

Woordenschatverwerving door het bekijken van ondertitelde video: Een eye-tracking studie

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Second Language Acquisition: New flavours

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Summary

- Incidental vocabulary acquisition from input
- Input enhancement: what and how?
- The effectiveness of 2 input enhancement techniques for vocabulary acquisition: results of an eye-tracking study

Some background information

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- The relation between vocabulary size and reading:
 - 95% - 98% of the words need to be known for adequate text comprehension
- Vocabulary size is also crucial for listening/viewing
 - Research has shown that: in order to adequately understand TV-series (e.g., Webb & Rodgers, 2009), we need
 - 2000 – 4000 (+ proper nouns) most frequent words to cover 95% of the words in the programme → *global comprehension*
 - 5000 – 9000 (+ proper nouns) most frequent words to cover 98% of the words in the programme → *detailed comprehension*

Some background information

- Relation between vocabulary size and general language proficiency
- We need to know a lot of words...
- But what does it mean: to know a word?
 - Form, meaning, and use – receptive and productive knowledge (Nation, 2001)
- Can we learn all words explicitly/intentionally?
- Incidental acquisition

Incidental vocabulary acquisition

What is incidental vocabulary acquisition?

= “learning in the absence of an intention to learn” (Hulstijn, 1996)

→ Learning as a “by-product of other cognitive exercises involving comprehension” (Gass, 1999, p. 319) or the “picking-up” (Hulstijn, 2001) of new words from context, during e.g., reading and listening activities

vs. intentional word learning: intentionally try to add a new word to your mental lexicon (-> memorizing)

Incidental vocabulary acquisition

Webb (2015) – TV can contribute to learning – in the same way as reading

But a very slow process: “The fault in the Default Hypothesis” (Laufer, 2005)

- Learners do not necessarily notice new words in the input – “noticing”
 - First crucial step
- If noticed, infer word meaning?
 - The acquisition of the form-meaning link is an essential aspect of acquiring a new word
- Repeated encounters with the new words
 - Add new aspects of word knowledge or consolidate the form-meaning link
 - But: enough frequent encounters within formal setting?

→ How can we stimulate those processes?

→ Add extra layer – input enhancement?

→ *What* is input & input enhancement?

→ *How* can input be enhanced?

- Enhancement of written and audio-visual input



Input

Input: “Potentially processible language data which are made available, by chance or by design, to the language learner” (Sharwood Smith, 1993, p. 167)

+

- **Input enhancement**

= aspect of the input is highlighted in some way (cf. Sharwood Smith 1991) → noticing

= salience (often written language (bolded, underlined, italicize, capitalized, etc.)

How can written input be enhanced?

Some examples:

- Glosses & electronic dictionaries (Laufer & Hill, 2000)
- Input modality & annotations (Al-Seghayer, 2001; Chun & Plass, 1996)
 - Picture
 - Text
 - Picture and text
 - ...

Picture gloss

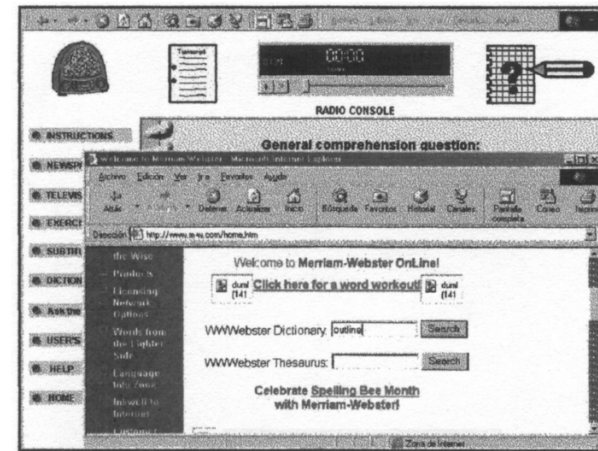
(Yanguas, 2009)

The screenshot shows two windows from a software application. The top window, titled 'glosaspicturesBb.swf', displays a blue whale image with a yellow highlight. Below the image is Spanish text: 'Varias lanchas de Grecia se interpusieron entre el arpón del ballenero japonés Kyo Maru y una ballena (un rorcual aliblanco) en el Santuario Ballenero de la Antártida para impedir su caza. Esta es la tercera acción de la organización ecologista en los últimos días en la zona, a donde ha desplazado dos de sus mayores barcos para tratar de impedir las 'capturas científicas' que cada año realiza Japón. Una de las lanchas neumáticas del barco MY Esperanza trató de interponerse entre el rorcual y el arpón del ballenero, exhibiendo o por Gorton's") sobre animales y esta empresa es denunciar que bajo la en claros intereses'. The bottom window shows a black and white photograph of a mountain range. It has a text gloss in German: 'Anekdote zur Senkung der Arbeitsmoral Heinrich Böll'. The gloss text reads: 'Fischer, der sich schläfrig aufrichtet°, schläfrig nach seiner Zigaretten-schachtel angelt°, aber bevor er das Gesuchte° gefunden hat, hat ihm der eifrige° Tourist schon eine Schachtel° vor die Nase gehalten, ihm die Zigarette nicht gerade in den Mund gesteckt, aber in die Hand gelegt, und ein viertes Klick, das des Feuerzeuges°, schließt° die eifertige° Höflichkeit ab. Durch jenes kaum meßbare°, nie nachweisbare° Zuviel an flinker° Höflichkeit ist eine gereizte° Verlegenheit° entstanden°, die der Tourist, der Landessprache° mächtig°, durch ein Gespräch zu überbrücken° versucht°'. There are navigation icons and a 'next' button in a green box.

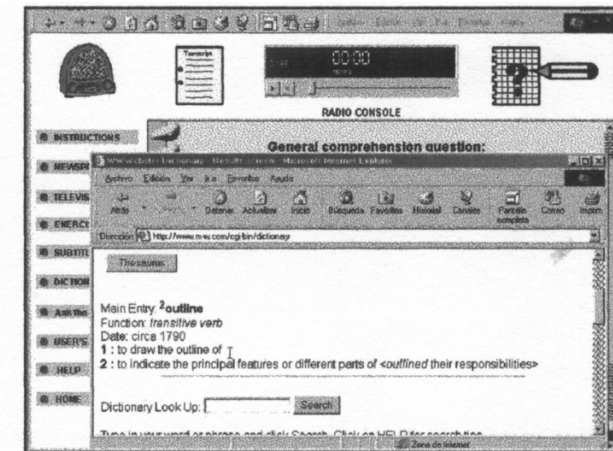
How can audio-visual input be enhanced?

Some examples:

- Video specific options: rewind/pause/forward buttons (Liou, 2000)
- Annotations (Jones, 2004)
- Dictionary in web-based multimedia program (Pujolà, 2002)
- Transcriptions (Grgurovic & Hegelheimer, 2007)
- Captioning (Price, 1983; Winke, Gass, & Sydorenko, 2010) & captioning variations (Montero Perez, Clarebout, Peters, & Desmet, 2014)



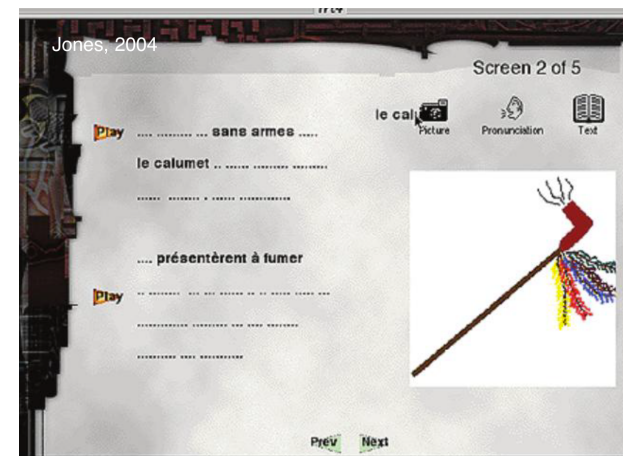
a



b

(Pujolà, 2002)

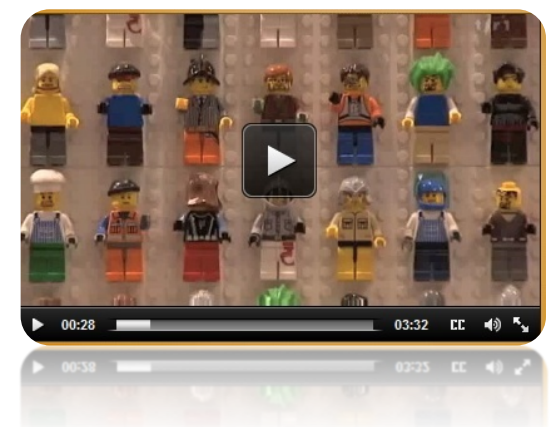
Fig. 6. (a) Dictionary homepage, (b) consultation of entry.



How can audio-visual input be enhanced?

Some examples:

- Captioning (Price, 1983; Winke, Gass, & Sydorenko, 2010)
- Variations on standard captioning (Montero Perez, Clarebout, Peters, & Desmet, 2014)
 - Keyword captioning
 - Highlighted keywords
 - Keywords with access to meaning
 - ...



To sum up:

- We know that incidental vocabulary learning from context is a slow and difficult process -> add an input enhancement?
- Students' vocabulary size is crucial and also determines word learning from context
- How can we enhance learners' picking-up of new words from video?
 - Do input enhancement techniques effectively stimulate their attention allocation?
 - Does that also affect learning?

Vocabulary learning from video: An eye-tracking study

This study is published in *The Modern Language Journal*: Montero Perez M., Peters E., Desmet P. (2015). Enhancing vocabulary learning through captioned video: An eye-tracking study. *The Modern Language Journal*, 99 (2), 308-328.

- Background research
- Research questions
- Method
- Results
- Discussion
- Concluding remarks

Background research

Background

- Linguistic benefits of captioned video (L2 dialogue; L2 on-screen text)
- Captioning vs. no captioning
 - Superior content comprehension
 - Aid speech decoding (e.g. Bird & Williams, 2002)
 - More vocabulary learning
 - Isolate items and pay attention to those items (Winke, Gass, & Sydorenko, 2010)
 - Confirmed by results of meta-analysis (Montero Perez, Van Den Noortgate, & Desmet, 2013)

Background

- Results indirectly suggest that students process captions
- Captions help learners to allocate sufficient attentional resources to unknown words

Background

- Attention as prerequisite for acquisition – cf. Schmidt's (2001) *noticing* hypothesis
 - *Focus on Form* activities (Laufer, 2005)
 - Techniques to increase learners' *engagement* with new words (Schmitt, 2008, 2010)
- ➔ Can we make unknown, i.e. target words (TWs) more salient in the captions in order to enhance word learning?
- (1) Visual salience
 - (2) Test announcement

Background research

(1) Effect of visual salience in the captioning line?

- Full captioning: no salience

vs.

- Keyword captioning & full captioning with highlighted keywords



Background research

- Effect of visual salience in the captioning line? (Montero Perez, Peters, Clarebout & Desmet, 2014)
Full captioning (no salience) vs. Keyword captioning & full captioning with highlighted keywords (salience)
 - Results:
 - Captioning groups outperform control group
 - Visual salience did not help to achieve higher vocabulary test scores
- Findings suggest that keyword captioning draws learners' attention (Montero Perez, Peters, & Desmet, in 2013)

Background research

- Test announcement? → “Prelearning instructions” (Hulstijn, 2001, p. 268)
- Methodological distinction:

Absence of Test
Announcement

- **Not telling** students that vocabulary used in video will be tested afterwards
- *Incidental* vocabulary learning

Presence of Test
Announcement

- **Telling** students that vocabulary used in video will be tested afterwards
- *Intentional* vocabulary learning

Background research

(2) Effect of test announcement?

- Literature on vocabulary learning through (captioned) video: no studies
- Literature on vocabulary learning through reading:
 - Studies of Peters (2007, 2012) and Peters, Hulstijn, Sercu & Lutjeharms (2009)
 - Does test announcement enhance students' use of an electronic dictionary and their word retention?
 - Intentional: looked up more target words but was not conducive to deeper word processing

Background research

- Results of previous research studies
- Subjective measures

But: processing?

→ on-line measures needed such as eye-tracking

Assumption = eye movements -> cognition (the eye-mind link, Reichle et al., 2006)

Eye-tracking studies

- Two studies on caption reading behaviour
 - Bisson, Van Heuven, Conklin & Tunney (2012):
 - Reversed subtitles, L1 subtitles, & Captions
 - Participants read the captions
 - Subtitle and captioning conditions: regular reading pattern
 - No differences between groups on vocabulary test
 - Winke, Gass, & Sydorenko (2013):
 - Caption-reading <-> L2 and content familiarity
 - On average 68% of the time on captions
 - L2 affects learners' reading of captions

Eye-tracking studies

- Use of eye-tracking to measure the attentional processes at the word level
 - Godfroid, Boers, & Housen (2013):
 - incidental vocabulary learning through reading
 - Positive relationship between learners' total fixation times on the pseudo-word and form recognition
 - Eye-tracking as a valid measure of noticing at level of attention

Research questions

Research questions

- What is the effect of the enhancements on learners' initial vocabulary learning of a selection of unknown words?
- What is the effect of the enhancements on learners' use of captions as measured in terms of eye fixations on unknown words?
- Is there a relation between learners' fixations on a given word and their learning of that word?

Method

Participants and design

- 2 independent variables: Test Announcement & Type of Captioning
= four experimental groups:

	Full Captioning	Keyword Captioning
Incidental	FCINCID N = 9	KCINCID N = 8
Intentional	FCINTEN N = 8	KCINTEN N = 9

Type of captioning



C'est devenu une référence planétaire dans le monde du jouet.

00:28 03:32 CC 🔊 ↗



référence planétaire

00:27 03:32 CC 🔊 ↗

Test Announcement

- “Prelearning instructions” (Hulstijn, 2001, p. 268)
- Methodological distinction:

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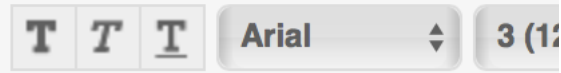
Target and keyword determination

- Target words:
 - 18 unknown words
 - Determined by means of pilot study and prior knowledge test
- Keywords:
 - Essential to the meaning of sentence/paragraph
 - Determined by experienced lecturers

Instruments

- Comprehension task: make sure that students watch attentively
- Vocabulary size test (cf. van Zeeland & Schmitt, 2012; Webb & Rodgers, 2009)
 - Used as covariate to control for learner differences
- Vocabulary tests at different levels of sensitivity
- Questionnaire

Form recognition: Was this word used in the video?
 yes
 no

gavarnar

= meaning recall test (provide L1 translation of pseudoword)

gavarnar Example of vocabulary posttest

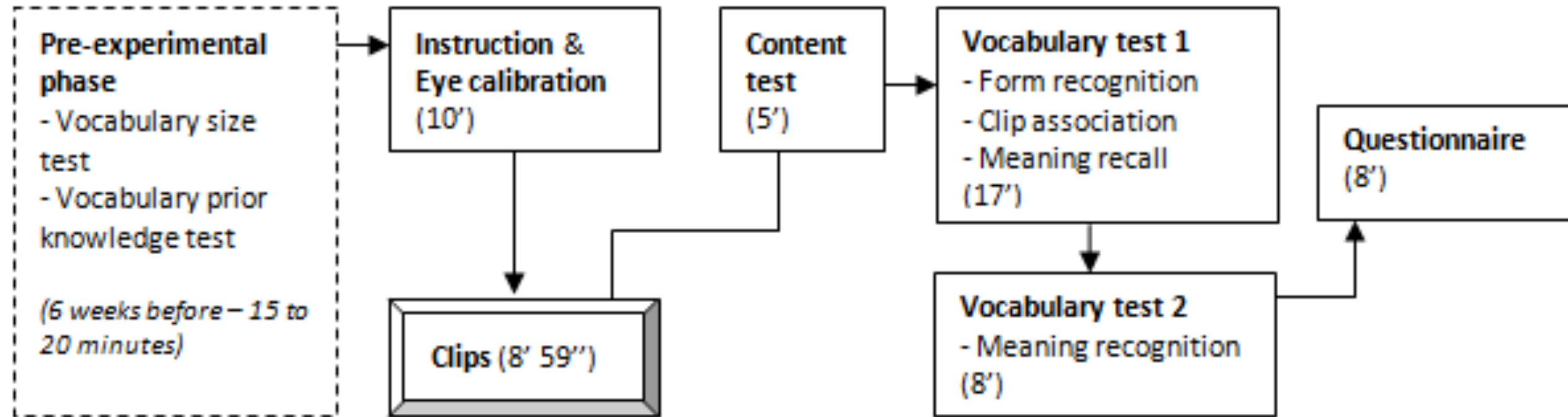
- 1. loslaten
- 2. bekennen = Meaning recognition test (choose correct translation of pseudoword)
- 3. uitzenden
- 4. verbeteren
- 5. ik weet het niet.

Materials and apparatus

- Materials:
 - 2 short video clips
 - Clip 1 (6'30'') – Lego
 - Clip 2 (2'29) - Brewery
- Eye-tracking tools:
 - Tobii studio platform for analysis
 - Tobii X120 stationary eye-tracker



Procedures



Results

Caption-reading

= Descriptives for overall time spent reading captions, while captions were shown on the screen

	Incidental	Intentional
Full captioning (452 seconds)	279 (61,7%)	295 (65,3%)
Keyword captioning (161,9 seconds)	96 (59,3%)	127 (78,4%)

Descriptives – Vocabulary tests

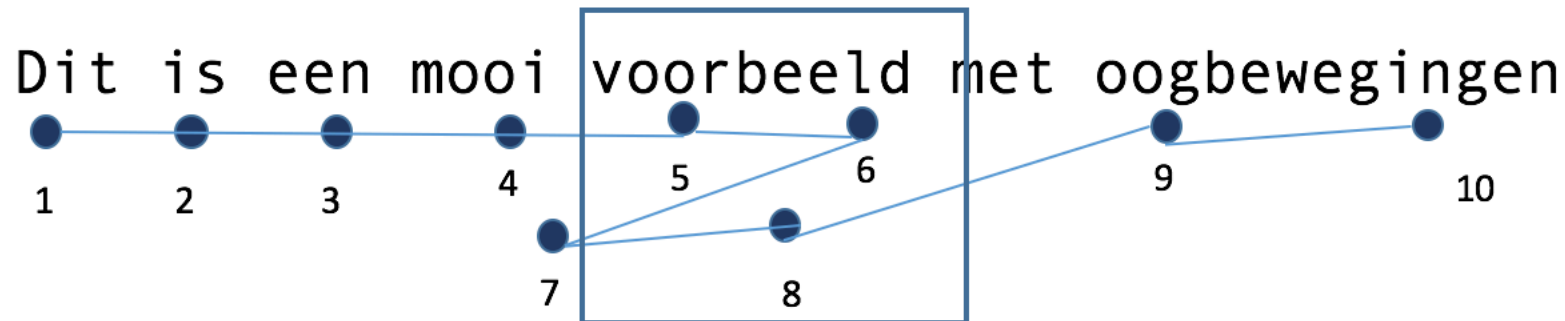
Mean Scores and Standard Deviations on Vocabulary Tests

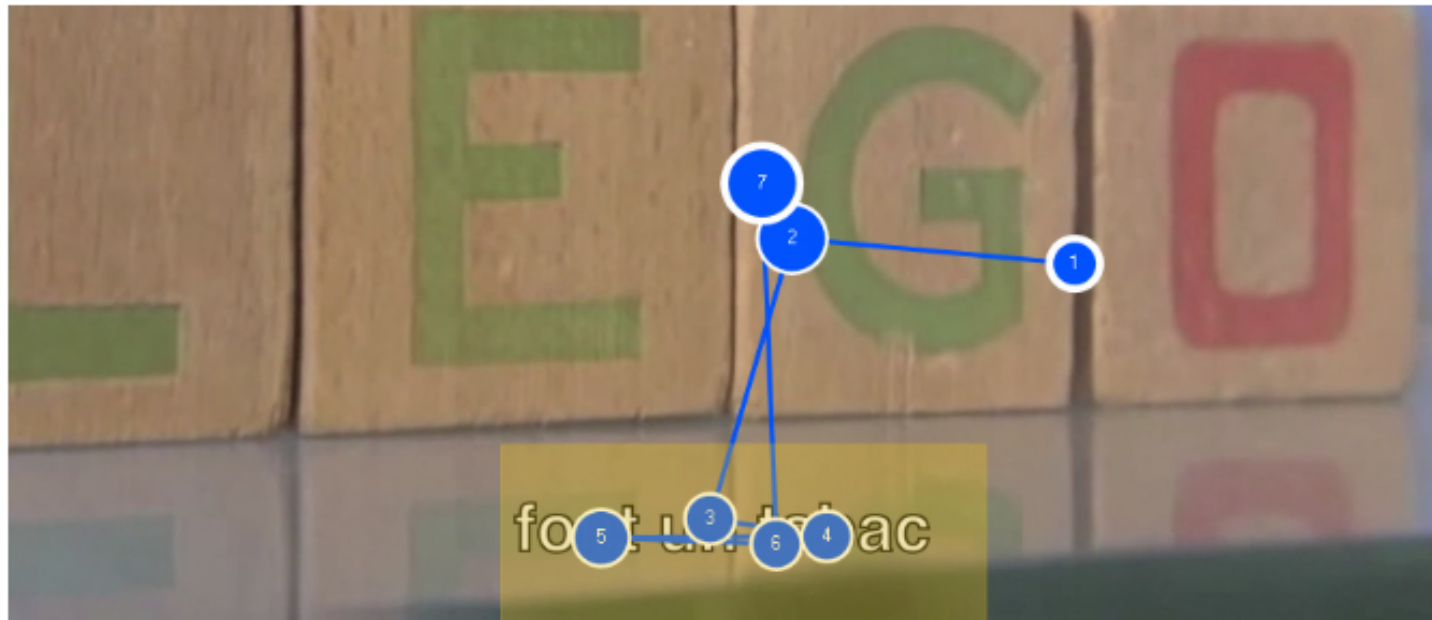
	All Students <i>N</i> = 51 <i>M</i> (<i>SD</i>)	FCINCID <i>N</i> = 13 <i>M</i> (<i>SD</i>)	KCINCID <i>N</i> = 12 <i>M</i> (<i>SD</i>)	FCINTEN <i>N</i> = 13 <i>M</i> (<i>SD</i>)	KCINTEN <i>N</i> = 13 <i>M</i> (<i>SD</i>)
Form recognition	8.63 (2.83)	7.31 (2.75)	9.25 (2.30)	8.08 (2.50)	9.92 (3.20)
Meaning recall	1.98 (1.74)	1.08 (1.44)	1.83 (1.53)	2.62 (1.76)	2.38 (1.94)

Note. Meaning recognition scores are not included in the statistical analyses.

Target word processing

- Three metrics
 - First pass reading time (5+6)
 - Early measure, initial processing time
 - First fixation and additional fixations in TW area prior to leaving the TW area
 - Second pass reading time (8)
 - Reanalysis
 - Rereading in the TW area after eyes had left the area
 - Total fixation duration (5+6+8)
 - Sum of all fixations in TW area



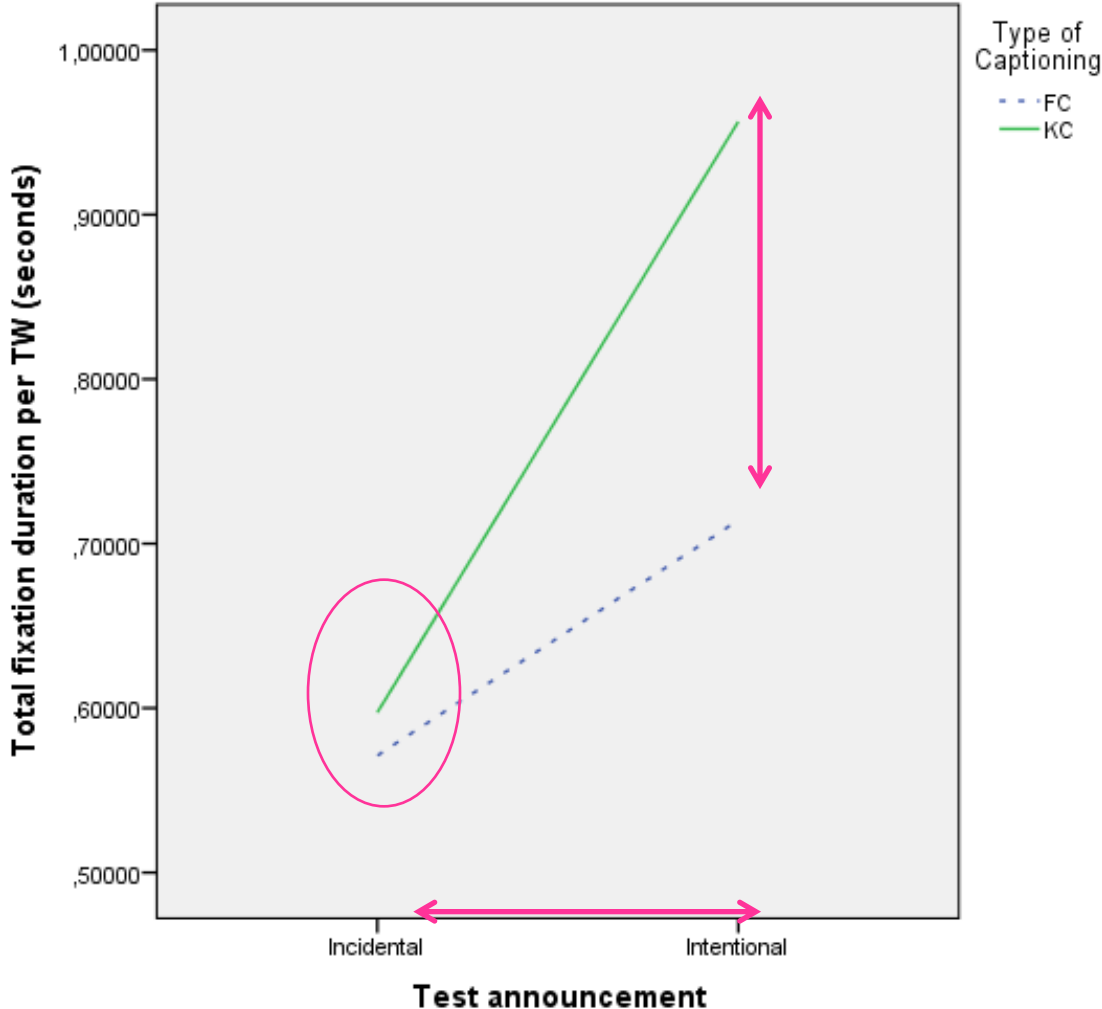


Descriptives

Descriptives for the Three Eye-Tracking Metrics (Seconds)

	Gaze Duration		Second Pass Reading Time		Total Fixation Duration	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
FCINCID (<i>N</i> = 9)	7.49	1.49	2.88	1.41	10.46	2.00
FCINTEN (<i>N</i> = 8)	8.17	0.65	4.49	1.47	12.92	1.79
KCINCID (<i>N</i> = 8)	8.76	1.76	1.86	0.62	10.77	1.86
KCINTEN (<i>N</i> = 9)	9.80	2.61	6.72	1.97	17.57	2.55

Total fixation duration



Summary relation between eye fixations and form recognition scores

	Full captioning Incidental	Full captioning Intentional
Gaze duration	+	/
Second pass time	-	+
Total fixation duration	/	+

Discussion of results and
methodology used

Discussion

- Total fixation duration
 - INCID learners:
 - FC and KC : similar fixation durations
 - FC pays attention to unknown words
 - INTEN learners:
 - $KC > FC$: visual salience prompted longer fixations -> enhances fixation duration
 - $INTEN > INCID$: test announcement affects eye fixations

- Eye-movement data indicate that enhancement techniques are successful in directing learners attention to the TWs
- Relation between attention and word learning → are eye-movement data predictive of word learning?

Discussion

- FCINTEN: eye-fixations ~form recognition
 - Total fixation duration
 - Positive relation total fixation & form recognition (cf. Godfroid, et al., 2013)
 - Eye movements can predict word learning
 - <-> Godfroid: this study does not focus on noticing + dynamic vs. Static input
 - Gaze duration
 - By itself, insufficient to account for any significant learning gains
 - Second pass time
 - Significant relation: reanalysis reflects increased intention to commit word to memory
~greater learning gains

Discussion

- FCINCID: eye-fixations ~form recognition
 - Total fixation duration
 - No significant relation
 - Gaze duration
 - Significant positive relation: when processing for meaning, gaze duration may reflect processes that are required for successful learning
 - Second pass time
 - Significant negative relation: may reveal processing problems -> difficulties to successfully integrate a word

Discussion

- KCINCID and KCINTEN: no significant relations between eye-fixations and form recognition
 - Other processes/aspects that mediate the relation between attention & form recognition?
 - Over-fixate? No elaborate processing?

Concluding remarks

- Eye-tracking: +/-
- Vocabulary learning through video-based activities
- Impact of attention-drawing techniques
- Incidental/intentional acquisition from input
 - + word-focused activities
 - + rehearsal & frequency

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