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How to choose stimuli for experiments on lexical ambiguity?

A comparison of data sources for psycholinguistic experiments

**Background situation: Methods for the selection of stimuli**

In experiments such as priming, eye-tracking, rating and sorting tasks researchers are in need of suitable polysemous stimuli. Subjects have to be familiar with the word meanings that are investigated, because unknown stimulus distort the results. Thus, the most reliable materials for such experiments are relatively salient meanings that are easily accessible for the informants. However, in contrast to what one might expect it seems that this issue is often neglected: some authors do not even give the sources of their materials (e.g. Williams 1992, Briesard, Van Rillaer, and Sandra 2001).

**Our aims in this poster are**

• to compare different data sources (see I to V below) on the basis of polysemous Italian grande (adj.) and
to show that the “Sentence Generation and Definition Task” (see V below) is better suited than any of these methods.

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**Italian grande^1 (adj.) according to four different data sources**

<table>
<thead>
<tr>
<th>Data source</th>
<th>I Linguist introspection</th>
<th>II Corpus analysis</th>
<th>III Dictionaries</th>
<th>IV Production experiments with native speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examples</td>
<td></td>
<td></td>
<td>De Mauro: Il dizionario della lingua italiana, (1997)</td>
<td>In this experiment type native speakers are presented with word forms and are asked to formulate disambiguating sentences (IV.1) or to give definitions (IV.2) for each meaning of the word forms that comes to their mind.</td>
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<tr>
<td>Quattro abbozzi e il grande del bosco. (all dimensions maggiore)</td>
<td></td>
<td></td>
<td></td>
<td>(1a) It. Quel cantante è grande.</td>
</tr>
<tr>
<td>En: ‘superior size’ (concreta o astratta) with regard to the average on a scale^3</td>
<td></td>
<td></td>
<td>En: ‘superior size’ (concreta o astratta) with regard to the average on a scale^3</td>
<td>(1b) It. Sei grandi.</td>
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<tr>
<td>En: ‘superior size’ (concreta o astratta) with regard to the average on a scale^3</td>
<td></td>
<td></td>
<td>En: ‘superior size’ (concreta o astratta) with regard to the average on a scale^3</td>
<td>(1c) It. Un grande pubblico.</td>
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<tr>
<td>En: ‘superior size’ (concreta o astratta) with regard to the average on a scale^3</td>
<td></td>
<td></td>
<td>En: ‘superior size’ (concreta o astratta) with regard to the average on a scale^3</td>
<td>A. great/numerous audience.</td>
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<tr>
<td>En: ‘superior size’ (concreta o astratta) with regard to the average on a scale^3</td>
<td></td>
<td></td>
<td>En: ‘superior size’ (concreta o astratta) with regard to the average on a scale^3</td>
<td>IV.2 Definition task:</td>
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<tr>
<td>En: ‘superior size’ (concreta o astratta) with regard to the average on a scale^3</td>
<td></td>
<td></td>
<td>En: ‘superior size’ (concreta o astratta) with regard to the average on a scale^3</td>
<td>(2a) It. come dimensione/altezza</td>
</tr>
<tr>
<td>En: ‘superior size’ (concreta o astratta) with regard to the average on a scale^3</td>
<td></td>
<td></td>
<td>En: ‘superior size’ (concreta o astratta) with regard to the average on a scale^3</td>
<td>(2b) It. ampiore</td>
</tr>
<tr>
<td>En: ‘superior size’ (concreta o astratta) with regard to the average on a scale^3</td>
<td></td>
<td></td>
<td>En: ‘superior size’ (concreta o astratta) with regard to the average on a scale^3</td>
<td>(2c) It. contrario di piccolo</td>
</tr>
<tr>
<td>En: ‘superior size’ (concreta o astratta) with regard to the average on a scale^3</td>
<td></td>
<td></td>
<td>En: ‘superior size’ (concreta o astratta) with regard to the average on a scale^3</td>
<td>En. of small/young</td>
</tr>
</tbody>
</table>

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**Discussion**

• only one highly abstract meaning for It. grande in contrast to the results of methods II to V
• problem: this single expert’s definition is not necessarily typical of other native speakers.

**Linguist introspection**

is subjective and not representative for the whole speech community

• advantage: more objective than method I because based on a large number of sources representing different text types
• first problem: presumably central meanings like ‘adult’, ‘big (age)’ (qualified as ‘fundamental’ by De Mauro, cf. meaning no. 2 and method IV + V), do not appear at all in the corpus because of its limited textual basis.

**II Corpus analysis**

• second problem: due to the vague context word meanings often have to be defined in a very general way: meanings that dictionaries (method III) may discriminate do not necessarily appear in corpus analyses, e.g. grande ‘high’ (Zingarelli, meaning no. 3), which is subsumed under ‘spatially extended’ in the corpus:

Which distinction is more valid as a basis for psycholinguistic experiments?

• first problem: the selection of the dictionary, because of diverging principles of meaning differentiation: De Mauro discriminates much more specialized meanings than Zingarelli (compare meaning no. 1 in Zingarelli and meanings no. 1a, 1b, 2, 3a, 3c, 3d, 4 and 5 in De Mauro).
• second problem: even within one dictionary it is still difficult to decide which of the numerous meanings to use for the experiment and which to omit.

Which meaning differentiation, if at all, best reflects the speakers’ consciousness (same problem as in II)?:

Which meanings are the most central ones (↔ IV + V)?

• problem: sometimes ambiguous results (cf. (1a) – (2c))
• second problem: even within one dictionary it is still difficult to decide which of the numerous meanings to use for the experiment and which to omit.

Which meaning differentiation, if at all, best reflects the speakers’ consciousness (same problem as in II)?:

Which meanings are the most central ones (↔ IV + V)?

But still, there are two advantages:

• the resulting meanings are most salient for the speakers (↔ II, III),
• sound basis for cross-linguistic studies, as the comparability of the material is guaranteed (↔ III)

→ suitable methods, but they have to be refined

**III Dictionaries**

• De Mauro: Il dizionario della lingua italiana, (1997)

→ suitable polysemous stimuli are unsatisfactory in one or more respects.

Alternative: V „Sentence Generation and Definition Task“ (Marzo/Rube/Umbreit 2007)

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**V Sentence Generation and Definition Task**:

**Discussion**

• combination of two methods (IV 1+IV 2): formulation of disambiguating sentences plus meaning definition or paraphrase (see examples on the left),
• advantages of this combination:

→ it elicits objective (↔ I), mostly unambiguous and easily interpretable data (↔ IV): e.g. in each response given by informant A on the left, the meaning of the stimulus becomes clear, if we take into account both the example sentence and the definition.

→ We can be sure to get salient and cognitively relevant data (↔ II, III), because they are spontaneously found by a certain number of native speakers.

→ reliable basis for all sorts of linguistic experiments using ambiguous words.

**Application up to now**

• 400 French and 400 Italian words have been researched according to this method. The resulting data are currently used for experiments on lexical motivation (http://www.sfb441.uni-tuebingen.de/).

**Availability of the data**

• This material is integrated into the "Database of semantic shifts" established by the Russian Academy of Sciences under the direction of Anna Zaliznjak (http://www.zaliznjak.org/rus/ONAT/ESD/hompage/P/INTAS.html).

• The data will soon be accessible within the database of different German collaborative research centers (http://www.sfb441.uni-tuebingen.de/).

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1 The same study has been done for 8 other Italian words leading to the same results: animals, women, cows, dogs, etc., example, form, scene, square and velluto.

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