

Differential Processing in Integrating Conceptual Features of Adjectives  
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Adjectives carry featural information that often specifies or restricts, facilitating human communication by helping to focus attention to specific items under discussion. Many studies examining noun-phrase-level composition suggest early effects in integrating conceptual information components. For example, *red boat* compared to *xbl boat* or *cup boat* leads to increased neural activity at left anterior temporal regions quite early in the timecourse of processing (Bemis & Pyllkkanen, 2013; Neufeld et al., 2016; Zhang & Pyllkänen, 2018). Still, not all lexical adjectives function in the same way. There is no increased neural activity in the same brain regions for scalar terms like *large* when it precedes e.g. *boat*; here, the interpretation of the adjective depends on the noun and composition cannot fully proceed until the noun meaning is fully accessed (Ziegler & Pyllkänen, 2016). Similarly, composition effects do not extend to cases of numeral quantification, where e.g. *two boats* adds no conceptual features to the noun, but rather enumerates the number of tokens within a set (Del Prato & Pyllkänen, 2014).

How does semantic integration work then for expressive adjectives (e.g. *damn dog*)? Like numerals, expressives do not add conceptual features to the noun, but rather convey the speaker's heightened emotional state. Given that *damn* and *fucking* carry no featural information themselves, it remains to be seen whether this manifests in processing differences relative to descriptive adjectives.

Further, expressive adjectives differ from descriptive adjectives in many other ways (Gutzmann, 2019). For example, they are restricted to the positive form (*\*the damner dog*), are resistant to degree and adverbial modification (*\*the very damn dog*, *\*the probably damn dog*), and are reluctant to be coordinated (*\*the damn and fucking dog*, *\*the damn and young dog*). Most importantly, expressive adjectives can have nonlocal readings, where the expressive can take wide scope over the entire situation, not just as a modification of the noun itself. For example, *I lost my damn watch and now I have to buy a new one*, there is the interpretation that the speaker is upset about the watch, but there is also the (perhaps more salient) interpretation that the speaker is upset about the entire situation of losing the watch. This nonlocalness is very rare for other attributive adjectives. We hypothesised that some of these structural differences could be a driving force for potential processing differences in expressive and descriptive adjectives.

In order to investigate these questions, we conducted an online study of processing. We present findings using a Maze Task, which is comparable to self-paced reading (Forster, Guerrerá, & Elliot, 2009). Stimuli included 66 pairs of **Expressive (Exp)** and **Descriptive (Des)** adjectives. These adjectives were placed into identical sentences preceded by a short context. Adjectives were matched for frequency, length, and a variety of other psycholinguistic factors. Valency of the **Des Adjs** were also manipulated (negative, neutral, positive). One stimulus item is presented here:

Context: <i>Ina really wanted to go to the big art gallery over the weekend.</i>	
Des Adj Condition:	<i>The huge museum was closed then.</i>
Exp Adj Condition:	<i>The fucking museum was closed then.</i>

We predicted that, because expressives do not add any conceptual features in the ways that other descriptive adjectives do, they would be processed relatively quickly.

Behavioural results of 31 participants were analysed using linear-mixed effects modelling in R (Table 1), and show that participants were significantly faster for **Exp Adj** than **Des Adj**. Still, even though psycholinguistic factors were controlled for, ultimately e.g. *huge* and *fucking* are different words. To control for this, RT results on the noun were compared when it was preceded by an **Exp Adj** or **Des Adj**, as the noun is the same in both conditions. Here (Table 2), participants were significantly slower for the **Exp Adj** versus the **Des Adj** condition.

**Table 1. RT in ms for each stimulus type (trimmed to 2.5 stand dev), with example items in parentheses. Significance is with respect to noun as the baseline (0~\*\*\*, .001~\*\*, .01~\*, .05~.).**

Det ( <i>The</i> )	Des Adj ( <i>huge</i> )	Noun ( <i>museum</i> )
616.3***	988.9***	736.2
	Exp Adj ( <i>fucking</i> )	
	871.8***	

**Table 2. RT to noun split by preceding adj. type (trimmed to 2.5 stand dev.)**

Des ( <i>huge museum</i> )	Exp ( <i>fucking museum</i> )
721	753.7**

Together, these results show that expressives presented in context enjoy a facilitatory effect relative to descriptive adjectives, but there is a wrap-up effect downstream. These findings can be explained in a conceptual combinatoric framework. Although both conditions involve the creation of linguistically complex phrases from smaller parts, only the Des Adj condition presents conceptual features at the adjective itself, which is a possible explanation for the delayed processing at this position in the sentence. The processing differences encountered on the noun are perhaps best explained by the unique nonlocalness property of expressives, leading to more difficult integration with the noun. Overall, these data allow us to probe our understanding of semantic conceptual knowledge and its intersection with the linguistic communication of emotion.

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