Cross-language influences in trilingual word processing

Kristin Lemhöfer

L3 workshop, Poznan 2017
Why study trilinguals?

Dutch

German

English

leaf

blad

Blatt
Why study trilinguals?

- Dutch
- English
- German

Dutch: trein
English: train
German: Zug
Why study trilinguals?

Dutch: jurk
English: dress
German: Kleid
Why study trilinguals?

Dutch

Huis

English

House

German

Haus
Why study trilinguals?

Dutch: trein (train), jurk (dress), huis (house), blad (leaf), Blatt (Zug)

English: train, dress, house

German: Haus, Kleid, Zug
What to study about trilinguals?

- **Dutch**:
  - huis
  - jurk
  - blad

- **German**
  - Haus
  - Kleid
  - Zug

- **English**
  - train
  - dress
  - house
What to study about trilinguals?
It is the mark of a fluent bilingual individual that he manages to keep his language-generating essentially unilingual. Relatively few involuntary intrusions from one language occur when he is speaking the other, and of those that do occur, many seem to be syntactic units rather than random words (Diebold, in press; Weinreich, 1954). Such observations point to some major organizing principle underlying the psychological separation of the bilingual’s two languages, but it is not known what that is. Several hypotheses can be listed to account for it; this paper the description limited only by the rules of the language (Chomsky, 1957; Miller, Galanter, and Pribram, 1960) in which the experience is being recalled. The fact that a bilingual responds differently to a set of “standard” stimuli depending upon which of his two languages he is speaking (Ervin, 1961; Lambert, Havelka, and Crosby, 1958; Lenneberg and Roberts, 1956) can in fact be interpreted in this way. We will call this the shared hypothesis.

Alternatively, if verbally defined past experiences were tagged and stored in a form
Kolers (1963)

N = native language
E = English (L2)
T = translation
M = memory
Table 1

An Illustrative Case of Intralingual and Interlingual Tests

<table>
<thead>
<tr>
<th>E-E</th>
<th>E-N</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>table</strong></td>
<td><strong>silla</strong></td>
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<tr>
<td><strong>boy</strong></td>
<td><strong>niña</strong></td>
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<tr>
<td>king</td>
<td><strong>reina</strong></td>
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<tr>
<td>house</td>
<td><strong>blanco</strong></td>
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<td>dish</td>
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<td>girl</td>
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<table>
<thead>
<tr>
<th>N-N</th>
<th>N-E</th>
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<tbody>
<tr>
<td><strong>mesa</strong></td>
<td><strong>chair</strong></td>
</tr>
<tr>
<td><strong>muchacho</strong></td>
<td><strong>trousers</strong></td>
</tr>
<tr>
<td>rey</td>
<td><strong>queen</strong></td>
</tr>
<tr>
<td>casa</td>
<td><strong>mother</strong></td>
</tr>
<tr>
<td>silla</td>
<td></td>
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<tr>
<td>hombre</td>
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<tr>
<td>reina</td>
<td></td>
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<tr>
<td>madre</td>
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<tr>
<td>(e)</td>
<td>(f)</td>
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<tr>
<td>(g)</td>
<td>(h)</td>
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</tbody>
</table>
“… experiences and memories of various kinds are not stored in common in some supralinguistic form but are tagged and stored separately in the language S [the subject] used to define the experience to himself.” (p. 300)
Kolers (1963)

N = native language
E = English (L2)
T = translation
M = memory
<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Speaker(s)</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00-9:00</td>
<td>Registration</td>
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<tr>
<td>9:00-9.15</td>
<td>Conference opening</td>
<td>Marit Kristine Westergaard</td>
<td>C1, Collegium Novum UAM, al. Niepodległości 4</td>
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<tr>
<td>9:15-10:15</td>
<td>Plenary lecture</td>
<td>Cross Linguistic Influence at the level of word order in L3 English by</td>
<td>Monolingual L1 Georgian and bilingual L1 Georgian/L2 Russian speakers</td>
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<tr>
<td></td>
<td>Chair: Katarzyna Dziubalska-Kołaczyk</td>
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<tr>
<td>10:15-11:15</td>
<td>Session 1</td>
<td>verb Placement in the Initial Stages of L3 Swedish</td>
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<td>Chair: Jeanne McGill</td>
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<td>Gvantsa Jichoshvili and Maria Juncal Gutierrez Mangado</td>
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<tr>
<td>11:15-11:45</td>
<td>Coffee break</td>
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<td>11:45-13:15</td>
<td>Session 2</td>
<td>The role of language dominance for syntactic and phonological transfer into</td>
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<td>Chair: Jennifer Cabrelli Amaro</td>
<td>L3 English</td>
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<td></td>
<td>Anika Lloyd-Smith, Marieke Einfeldt, Tanja Kupisch and Stefano Quaglia</td>
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<td>Cross Linguistic Influence at the level of word order in L3 English by</td>
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<td>(Non-)Native influence in the acquisition of VOT patterns: The case of</td>
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<td>advanced L1 Spanish</td>
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<td>Raquel Llama, Walcir Cardoso and Laura Collins</td>
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<td>Maria Marecka, Magdalena Wrembel, Romana Kopeckova and Ulrike Gut Speech</td>
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<td>perception in young multilinguals</td>
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<td>13:15-14:30</td>
<td>Lunch</td>
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<td>14:30-15:30</td>
<td>Plenary lecture</td>
<td>Assessing cross-linguistic influence in L3 phonology through language</td>
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<td>Chair: Ulrike Gut</td>
<td>switching tasks: the role of L1 dominance and individual differences in</td>
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<td>Carrie Pichan and Jennifer Cabrelli Amaro</td>
<td>attention and inhibitory control</td>
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<td>Phonological Transfer in L3 Initial Stages Italian and Portuguese</td>
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<td></td>
<td>Anna Balas</td>
<td>Experience with second language vowels determines foreign language vowel</td>
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<td></td>
<td></td>
<td>perception</td>
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<td>16:30-16:45</td>
<td>Coffee break</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16:45-17:45</td>
<td>Plenary lecture</td>
<td>Cross-language influences in trilingual word processing</td>
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<tr>
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<td>Chair: Agnieszka Chmiel</td>
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<td>19:30</td>
<td>Conference Dinner</td>
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<tr>
<td></td>
<td>Brovaria Restaurant, Stary Rynek 73</td>
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</tbody>
</table>
Population:
• healthy adults (mostly university students)
• with one dominant native language
• and one or more foreign language they use regularly
Cross-linguistic interactions in the lexicon: good or bad?
Good: facilitation

Dutch: huis

English: house

German: Haus
Cognate effects

The good news: Cross-linguistic facilitation in multilingual word processing
Cognate effects: the bilingual case

English (L2) lexical decision

Is this letter string an English word?

Lemhöfer & Dijkstra, 2004, M&C
Cognate effects: the bilingual case

English (L2) lexical decision

bird

Lemhöfer & Dijkstra, 2004
Cognate effects: the bilingual case

English (L2) lexical decision

bird

NO YES

Lemhöfer & Dijkstra, 2004
Cognate effects: the bilingual case

English (L2) lexical decision

Lemhöfer & Dijkstra, 2004
Cognate effects: the bilingual case

English (L2) lexical decision

Lemhöfer & Dijkstra, 2004
L2 lexical decision

Dutch - English bilinguals

SO (fruit - fruit)  
SOP (film - film)  
SP (wheel - wiel)

RT [ms]

control word  
cognate

Lemhöfer & Dijkstra, 2004
The more similar, the faster

Dijkstra et al., 2010
Sentence reading in L2 (RSVP)

Duyck et al, 2007
Sentence reading in L2 (RSVP)

Uncle

Duyck et al, 2007
Sentence reading in L2 (RSVP)

Mark

Duyck et al, 2007
Sentence reading in L2 (RSVP)

sold

Duyck et al, 2007
Sentence reading in L2 (RSVP)

Duyck et al, 2007
Sentence reading in L2 (RSVP)

Duyck et al, 2007
Sentence reading in L2 (RSVP)

and

Duyck et al, 2007
Sentence reading in L2 (RSVP)

spent

Duyck et al, 2007
Sentence reading in L2 (RSVP)

Duyck et al, 2007
Sentence reading in L2 (RSVP)

the

Duyck et al, 2007
Sentence reading in L2 (RSVP)

money

Duyck et al, 2007
Sentence reading in L2 (RSVP)

Duyck et al, 2007
Sentence reading in L2 (RSVP)

Duyck et al, 2007
Sentence reading in L2 (RSVP)

ship = cognate (Dutch: schip), non-cognate control word: farm

Duyck et al, 2007
L2 sentence reading (RSVP)

Dutch - English bilinguals

Duyck et al, 2007

<table>
<thead>
<tr>
<th>RT [ms]</th>
<th>identical cognates (lip)</th>
<th>non-identical cognates (ship - schip)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>control word</td>
<td>cognate</td>
</tr>
</tbody>
</table>

* Significant difference
Masked priming with lexical decision in L1 or L2

Is this letter string an English word?
Masked priming with lexical decision in L1 (Spanish) or L2 (English)

Davis et al, 2010
Masked priming with lexical decision in L1 or L2

Davis et al, 2010
Masked priming with lexical decision in L1 or L2

RICH

NO

YES

Davis et al, 2010

Kristin Lemhöfer
Masked priming with lexical decision in L1 or L2

Spanish-English bilinguals

Davis et al, 2010

RT [ms]

<table>
<thead>
<tr>
<th></th>
<th>L1 (Spanish)</th>
<th>L2 (English)</th>
</tr>
</thead>
<tbody>
<tr>
<td>form control (rict - RICO)</td>
<td>613 ms</td>
<td>675 ms</td>
</tr>
<tr>
<td>cognate (rich-RICO)</td>
<td>592 ms</td>
<td>654 ms</td>
</tr>
<tr>
<td>identical (rico-RICO)</td>
<td>571 ms</td>
<td>633 ms</td>
</tr>
</tbody>
</table>

Kristin Lemhöfer
Masked priming with lexical decision in L1 or L2

Spanish-English bilinguals

<table>
<thead>
<tr>
<th>Condition</th>
<th>Mean RT [ms]</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1 (Spanish)</td>
<td>571</td>
</tr>
<tr>
<td>L2 (English)</td>
<td>633</td>
</tr>
<tr>
<td>form control (pano- PATO)</td>
<td>613</td>
</tr>
<tr>
<td>translation (duck-PATO)</td>
<td>633</td>
</tr>
<tr>
<td>identical (pato-PATO)</td>
<td>571</td>
</tr>
</tbody>
</table>

Davis et al, 2010
Picture Naming in L2

Name the picture as quickly as possible in Spanish

Costa et al., 2000
Picture Naming in L2

“puerta” (door)

Costa et al., 2000
Picture Naming in Spanish (L2)

Costa et al., 2000

Catalan-Spanish bilinguals
Spanish monolinguals

control words  cognates

n.s.

RT [ms]

600 620 640 660 680 700 720

*
Cognate facilitation in bilinguals

Costa et al., 2005
Cognate facilitation in bilinguals

L1

L2

L3

similarity helps
But how about trilinguals?
Why should three languages be different from two?

“With respect to specific issues relating to the processing of more than two languages, (…) there is no need to develop a specific model for such multilingual processing” (de Bot, 2004)
Why should three languages be different from two?

“With respect to specific issues relating to the processing of more than two languages, (…) there is no need to develop a specific model for such multilingual processing”
(de Bot, 2004)
Why should many languages be different from two?
e.g., three foreign languages at school (English, German, French) + 1 native language
Why should many languages be different from two?

e.g., three foreign languages at school (English, German, French), one new language later (Spanish) + 1 native language
But how about trilinguals?
Trilingual cognate effects

van Hell & Dijkstra, 2002

- English (L2)
  - English-Dutch (near-)cognates: droom - dream - rêve

- Dutch (L1)
  - ?

- French (L3)
  - French-Dutch (near-)cognates: muur - wall - mur
Trilingual cognate effects

van Hell & Dijkstra, 2002: Exp. 2

speakers with fairly low proficiency in French (L3)

<table>
<thead>
<tr>
<th>RT [ms]</th>
<th>non-cognates</th>
<th>English-Dutch cognates</th>
<th>French-Dutch cognates</th>
</tr>
</thead>
<tbody>
<tr>
<td>450</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>470</td>
<td></td>
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<td></td>
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<td>490</td>
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<td></td>
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<td>510</td>
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<td>530</td>
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<tr>
<td>550</td>
<td></td>
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</tr>
</tbody>
</table>

n.s.

*
van Hell & Dijkstra, 2002: Exp. 3

Speakers with higher proficiency in French (L3)

- Non-cognates
- English-Dutch cognates
- French-Dutch cognates

* (F₁)

But: no monolingual control!
Trilingual cognate effects

van Hell & Dijkstra, 2002

depending on proficiency

English (L2) ✔

French (L3) ❌/✔

Dutch (L1)
Trilingual cognate effects

Lemhöfer, Michel, & Dijkstra, 2004

Marije Michel

Ton Dijkstra
Trilingual cognate effects

Lemhöfer et al., 2004

German-Dutch-English cognates:
- Echo - echo - echo

English vs. Dutch pre-activation (reading book)

English (L2) + Dutch (L1)

German (L3)

German-Dutch cognates:
- Kunst - art - kunst

Kristin Lemhöfer
Trilingual cognate effects

Lemhöfer et al., 2004

Participants (students of German in the Netherlands)

| Table 1 |
|------------------|------------------|
| **Results of the language experience questionnaire of trilingual participants in Experiment 1** |
|                     | **English** | **German** |
|                     | **Mean** | **SD** | **Mean** | **SD** |
| Number of years of experience with the language | 12.8 | 6.3 | 11.0 | 5.4 |
| Frequency of reading literature in that language (1–7) | 4.0 | 2.1 | 3.7 | 1.5 |
| Frequency of speaking that language (1–7) | 3.5 | 1.9 | 4.2 | 1.5 |
| Self-rated reading experience in that language (1–7) | 5.2 | 1.5 | 5.4 | 1.4 |
| Self-rated writing experience in that language (1–7) | 4.1 | 2.0 | 5.0 | 1.6 |
| Self-rated speaking experience in that language (1–7) | 4.2 | 2.0 | 4.9 | 1.6 |
| ‘LexTALE’ score | 81.0 | 8.4 | 78.0 | 8.7 |

→ comparable proficiency in English and German
Trilingual cognate effects

Lemhöfer et al., 2004

Language pre-activation (Dutch vs. English reading)

In de Ligusterlaan, op nummer 4, woonden meneer en mevrouw Duffeling. Ze waren er trots op dat ze doodnormaal waren en als er ooit mensen waren geweest van wie je zou denken dat ze nooit bij iets vreemds of geheimzinnigs betrokken zouden raken waren zij het wel, want voor dat soort onzin hadden ze geen tijd. (…)

Mr and Mrs Dursley, of number four, Privet Drive, were proud to say that they were perfectly normal, thank you very much. They were the last people you’d expect to be involved in anything strange or mysterious, because they just didn’t hold with such nonsense. (…)

did the following words occur in the text?

Dutch

N = 28

E English

N = 14

N = 14

from “Harry Potter and the philosopher’s stone”

did the following words occur in the text?

proud

neck

…

trots

nek

…
Results: RTs

Dutch pre-text

English pre-text

no interaction with pre-text

German control words (ZELT)
G-D cognates (KUNST)
G-D-E cognates (ECHO)

Lemhöfer et al., 2004
Results: errors

Lemhöfer et al., 2004

German control words (ZELT)
G-D cognates (KUNST)
G-D-E cognates (ECHO)
Results: RTs

Lemhöfer et al., 2004

German control words (ZELT)
G-D cognates (KUNST)
G-D-E cognates (ECHO)
Results: errors

Lemhöfer et al., 2004

German control words (ZELT)
G-D cognates (KUNST)
G-D-E cognates (ECHO)
Trilingual cognate effects

but....

could the effects possibly be due to between-item differences?

➙ better include a monolingual German control group

| TABLE 5 |
|-----------------|-----|-----|
| Results of the language experience questionnaire of monolingual participants in Experiment 2 |
| (Mean) | (SD) |
| Number of years of experience with English | 1.3 | 3.2 |
| Frequency of reading literature in English (1–7) | 1.0 | 0.0 |
| Frequency of speaking English (1–7) | 1.1 | 0.5 |
| Self-rated reading experience in English (1–7) | 1.3 | 0.7 |
| Self-rated writing experience in English (1–7) | 1.2 | 0.5 |
| Self-rated speaking experience in English (1–7) | 1.2 | 0.6 |

‘LexTALE’ score (half of items) | 59.0 | 7.5 |
Results: RTs

<table>
<thead>
<tr>
<th>RT [ms]</th>
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<tbody>
<tr>
<td>580</td>
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<tr>
<td>600</td>
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<tr>
<td>620</td>
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<td>640</td>
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<td>660</td>
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<tr>
<td>680</td>
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<tr>
<td>700</td>
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</tbody>
</table>

(all) trilinguals

German control words (ZELT)

G-D cognates (KUNST)

G-D-E cognates (ECHO)

Lemhöfer et al., 2004
Results: errors

- (all) trilinguals
- German control words (ZELT)
- G-D cognates (KUNST)
- G-D-E cognates (ECHO)

Lemhöfer et al., 2004

No item differences whatsoever in monolinguals.
Trilingual cognate effects

Lemhöfer et al., 2004

German-Dutch-English cognates:
Echo - echo - echo

English vs. Dutch pre-activation (reading book)

✔ (RT’s)

German (L3)

English (L2)

German-Dutch cognates:
Kunst - art - kunst

Dutch (L1)

+
But what ARE cognate effects?

Strijkers et al., 2010
But what ARE cognate effects?

“The cognate effect may reflect a word frequency effect in disguise”

Strijkers et al., 2010
Costa et al., 2005

cognate

non-cognate
Bad cross-language effects: interference

Dutch: jurk
English: dress
German: Kleid

especially during speaking
cross-language interference

Trilinguals in trouble

German (L1)

Dutch (L2)

English (L3)
L1 native
L2 non-native
L3 non-native
• Some linguistic case studies support this supposition (e.g. Williams & Hammarberg, 1998; De Angelis, 2005; Dewaele, 1998)
• However, no experimental evidence
• Experimental psycholinguistic literature: almost exclusively bilingual studies
• “Relative strength” assumption in (bilingual) literature (L1 ➔ L2 vs. L2 ➔ L1):

  “Languages that are used often and have therefore a high default level of activation are difficult to suppress or inhibit, ....” de Bot, 2004

This account might predict the opposite (stronger L1 ➔ L2 than L3 ➔ L2 effects)
Trilingual cross-language interference

How do we study this question experimentally?
Trilingual cross-language interference

a little experiment…. 

NAME THIS PICTURE QUICKLY IN YOUR L3 (French / German / Spanish / Russian ….)

“Huhn”

“poule”
Trilingual cross-language interference

a little experiment….

NAME THIS PICTURE QUICKLY IN YOUR L3 (French / German / Spanish / Russian ….)
Trilingual cross-language interference

a little experiment....

NAME THIS PICTURE QUICKLY IN YOUR L3 (French / German / Spanish / Russian ....)

PLATE
Trilingual cross-language interference

a little experiment….

NAME THIS PICTURE QUICKLY IN YOUR L3 (French / German / Spanish / Russian ….)

“Pferd”

“cheval”
Phono-translation effect (in bilinguals)

Dutch word for ‘chicken’: ‘kip’
(Dutch, L1)

(KIN)

(English, L2)

“chicken”

Hermans et al., 1998; Costa et al., 2003
Phono-translation effect (in bilinguals)

Dutch word for ‘chicken’: ‘kip’

(English, L2)
“chicken”

takes longer than…

(Dutch, L1)
“kin”

Hermans et al., 1998; Costa et al., 2003
Phono-translation effect (in bilinguals)

Dutch word for ‘chicken’: ‘kip’

(English, L2)
“chicken”

(Dutch, L1)
“juf” (teacher)

Hermans et al., 1998; Costa et al., 2003
Explanation of phono-translation effect: cross-language interference
Explanation of phono-translation effect: cross-language interference

Dutch (L1)

kip

English (L2)

chicken

“kin”
A trilingual version of the phono-translation effect

“chicken” (English, L2)

Dutch (L3) word for ‘chicken’: ‘kip’

German (L1) word for ‘chicken’: ‘Huhn’

“kin”

“Hut”
Experiment 1

“chicken” (English, L2)

<table>
<thead>
<tr>
<th>Language (L1), Related:</th>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>German</td>
<td>Hut</td>
<td>‘hat’ (Huhn = chicken)</td>
</tr>
<tr>
<td>Dutch</td>
<td>Kin</td>
<td>‘chin’ (kip = chicken)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Language (L1), Unrelated:</th>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>German</td>
<td>Wand</td>
<td>‘wall’</td>
</tr>
<tr>
<td>Dutch</td>
<td>Juf</td>
<td>‘teacher’</td>
</tr>
</tbody>
</table>

Conditions within-subjects (mixed, not blocked); distractors spoken by same balanced-bilingual speaker.
Participants

60 German students / staff at University of Nijmegen (NL): **German** = L1; **English** at school = L2; **Dutch** language of current study / life = L3

<table>
<thead>
<tr>
<th></th>
<th>Dutch</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>yrs. experience</td>
<td>3.9</td>
<td>14</td>
</tr>
<tr>
<td>freq. of speaking (1-7)</td>
<td>6.2</td>
<td>4.2</td>
</tr>
<tr>
<td>speaking experience (1-7)</td>
<td>5.6</td>
<td>4.9</td>
</tr>
<tr>
<td>higher proficient in...</td>
<td>26</td>
<td>19</td>
</tr>
</tbody>
</table>

→ Dutch as the currently more active and proficient foreign language
• significant inhibitory effect of phono-translations
• no interaction between distractor language and relatedness
Results Exp. 1 (error rates)

- no significant effects
Results

RTs: role of Dutch proficiency for Dutch effect

significant correlation of Dutch effect with proficiency (performance when naming objects in Dutch)

$r = .30, p = .02$
Results

more important than proficiency: Dutch- vs. German-dominant environment

linear regressions show that strongest modulating factor for effects is environment

Lemhöfer et al., yet unpublished 😞
Trilingual phono-translation effects

Replication attempt

N = 42 (one excluded); German students at University of Nijmegen (NL)

<table>
<thead>
<tr>
<th></th>
<th>Dutch</th>
<th></th>
<th>English</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>new</td>
<td>old</td>
<td>new</td>
<td>old</td>
</tr>
<tr>
<td>yrs. experience</td>
<td>3.2</td>
<td>3.9</td>
<td><strong>13.1</strong></td>
<td><strong>14.0</strong></td>
</tr>
<tr>
<td>frq. of speaking (1-7)</td>
<td><strong>6.0</strong></td>
<td><strong>6.2</strong></td>
<td>3.8</td>
<td>4.2</td>
</tr>
<tr>
<td>speaking experience (1-7)</td>
<td><strong>4.9</strong></td>
<td><strong>5.6</strong></td>
<td>4.5</td>
<td>4.9</td>
</tr>
<tr>
<td>higher proficient in...</td>
<td><strong>15</strong></td>
<td><strong>26</strong></td>
<td>14</td>
<td>19</td>
</tr>
</tbody>
</table>

→ Dutch as the currently more active and proficient foreign language in both samples, but this sample is somewhat less experienced in Dutch (and English)
Results Exp. 2 (RTs)

- significant inhibitory effect of phono-translations
- no interaction between distractor language and relatedness

German (L1) vs. Dutch (L3)
Results Exp. 2 (error rates)

- significant inhibitory effect of phono-translations
- no interaction between distractor language and relatedness
BUT....

RTs: role of Dutch proficiency for Dutch effect

significant correlation of Dutch effect with proficiency (performance when naming objects in Dutch)

$r = .30, p = .02$
BUT....

bad news (1): role of Dutch proficiency for Dutch effect

NO significant correlation of Dutch effect with proficiency
(performance when naming objects in Dutch)

\[ r = .13, p = .42 \]
BUT....

RTs: role of Dutch proficiency for Dutch effect
Results

more important than proficiency:
Dutch- vs. German-dominant environment

linear regressions show that strongest modulating factor for effects is environment

Lemhöfer et al., yet unpublished 😞
Results Exp. 2

bad news (2):
Dutch- vs. German-dominant environment

Lemhöfer et al., yet unpublished 😞
Discussion of phono-translation effects

- lexical **competition between all three languages** during L2 production
- effect equally large for Dutch (L3) and German (L1), overall
- **in Exp. 1 only**, largest interference from language which is **dominant** in environment
But what if the distractors are the direct translations?

“chicken” (English, L2)

Dutch (L3) word for ‘chicken’: ‘kip’

German (L1) word for ‘chicken’: ‘Huhn’
But what if the distractors are the direct translations?

“chicken” (English, L2)

“kip”

Dutch (L3) word for ‘chicken’: ‘kip’

“Huhn”

German (L1) word for ‘chicken’: ‘Huhn’
“chicken” (English, L2) → “kip” (Dutch, L1) → chicken (English, L2)
faster naming of ‘chicken’ with ‘kip’ than with ‘juf’ as distractor
(Costa et al., 1999; Hermans, 2000; Roelofs et al., 2011)
Experiments 3 & 4 (translation distractors)

“chicken” (English, L2)

<table>
<thead>
<tr>
<th>German (L1), related:</th>
<th>Huhn (Huhn = chicken)</th>
</tr>
</thead>
<tbody>
<tr>
<td>German (L1), unrelated:</td>
<td>Wand ‘wall’</td>
</tr>
<tr>
<td>Dutch (L3), related:</td>
<td>kip (kip = chicken)</td>
</tr>
<tr>
<td>Dutch (L3), unrelated:</td>
<td>juf ‘teacher’</td>
</tr>
</tbody>
</table>

conditions within-subjects (mixed, not blocked);
distractors spoken by same balanced-bilingual speaker
Method

- same population, less variance in proficiency (mean 2.5 yrs experience with Dutch, 88% correct naming responses in Dutch)
- SOA manipulation between participants: SOA = 0 and -200 ms
- modality manipulation of distractors: auditory vs. visual (previous studies)
- same picture stimuli (n = 20) as before
- n = about 20 participants per SOA condition
RT results, auditory distractors (Exp. 3)

- **inhibition** rather than facilitation by translation distractors
- significant effect **only for Dutch**, not for German distractors
- no interaction SOA x relatedness (x distractor language)
RT results, visual distractors (Exp. 4)

- **inhibition** for Dutch translation remains
- BUT: German translations give null-effect (SOA 0) and facilitation (SOA -200)!
- This is perfectly in line with previous bilingual studies
overview translation effects

-50.00 -40.00 -30.00 -20.00 -10.00 0.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00

German (L1)
Dutch (L3)
So, what is happening?

• Difference between phono-experiments and translation experiments: Translation distractor can be used to predict upcoming target

  HUHN $\rightarrow$ related (translation)

  VS.

  SPRUNG $\rightarrow$ unrelated

• This prediction works better (faster) for L1 (German), for visual distractors, and for a negative SOA (distractor before picture)
Translation effects

So, what is happening?

Translation effect is a mix of **lexical inhibition**...
So, what is happening?

→ translation effect is a mix of lexical inhibition and strategic facilitation

→ offers explanation for paradoxical pattern with respect to phono-translation effects
Back to trilingual cross-language effects
Work by…

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Nadine Grabner

Iris Verpaalen

Herbert Schriefers

Judith Schellenberger

Randi Goertz

Leonie Albers
Trilingual cross-language effects

L1  L2  L3

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