

Second Language Acquisition and the Critical Period

Grant Goodall

Dept. of Linguistics

What we will do today

- Introduction to second language acquisition
- How age affects second language acquisition

Second language acquisition: a first look

- Classroom learning not the best example of L2 acquisition
- L2 acquisition is much like L1 acquisition
- Child L2 acquisition is especially like L1 acquisition
- Adult L2 acquisition diverges in certain ways from L1 acquisition

Classroom learning not the best example of L2 acquisition

- Majority of humans speak an L2; few of them learned it in classroom setting.
- Classroom language instruction is a relatively recent phenomenon.
- It usually involves just the beginning stages of acquisition.

A typical language class

3 hours per week

30 weeks per year

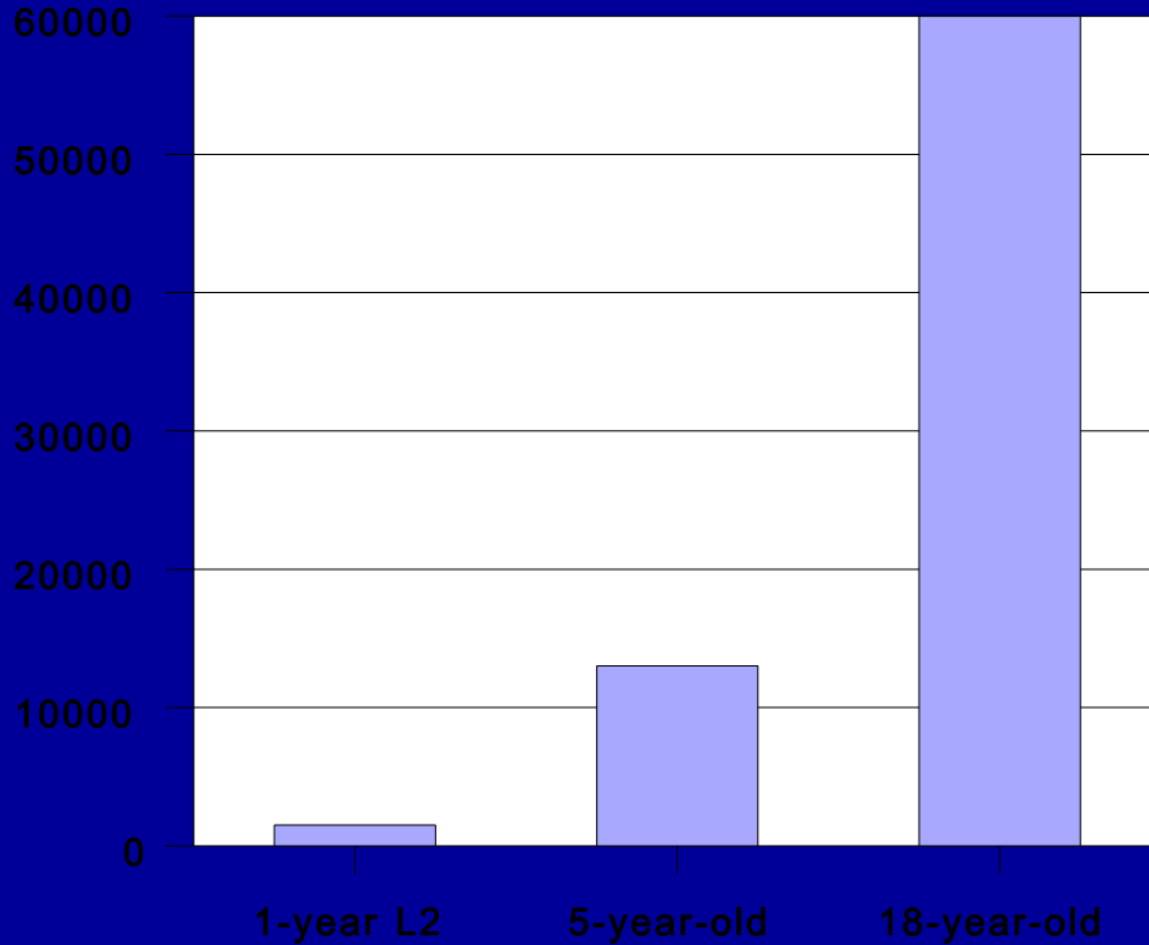
2 years of study

180 total hours of exposure

What can you do in 180 hours?

- If you learn 10 words per hour, you will learn 1,800 words in 2 years.
- Is this a lot?

You be the judge:



You be the judge:

1,800	two years of instruction
13,000	average 5-year-old
60,000	average 18-year-old

So.....

- Classroom language learning is worth studying (and worth doing!),
- But it is just one piece of the larger picture of second language acquisition.

Second language acquisition: a first look

- Classroom learning not the best example of L2 acquisition
- L2 acquisition is much like L1 acquisition
- Child L2 acquisition is especially like L1 acquisition
- Adult L2 acquisition diverges in certain ways from L1 acquisition

L2 acquisition is much like L1 acquisition

- Have to learn words: dog, run, of ...
 - Typical error:
“Cover the turkey with aluminum paper.”
- Have to learn rules: SVO, “add –ed to make verb past tense” ...
 - Typical error:
“I taked test yesterday.”

Second language acquisition: a first look

- Classroom learning not the best example of L2 acquisition
- L2 acquisition is much like L1 acquisition
- **Child L2 acquisition is especially like L1 acquisition**
- Adult L2 acquisition diverges in certain ways from L1 acquisition

Child L2 acquisition is especially like L1 acquisition

- After arriving in a new language environment, younger children will “catch up” within a year or two.
- They then appear to be indistinguishable from L1 acquirers of the language.

Second language acquisition: a first look

- Classroom learning not the best example of L2 acquisition
- L2 acquisition is much like L1 acquisition
- Child L2 acquisition is especially like L1 acquisition
- Adult L2 acquisition diverges in certain ways from L1 acquisition

Adult L2 acquisition diverges in certain ways from L1 acquisition

- Pronunciation
- Inflectional morphology (grammatical endings on words):
 - “The boy walk**s** to school.”
- Subtle semantic distinctions not present in L1:
 - “I saw **a** cow” vs. “I saw **the** cow”
 - “El niño corr**ía** mucho” vs. “el niño corrió mucho”



...but you already knowed
this facts!

But many other aspects of adult
L2 acquisition work just as you
would expect...

Adults readily learn:

- Words (vocabulary)
- Word order and many other aspects of syntax: SVO, VSO, SOV, etc.

Neko-ga nezumi-o toraeru.

cat mouse catch

Second language acquisition: a first look

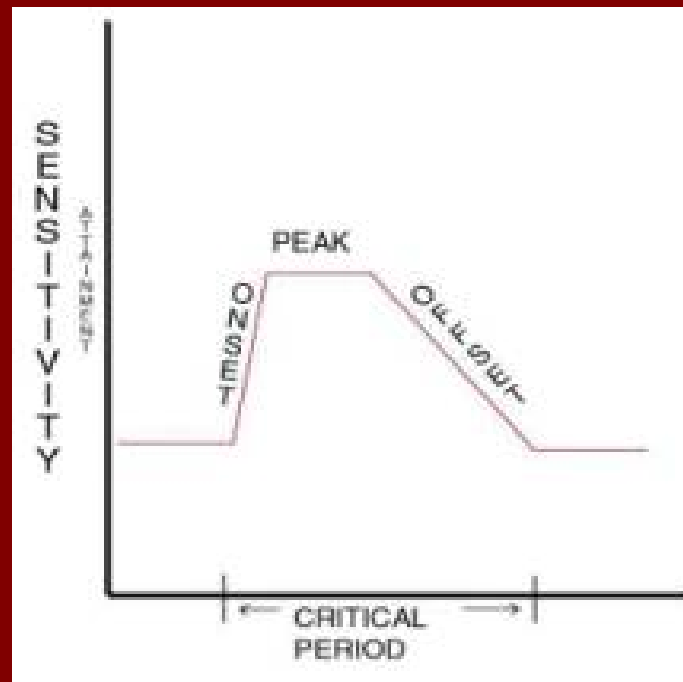
- Classroom learning not the best example of L2 acquisition
- L2 acquisition is much like L1 acquisition
- Child L2 acquisition is especially like L1 acquisition
- Adult L2 acquisition diverges in certain ways from L1 acquisition

Effects of age on L2 acquisition

- Critical period for L1 acquisition
- What would a critical period for L2 acquisition look like?
- Do we actually find such a critical period?
- Do late learners ever attain nativelikeness?

Critical period for L1 acquisition

- Critical period = “window of opportunity”



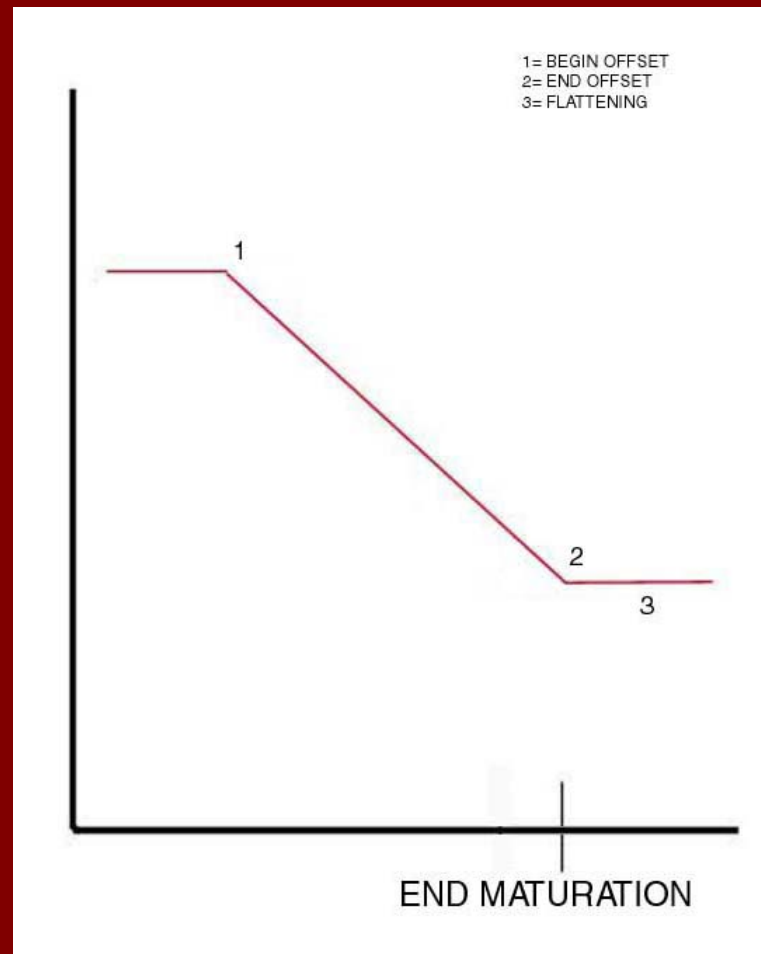
Standard evidence for critical period in L1

- Young infants are “universal listeners”. Ability declines around age 1.
- Delaying L1 acquisition until after childhood leads to low levels of grammatical development (e.g. Genie).

Effects of age on L2 acquisition

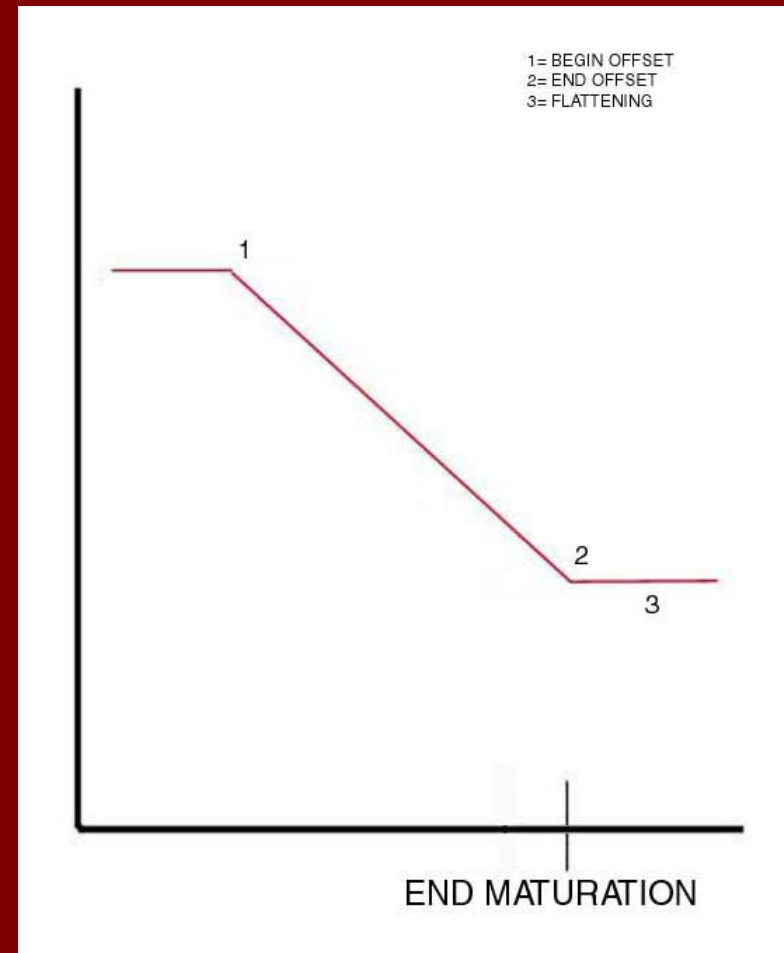
- Critical period for L1 acquisition
- What would a critical period for L2 acquisition look like?
- Do we actually find such a critical period?
- Do late learners ever attain nativelikeness?

What would a critical period for L2 acquisition look like?

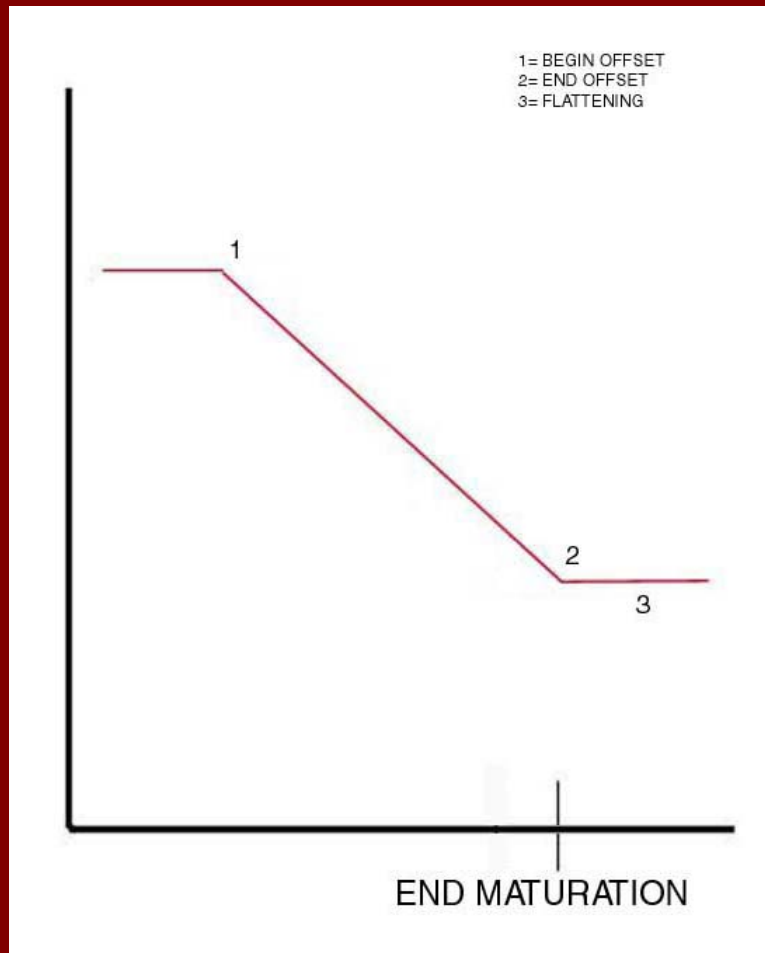


What would a critical period for L2 acquisition look like?

- “Geometric features”
 - Heightened sensitivity at beginning
 - Clear point where offset (decline) begins
 - Flat period when critical period is over



What would a critical period for L2 acquisition look like?



- “Temporal features”
 - Heightened sensitivity through early childhood
 - Sensitivity bottoms out when full neurocognitive maturity is reached
 - Continued low sensitivity throughout adulthood

Effects of age on L2 acquisition

- Critical period for L1 acquisition
- What would a critical period for L2 acquisition look like?
- Do we actually find such a critical period?
- Do late learners ever attain nativelikeness?

Do we actually find such a critical period?

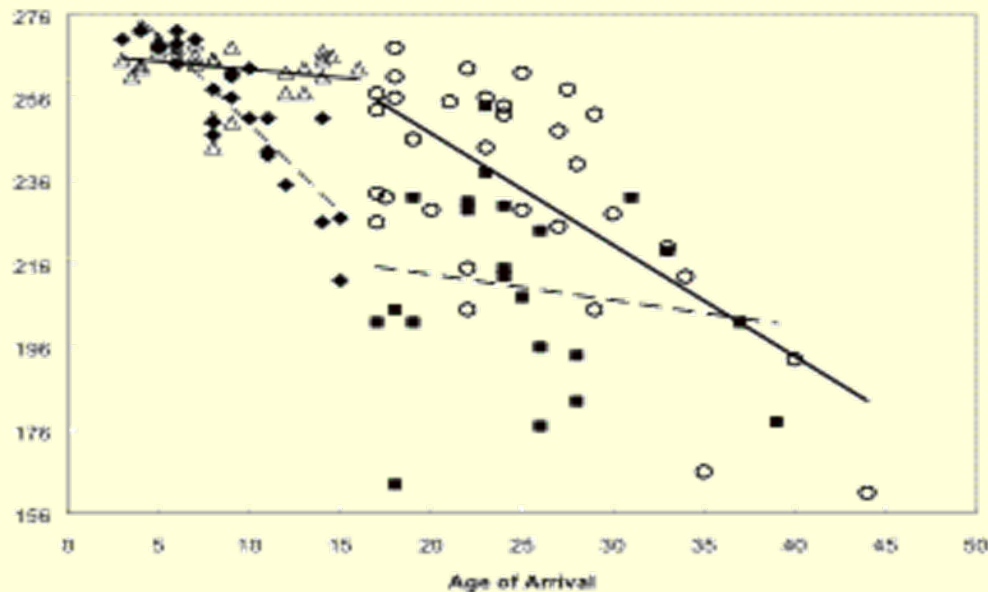
- The “classic” study says yes.
- Johnson & Newport (1989) compared English proficiency of Korean and Chinese immigrants to U.S.
- Age of arrival ranged from 3 to 39
- Length of residence in U.S. at least 3 years
- Subjects tested on variety of English structures

Results:

- Clear and strong advantage for early arrivals over late arrivals
- Age of arrival before puberty
 - Performance linearly related to age
- Age of arrival after puberty
 - Performance low but highly variable
 - Performance unrelated to age

But...

- Reanalysis of Johnson & Newport suggests that cutoff point is 20, not puberty
- Birdsong & Molis (2001) got different results:

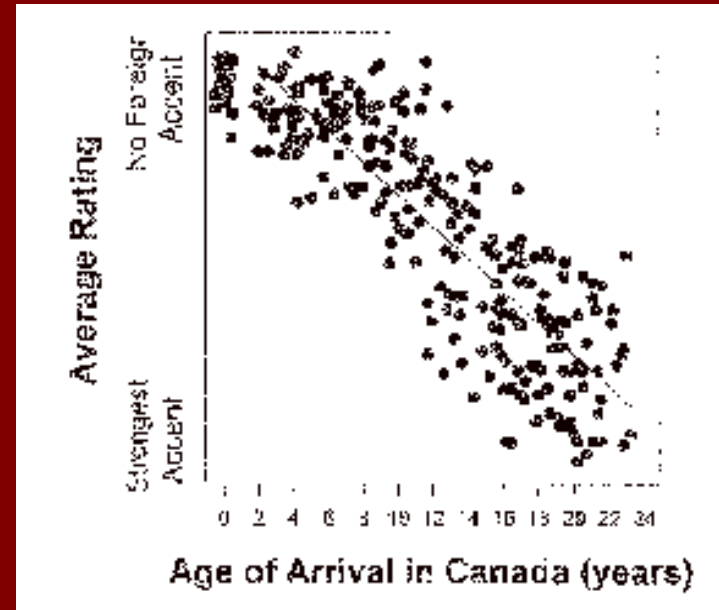


Other studies point to same conclusion:

- Not clear there is sharp cutoff point
- Slow decline in sensitivity throughout life (i.e., no “flattening out”)

Flege (1999)

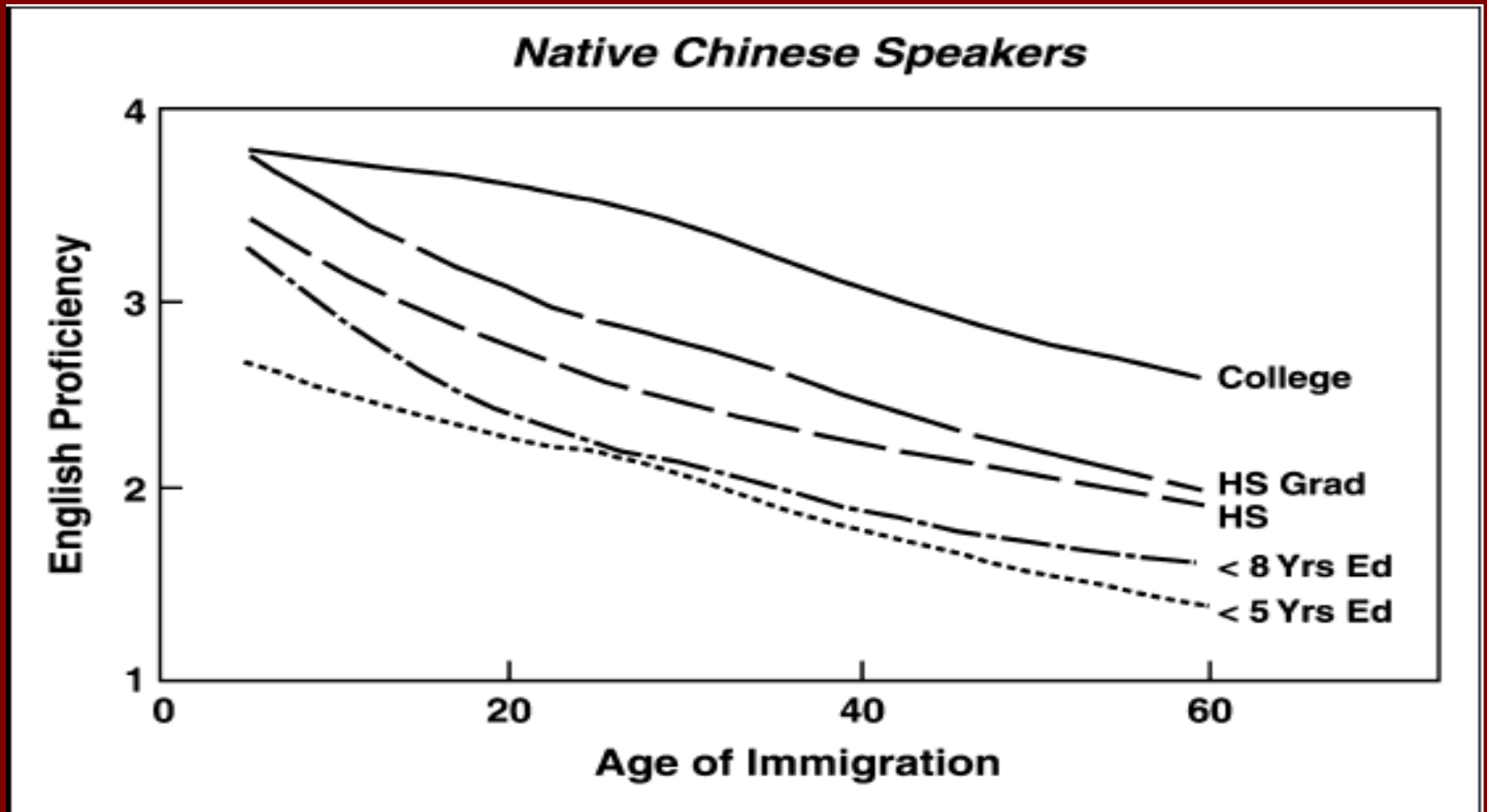
- Pronunciation of Italian immigrants to Ontario, Canada
- Length of residence \geq 15 years
- No cutoff point where decline begins
- No flattening out in adulthood



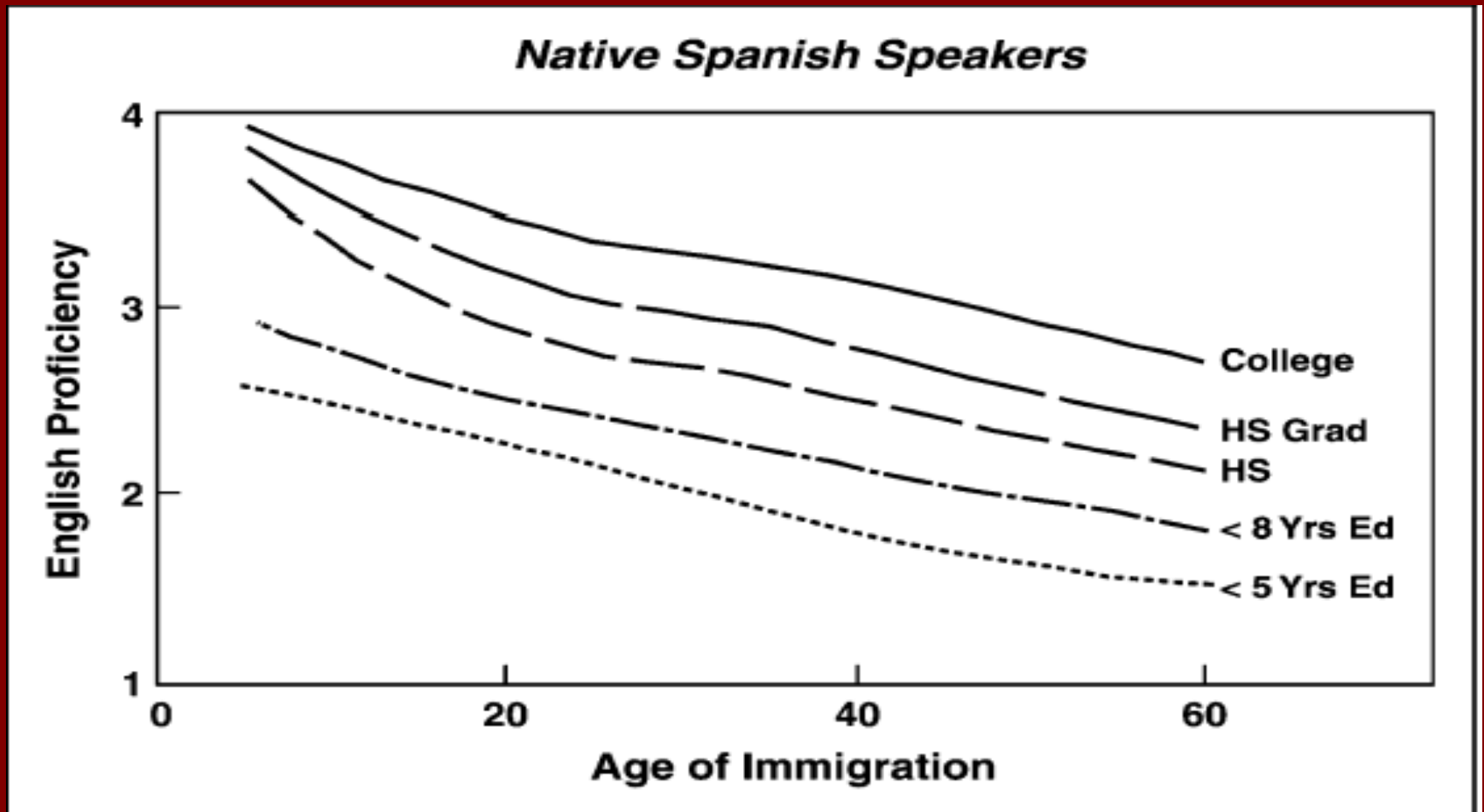
Hakuta, Bialystok & Wiley (2003)

- Self-assessed oral proficiency ratings of Chinese- and Spanish-speaking immigrants to U.S. (1990 U.S. Census)
- Length of residence ≥ 10 years
- 2.3 million responses
- No cutoff point where decline begins
- No flattening out in adulthood

English proficiency ratings: Chinese speakers



English proficiency ratings: Spanish speakers



Key points from Hakuta, Bialystok & Wiley article

- “Our conclusion ... is that second-language proficiency does in fact decline with increasing age of initial exposure.”
- “The pattern of decline, however, failed to produce the discontinuity that is the essential hallmark of a critical period.”
- “The degree of success in second-language acquisition steadily declines throughout the life span.”

Tentative conclusions

- Is there a sharp cutoff point where sensitivity begins to decline?

NO

- Does sensitivity flatten out in adulthood?

NO

- Is there a significant change in sensitivity when maturation is reached?

NO

- Is there a well-defined critical period for L2 acquisition?

NO

- Does age affect L2 acquisition?

YES

Effects of age on L2 acquisition

- Critical period for L1 acquisition
- What would a critical period for L2 acquisition look like?
- Do we actually find such a critical period?
- Do late learners ever attain nativelikeness?

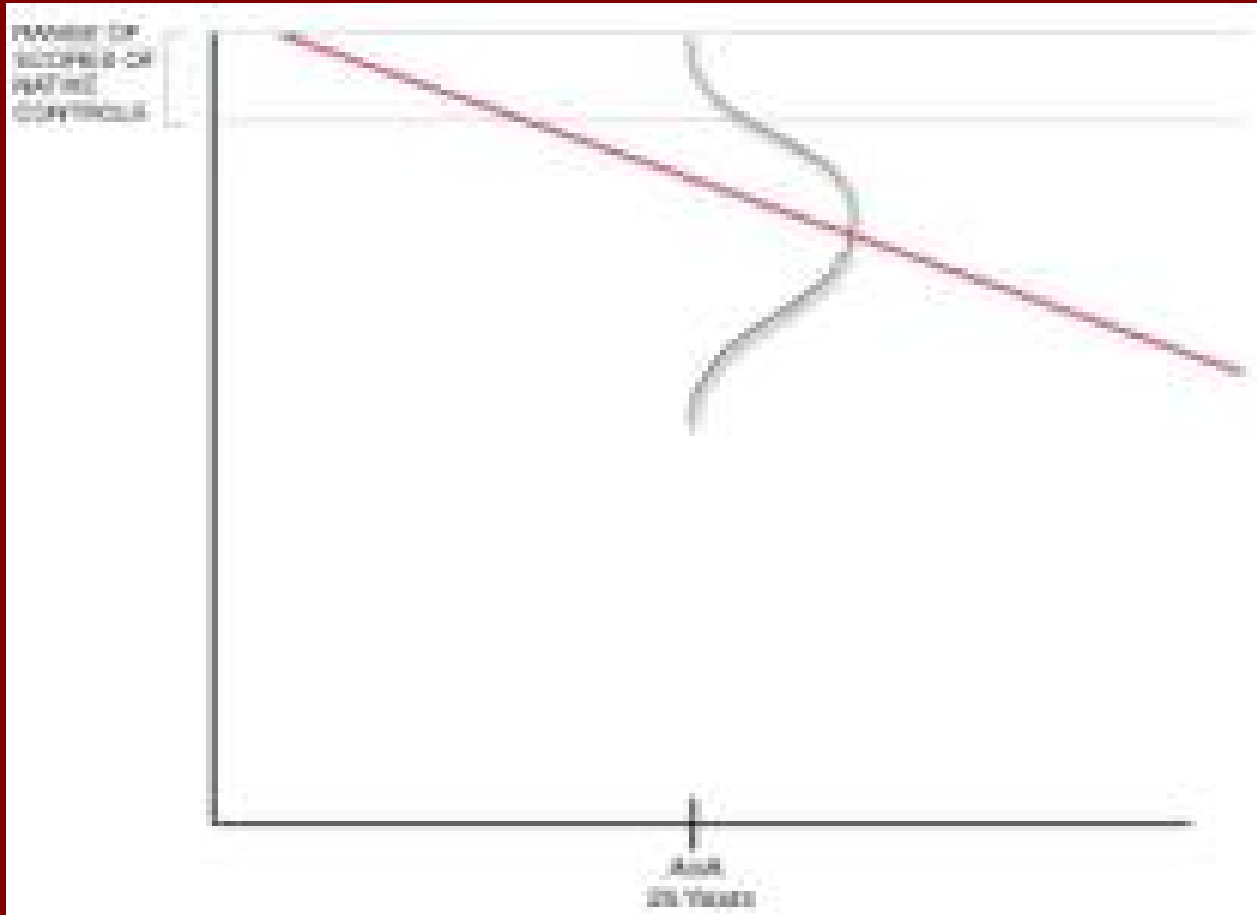
Do late learners ever attain nativelikeness?

- Previous assumed answer: Very rarely.
- Is what we would expect if there is critical period.
- Newer research reevaluates this, shows incidence of nativelikeness at 5% to 15%.
- This is additional evidence against critical period.

Comments on nativelikeness

- Not monolithic: one can be nativelike in pronunciation, but not syntax (or vice-versa).
- Have to consider the appropriate population: those who have had years of interaction with language

- Incidence of nativelikeness appears to decline with age of arrival, as we would expect.



Final considerations

- Why does L2 learning ability decline throughout life?
 - Biology
 - Environment

Biology

- Age-related changes in cognitive processing.
- For example, decreasing ability to:
 - Learn paired associates.
 - Encode new information.
 - Recall detail as opposed to gist.
 - Perform “control” processes (e.g. Simon task)

Biology

- Also, general decline in:
 - Working memory capacity
 - Cognitive processing speed
 - Attention

These changes in brain functioning may account for much of the decline in language learning ability. But also ...

Environment

- Lack of input that is good for learning.
- Need to respond in socially appropriate way.
- Insufficient time

Wanna learn another language?

- Would have been easier 10 years ago.
- But will be harder still 10 years from now.

So do it now.