Effects of immersion, language, and learner variables on lexical category convergence

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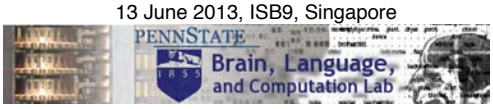


Lexical Categorization

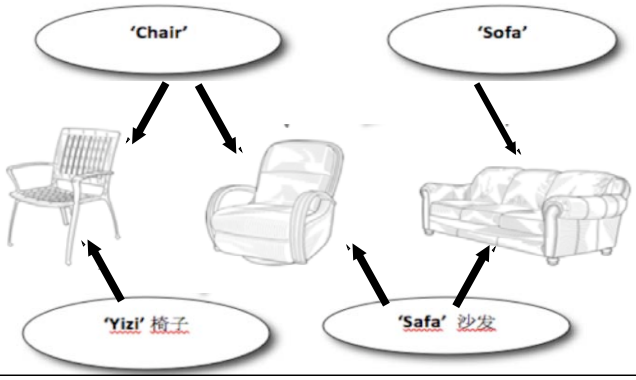
Languages carve up the world of objects and events into named categories that suggest some similarity between their diverse constituents

- Color (Landar, Ervin, Horowitz, 1960; Caskey-Sirmons & Hickerson, 1977; Kay & Regier, 2007)
- Furniture (Graham & Belnap, 1986, Malt, Sloman, & Gennari, 2003; Li, 2012)
- Containers (Malt et al, 1999; Ameel et al, 2005)
- Causation (Wolff & Ventura, 2009)

BUT they do not fully align across languages!

Non-native-like word use is an example of semantic accent *(de Groot 2013)*, or the transfer of naming patterns from one language to another.

L1-L2 naming differences



Cross-Language Transfer

English-to-Chinese transfer

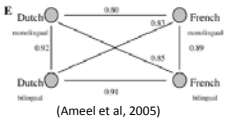
Chinese-to-English transfer

Convergence

- Similarity between L1 & L2 production: convergence
  - Lexico-semantic conflicts appear to be solved through compromise between languages (Ameel et al, 2005)

Group Correlations

Hypothesis

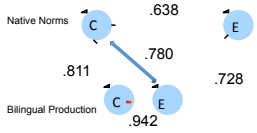


(Ameel et al, 2005)

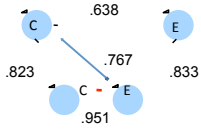
Results

Convergence (correlation within bilinguals): greater than baseline in both groups

Cross-language transfer: groups are relying on L1 to differing extent



Beijing Normal



Penn State

Goals of the Present Study

What linguistic, developmental, and environmental variables predict native-like L2 lexical categorization?

- Immersion Status
- Language History and Use
  - Years of L2 study
  - Age of L2 onset
  - Code-Switching frequency
- Language Norms
  - Naming agreement among native speakers
  - Number of competing names

Methods

Participants: Chinese-English bilingual graduate and undergraduate students of varying language background and proficiency

- 34 students from Penn State University (USA)
- 26 students from Beijing Normal University (China)

Sample	Age	AOEE	LOR	English Prof	Yrs Study
PSU	18 – 29 y M = 21 y	5 – 15 y M = 9 y	0 – 18 y M = 2.6 y	2.8 – 7.0 M = 5.1 / 7	5-17 M = 12
BNU	18 – 26 y M = 23 y	5 – 15 y M = 12 y	~	1.3 – 5.5 M = 4.0 / 7	8-18 M = 11

What is this?

这是什么？

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http://www.lehigh.edu/~inmotion/dishes/dishes1_inEngl_forChinese.htm

What is this?

这是什么？

Methods

Scores:

- Bilingual naming agreement with monolingual norms
- Individual names by bilinguals compared with the dominant name in monolingual norms

Analyses:

- Naming agreement scores regressed over measures/ variables of language history (Li et al., 2006)
  http://blclab.org/language-history-questionnaire/
- Predicting native-likeness in the L2 in lexical categorization

Predictors of Native-like English

Step 1: Linear Regression for overall L2 category native-likeness

Learner variables:

- Age of earliest L2 (English) exposure
- Immersion (Years in L2 environment)
- Years studying English
- Frequency of code-switching
- All non-significant interactions later removed

Predictors of Native-like English

Outcome Measure: Category native-likeness (0 - 1, mean 0.40)

Learner variable predictors (Adjusted R^2=0.24)

AOEE +0.002, p=0.74

Length of US Residence (Immersion) +0.01, p=0.04

Years Learning English +0.006, p=0.41

Code-switching Frequency +0.18, p=0.04

YearsLearn x CS-Freq -0.008, p=0.06

AOEE x CS-Freq -0.008, *p*=0.06

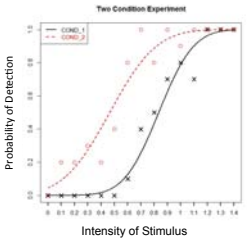
- The main effect of AOEE is not significant, varying with language use (code-switching frequency)
- Code-switching appears to have differential effects for various levels of learner (YearsLearn)

Binomial Logistic Regression

Logistic Regression
Application of the general linear model to data which follow a logistic function

Binomial Logistic Regression

- Outcome variable has two possible values (e.g., Correct vs. Incorrect) assigned 0 or 1
- Probability of 0 or 1 occurring (e.g., Probability of a correct response) covaries with predictors, resulting in a logistic curve with predictor on horizontal axis and P(Correct) on the vertical axis



Predictors of Native-like English

Step 2: Binomial Logistic Regression to predict accuracy of each object name
Learner variables from Step 1
Language variables:

- Naming Agreement by monolinguals in Chinese & English
- Number of proposed names by monolinguals in Chinese & English

Data are organized trial-wise, allowing us to estimate the probability of an object being assigned its dominant name based on both learner- and language-variables

Predictors of Native-like English

Outcome Measure: Dominant name production (0 or 1, 43% correct)

Learner Variable predictors (Nagelkerke R^2=0.04)

With Language Variable predictors (Nagelkerke R^2=0.21)

Chinese Norm Agreement -2.376, p<0.01

English Norm Agreement 2.894, p<0.01

 # Chinese Competitor Names -0.242, p<0.01

 # English Competitor Names -0.073, p=0.01

English Agreement x LOR 0.319, p<0.01

 # English Names x LOR 0.02, p=0.11

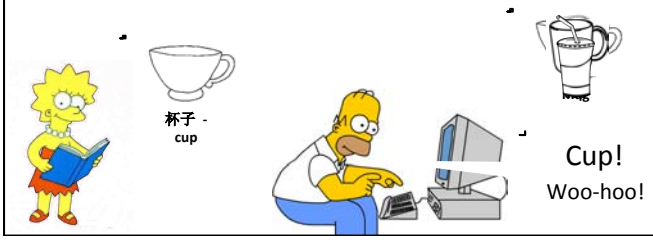
- L1 & L2 norms compete in L2 categorization
- Influence of L2 norms receives a boost with increased duration of immersion in L2 environment

Discussion

- Agreement among native speakers is highly predictive of L2 learners' success in acquiring native-like categorization
- L2 Norms are more effectively learned in an immersive environment
- Individual differences in language history interact with language use behavior, showing no single factor as determinant of L2 acquisition

Discussion

- L2 instruction should be sensitive to category differences
- Immersive virtual environments can offer greater object variety



Thank You & 谢谢

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