ANAPHORA RESOLUTION IN ADVANCED SECOND LANGUAGE SPEAKERS OF ENGLISH

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Introduction

- Second language (L2) acquisition is often less successful than first language (L1) acquisition.
- What type of linguistic structures are more difficult to acquire to a native-like level for L2 speakers?
- What are the sources of the non-convergence between advanced L2 speakers and native speakers? L1 influence or general L2 processing effects?

Introduction

- The Interface Hypothesis (Sorace & Filiaci, 2006):
- Though very advanced L2 speakers seem to be able to acquire narrow syntactic properties of their L2, they have difficulties in structures involving an interface of syntax and other cognitive domains (e.g. semantics, pragmatics, etc.) .

- In English, it is commonly assumed that the choice of a referent

reflexives<- syntactic/structural configuration (Chomsky, 1981)
pronouns<- non-structural factors (semantics/pragmatics) (Hobbs, 1979; Kehler, 2002).

The Interface Hypothesis

- The Interface Hypothesis (IH) (Sorace & Filiaci, 2006)

- Criticism of the original IH
- a) are there structures which require only syntactic computations?
- b) many structures are sensitive to multiple conditions

- Later development of IH
- Internal interfaces (e.g. syntax-semantics)
- External interfaces (e.g. syntax-pragmatics)(Sorace &Serratrice,2009)
- Categorical distinction → gradient differentiation (Sorace 2011)

- Integrating multiple types of information at interfaces

Picture Noun Phrases

- Picture Noun Phrase construction (PNP) involves both structural and non-structural factors (see Kaiser et al., 2009).
  e.g. Leonard gave Sheldon a picture of him/himself.

- Structural bias in PNPs
- Principle A: a reflexive must be bound in a local domain. (Chomsky 1981)
- Principle B: a pronoun can have antecedent, as long as it is not local. (Chomsky 1981)
- (1) Sheldon$_1$ saw the picture of him$_{*1}$/himself$_1$.

- (2) Sheldon$_1$ told Leonard$_2$ about the picture of himself$_{1/?2}$.
- (3) Sheldon$_1$ heard from Leonard$_2$ about the picture of himself$_{1/?2}$.

- (4) Sheldon$_1$ told Leonard$_2$ about the picture of him$_{?1/2.}$
- (5) Sheldon$_1$ heard from Leonard$_2$ about the picture of him$_{?1/2.}$

Picture Noun Phrases

- Non-structural bias in PNPs

- *The source hypothesis*
- Reflexives -> sources of information. (Kaiser et al., 2009)
- (2) Sheldon told Leonard about the picture of himself.
- (3) Sheldon heard from Leonard about the picture of himself.

- *The perceiver hypothesis*
- Pronouns ->perceivers of information. (Kaiser et al., 2009)
- (4) Sheldon told Leonard about the picture of him.
- (5) Sheldon heard from Leonard about the picture of him.

Picture Noun Phrases

Sample sentence	Structural bias	Non-structural bias	conflict
Sheldon told Leonard about the picture of himself.	Sheldon	Sheldon	No
Sheldon heard from Leonard about the picture of himself.	Sheldon	Leonard	Yes
Sheldon told Leonard about the picture of him.	Leonard	Leonard	No
Sheldon heard from Leonard about the picture of him.	Leonard	Sheldon	Yes

Aims

- To what extent are L2 speakers sensitive to information from syntactic and semantic levels?
- Does their L1 make a difference in their comprehension of English with regard to this sensitivity?
- This study tested these questions with Picture Noun Phrases (adapted from Kaiser et al., 2009).

Methods

- Participants
- Experiment groups: L1 Mandarin (n=20), L1 German (n=20) advanced L2 speakers of English (IELTS 7.5 or above)
- Control group: Monolingual English speakers (n=22)
- Participant information by group

		Mandarin	German	English
Age of acquisition of English	Range	6-13	6-13	/
	Average	9.5	10	/
Length of residence in UK (months)	Range	9-36	9-48	/
	Average	15.3	18.4	/
Age	Range	22-31	19-27	20-32
	Average	23.6	24.2	23.7

Why L1 German vs. L1 Mandarin?

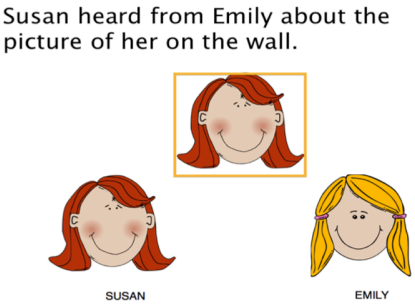
PNPs in English, German and Mandarin Chinese

	English	German	Mandarin Chinese
reflexives	**John** told Peter about the picture of **himself**.	**John** hat Peter über das Bild von **sich** erzählt.	**Yuehan** gen Bide shuo **tazijide** zhaopian.
	John heard from Peter about the picture of **himself**.	**John** hat von Peter über das Bild von **sich** gehört.	Yuehan ting **Bide** shuo **tazijide** zhaopian.
pronouns	John told **Peter** about the picture of **him**.	John hat **Peter** über das Bild von **ihm** erzählt.	**Yuehan** gen Bide shuo **tade** zhaopian.
	John heard from Peter about the picture of **him**.	**John** hat von Peter über das Bild von **ihm** gehört.	Yuehan ting **Bide** shuo **tade** zhaopian.

Methods

Tasks:

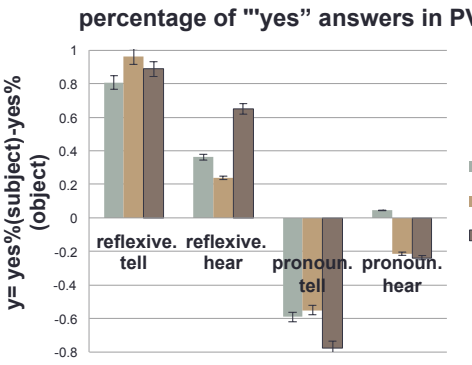
- Picture verification task (PVT)
- (whether the picture matches the sentence-yes/no)



- 2 x 2 x 2 design
- Anaphor: reflexive/pronoun
- Verb: tell/hear ->semantic role
- Picture: subject/object ->syntactic role

- Linguistic questionnaire

Results



Mixed-effect regression model

Function: Binary yes/no response

Fixed effects:
Anaphor (reflexive/pronoun)
Picture (subject/object)
Semantic role (source/perceiver)
Language (Man./Ger./Eng.)

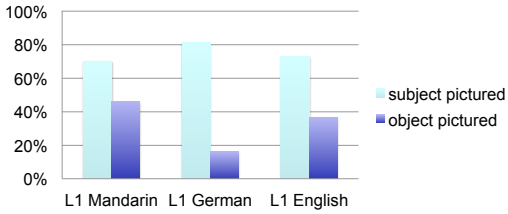
Random effects:
Participant
Item

Picture (β = .58, p< .001)
Anaphor*Picture (β =1.56, p< .001) ->syntactic constraints
Anaphor*Semantic Role (β= .85, p< .001) ->semantic biases
Language*Anaphor*Picture (p< .001)
Language*Anaphor*Semantic Role (p< .01)

Results

”yes”% in PVT in conflict condition

ref + hear e.g. Sheldon heard from Leonard about the picture of himself.

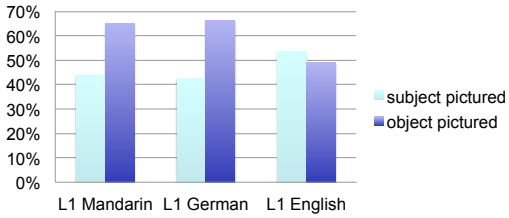


L2 speakers vs. L1 English
Different
L1 Mandarin vs. L1 German:
Different (at least not the same)
Language*Picture (*p*= .09) ->they didn’t seem to agree on whether the reflexive refer to the subject
Potential crosslinguistic influence from L1

Results

”yes”% in PVT in conflict condition

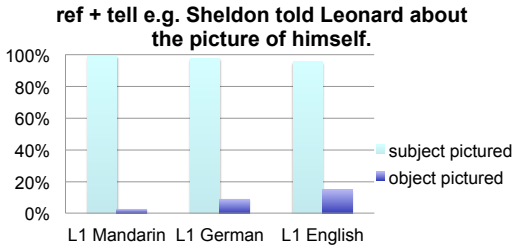
pro + hear e.g. Sheldon heard from Leonard about the picture of him.



L2 speakers vs. L1 English
Different
L1 Mandarin vs. L1 German:
Similar
Picture (*β*=- .70, *p*< .05) ->they accepted the pronoun as referring to the object
Potential general L2 processing inefficiency

Results

”yes”% in PVT in non-conflict condition



L2 speakers vs. L1 English:
Similar
Picture (β=3.10, p< .001) -> all participants gave significantly more “yes” answers to the subject pictured items.

Results

”yes”% in PVT in non-conflict condition

L2 speakers vs. L1 English
Similar
Picture (β=-2.22, p< .001) ->all participants gave significantly more “yes” answers to the object pictured items.

Discussion and conclusions

- Non-convergence between advanced L2 speakers and native speakers only occurs in ***conflict*** conditions.
- This non-convergence is not due to interface ***per se***. It is the conflicts of different kinds of information that contribute to the non-convergence at interface conditions.
- The interface provides the ***possibility*** of having conflicts of different kinds of information and various types of interface conditions predict various ***degrees*** of non-convergence.

Discussion and conclusions

- The non-convergence in conditions that are more syntactically constrained (e.g. reflexive conditions) likely reflects crosslinguistic influence from L1.
- The non-convergence in conditions that are more contextually constrained (e.g. pronoun conditions) likely reflects general L2 processing inefficiency.
- This study lends support to a model of anaphora resolution in which different weighs and directions of structural information are considered on a gradient basis.

Future research

- Online experiments (eye-tracking during reading, self-paced reading, etc.)
- Different levels of proficiency
- Native speakers in overloaded-processing conditions (noise, limited time, etc.)

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