Cross-Language Lexical Interaction in Object Naming
A training study on the effects of L2 categorization on L1 picture naming
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Introduction

Lexical categorization refers to the grouping of objects using a common name (e.g., many containers may be called 'bottle'). Lexical categories for common objects often vary between languages. In some cases, objects which share a common name in one language may be distinguished by different names in another.

This incongruity poses a special challenge to bilinguals, who must manage conflicting input from two different naming systems. Under extreme conditions of second language (L2) immersion, some late-onset bilinguals have been observed to transfer L2 semantic patterns back into their first language in verb use. This change is one example of first-language lexical attrition.

Method

Participants: 10 (7F, 3M) psychology undergraduates, ages 18-20 years (mean 18.71), English monolinguals

Stimuli: 30 line-drawings of common objects were selected from the International Picture-Naming Project database and Snodgrass & Vanderwart's named set. All pictures had >80% (English) dominant name agreement (>85% for incongruent trials).

A second language (pseudo-Chinese, L2) was synthesized to create three conditions of category (in)congruity between L1 and L2:

- **L2 Reductive** (6 pairs)
  - zebra
  - horse
  - crab

- **L2 Elaborative** (6 pairs)
  - banana
  - chong
  - cao-rang

- **L2 Equivalent** (6 items)
  - zeng-ting
  - zheng-weng

Procedure: Participants named 30 common objects in English (L1) as quickly as possible in two tests: before and after 5 training sessions in the L2 over approximately two weeks.

Results

Means and 2 s.e. are pictured above for each condition. Pairwise comparisons revealed a significant difference between L2 Elaborative and L2 Reductive conditions (p<0.05).

Errors: Although the number of naming errors did not vary significantly between the Session 1 and Session 6 English tasks (p=0.181, matched pairs t-test), several interesting naming errors occurred in the Session 6:

- **L2 Reductive Condition**
  - Desk - “table”, 4 subjects
  - Telescope - “binoculars”, 2
  - Zebra - “horse”, 1
  - Motorcycle - “bike” or “bicycle”, 2

- **L2 Elaborative Condition**
  - Brush - “comb”, 3 subjects
  - Banana - “peeled banana”, 3
  - Arrow(1) - “bow and arrow”, 1
  - Arrow(2) - “left”, 1
  - Camel - “camel with two humps”, 2

Discussion

• The changes in RT before and after L2 training were not as predicted, but the significant effect of the L2 Reductive condition supports non-selective activation accounts of bilingualism.

• While L2 training in the Elaborative condition required subjects to recognize new underlying category structures, Reductive condition training primarily activated existing L1 lexical representations, facilitating their later retrieval in the English task.

• L1 naming errors in Session 6 suggest that some degree of L2 transfer occurred in the L1 task. This observation suggests that the conceptual stores for L1 are shared with additional languages and are subject to interference or even reorganization by L2.

References


ANOVA was performed to find the fixed-effect of L2 translation condition across subjects (overall F=3.269, p=0.040). Condition was a marginally significant factor (F=2.706, p=0.093).

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