Predicting the semantics of English nominalizations
A frame-based analysis of -ment suffixation

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Affix polysemy: -ment

• Nominal suffix attaching mainly to verbal bases

• Various readings (Bauer et al. 2013, ch. 10)
  
<table>
<thead>
<tr>
<th>ROLE</th>
<th>EXAMPLE</th>
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</thead>
<tbody>
<tr>
<td>EVENT</td>
<td>assessment</td>
</tr>
<tr>
<td>RESULT</td>
<td>containment</td>
</tr>
<tr>
<td>STATE</td>
<td>contentment</td>
</tr>
<tr>
<td>PRODUCT</td>
<td>pavement</td>
</tr>
<tr>
<td>INSTRUMENT</td>
<td>entertainment</td>
</tr>
<tr>
<td>LOCATION</td>
<td>embankment</td>
</tr>
</tbody>
</table>
How do we get such readings?

• Certain base verbs evoke certain readings (Bauer et al. 2013, 212)
  - Verb requires instrument \( \rightarrow \) INSTRUMENT nominalization
    - *to wrap* \( \rightarrow \) *wrap*
    - *to refresh* \( \rightarrow \) *refreshment*

• Shift to a syntactic argument of the verb
  
  *John purchased a car*. *His wife approves of this purchase.*

• Not restricted to syntactic arguments though
  
  *My granny used to embroider pillowcases*. I love the *embroidery* on this one.
An interplay of verb and suffix

Verb semantics

X

Noun semantics

-ment

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Issues concerning -ment data

• Very productive in Early Modern English (15th-17th c.); nowadays still somewhat productive (Bauer et al. 2013, 199)

• Many (often highly lexicalized) derivatives
  - movement 1393
  - department c. 1450
  - treatment 1560

• Aim: synchronic analysis of the productive process
  ➢ Neologisms (1900-today)
Method

- Neologisms (*Oxford English Dictionary*)
- Hapax Legomena (*Corpus of Contemporary American English*)
- 86 -ment derivatives from 24 verb classes (Levin 1993 / VerbNet)
- Largest class: PSYCH verbs (N=16)
- Semantic classification of derivatives
- Attestations from other corpora (GloWbE, WebCorp, WebCorp LSE, Google)
Definition of PSYCH verbs

- Typically two arguments: STIMULUS & EXPERIENCER
- Traditional categories (Pesetsky 1995): Object Exp. & Subject Exp.
- Four subcategories following Levin (1993) / VerbNet:

<table>
<thead>
<tr>
<th>Transitive Verbs</th>
<th>Subject Experiencer</th>
<th>Object Experiencer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ADMIRE verbs</td>
<td>AMUSE verbs</td>
</tr>
<tr>
<td></td>
<td><em>The tourists admired the paintings</em></td>
<td><em>The clown amused the children</em></td>
</tr>
<tr>
<td>Intransitive Verbs with PP</td>
<td>MARVEL verbs</td>
<td>APPEAL verbs</td>
</tr>
<tr>
<td></td>
<td><em>Megan marveled at the beauty of the Grand Canyon</em></td>
<td><em>This painting appeals to Malinda</em></td>
</tr>
</tbody>
</table>
Semantic coding of derivatives

Traditional semantic categories
(Beard 1995; Spencer 2010; Sil et al. 2010; Osswald 2005; Brandtner 2011; Ehrich & Rapp 2000, cf. also VerbNet semantic annotation)

- EVENT
- STATE
- EXPERIENCER
- STIMULUS
- RESULT STATE
- ...

‘transposition’
Some examples for attestations

• EVENT

Medicine’s and my great problem and great fault consist of what might be called the intellectualization – the enrapturement with science and technology – by which that legion of men and women who are today’s doctors have allowed themselves to become besotted. (Webcorp_BLOG_1998)

• RESULT STATE

I know a lot of our compatriots also feel the same angst, consternation and confoundment. (GloWbE_ART_2012)

• STIMULUS

The Education Secretary arrived having just made her first big policy declaration - dressed up as a reassurement to Middle England that A-levels will be retained and that other exams may be made harder. (OED_NEWS_2005)
<table>
<thead>
<tr>
<th>Types in our dataset (N=16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>affrightment</td>
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<tr>
<td>apprevement</td>
</tr>
<tr>
<td>bmfuzzlement</td>
</tr>
<tr>
<td>confoundment</td>
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<tr>
<td>dumbfoundment</td>
</tr>
<tr>
<td>endullment</td>
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<tr>
<td>enragenment</td>
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<tr>
<td>enrapturement</td>
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<tr>
<td>nonplusment</td>
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<tr>
<td>perturbument</td>
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<tr>
<td>reassurement</td>
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<tr>
<td>upsetment</td>
</tr>
<tr>
<td>soothelement</td>
</tr>
<tr>
<td>staggerment</td>
</tr>
<tr>
<td>marvelment</td>
</tr>
<tr>
<td>worriment</td>
</tr>
</tbody>
</table>
Results
Overview

MARVEL verbs
RESULT STATE is dominant: not surprising

• STIMULUS & EVENT nominalizations should be impossible

• Pesetsky (1995, 71):

  Now consider the nominalizations that are related to causative ObjExp verbs like annoy. These nominalizations uniformly lack all causative force (as observed first, perhaps, by Lakoff (1970:126)). The present analysis is unusual in its implication that these nominalizations correspond to noncausal predicates. Thus, annoyance does not mean ‘the process of making annoyed’, but ‘the state of being annoyed’. Amusement does not refer to something amusing someone, but to the state of being amused.

• Our data provide counter-evidence to these views
Output semantics: MARVEL verbs

*Approval* is attested as *stimulus*, *musement* isn’t:
Not surprising

• Artefact of the data: only two types in the dataset

• Verb class is heterogeneous in the first place:
  • Static vs. dynamic (e.g. *muse over*: ‘to be pensive’ vs. ‘to ponder’)
  • Different degrees of implied causation (e.g. *mourn over* vs. *approve of*)

• Enlarge the dataset!
Output semantics: *EXPERIENCER

EXPERIENCER is not attested in PSYCH verb + -ment combinations

- Affix rivalry
  - Suffix for EXPERIENCER and PATIENT: –ee (or –er)

- Verb class might disallow it
  - Not convincing, cf. soothe and sufferer

- -ment might disallow it
  - EXPERIENCER isn’t mentioned in the pertinent literature
  - Data set: no [+animate] readings (except, potentially, STIMULUS)
  - At least a preference for [-animate]!
A frame-based analysis

-ment on AMUSE verb bases
Modeling semantics in frames

(e.g. Barsalou 1992 a,b; Löbner 2013; Petersen 2007)

Frame matrix of the verb *walk*

Frame graph of the verb *walk*
Modeling semantic shifts in frames

Frame graphs for three nouns derived from the verb walk
(Löbner 2013, Figure 12.9)
Modeling psych causation

(cf. Löbner 2013, Naumann 2013, Osswald & Van Valin 2014)
Modeling affix polysemy
Bumfuzzlement: Shift to RESULT STATE
Summary

• -ment has clear preferences for certain types of base verb.

• Resulting derivatives show a well restricted set of possible readings (transposition, RESULT STATE, STIMULUS; no EXPERIENCER).

• Shifts can target argumental and non-argumental components of the semantic representation.

• Attested readings result from clearly defined shifts in the semantic structure of the respective base verbs.

• These shifts are governed by certain constraints and/or preferences.
Conclusion

• Affix semantics:

  The potential to induce particular kinds of shift in the semantic structure of the base

• Possible readings of –ment nominalizations emerge from the predictable interaction of base semantics with affix semantics

• Future work: Test this with further verb classes
References


Thank you very much for your attention!
**Base selection**

- *-ment* selects only two subcategories of PSYCH verbs

<table>
<thead>
<tr>
<th>No APPEAL verbs, no ADMIRE verbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>13 AMUSE verbs</td>
</tr>
<tr>
<td><em>afright, bumfuzzle, confound, dumbfound, endull, enrage, enrapture, nonplus, perturb, reassure, upset, soothe, stagger</em></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2 MARVEL verbs</th>
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<tbody>
<tr>
<td><em>approve (of), marvel (over)</em></td>
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</table>

<table>
<thead>
<tr>
<th>1 AMUSE &amp; MARVEL verb</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>worry</em></td>
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</table>

- Preference for AMUSE verbs seems to be a general tendency
Base selection

- Preference for AMUSE verbs seems to be a general tendency
Why prefer AMUSE verbs?

- Artefact of lexical distribution: Only five verbs in APPEAL verb class, three of which are very infrequent.

- Preference for other derivational processes:
  - MARVEL verbs: conversion (sorrow, freakout)
  - ADMIRE verbs: -ation (reaffirmation, adoration) and conversion (mistrust, grudge)

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