



Our Corpus

- ▶ We collected a corpus of referring expressions produced by **speakers describing objects for listeners under cognitive load**.
- ▶ We used similar stimuli to the TUNA and D-TUNA corpora (Gatt et al., 2007; Koolen & Krahmer, 2010) to produce **a comparable corpus of referring expressions in German**.

Referring Expressions and Accommodation

Referring Expression Generation

Controlled corpora of referring expressions provide a testbed for evaluating Referring Expression Generation (REG) algorithms, but so far fall short of including speech produced under more naturalistic conditions.

Adapting to Listeners

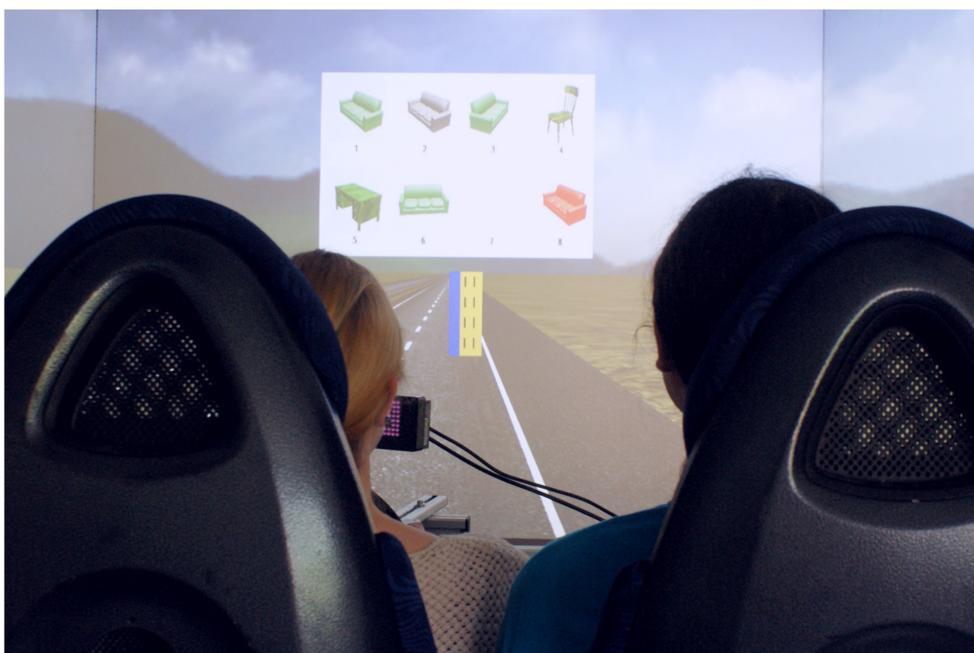
Our corpus allows us to study whether speakers adapt their referring expressions to listeners under cognitive load (i.e. *accommodation*) with respect to speech rate, over- and under-specification, and other measures of linguistic complexity.

- ▶ studies of accommodation have yielded mixed results so far (Bard et al. 2000, Galati & Brennan 2010)
- ▶ but passengers seem to adapt to drivers in adverse conditions (Crundall et al. 2005, Drews et al. 2008)

Experiment and Corpus Collection

Studying audience design in a driving simulator

- ▶ two driving conditions: EASY and HARD
- ▶ participants took turns playing the role of the **SPEAKER** or the **DRIVER**
- ▶ **SPEAKERS** had to provide a unique description of the target object to drivers
- ▶ **DRIVERS** had to (1) steer the car to follow a moving target on the screen and (2) correctly identify the object referred to



References

- Bard et al. 2000. 'Controlling the Intelligibility of Referring Expressions in Dialogue'. *J. of Memory & Language*.
- Crundall et al. 2005. 'Regulating conversation during driving: A problem for mobile telephone?' *Transportation Research Part F*.
- Drews et al. 2008. 'Passenger and Cell Phone Conversations in Simulated Driving'. *J. Experimental Psych.*
- Galati & Brennan 2010. 'Attenuating information in spoken communication: For the speaker, or for the addressee?' *J. of Memory & Language*.
- Gatt et al. 2007. 'Evaluating algorithms for the Generation of Referring Expressions using a balanced corpus'. *ENLG*.
- Koolen & Krahmer. 2010. 'The D-TUNA Corpus: A Dutch Dataset for the Evaluation of Referring Expression Generation Algorithms'. *LREC*.

Comparison to other corpora

	TUNA	D-TUNA	G-TUNA
# subjects	45	60	40
language	English	Dutch	German
# trials	20	40	60
grid size	3 × 5	3 × 5	2 × 4
# targets/grid	1–2	1–2	1
# distractors/grid	6	6	6
situation	human-computer	no v. invisible v. visible addressee	driver & passenger in driving simulation
modality	written	written + spoken	spoken
domains	furniture, people	furniture, people	furniture
# comparable REs*	420	400	2331
total # REs	2280	2400	2331

Table: *Two sets of REs are 'comparable' if in the same domain and with the same cardinality. The TUNA corpus' REs are all textual, while the other corpora are spoken.

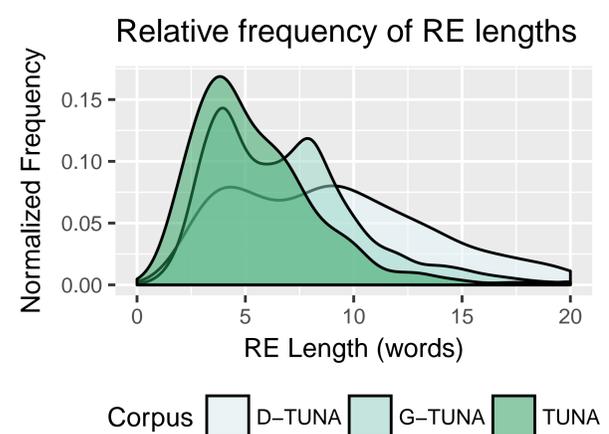
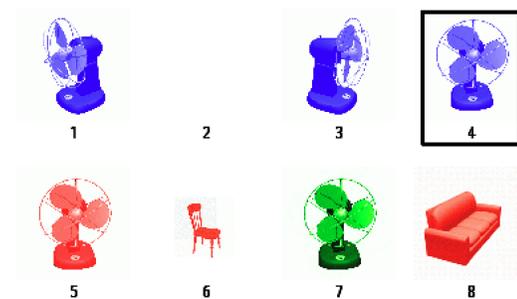


Figure: Density plot of RE lengths in the 3 TUNA corpora for comparable REs.

Sample stimulus and descriptions



Type of description	Text
minimal description	the blue fan facing forward
overspecification	the big blue fan facing forward
underspecification	the fan facing forward

Initial Findings

- ▶ The **rate of referential overspecification was high** (about 46%), while underspecification occurred only 2% of the time. 51% were minimally specified. These **rates are similar to the existing TUNA and D-TUNA corpora**.
- ▶ **REs were shorter in the hard condition**, but only when the speaker already had experienced the driving task.
- ▶ Our corpus **facilitates cross-linguistic comparisons of REs and enables the study of accommodation** by human speakers for listeners under load.