

Investigating cognitive load in simultaneous interpreting with the support of terminology management tools

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1. Introduction

Over the past few years, Computer-Assisted Interpreting (CAI) tools have been developed to support interpreters in their workflow, from conference preparation to simultaneous interpreting in the booth.

While several studies have investigated how CAI tools affect the preparation phase by comparing them to more traditional solutions, only a few studies have tried to gain insight on whether the use of CAI tools improves the terminological quality of the target text.

However, we still lack an understanding of how CAI tools affect the cognitive processes occurring during simultaneous interpreting, which depend on the availability of cognitive processing capacity.

Our study aims at bridging this research gap by adopting a process-oriented, empirical approach combining various research methods.

2. CAI tools

First-generation CAI tools:

- Interplex, Interpreter's Help, Terminus, LookUp, DoITerm
- simple entry structure, look-up functionality, extra fields, categorization of entries

Second-generation CAI tools:

- Intragloss, InterpretBank
- advanced features: organization of textual material, information retrieval (e.g. corpora), search functions
- Intragloss: focus on preparatory phase (interaction between preparatory texts and terminological database)
- **InterpretBank**: glossary creation and management (Fig.1), support for terminology memorization, advanced search algorithm for terminology look-up in the booth while keeping the added cognitive load as low as possible (Fantinuoli 2009¹, 2012², 2016a³, 2016b⁴) (Fig. 2.1, Fig. 2.2)

CAI tools - state of the art:

- ❖ model and features of CAI tools (Rütten 2000⁵, 2004⁶, 2007⁷)
- ❖ design and development of the CAI tool InterpretBank (Fantinuoli 2009, 2012, 2016a, 2016b)
- ❖ development of a methodology and a golden standard to evaluate CAI tools (Costa et al. 2016⁸, Will 2015⁹)
- ❖ Gacek (2015¹⁰): usability study on the CAI tool InterpretBank
- ❖ Biagini (2015¹¹): empirical study comparing InterpretBank and paper glossaries. InterpretBank improves terminological quality in SI
- ❖ Prandi (2015a¹², 2015b¹³): integration of CAI tools in interpreters' training (exploratory study)

Lack of process-oriented studies on CAI tools and experimental studies

3. Hypotheses

When compared to other terminology management solutions traditionally adopted by interpreters, such as Word or Excel glossaries:

1. the use of CAI tools adds the least cognitive load
2. the search mechanism takes up less time and is more effective in CAI tools
3. the use of CAI tools helps improve terminological quality in the interpreter's output

4. Experimental design

❖ **Cognitive Load Model in Simultaneous Interpreting** (Seeber 2007¹⁴, 2011¹⁵, Seeber & Kerzel 2011¹⁶)

❖ CAI tool used: **InterpretBank**

❖ **Pilot study:**

- sample of trainee interpreters (German natives)
- simultaneous interpreting EN > DE
- 3 speeches (each interpreted with the support of either Word, Excel or InterpretBank glossaries) made up of sentence clusters. E.g.:

*I'm sure we all know that "there is no such thing as a free lunch".
That is certainly true if we consider **energy generation**
In fact, when we produce energy, it always comes at a price.*
[target sentence embedded between two general sentences]

❖ **Pre-test** to evaluate usability of texts for pilot study:

- positioning of the stimuli (end of sentence vs. not end of sentence): is there an anticipation effect?
- simple vs. complex terms (2-grams, 3-grams): are there statistically significant differences in pupil dilation for simple and complex terms?

❖ **Data collection:**

❑ **Hypothesis 1:**

pupil dilation as a measure of cognitive load (to be tested in the pilot-study):

- is there a clear pattern of pupil dilation during terminology search?
- are there statistically significant differences in the pupil dilation during terminology search for the different tools? is the pupil dilation lower for InterpretBank?

❑ **Hypothesis 2:**

eye-tracking measures (fixation duration, fixation counts, AOIs):

- do test subjects look at the CAI tool for a shorter time than for other tools?
- is it easier to visually identify the translation equivalents in the CAI tool?

LOG file (generated by InterpretBank):

- when are terms looked up?
- is the search repeated?

analysis of interpreter's output:

- ear-voice span: does the CAI tool require less time to find and use the terms?

❑ **Hypothesis 3:**

interpreter's output analysis:

- % of terminology equivalence: is it higher with the support of the CAI tool?
- omissions, errors: does the CAI tool lead to fewer problems in the output?

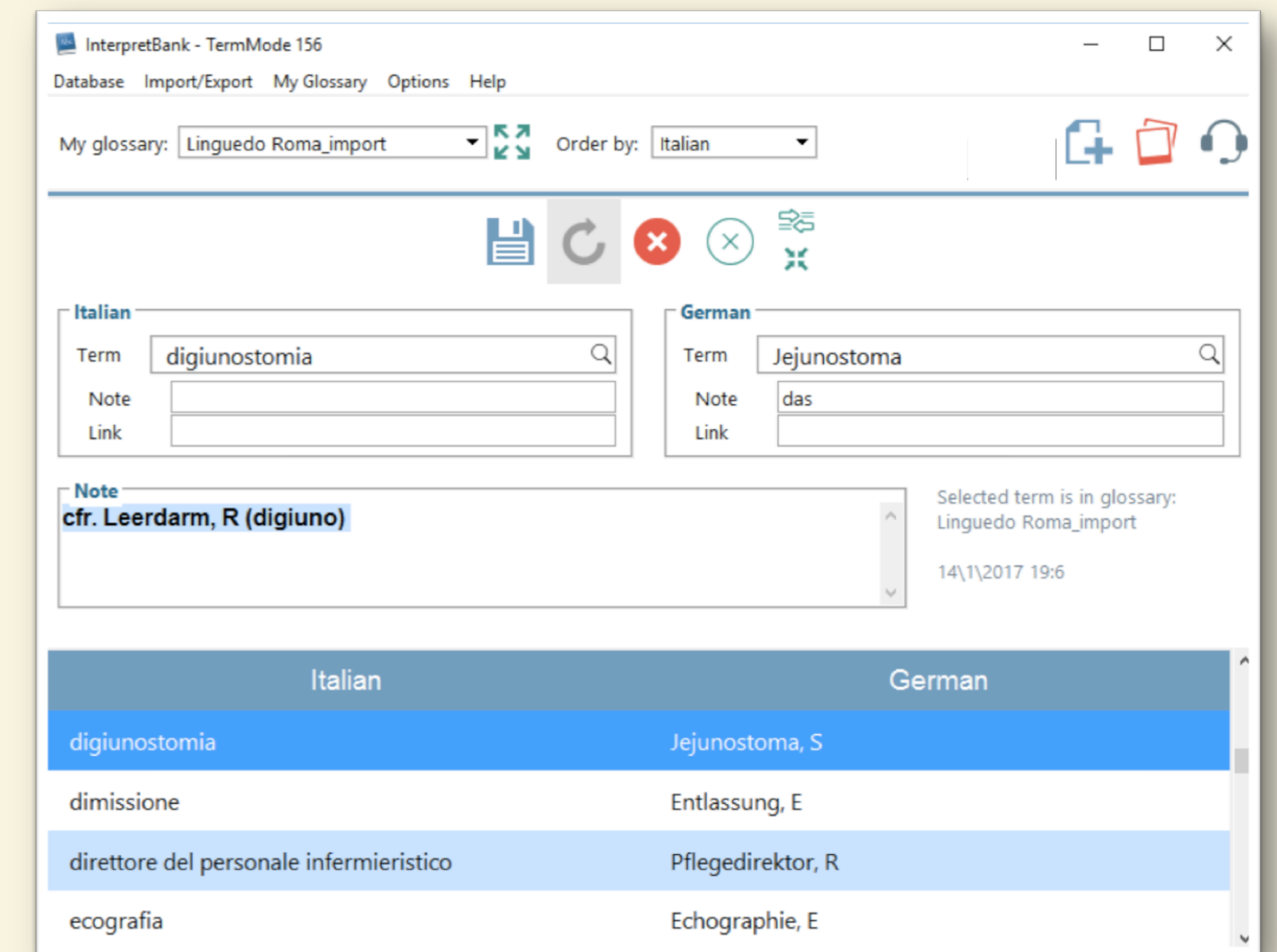


Fig. 1 InterpretBank: TermMode (expanded view)

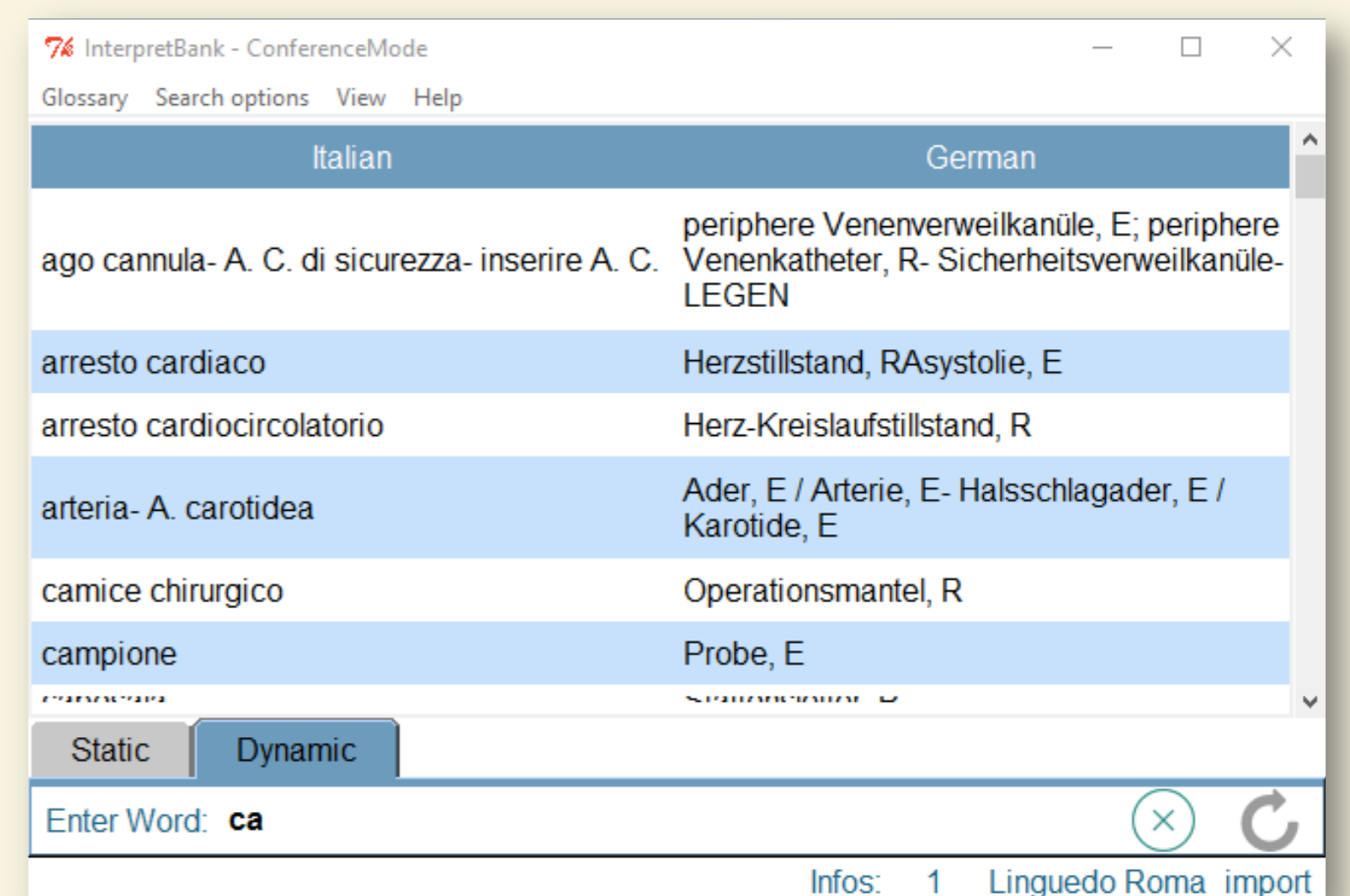


Fig. 2.1 InterpretBank: dynamic search function in ConferenceMode.

The user looked up the term "catetere". The results shown are found after the first two letters are typed in.

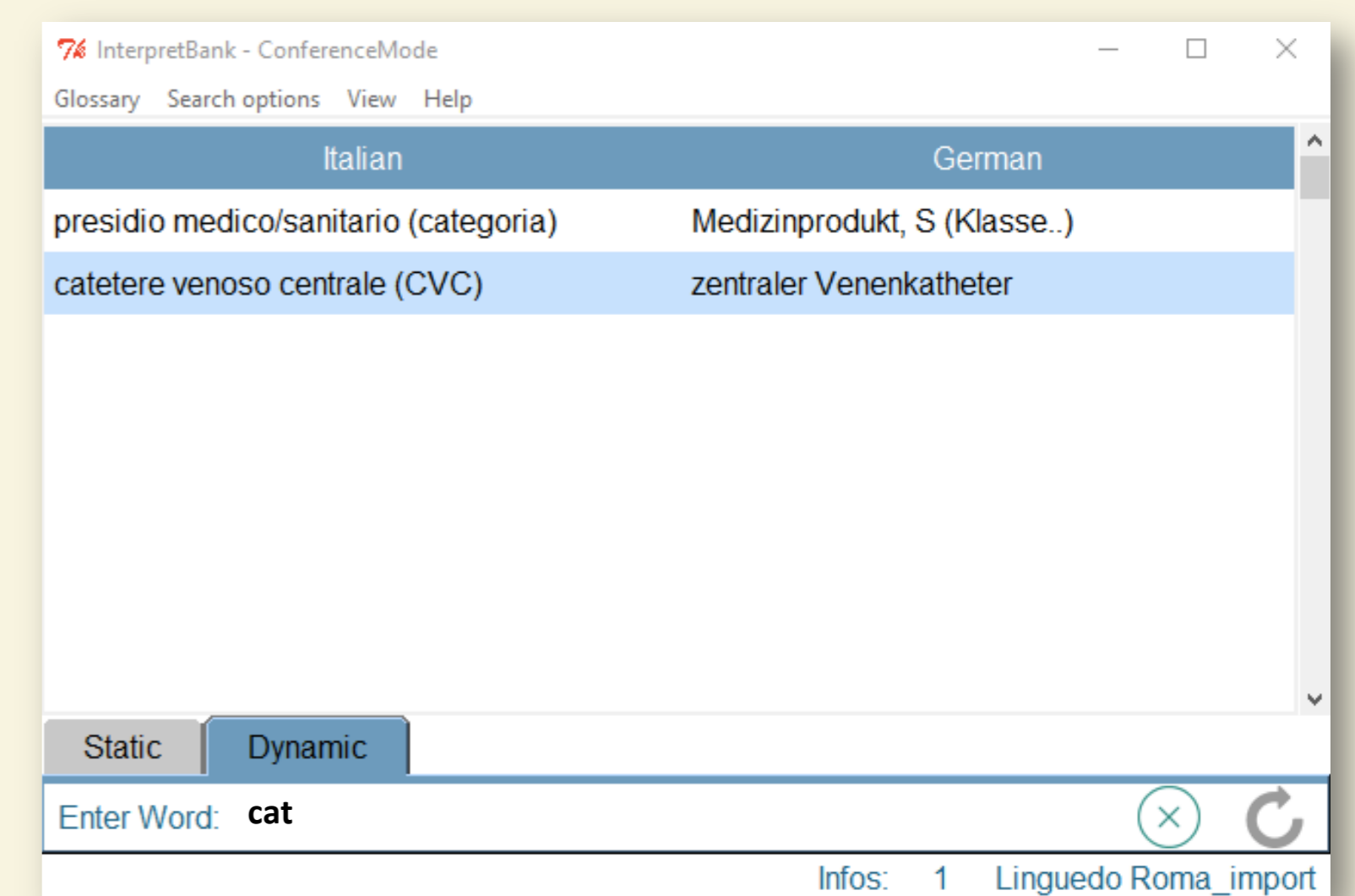


Fig. 2.2 InterpretBank: dynamic search function in ConferenceMode.

The user looked up the term "catetere". The results shown are found after the first three letters are typed in. One can notice the progressive reduction of the results shown.

Contact

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