Is it word-formation? An experimental study on English, French and German

Marcel Schlechtweg & Holden Härtl
Universität Kassel (Germany)
marcelschlechtweg@gmail.com

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Do morphological products, i.e. compounds, show a memorization advantage in comparison to syntactic products, i.e. phrases?
Table 1: Distinction between compounds and phrases (adjective-noun(AN)/noun-adjective(NA))

<table>
<thead>
<tr>
<th></th>
<th>German (Braunbär vs. brauner Bär)</th>
<th>English (BROWN bear vs. brown BEAR)</th>
<th>French (ours brun vs. ours brun)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural criteria</td>
<td>✔</td>
<td>✔  ❌</td>
<td>❌</td>
</tr>
<tr>
<td>(inflection, stress)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Memorization</td>
<td>✔</td>
<td>❓</td>
<td>❓</td>
</tr>
</tbody>
</table>

Van Goethem (2009); Schlücker (2013); Kotowski, Böer & Härtl (2014)
Do AN/NA items in German, English and French differ in terms of memorization and, if they do, what does this difference tell us about the distinction between compounds and phrases?
Study 1: Assumptions

The realization of new complex lexical concepts from a pre-theoretical, descriptive perspective:

- **German** prefers a morphological route (Bücking 2010; Hüning 2010), i.e. the items used in this study are **compounds**.
- **French** uses a syntactic route for this purpose (Van Goethem 2009), i.e. the items used in this study are **phrases**.
- **English** offers both routes, i.e. some of the items in this study are **compounds**, while others are **phrases**.
4 groups of native speakers: German, English A (BLUE motor), English B (blue MOtor), French

Auditory memorization experiment on three days (day 1, day 4, day 8)

On each day: Memorization phase (MP) and recall phase (RP)

- MP: Memorization of non-lexicalized complex items (e.g. Blaumotor/BLUE motor/blue MOtor/moteur bleu) and, as a baseline, real nouns (e.g. Architekt/architect/architect/architecte) of their respective native language (same items on each day)

- RP: Response “yes” to items that subjects heard in the MP and response “no” to items that they did not hear in the MP
No significant difference should occur between the real nouns across languages (baseline).

Significant differences should be found between the complex AN/NA items across languages, i.e. a *memorization advantage / memorization disadvantage*. 
Two approaches:

**MemoA**: Learned compounds show overall faster response times than learned phrases (first, second and third day together).

→ Faster response times of compounds = memorization advantage

**MemoB**: Learned phrases show faster response times than learned compounds on the first day but not on the second and/or third day.

→ Greater improvement of compounds = memorization advantage
Study 1: Selected results

Figure 1: Interaction LANGUAGE x ITEM TYPE ($F_2$)
German vs. French

MemoA: Memorization advantage of compounds (German) in comparison to phrases (French)

German

No significant difference between the real nouns and the complex items (AN) → “word-like” nature of German compounds
MemoA does not work

Advantage of items with non-initial stress due to their “normal, ‘unmarked’ stress pattern” (Giegerich 1992: 252)

No markedness = higher frequency of usage = faster response times (Bybee 1995 referring to Greenberg 1966; Schiller, Fikkert & Levelt 2004)

MemoB does not reveal a striking result
Study 2: Starting point and research question

High semantic compositionality in Study 1

How does the interaction of stress and semantic compositionality affect the memorization of complex English AN items?

- Non-initial stress + semantic compositionality (e.g. *short BRUSH*)
- Non-initial stress + semantic non-compositionality (e.g. *hard SHIRT*)
- Initial stress + semantic compositionality (e.g. *SHORT brush*)
- Initial stress + semantic non-compositionality (e.g. *HARD shirt*)
Study 2: Hypothesis

Memorization leads to lexicalization (Wunderlich 1986)

Expectation: Greater memorization advantage (MemoB) of apparent morphological products (initial stress + semantic non-compositionality)

(Bakken 2006; Bauer 2004; Blank 2001; Bücking 2010; Chomsky & Halle 1968; Downing 1977; Giegerich 2004; 2005)
Study 2: Design

- Memorization experiment on three days (day 1, day 4, day 8)
- On each day: Memorization phase 1 (MP1), memorization phase 2 (MP2) and recall phase (RP)
  - MP1: Memorization of non-lexicalized complex AN items belonging to the four conditions
  - MP2: Memorization of the same items
  - RP: Response “yes” to items from MP1/MP2 and response “no” to other items
Study 2: First results

Figure 2: Interaction STRESS x SEMANTIC COMPOSITIONALITY ($F_1$)
Figure 3: “Initial stress + semantic non-compositionality” versus “Non-initial stress + semantic compositionality” on all three days ($F_1$)
MemoA not useful

(“normal” pattern faster)

↓

MemoB useful

(memorization advantage of semantically non-compositional items with initial stress)
We see that **German compounds**, i.e. morphological products, show a memorization advantage in comparison to **French phrases**, i.e. syntactic products, by comparing the response times of all three days together.

In **English**, semantically **non-compositional** items with **initial stress**, i.e. apparent **morphological** products, benefit more from memorization than semantically **compositional** items with **non-initial stress**, i.e. apparent **syntactic** products.


