397LH
Topics in L1 and L2

Week 2.
The Critical Period Hypothesis

L1A vs L2A

- Some properties of L1A:
  - Fast
  - Seemingly effortless
  - Uniformly successful in reaching target.
- Some properties of L2A:
  - Slow
  - Hard
  - Typically does not end in native-like ability.

Child L1A: fast, easy, successful. Adult L2A: slow, hard, failure-prone.

- Suggests that kids are "built to learn language" in a way that adults are not.
- Perhaps there is a "sensitive period" early in life where one absorbs languages? A sensitive period which ends at some point…

Lenneberg 1967

- Lenneberg 1967 is usually considered to be the written origin of this idea that there is a "critical period" or "sensitive period" for language acquisition.
- He based this on several observations, including the observation that critical periods are biologically common.

What makes us think there might be a critical period?

- Concerning L1A, there are (traumatic) cases of delayed language exposure which together seem to show that only if recovered before age 10 would normal L1 language development occur.

What makes us think there might be a critical period?

- Another case of severely delayed language access (but without abuse) is Chelsea, misdiagnosed as cognitively challenged in early childhood, when in fact she was congenitally deaf—only discovered when Chelsea was 31.
- Chelsea's utterances have almost no discernable structure at all; her speech was less language-like than Genie's.

How early is early enough?

- Isabelle (imprisoned with her mute, uneducated mother), starting at 6, rapidly caught up to normal age-levels.
- Jim, hearing child of deaf parents, brought into speech contact around 3;6, rapidly caught up in spoken language, reaching age-norms by 6.

How early is early enough?

- Newport & Supalla's study of ASL as L1 among congenitally deaf individuals, who started learning ASL at different ages.
  - Exposure before 6 yields native competence, uniform error types (4-6 did slightly less well).
  - Exposure after 7 yielded more errors in closed-class items, later correlated with evidence of more "holistically" (rote?) learned elements.
  - Exposure after 12 much higher error rate and variable error types, more frozen forms.

Seems clear enough

- There is *some* kind of advantage to L1A within the "sensitive period".
- Is it language specific? Or is there something about overall cognitive development that can explain this?
- Once you get L1 within the sensitive period, is that good enough (does that "get it started") for L2A even after the sensitive period?

To reiterate…

- Is there a critical period for L1A?
  - Evidence just reviewed suggests probably.
- Does this critical period affect L2A?
  - Is it easier to learn an L2 inside the critical period?
  - It is possible to learn an L2 outside the critical period?
  - Does it just depend on having learned an L1 inside the critical period?

About critical periods

- Just a note: It's pretty uncontroversial that there is *some decline* in the ability to learn language that happens with age. Nobody disputes the fact that it's harder to learn a second language later in life.
- The question is: Is this caused by an irreversible neurological change? (A *critical period*) Is it *impossible* to "learn an L2" after the end of the critical period? Or does it just get harder to learn stuff as you get older? Why does it seem to be particularly acute with language learning?

About knowledge

- We can borrow from Krashen a distinction between two types of knowledge:
  - **language competence (acquired competence)**
  - **learned linguistic knowledge**
- The first is generally unavailable to conscious reflection. The second is quite often conscious.
  - An L1 example of LLK is ***Don't end your sentences with a preposition***, which if followed threaten to result in travesties like: ***This is the sort of pedantry up with which I will not put!***

About knowledge

- The critical period hypothesis is about obtaining *acquired competence* (not *learned linguistic knowledge*) and it makes a claim about whether an L2 speaker can obtain a native-like *competence* of an L2.
- People can always gain LLK in an L2 as well, learn rules, apply them, maybe get so practiced at it that it becomes second nature, but this still wouldn't rise to the level of acquired competence.

L2A and age of initial exposure

- Adults proceed through early stages of morphological and syntactic development faster than children (time and exposure constant).
- Older children acquire faster than younger children (morphology and syntax; time and exposure constant)
- Child starters outperform adult starters in the end.
- **So, age improves *rate*, at least initially, but negatively affects ultimate level of attainment.**

Phonology—6

- Studies of phonological acquisition suggest that **6 years old** is a critical one for attainment of native-like phonology.
- Generally tested by having native speaker judges listening (to accent, presumably) and guessing which were native speakers and which weren't.

Morphology, syntax, semantics—15

- A few studies (including Johnson & Newport 1989) show that L2 speakers with an initial exposure prior to 15 did significantly better than L2 speakers with an initial exposure after 15 in the domain of syntax and morphology.

Comprehension—10

- A small set of results (Oyama 1978, Scovel 1981) suggest that ability to comprehend "masked" speech and recognize foreign accents has a discontinuity at around age 10.

Several "critical periods"

- So it seems that there is an age-sensitivity, but it is not even *language* specific, it is *subpart-of-language* specific.
  - Phonology—6
  - Morphology, syntax, semantics—15
  - Comprehension—10
  - …?

Why isn't it strange that there should be (a) critical period(s)?

- There are critical periods attested all over the biological world.
- The visual system is a favorite example. In experiments done on macaque monkeys, it was determined that there is a critical period for development of binocular vision cells in the visual cortex (tested by monocular deprivation)
- Recovery after CNS damage: disappointingly limited in the adult brain, but can be nearly 100% in the immature nervous system.

Why isn't it strange that there should be (a) critical period(s)?

- Vision studies replicated in cats.
- In fact, vision studies "replicated" in humans as well; there seems to be a visual critical period at around age 6, after which providing previously delayed visual stimuli is of no use. (Congenital opacities of the cornea; surgery performed on juveniles or adults does not restore sight)
- *Imprinting* in birds; just after birth, they "become attached" to a prominent moving object in their environment (typically, the mother). This attachment persists. But it can only be done sometimes in the first few hours, for some species.

Why isn't it strange that there should be (a) critical period(s)?

…The development of form perception and the binocular vision necessary for depth perception proceed in stages after birth. Each stage culminates in one or more developmental decisions, many of which are irreversible. In each stage, appropriate sensory experiences are necessary to validate, shape, and update normal developmental processes. Consequently, the effects of sensory deprivation are most severe during a restricted and well-defined period early in postnatal life when these developmental decisions are still being made. (*Kandel, Schwartz, Jessell* 3d ed. 1991, p. 956)

Why isn't it strange that there should be (a) critical period(s)?

…Critical periods of development generally do not have *sharp* time boundaries. Different layers within one region of the brain may have different critical periods of development, so that even after the critical period for one layer has passed, rearrangement of the layer may still be possible because the entire region has not yet fully developed. For example, 8 weeks after birth layer 4c in the visual cortex of the monkey is no longer affected by monocular deprivation, whereas the upper and lower layers continue to be susceptible for almost the entire first year.. (*Kandel, Schwartz, Jessell* 3d ed. 1991, p. 957)

What do you lose after the critical period?

- If you lose some ability to learn language after the critical period, what is different?
- A common and tempting interpretation of the critical period effects is that a second language learner's efforts is no longer facilitated by "UG" after the critical period is over, so people have to learn languages in some way which is different from how kids learn their native language.

What do you lose after the critical period?

- Is the end of the critical period the end of the availability of UG to aid in language acquisition?
- This is a somewhat simplistic view, but this is the question we'll investigate over the next couple of weeks.

Those who disagree…

- Despite all of this, there are still those who maintain that there *isn't* a critical period.
- The primary evidence brought in favor of this is that we can *find* isolated, rare instances of people who have learned a second language in their adult years (after a critical period should be over) who pass for native speakers on various kinds of tests.
- What are we to make of this kind of evidence?

So where *are* we?

- The onset of language takes place at early infancy, if not already at birth.
  - At least by 6 months, infants are able to discriminate linguistic sounds (phonetic inventories, open syllables) from one another and from non-linguistic sounds.

So where *are* we?

- There is an initial sensitive period for phonetic perception that is already over at 10-12 months of age but that appears to be reversible at least to some extent.
  - Prior to this, children can discriminate linguistic sounds not only from the language they are learning as a native language, but also from other languages as well. After this, their ability wanes, although it seems to still be possible even for adult learners to regain the ability to distinguish non-native sounds with training or with the right experimental conditions.

So where *are* we?

- Delayed first language acquisition is incomplete when the onset of language is after age 4; the later the age of onset, the less complete acquisition is likely to be.
  - Newport (1990) studied congenitally deaf adults with different initial ages of exposure to ASL and found that even those whose initial age of exposure was as early as four were outperformed by those whose initial age of exposure was prior.

So where *are* we?

- Late first language acquisition is less successful in the long run than equally late second language acquisition.
  - Many studies combined show this sort of effect; it appears to be vital to learn a native language early, whereas the "window" doesn't seem to completely close on highly-successful second language acquisition until quite a bit later.

So where *are* we?

- More mature learners generally make faster initial progress in acquiring morphosyntactic and lexical aspects of second language.
  - The general idea here is that more mature learners have more advanced general cognitive processes and problem-solving ability that allows them to better deal with the task of learning the morphology and syntax. Perhaps this is indicative of a role for LLK? *In the long run*, though, more mature learners are generally *less* successful.

So where *are* we?

- An increasing age of onset for second language acquisition is correlated with declining ultimate attainment in pronunciation and morphosyntax across age groups, this pattern beginning typically with an onset age of 6 to 7 in childhood and continuing into adulthood. In adult learners, the association between onset age and declining outcomes is most strongly manifested in the oral aspects of second language proficiency.
  - Learning a second language without an accent is very difficult after quite an early age.

So where *are* we?

- Second language studies have not provided convincing support for a critical period terminus at puberty. Some adult learners are capable of near-native, if not native-like, performance in a second language, whereas some children are less successful than others.
  - Puberty is another biologically scheduled process that is tempting to compare with a "critical period" for language acquisition. However, puberty is not itself contemporaneous with any observable linguistic milestone—it appears to be also maturational, but not directly linked to linguistic capacities.
  - Whatever critical period there is, it seems to be somewhat "overcomable" either with effort or perhaps in terms of individual differences…?

So where *are* we?

- Monolingual-like attainment in each of a bilingual's two languages is probably a myth (at any age).
  - This contentious-sounding statement is really aiming to cover the fact that studies have indicated that a bilingual's knowledge is different from a monolingual speaker's knowledge in various ways (although most studies seem to be more about speed of access and phonology, not syntax). The idea is that perhaps the appropriate measure of "success" should be approximating a *bilinguals* knowledge rather than a monolingual native speaker's knowledge, which is sensible enough.

So where *are* we?

- Maintaining two languages at a high level in a minority context may be particularly difficult for young children.
  - Not a lot of support for this was provided, but there is plenty of anecdotal evidence of people who "once knew a language as a child" but have since come to a point where they don't believe they know it at all anymore ("language attrition"). Anecdotal evidence also indicates that such people "pick up" the language they "lost" very quickly, suggesting that it hadn't really been completely "forgotten." It isn't clear what importance this fact has, however, other than pointing to a difference between children and adults.

So…

- In the next few classes, we will consider some arguments about the role of "UG" in second language acquisition, and part of the reason there is a debate is that there is some evidence for a critical period for language learning.
- Given that, the question is: What disappears after the critical period? Is it UG? Or does UG play a role in L2A? Or does only *part* of UG play a role?