10	Global proficiency	X-Lex & Y-Lex	Phonetic Perception	Struct complex Oral film retelling
LoE (yrs)	.187(*) .019 156	.221(**) .007 150	ns	ns
LoE (curric + extracurric hrs)	.193(*) .016 156	.199(*) .015 150	ns	ns
Curric. hours University	.249(**) .002 156	.309(**) .000 150	ns	ns
Curric + extracurric hours University	.254(**) .001 154	.295(**) .000 148	ns	ns
SA (hrs)	.285(**) .000 156	.172(*) .036 150	ns	.326(*) .025 47
Current L2 contact	.253(**) .002 153	.197(*) .017 147	.254(**) .002 142	ns

Results. Muñoz (2011)

While **STARTING AGE** is not significantly correlated with output measures in the long term (not even after 10 years), measures of **INPUT** are.

- length/amount of formal exposure (yrs, hrs)
- amount of naturalistic exposure to L2 (SA)
- recent curricular and extracurricular exposure (University)
- current L2 contact

In sum,… age advantages

- LSs are faster in the initial stages
- ESs have an advantage at implicit learning but not at explicit learning. Implicit learning requires massive input and intensive interaction
- If ESs are not provided with massive exposure, they will not outperform LSs, when similar instruction/exposure conditions

4. Implications for language teaching

- Optimum age?
- Benefits of early teaching
- Conditions for early teaching

Optimum age?

- *"Empirical evidence has not yet definitively established an 'optimum age' for starting a foreign language (…) An early start by itself … guarantees nothing; it needs to be accompanied minimally by*
  - *good teaching (from teachers who have developed the required range of knowledge and skills)*
  - *a supportive environment*
  - *continuity from one year to the next, taking children smoothly from pre-primary to primary, and from primary into secondary education."*

Edelenbos, Johnstone & Kubanek (2006: 147)

Optimum age?

- "… there is an advantage to providing L2 instruction relatively late in students' schooling. Older students' more mature cognitive system, with the capacity to abstract, classify, generalize, and consciously attend to language qua language, may be well suited for the task of learning a L2 in school, where language is often used and taught in an abstract, decontextualized manner.

  The younger learner, who is thought to use unconscious, automatic kinds of learning strategies, may be at a relative disadvantage in such a context"

  Genesee (1988: 104)

Benefits of early teaching for children

- Positive attitudes and motivation
  - "As with Blondin et al. (1998), the main gains … lie in the development of positive attitudes and motivation."
    Edelenbos, Johnstone & Kubanek (2006)
- More time for learning:
  - "… an early start offers a longer overall period of learning…"
    Edelenbos, Johnstone & Kubanek (2006)
- Children's development:
  - "… an early start … has the potential to influence children's personal development when they are still at a highly developmental stage."
    Edelenbos, Johnstone & Kubanek (2006)
  - " … pupils need to be equipped with the competences, attitudes and skills to cope successfully with the social and economic changes which are transforming life in Europe."
    Driscoll (1999)

Benefits for society

- The introduction of a FL in primary school as a very important change in education in Europe.
  - *"We've come a long way (…) a change in education and … historic decision […] to introduce a foreign language in primary school, i.e. for all children.'*

    B. Millet of the French Ministry of Education, 2003

- "In Scotland… a wider range of pupils than before was reaching the Standard Grade including many who previously would have opted out and not taken a Certificate level".

  Low et al (1993, 1995); Johnstone (1997)

- Unequal access to FL instruction in US
  - Students attending rural or low socioeconomic status schools less likely to learn a FL

    Rhodes & Pufahl, 2008

Conditions

- The classroom
- The school system

Classroom conditions

- **Teacher training: pre-service and in-service**
  - Early Language Learning at Pre-primary Level in Europe: Current Situation and Future Perspectives
  - … few teachers and staff are trained to work with this particular age group in most educational contexts

  - Teachers' linguistic skills
    - Oral command: fluent, spontaneous, authentic production

    - *In the BAF project, initial age of learning was not a determinant of children's pronunciation …*

      Fullana, 2006

      - "Accented L2 input hypothesis"

        Regardless of an early starting age, learners will not be able to perceive and produce L2 sounds accurately if they have received accented input in the L2"

        Flege, 1991

Classroom conditions

- **Methodology**
  - Age-appropriate activities
    - Learning styles; cognitive conditions
    - Communicative skills first but not only: metalinguistic reflection; accuracy
    - Teaching and learning strategies
    - Language awareness and metacognitive skills
    - Creating a positive emotional environment
    - Compensatory resources: materials, TIC, teacher's "facilitating" role

- Need of new strategies for building on what YLs can do and for maintaining their motivation over an extended period of time…
  - ➢ the integration of content and language?

Nikolov & Mihaljević Djigunović, in press

School system. Conditions

- Enough teaching time in the curriculum
  - "The most reliable predictive factor"

    Edelenbos & Johnstone, 1996

  - "One or two hours a week – even for seven or eight years – will not produce very advanced second language speakers. This "drip-feed approach often leads to frustration as learners feel that they have been studying "for years" without making much progress"

    Lightbown & Spada, 1999
- Enough intensity
  - Implicit learning
- Appropriate students-teacher ratio
- Continuity: pre-primary, primary, secondary

To finish

- Trusting young age of learning with the burden of learning success is clearly not enough
- YLs need well trained teachers, age-appropriate materials and assessment, and TIME
- Intensity of exposure may have a stronger impact than length of exposure, esp. in the early years

A few recent references

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