Excitatory and inhibitory processing of attended and ignored stimuli

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Past research on language processing and its cognitive underpinnings typically employed monolingual subjects assuming that the native language alone was informative on which universal principles may be generalised.

Bilinguals were considered a special group akin to brain damaged patients, language disorders and deaf individuals.

But that view has changed, in part as a consequence of the increasing prevalence of bilingual population and the upsurge of research on bilingualism.
There is evidence that the two languages of the bilingual are active when a bilingual intends to use one language alone.

The resolution of cross-language competition renders the bilingual a “mental juggler.”

The expertise developed in “mental gymnasium” for the brain is known to enhance executive function in bilinguals relative to monolinguals.

The present study contrasted monolinguals and bilinguals on inhibitory and lexical decision tasks using the priming paradigm.
Predictions

- Both groups will show positive and negative priming effects in the attended repetition and ignored repletion conditions respectively.
- Bilinguals will show greater inhibitory cost and lesser facilitation.
- Monolinguals will show higher facilitation and lesser inhibition cost.
The Lexical Decision Task

Attended Repetition

+ 

plant
ROAD

DIARY

plant

Control

+ 

BOTTLE
dew

school
CHIEF

Ignored Repetition

+ 

monkey
LAND

TEACHER
land
Predictions by the two main rival theories of conceptual priming

- **Priming**
  - Positive Priming
    - Episodic Retrieval (Compatible Response Tag)
    - Selective Inhibition (Excitatory Processing)
  - Negative Priming
    - (Episodic Retrieval) Incongruent Response Tag
    - Selective Inhibition (Inhibitory Processing)
results

Response Time (msecs)

Monolinguals

Bilinguals

Priming Conditions

AR

CO

IR

AR

CO

IR
In contrast with the control trials, both monolinguals and bilinguals produced AR facilitation and IR inhibition effects respectively.

The positive and negative priming effects obtained were not statistically different across the two groups of bilinguals and monolinguals.

Both groups produced relatively more errors (nonsignificant) in the AR condition in contrast with the control condition than IR condition compared to the control condition.
Implications

- The present evidence has called into question assumptions about bilingual superiority in inhibitory control as relative to monolinguals.
- The results also discount the claim that negative priming cannot be obtained when large pool of words are used and when each word appears maximally twice.
Suggestion for further research

- It is beyond the scope of the present study to review the effect of proficiency levels on the findings.
- The bilinguals employed in the present paradigm were proficient and balanced bilinguals.
- Research shows that for all but most proficient and balanced bilinguals the processing of L2 is typically slower than the processing of L1.
- Another study is recommended for comparing similar groups in their L1’s.