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Mastering the Grammar of Past Tense Counterfactual Sentences: Building the Legacy of Research in

Later Language Development

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What IS a past tense counterfactual (PTCF)?

EXAMPLE: “If Harry had baked an apple pie, we would have eaten a delicious dessert.”

It implies that certain events did not happen (Harry did NOT bake a pie; we did NOT eat a delicious dessert).

BUT it expects the listener to consider that they COULD HAVE occurred.

It contains a subordinate (adverbial) clause and a main clause.

It has a hypothetical, conditional quality.

To be grammatically correct, the subordinate clause must employ the past perfect verb form (had baked); AND, the main clause must employ the present perfect verb form (have eaten), with a modal verb (would).

Objectives of the Study

To examine the development of PTCF sentences beyond childhood, we compared young adolescents and young adults.

1. Do developmental changes occur in production?
2. Do developmental changes occur in comprehension?

Importance of the questions:

1. Evidence of growth beyond late childhood would provide further support regarding the length of critical [or sensitive] periods for language acquisition – that language learning remains an **active process** during adolescence (Hartshorne, Tenenbaum, & Pinker, 2018)
2. In addition, the current study continues the legacy of research in later syntactic development, which began over 50 years ago (C. Chomsky, 1969).
3. The results would inform educational standards (Common Core State Standards) and classroom instruction in grammar. Currently, CCSSs expect mastery by 5th grade (age 11).

We already know that fully accurate production is a late linguistic attainment and that PTCF sentences are challenging even to 11-year-old children.

BUT WHY are they so difficult to master?

Perhaps because...

- They have a low frequency of occurrence in natural language.
- They are often produced “inaccurately” by adults.
- Children do not hear them often enough (and correctly enough) for “entrenchment” to occur (Crutchley, 2004, 2013)
- They express subtle meanings and have an abstract, “irrealis quality” (Ravid, 2018).
- They are constructed of two syntactic parts (or clauses) that are co-relative (Ravid, 2018). In other words, the speaker must coordinate the relative timing of past events (using the past perfect and present perfect verb forms correctly).

Participants (n = 80 per group)

Middle School Student Group: mean age = 12.44 years. All attended a private school located in a middle-income neighborhood in Oregon.

University Student Group: mean age = 21.30 years. All attended a nearby public university.

All students were monolingual speakers of Mainstream American English

Methods and Materials

A written sentence completion task was employed that involved 32 sentences. Half the sentences examined the **past perfect** (in the subordinate clause) and half examined the **present perfect** (in the main clause). To examine possible differences between production and comprehension, half the participants in each group received a fill-in response format (**production**) and half received a multiple-choice response format (**comprehension**). All students were tested in their classrooms at the middle school or university.

Examples of test items: Production (fill-in)

Present Perfect:

If John had slipped off that ladder, he would _____ his arm.

Clue word: break

Answer: *have broken*

Past Perfect:

The old house would have looked nicer if the owner _____ the front porch.

Clue word: sweep

Answer: *had swept*

Examples of test items: Comprehension (multiple-choice)

Present Perfect:

If Jane had owned a bigger garden, she would _____ more vegetables.

- A. grow
- B. grew
- C. have grew
- D. have grown*
- E. grew

Past Perfect:

Linda would have arrived at the office on time if she _____ the bus.

- A. rode
- B. ride
- C. rided
- D. had ridden*
- E. had rode

Fig 1: PTCF Sentences: Production versus Comprehension (max = 32)



Results

1. The young adults (age 21) outperformed the young adolescents (age 12) on both the production and comprehension tasks.
2. The production task was more difficult than the comprehension task for both groups.
3. A sizeable number of participants in both groups had not mastered PTCF sentences.
4. The present perfect (main clause) was easier than the past perfect (subordinate clause) for both groups, on both tasks.

Table 1. Number and percentage of participants in each group that showed mastery (n=40 per group):

	Adolescents	Adults
Production	1 (2%)	10 (25%)
Comprehension	4 (10%)	20 (50%)

(Mastery is defined as a raw score of at least 29 out of 32 items, or an accuracy level of 90% or higher.)

Statistical Analysis:

P value: Statistically significant main effects obtained for

- Group [$F(1, 156) = 44.80, p < .0001, \eta = .47$]
- Format [$F(1, 156) = 15.46, p = .0001, \eta = .30$]
- However, the interaction between group and format was not statistically significant [$F(1, 156) = 1.24, p = .2673, \eta = .09$].

Effect size: large for group and medium for format (Cohen, 1969, p. 276).

Fig 2: Present Perfect versus Past Perfect: Production Task (max = 16 per type)



Fig 3: Present Perfect versus Past Perfect: Comprehension Task (max = 16 per type)



Conclusions

1. PTCF sentences are a late linguistic attainment – even later than previously reported by Crutchley (2004). Even young adolescents and young adults with typical language development are still in the process of mastering them.
2. Evidence of grammatical growth during adolescence is consistent with recent research regarding the critical period for language learning (Hartshorne, Tenenbaum, & Pinker, 2018).
3. In other words, the adolescent years remain an active period of language learning in terms of mastering the grammar of PTCF sentences.

Clinical Implications:

Implications for the assessment of students with possible developmental language disorders are as follows:

- A. Errors on the PTCF do not necessarily indicate a language deficit.
- B. Patterns may reflect language differences, not disorders.
- C. Future research is necessary to examine the PTCF sentence in diverse languages and varied dialects of English.

Educational Implications:

- A. Students with typical language development may need explicit instruction in the classroom on the production and comprehension of PTCF sentences.
- B. Mastering the grammar of PTCF sentences is part of the Common Core State Standards (by age 11, should have mastered PTCF sentences)
- C. Instructional activities should be relevant to students’ lives:

For example:

A lesson could begin with a familiar, concrete activity:

Brownie-making activity to teach PTCF sentences:

Have students, in small groups, make brownies, carefully following a recipe in a cookbook. Then, ask students how things might have turned out *differently* if certain steps had not been followed, modeling and prompting PTCF sentences, for example:

Question: If *we had forgotten* to add cooking oil to the mix, what *would have happened*?

Answer: If *we had forgotten* to add cooking oil, the brownies *would have been* too dry!

Later, move to academic tasks where PTCF sentences are needed:

Example from a social studies text:

If Japanese rulers *had not been driven* by the idea of gaining power outside of Japan, they *would not have welcomed* the Chinese and Korean cultures, and without those cultural influences, Japan *would not have adopted* different customs including Buddhism, the use of bronze and iron, and how to grow rice (Bednarz, Miyares, Schug, & White, 2005, p. 687).

Example from a mathematics activity:

“If James *had rolled* the die once, the probability of getting a 5 *would have been* 1 in 6.”

Example from a nutrition class:

“If more students *had eaten* breakfast before coming to school, they *would have scored* higher on the exam.”

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