Article

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The red dress is cute: why subjective adjectives are more often predicative

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Abstract: Which adjectives tend to occur as attributive (*the cute/red dress*) versus predicative (*the dress is cute/red*) and why? Building on findings from Wiegand et al. (2013. Predicative adjectives: An unsupervised criterion to extract subjective adjectives. In Lucy Vanderwende, Hal DauméIII & Katrin Kirchhoff (eds.), *Proceedings of the 2013 conference of the North American chapter of the Association for Computational Linguistics: Human language technologies (NAACL-HLT)*, 534–539. Atlanta, GA: Association for Computational Linguistics) and Vartiainen (2013. Subjectivity, indefiniteness and semantic change. *English Language and Linguistics* 17(1). 157–179), this paper argues that subjective adjectives such as *cute* tend to be placed in predicative position not just because they often describe discourse-new information, but because this position serves to foreground information that the hearer may disagree with. This claim is supported using data from the Corpus of Contemporary American English (Davies, Mark. 2008. *The corpus of contemporary American English: One billion words, 1990-present*. Available at: https://www.english-corpora.org/coca/) combined with human annotations for subjectivity from Scontras et al. (2017. Subjectivity predicts adjective ordering preferences. *Open Mind* 1(1). 53–66) *et seq.*; and data from image captions versus descriptions (for seeing versus low-vision people) from the National Gallery of Art. A production experiment manipulates the discourse context to further show that adjectives tend to be placed in predicative position when they express controversial information. Overall, this paper explores how the lexical semantics of adjectives shapes the pragmatic contexts in which they tend to be used, which in turn shapes the syntax of the sentences using them.

Keywords: attributive; predicative; adjectives; subjectivity; epistemic authority

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1 Introduction

To use an adjective such as *cute* or *red*, a speaker must decide whether it will be attributive (1) or predicative (2) (e.g., Bolinger 1967). If attributive, the speaker must also choose a determiner for the larger noun phrase, most frequently a definite (1a) or indefinite (1b) one.

(1) a. the **{cute/red}** dress
b. a **{cute/red}** dress

(2) The dress is **{cute/red}**.

The choice between attributive versus predicative forms maps onto the functional distinction (Croft 1990; Ferris 1993; Hopper and Thompson 1985; Thompson 1989) between reference (picking out an individual) versus predication (saying something about that individual), and thus the syntactic distinction between nouns, which are prototypically used for reference, and verbs, prototypically used for predication. These two opposing functions evoke broader claims about the nature of adjectives as a lexical category: that they are less cross-linguistically robust than nouns or verbs (Dixon 1977); or that they occupy an intermediate space between nouns and verbs (Baker 2003; Chomsky 1970).

Wrapped up in the functional opposition between reference and predication, the distinction between attributive and predicative adjectives also implicates the pragmatic status of information in discourse. Predicative adjectives (2) present the main at-issue content (Potts 2005; Simons et al. 2010) of a sentence (Kaiser and Wang 2021), while attributive adjectives (1) add secondary information to a noun phrase. The choice to place the attributive adjective within a definite versus indefinite noun phrase further depends on whether the dress is framed as old or new (Heim 1982).

When explored in corpora (Bybee and de Souza 2019; Englebretson 1997; Hollmann 2021; Saylor 2000; Schlüter 2008; Thompson 1989), the truism that adjectives "can" be attributive or predicative transforms into a quantitative question that drives this paper: *which adjectives tend to surface as attributive versus predicative, how often, and why?* Of course, we have already noted that the attributive/predicative distinction depends on the discourse context of a given adjective token, which is obscured when we look at type-level counts in corpora. But it is still possible to explore quantitative type-level data if we assume that the lexical semantics of an adjective type predicts how it typically relates to the conversational Common Ground (Grice 1989 [1975]; Stalnaker 1978) of its tokens. Further exploring how the distribution of adjectives is shaped by the pragmatic

status of the information that they describe, this paper also investigates which attributive adjectives tend to appear in definite versus indefinite noun phrases.

This paper synthesizes the literature (Section 2) to draw out a series of predictions to be tested in corpora. These predictions involve subjective adjectives such as *cute* versus more objective ones such as *red* (Kaiser and Wang 2021; Lasersohn 2005; Scontras et al. 2017, 2019; Vardomskaya 2018; Vartiainen 2013); and visual adjectives (*red*) in image captions for seeing people, versus in image descriptions for people with vision impairments for whom the visual context is not Common Ground (Kreiss et al. 2022).

The paper finds (Section 3), generalizing claims from Vartiainen (2013) and Wiegand et al. (2013), that subjective adjectives (*cute*) appear more often in indefinite NPs when they are attributive, and are more often predicative overall, compared to more objective adjectives such as *red*. These results are consistent with claims from the literature that subjective adjectives are not useful for reference because people may disagree on what they apply to; that they describe new information because speakers' subjective opinions are inherently private (another reason that they are not useful for reference); and that they are suited to the foreground because such opinions are controversial (Abbott 2000; Farkas and Bruce 2010; Gunglogson 2008; Malamud and Stephenson 2014; Stephenson 2007) and not easily accommodated (i.e., not easily added to the Common Ground in the background, without a direct assertion; see, e.g., von Fintel 2008), because the hearer may disagree.

As for visual adjectives such as *red* (Section 4), when used in attributive position, these tend to appear in indefinite NPs in image descriptions for people with vision impairments for whom the visual context is discourse-new, but favor definite NPs in image captions for seeing people for whom the visual context is discourse-old. However, in contrast to subjective adjectives, we find *no* evidence that visual adjectives are more often predicative when they are discourse-new than when they are discourse-old.

Putting these findings together (Section 5), I argue that the differences between subjective adjectives and discourse-new visual adjectives can be grounded in epistemic authority (Chemla 2008; Schlenker 2012): discourse-new visual descriptions are easily backgrounded in attributive position in image descriptions because the writer is an unquestioned authority on the visual scene, while subjective opinions are more suited to predicative position because it may be more cooperative for the speaker/writer to put forward opinions for debate rather than expecting interlocutors to accept them unquestioningly.

An experiment (Section 6) manipulates the discourse context to show that adjectives are more likely to be placed in predicative position when they describe controversial information.

In conclusion (Section 7), complementing research on the role of subjectivity in the ordering of attributive adjectives (Hahn et al. 2018; Scontras et al. 2017 *et seq*), this paper offers a pragmatic explanation for why subjective adjectives are more often predicative. This fact is noted in the natural language processing literature (Wiegand et al. 2013), but has remained obscure in linguistics. Here, it is explained by arguing that speakers tend to foreground information with which the hearer may disagree.

2 Attributive versus predicative adjectives

To draw out corpus predictions about which adjectives should favor which distributional contexts, this section distills the literature on attributive versus predicative uses of adjectives, discourse structure, and subjectivity.

2.1 (Noun-like) reference versus (verb-like) predication

It is often argued that the prototypical function of nouns is to refer, while the prototypical function of verbs is to predicate – to describe some event or state of a noun's referent (Croft 1990; Hopper and Thompson 1985; Thompson 1989). From this standpoint, as previewed above, attributive adjectives aid in reference by modifying a noun, while predicative adjectives predicate like verbs.

These parallels to nouns versus verbs are argued to lead to differences the temporal duration of the property described by attributive versus predicative adjectives. Because nouns tend to describe temporally stable referents, attributive adjectives are claimed to often describe lasting properties based on their affinity to nouns; conversely, many verbs describe dynamic changes, so predicative adjectives are claimed to describe transient states based on their similarity to verbs (Bolinger 1967; Ferris 1993; Givón 1984; Hollmann 2021; Nelson 1976; Quirk et al. 1972; Saylor 2000; Thompson 1989). In the literature on the attributive/predicative distinction, such temporal dimensions constitute the most widely discussed explanatory factor.

At the level of adjective types, temporal properties are sometimes invoked to explain why certain adjectives beginning with the *a-* prefix (*asleep, awake, afraid*) strongly prefer to appear in predicative position: such adjectives describe transient properties, which favor predication rather than reference (Bolinger 1967; Schlüter 2008). In the child language literature (Blackwell 1998; Nelson 1976; Saylor 2000), it is found that adjectives such as *big, little, tiny, new, old, good, bad, nice,* and *favorite* – describing lasting properties – tend to be attributive in speech to and by children, while *hungry, clean, dirty,* and *sorry* – describing transient states – tend to be predicative. At the level of tokens, even the same adjective type is claimed to evoke

different temporal contours when it is used as attributive versus predicative; for Wierzbicka (1986), *her red cheeks* suggests that someone's cheeks are characteristically red, whereas *her cheeks were red* connotes a transient state.

Aiming to distill type-level distributional hypotheses, one might therefore predict that adjectives describing lasting properties should tend to be attributive, while those describing transient properties should tend to be predicative. In fact, however, introspective data reveals striking counterexamples to this claim. In the literature on generic sentences (Carlson 1977; Kratzer 1995), researchers distinguish stage-level predicates such as *available* (3a), which describe transient states, versus individual-level predicates such as *altruistic* (3b), which describe lasting characteristics. Crucially, predicative adjectives can describe individual-level properties (3b) as well as stage-level ones, showing that predicative adjectives do not always describe transient properties.

(3) a. Firemen are **available** (right now). adapted from Kratzer (1995)
b. Firemen are **altruistic** (#right now).

Conversely, attributive adjectives can also describe stage-level properties (4), showing that attributive adjectives do not always describe lasting states.

(4) All the **available** firemen were deployed.

Moreover, while *her cheeks were red* may describe a transient state (Wierzbicka 1986), this inference depends as much on the subject noun *cheeks* (a person's cheeks can change color suddenly) as on the predicative position of the adjective *red*. With other subject nouns, *red* is taken to describe a durable characteristic (5).

(5) {His hair / This lipstick / Mars / Blood} is **red**.

Example (5) also illustrates that the inferred temporal duration of a property can vary widely across tokens of the adjective type describing it. Along the same lines, Maienborn (2004) notes that *blonde* is individual-level when it describes a person's stable natural hair color, but stage-level if it describes transient hair dye, showing that the distinction between stage-level and individual-level predicates cannot be drawn at the level of adjective types.

Although attributive versus predicative adjectives are often said to be distinguished by temporal duration, this paper does not attempt to test that prediction in corpus data because no data are available to label the temporal duration of adjectives in attributive versus predicative contexts.[1] I turn instead to other dimensions of meaning that lend themselves better to type-level corpus exploration.

1 Gantt et al. (2022) gather duration annotations for various predicate tokens in corpora, including predicative adjectives, but no data are available for attributive adjectives, so it is not possible to test the hypothesis that attributive versus predicative adjective tokens differ in their duration.

2.2 Discourse structure

As previewed above, attributive and predicative adjectives are distinguished by their contribution to the discourse (Bybee and Thompson 2022; Kaiser and Wang 2021; Thompson 1989). Predicative adjectives directly engage the Question Under Discussion (Roberts 2012 [1998]) by offering the sentence's "main news" (also known as its foregrounded, at-issue content; Abbott 2000; Potts 2005; Simons et al. 2010), as in (6). In contrast (Kaiser and Wang 2021), the information offered by attributive adjectives is secondary (7), offering at most one part of a larger answer to the QUD.

(6) a. What is the dress like?
b. It's **{cute/red}**.

(7) a. What did you buy?
b. I bought {the/a} **{cute/red}** dress.

In attributive position, an adjective may appear in a definite or indefinite noun phrase, typically dictated by whether its referent – and therefore also, perhaps, the properties attributed to it – is framed as discourse-old or discourse-new (Heim 1982; but see, e.g., Coppock and Beaver 2015 for an analysis in terms of uniqueness rather than familiarity). Assuming that definite determiners carry presuppositions (Strawson 1950), an attributive adjective in a definite noun phrase is backgrounded as part of the presupposition that the noun it modifies has a familiar referent. Indefinite noun phrases do not presuppose familiarity, but attributive adjectives within indefinite noun phrases are also more backgrounded than predicative adjectives because they do not themselves constitute the main point of the sentence.

Table 1 lays out this mapping between the status of information in discourse and the realization of adjectives presenting that information; one cell is empty because it would be redundant (Büring 2003; Stalnaker 1979) for discourse-old information to be presented as "main news."

Of course, the definite determiner can be used for new information (Abbott 2000; Poesio and Vieira 1998), but signals that this information is to be treated

Table 1: Mapping between the status of information in discourse and the realization of adjectives presenting that information.

	New	**Old (or treated as old)**
Main news	**Predicative:** The dress is **{cute/red}**.	–
Secondary info	**Attributive indefinite:** a **{cute/red}** dress	**Attributive definite:** the **{cute/red}** dress

(accommodated; Karttunen 1974; Lewis 1979; von Fintel 2008) as old. Usually, a speaker will ask hearers to accommodate information that is uncontroversial and unsurprising (*my sister* rather than *my boa constrictor*; Abbott 2000), about topics for which the hearer will defer to the speaker's epistemic authority (Chemla 2008; Schlenker 2012): having a sister is unsurprising and people typically know whether they have one, so if a speaker uses an expression presupposing that they have a sister, the sister should be uncontroversially added to the Common Ground.

Since the attributive/predicative distinction depends on the discourse context, the distribution of attributive versus predicative adjectives varies across genres or topics with systematically different Common Grounds. Counting the total number of attributive versus predicative adjective tokens in conversational corpora, Englebretson (1997) argues that attributive adjectives are used when introducing new referents, explaining why over 60 % of adjective tokens are attributive in a bank meeting in which many different loan applicants are discussed in sequence. In contrast, predicative adjectives are used to predicate information about known referents, which is why over half of adjective tokens are predicative in a conversation between a couple discussing people they both already know. The amount of shared referents in the Common Ground, he says, dictates the distribution of attributive versus predicative adjectives.

The rate of attributive versus predicative adjective tokens also varies across the spoken versus written medium (Biber and Gray 2011; Biber et al. 1999, 2010; Bybee and Thompson 2022). Attributive adjectives are far more common in writing than in speech, perhaps because writing is overall more information-dense. Writing and revision allows the author to add more information to a sentence than they could formulate in real time. Attributive adjectives have been gaining ground diachronically (Biber and Gray 2011; Biber et al. 2010), perhaps as society has become more informationally complex or as word-processing tools have made it easier to revise writing. When the Common Ground between a writer and their many hypothetical readers is unclear, writers may exploit that uncertainty by requiring readers to accommodate presuppositions, efficiently packing multiple propositions into a single sentence (Abbott 2000).

In sum, we might expect an adjective to favor attributive position if it describes information that is discourse-old or uncontroversial and thus easily accommodated. An adjective should favor predicative position in three overlapping cases: if the adjective describes information that is discourse-new and not easily accommodated; information that answers the Question Under Discussion (of course, informative answers are inherently discourse-new); or information that is potentially controversial, so that the speaker should offer it up for discussion rather than presuming that hearers will accommodate it.

To make distributional predictions about adjective types, one must elaborate how an adjective's typical discourse contributions are grounded in meaning. For example, the claim explored above – that adjectives describing time-stable properties tend to be attributive, while those describing transient properties tend to be predicative – links information structure to meaning, in that we might expect time-stable properties to be discourse-old (and thus perhaps uncontroversial), while transient properties may be discourse-new. Similarly, Bolinger (1967) grounds an adjective's discourse contribution in its meaning when he observes that *the dented bell* is a more felicitous description than *the rung bell*, because dents are part of the visual Common Ground and thus more helpful for reference. Predictions about the visual Common Ground are explored below, but first I introduce further dimensions of meaning that shape an adjective's contribution to discourse.

2.3 Restrictive versus non-restrictive uses of attributive adjectives

Attributive adjectives (*cute/red dress*) modify nouns in two different ways.[2] Prototypically, attributive adjectives "restrict" the denotation of the noun by carving out a proper subset of its referents: on its restrictive interpretation, *the red dress* distinguishes it from other (potential or actual; Martin 2014) dresses of other colors. In contrast, in the "non-restrictive" case (*my lovely husband*), the modified noun denotes the same referent as the unmodified version, without implying any non-lovely husbands.

Non-restrictive modifiers are not informative for reference, so they are claimed to be felicitous only when the modifier is relevant in some other way to the discourse (Leffel 2014; Martin 2014; Schlenker 2005): in (8a), the loveliness of my husband explains why I will bring him to dinner, while it is much harder to imagine why his height is worth mentioning. *Tall* can be nonrestrictive in a context where height is relevant (8b).

(8) a. I will bring my **{lovely/?tall}** husband to the dinner.
b. I will ask my **tall** husband to reach the top of the Christmas tree.

Because restrictive and non-restrictive interpretations are defined only for attributive adjectives, this distinction does not immediately yield predictions about which

2 This distinction between restrictive and non-restrictive modification has been discussed for over a century in the literature on Romance languages such as French (see Waugh 1977 and references therein), where adjectives can be used both post-nominally and pre-nominally, in ways that pattern with restrictive versus non-restrictive interpretations.

adjectives should tend to be attributive versus predicative. Such predictions only emerge, I argue, when this distinction is synthesized with insights about subjective adjectives, to which I turn next.

2.4 Subjectivity

Subjective adjectives such as *cute, fun,* and *tasty* (Lasersohn 2005) describe the speaker's personal opinion and therefore allow for "faultless disagreement" (Kölbel 2004): the sense that neither party in (9) is wrong. With objective adjectives such as *red*, on the other hand, one of the two parties would arguably be factually incorrect.

(9) a. **Alice:** This dress is **cute**.
b. **Bob:** No it isn't.

As Vardomskaya (2018) explains, predicates are subjective when (because) there is no social consensus about what evidence would establish their truth. To use Vardomskaya's examples, even the same predicate can be subjective in one context (*Obama won the debate*, meaning he performed well in the presidential debate) but objective in another (*Sharon won the debate*, meaning she has been declared the official winner of the World Debating Championship). *Cute* is thus more subjective than *red* because there is no consensus about what constitutes evidence for cuteness, while the optical basis for color is more widely accepted. Subjective adjectives also often carry emotional valence, emphasized in psychology (Osgood et al. 1957) and natural language processing (Pang and Lee 2008), so the study of subjective adjectives also advances the endeavor to bring affective meaning into semantics (e.g., Potts 2007) and corpus linguistics (e.g., Stubbs 1995).

For vague dimensional adjectives such as *expensive* (Kennedy 1999, 2007), the standard for what (cost) "counts as" *expensive* is subjective too, yielding faultless disagreement (10).

(10) a. **Alice:** This dress is **expensive**.
b. **Bob:** No it isn't.

But Kennedy (2013) observes that vague dimensional adjectives such as *expensive* allow faultless disagreement in the positive form only, whereas personal taste predicates such as *cute* allow such disagreement in the comparative form too. In (11) but not (12), we sense that one party is factually wrong.

(11) a. **Alice:** This dress is **more expensive** than that one.
b. **Bob:** No it isn't.

(12) a. **Alice:** This dress is **cuter** than that one.
b. **Bob:** No it isn't.

Therefore, while *cute* and *expensive* are both subjective, *cute* is even more so (Kaiser and Wang 2021). To capture these facts, *expensive* is taken to describe a subjective threshold along the objective scale of cost (Kennedy 1999, 2007), while *cute* is relativized to a judge parameter: cute according to *j* (Lasersohn 2005; Stephenson 2007; though see Barker 2013; Pearson 2013 for alternatives). *Red* is an objective, sortal predicate of individuals.

Along with semantics, subjectivity affects syntax and pragmatics. Scontras et al. (2017, 2019) and Hahn et al. (2018) use subjectivity to explain the ordering of multi-adjective attributive strings: why *the cute red dress* sounds better than *?the red cute dress*. A referent is more efficiently identified, Scontras et al. (2019) argue, if the noun first composes with objective predicates (*red*) that reliably narrow down its denotation. Subjective adjectives (*cute*) are less useful for resolving reference because people may disagree about what they describe, so they appear further from the noun.

A person's opinions are private until they verbalize them, so subjective adjectives typically describe discourse-new information and thus, when attributive, tend to appear in indefinite noun phrases in corpora (Vartiainen 2013). Vartiainen compares twenty frequent adjectives that he deems to be subjective (such as *significant, interesting, useful, terrible, pleasant*) to twenty more that he deems objective (*industrial, military, professional, western, physical*) in the British National Corpus (Leech et al. 2011), finding that the subjective ones occur more frequently in the indefinite part-of-speech-tagged string *a(n) ADJ N-Sg* while the objective ones favor the definite *the ADJ N-Sg*. Of course, the referent of an indefinite noun phrase is typically discourse-new along with the information described by the attributive adjective, so Vartianen's results also show that subjective adjectives are more often used to elaborate new referents than to pick out old ones. This interpretation echoes the aforementioned claim that subjective adjectives are less useful for distinguishing among a set of familiar referents because they describe information that is private to the speaker. This paper aims to expand on Vartiainen's finding.

Returning to the distinction between restrictive and non-restrictive attributive adjectives, subjective adjectives seem to favor the non-restrictive interpretation (Martin 2014; Umbach 2006). Perhaps *cute* and *lovely* are not effective for restricting a set of potential referents because, as discussed in the context of adjective ordering, people may disagree about what they apply to. Since non-restrictive adjectives are only felicitous when they are relevant for some reason, perhaps subjective adjectives are also suited to a non-restrictive interpretation because the speaker's affective

stance is easily accepted as relevant to whatever they are saying (Schlenker 2005). In Schlenker's example (13), the objective adjective *blond* violates Grice's quantity maxim (Grice 1989 [1975]) because it does not narrow the already-unique referent for *president*, but the subjective adjective *stupid* is informative because it contributes the speaker's attitude.

(13) Oh look, it's the **{stupid/?blond}** president on TV. adapted from Schlenker (2005)

Subjectivity also has consequences for the attributive/predicative distinction. Exploring how media consumers distinguish fact from opinion, Kaiser and Wang (2021) show that sentences containing subjective adjectives are rated by experimental participants as more subjective when the adjective appears as the predicate of the sentence (*the orchestra was amazing*), versus as an attributive (*the amazing orchestra*) or in a relative clause (*the orchestra, which was amazing, …*). This result is not surprising from the perspective of information structure: the whole sentence is rated as more subjective when the subjective adjective is framed syntactically as its central contribution.

Seeking to identify subjective adjectives for automatic sentiment analysis, Wiegand et al. (2013) show that adjectives occurring frequently in predicative position (*brilliant*) are more subjective (more likely to be listed in the sentiment lexicons of Taboada et al. 2011; Wilson et al. 2005) than those favoring attributive position (*financial*), but their paper does not explore the theoretical underpinnings or consequences of this insight.

On the one hand, we have established that predicative position is used for discourse-new information, and subjective adjectives are often discourse-new because a speaker's personal opinions are inherently private (Vartiainen 2013). Moreover, we have seen that subjective adjectives are less useful for reference, because people may disagree on what they apply to, meaning that they are ill-suited to serve as restrictive attributives. These factors might contribute to the finding of Wiegand et al. (2013) that subjective adjectives favor predicative position.

On the other hand, new information can appear in attributive contexts as well as predication, distinguished by whether that information is framed as the main point versus secondary. So if subjective adjectives tend to appear in predicative position, one might need to explain why they are often framed as the main point.

That question in turn depends on the theory of subjective adjectives in discourse, discussed by Barker (2013), Malamud and Stephenson (2014), Pearson (2013), Stephenson (2007) among others. If Alice asserts (14a) or (14b) and others accept it as true, do they accept that Alice finds the dress cute or do they endorse it as cute from their standpoint also?

If *cute* is given a judge parameter (*cute* according to *j*), then the question is whether this judge parameter is fixed to the speaker or whether it is extended to other interlocutors if they accept (14a)–(14b) as Common Ground.

(14) a. **Alice:** This dress is **cute**.
b. **Alice:** The **cute** dress is on sale.

If (14a) just states that the dress is cute according to Alice, then this opinion should be uncontroversial because no one can challenge Alice on her own aesthetic tastes (Pearson 2013). Perhaps, then, this information would be equally suited to attributive position (14b), whether definite or indefinite, because we have seen that speakers often ask hearers to accommodate uncontroversial information rather than asserting it. This point is highlighted by Schlenker (2005) in a discussion of expressives (Potts 2005) – words such as *damn* and *bastard* that express a speaker's emotional attitude – among which Schlenker includes subjective adjectives such as *stupid*. He says (Schlenker 2005: 392) that such words "invite accommodation" because "the speaker should know what his attitude towards an object is, and thus […] the addressee would be foolish to challenge such information." If subjective adjectives invite accommodation, then perhaps they should be easily backgrounded as non-restrictive attributives.

On the other hand, if (14a)–(14b) ask hearers to agree that they also find the dress cute, then this opinion is potentially controversial (Gunglogson 2008), because hearers may disagree. For Stephenson (2007), (14a) asserts that Alice finds the dress cute; but if the assertion is accepted, then it becomes Common Ground that the dress is cute according to all interlocutors. This analysis explains not just why disagreements are faultless, but why disagreements arise in the first place: an assertion using a subjective adjective asks hearers to agree with the speaker's opinion. From this standpoint, subjective adjectives are suited to predicative position because speakers should feel some pressure to propose controversial opinions for discussion as in (14a), rather than presuming that hearers should accommodate them as in (14b).

That pressure is presaged by Acton and Potts (2014) in a study of the 2008 United States Vice Presidential candidate Sarah Palin. Acton and Potts (2014) show that Palin frequently used definite and demonstrative noun phrases packed with subjective content, such as (15), thus presupposing a shared emotional outlook with her audience. They suggest that Palin's speech drew vociferous hatred from her critics in part because critics felt manipulated by determiners carrying presuppositions that they rejected. Palin illustrates that speakers who background subjective opinions may annoy their audience with false presuppositions of agreement, suggesting that speakers may face some social pressure to foreground such information.

(15) …that **goofy** game that has been played […] with the **leftist lamestream** media trying to twist the candidates' words … Acton & Potts (2014)

In sum, the type-level distinction between subjective and objective adjectives shapes their contribution to discourse, with consequences for their distribution as attributive versus predicative.

2.5 Predictions

This literature can be distilled into a series of corpus predictions.

When used in attributive contexts, subjective adjectives should favor indefinite Noun Phrases (16a) because subjective opinions are typically discourse-new (Vartiainen 2013) and not useful for distinguishing among familiar referents. Moreover, subjective adjectives should be more often predicative than objective adjectives (16b) (Wiegand et al. 2013). This finding would be consistent with claims that subjective opinions are discourse-new (Vartiainen 2013), in that predicative position is used for new information; and that they are not useful for reference (Scontras et al. 2017, 2019). It would also be consistent with the idea that subjective statements are controversial (Stephenson 2007) rather than self-fulfilling (Schlenker 2005), so that speakers may feel pressure to foreground such opinions rather than presuming that hearers will accommodate them. To preview, both of these predictions are manifested in the corpus studies reported below.

(16) **Subjective adjectives**

a. When attributive: Subjective adjectives should tend to appear in indefinite NPs.
To preview: Consistent with corpus data.

b. Subjective adjectives should be more often predicative than objective adjectives.
To preview: Consistent with corpus data.

The next set of predictions concerns visual (color) adjectives such as *red* in two different discourse contexts: image captions for seeing people versus image descriptions for people with vision impairments (Kreiss et al. 2022). Just as subjective opinions are said to be discourse-new in general, visual adjectives are discourse-new in descriptions for people with vision impairments. We therefore predict that attributive visual adjectives should favor indefinite NPs in descriptions where they are discourse-new, more so than in captions where the visual context is Common Ground (17a). To foreshadow, this prediction is indeed manifested.

Our final prediction (17b) emerges from the idea that visual adjectives in descriptions work like subjective adjectives in being discourse-new and not useful for reference. If those factors are taken to explain why subjective adjectives are more often predicative (16b), then we should similarly expect visual adjectives to be more often predicative in descriptions versus captions (17b). On the other hand, if we assume that subjective adjectives tend to be predicative because they are controversial, then we no longer predict visual descriptions to pattern like subjective adjectives, because visual descriptions are often not controversial.

(17) **Discourse-new visual adjectives**

a. When attributive: Visual adjectives should favor indefinite NPs when discourse-new.
To preview: Consistent with corpus data.

b. Visual adjectives should be more often predicative in contexts where they are discourse-new than in contexts where they are discourse-old.
To preview: **Not** consistent with corpus data.

To preview, (17b) is *not* manifested. These results are consistent with an analysis whereby visual descriptions are different from subjective adjectives in terms of the epistemic authority of the speaker/writer. The writer holds full authority over the visual scene that they're describing to a low-vision reader, so they are free to background visual information; but they do not have authority over whether readers/hearers will agree with their subjective opinions, so they feel some pressure to foreground such opinions for discussion.

These predictions synthesize insights from the literature about how the lexical semantics of an adjective type shapes the discourse contribution of its tokens, which in turn affects the syntactic realization of those tokens in attributive versus predicative position.

3 Subjective adjectives in corpora

This section tests predictions about subjective adjectives such as *cute*. All data and code are available through the Open Science Framework.[3]

To measure the subjectivity of an adjective type, I use human annotations from Futrell et al. (2020) (398 adjectives) and Dyer et al. (2023) (329 non-overlapping further adjectives) elicited from workers on Amazon's Mechanical Turk platform using methods from Scontras et al. (2017). For each adjective, the annotator is asked to rate

3 https://osf.io/j9nrb/.

its subjectivity using a slider ranging from "completely objective" (0) to "completely subjective" (1). *Cute* has a score of 0.865, far higher than 0.208 for *red*.

This subjectivity metric serves as the independent variable; the dependent variable is the proportion of predicative versus attributive uses of each adjective in corpus data. This proportion is explored in two different corpora: the Corpus of Contemporary American English (Davies 2008); and text scraped from the web catalog of the National Gallery of Art in Washington, D.C. It was noted above (Section 2) that the proportion of attributive versus predicative uses of adjectives varies widely across genres, particularly between the written versus spoken medium. CoCA provides a balance of genres, while the National Gallery catalog uses a formal academic register. If subjectivity has a robust effect on an adjective's distribution, we should expect to find that effect even across corpora that differ in their overall proportion of attributive versus predicative tokens.

3.1 CoCA

This corpus study analyzes 64.7 million words from the Corpus of Contemporary American English between 2008 and 2012, using the genres of academic, newspapers, magazines, and spoken – chosen to keep the data to a manageable size.

Using the SpaCy dependency parser (Honnibal and Johnson 2015), the text was split into clauses. For each clause containing any words that CoCA tags as adjectives,[4] attributive tokens were identified if they modified a noun using SpaCy's *amod* dependency, or, to capture multi-adjective strings (*cute red dress*), if they were directly adjacent to another adjective that did so.[5] The determiner of the larger noun phrase (if any) was also recorded. Predicative tokens were identified if they used the *oprd, acomp*, or *attr* dependencies. A token was excluded if the adjective appeared as the sentence's root (*Nice!*), or if it modified a noun that was itself a predicate, such as *that's a great idea* (Bybee and Thompson 2022), because such structures are both attributive and predicative at the same time. I also excluded appositives such as *Taormina, the last Byzantine base in Sicily, was …* (Doron 1992), and prepositional complements to verbs such as *regard, view, take, see, look, feel,* and *sound* (*that seems like a simple thing*), because these, too, blur the line between attributive and predicative uses. Overall, 219,547 tokens were excluded on these grounds.

4 According to Davies (2009), CoCA is part-of-speech-tagged using CLAWS-7 (https://ucrel.lancs.ac.uk/claws/).

5 SpaCy sometimes mistakes what are arguably true adjective tokens for nouns, as when it labels *plastic* as a noun in the sentence *The toy is plastic*, and as part of a noun-noun compound in *The plastic toy is cute*. The current work is therefore limited by the quality of the automatic part-of-speech tagger, particularly for words that can be interpreted as both adjectives and nouns.

Looking only at adjectives with human subjectivity ratings in the data of Futrell et al. (2020) and Dyer et al. (2023), the data comprise 1,983,532 adjective tokens (86 % of them attributive, 14 % predicative) of 690 adjective types. As expected, the percentage of predicative tokens is lowest in the academic genre (9 %), and highest in the spoken genre (24 %).

This token-level information was collated into a type-level dataframe which recorded, for each adjective, its percentage of attributive versus predicative tokens and the percentage of definite (*the*) versus indefinite (*a, an, some*) determiners on the noun phrases in which it occurs as an attributive modifier. For the purpose of labeling definiteness, I excluded bare nouns and only considered those with the determiners *the, a/an,* and *some*. For each adjective, I also gathered its per-million-word frequency as an adjective.

Using these data, I ran a linear regression in R (R Core Team 2024) to test the hypothesis (16a) from Vartiainen (2013) that subjective adjectives favor indefinite NPs when they are attributive. The independent variable is the adjective's subjectivity rating in the annotations from Futrell et al. (2020) and Dyer et al. (2023); the dependent variable is the percentage of indefinite versus definite determiners on the noun phrases in which an adjective occurs as an attributive modifier. As predicted (Figure 1), more subjective adjectives are associated with a greater percentage of

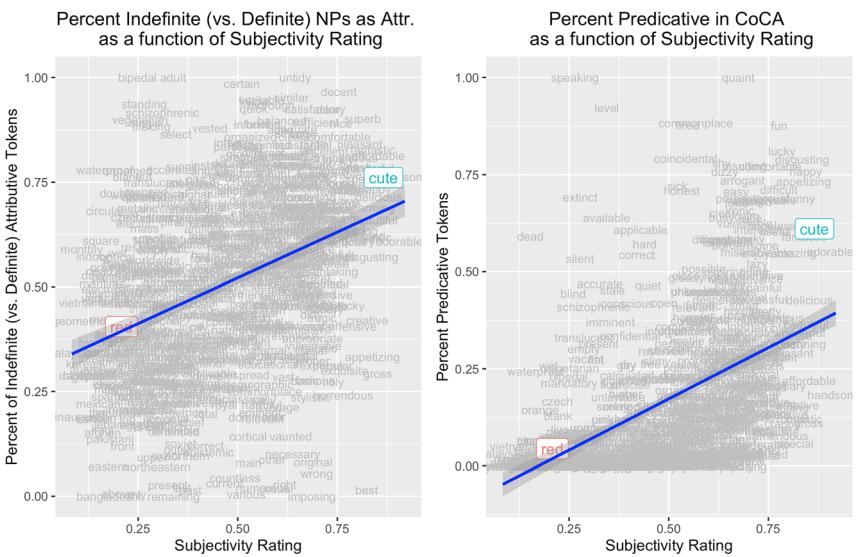

Figure 1: Percentage of indefinite versus definite determiners on the noun phrases in which an adjective occurs as an attributive modifier (left), and percentage of predicative versus attributive tokens of adjectives (right), as a function of the adjective's subjectivity rating, in CoCA from 2008 to 2012.

indefinite determiners when used as attributives – a substantial and highly significant effect (β = 0.44 on a 0-to-1 scale, $t(684) = 10.95$, $p < 0.001$, adjusted $R^2 = 0.15$). (These results are replicated in a model that includes the adjective's log-transformed per-million-word count as another additive predictor).

To illustrate, 77 % of attributive tokens of *cute* appear in indefinite noun phrases (18), compared to 40 % for *red* (19). These examples show both adjectives in both definite and indefinite noun phrases.

(18) a. She herself was a fierce competitor, a tough cookie with **a cute** smile.
b. "Bob didn't want to make **a cute** film about sweet, lovely old people," Walker says.
c. It is said that the problem with owning **a cute** puppy is that it grows up.
d. Don't be fooled by **the cute** name or flimsy appearance.

(19) a. Everyone recognizes **the red** phone box as British.
b. […] as if they were on **the red** carpet at the Academy Awards.
c. In a blender or food processor, pulse **the red** peppers.
d. They wear **a red** Salvation Army apron.

Next, I tested the hypothesis (16b) from Wiegand et al. (2013) that subjective adjectives are more often predicative. The independent variable is again the adjective's subjectivity rating; the dependent variable is the percentage of predicative versus attributive tokens of the adjective. As predicted (Figure 1), more subjective adjectives are more often predicative – a large and highly significant effect (β = 0.53 on a 0-to-1 scale, $t(688) = 15.02$, $p < 0.001$, adjusted $R^2 = 0.25$). (As above, these results are replicated if the log-transformed per-million-word count is included as an additive predictor).

For example, 61 % of tokens of *cute* are predicative (20), versus only 4 % for *red* (21). These examples show both attributive and predicative tokens for both adjectives.

(20) a. Everything about you is **cute** except those stupid high-waisted shorts.
b. But this is **cute**, Crystal wrote in, I love that song, too.
c. That is not **cute** at all.
d. And a **cute** dog is at the center of an ugly custody fight.

(21) a. Neighbors say they never saw any **red** flags or experiments with explosives.
b. He's daring Republicans to oppose something they've long supported, cutting **red** tape.
c. I remember when my dad would wear his **red** jacket to the reunions.
d. The whole middle of the country now is **red**.

3.2 Art catalog

The United States National Gallery of Art is a free museum in Washington, D.C. with an explicit "Open Data" policy welcoming people to use their web collection for research. Some works in this collection are associated with an "overview" (which I call a "caption"), a few paragraphs discussing the significance and historical context of the work (22); some also offer an "image description" for people with vision impairments (23). These descriptions follow published guidelines[6] advising that they should aim to be specific and objective in communicating the elements of the visual scene.

(22) **Caption:** Although a close associate of the impressionists who shared their dedication to the portrayal of modern life, Eva Gonzalès never participated in their group exhibitions. […]

(23) **Description:** A young woman sits and a young girl stands at an open, wide, vine-covered gate in front of a park in this horizontal painting. […]

These two types of text are parallel to the image captions and descriptions from Wikipedia compiled into the Concadia dataset of Kreiss et al. (2022), and I take inspiration from them in comparing language across paired texts discussing the same image with different pragmatic goals. But Concadia favors short sub-sentential phrases (e.g., *grocery store photo of several bunches of bananas*), so the National Gallery catalog was chosen because its full paragraphs offer more chances to find predicative adjectives.

I used Python and the Beautiful Soup html parser to scrape the catalog listings for sixty thousand art objects in the National Gallery catalog. In total, 338 Public Domain images possess both a caption/overview and a description, yielding a corpus of 182,909 total words (55 % from descriptions, 45 % from captions). This text was split into sentences using NLTK's sentence tokenizer (Loper and Bird 2002), and then into clauses using the SpaCy dependency parser (Honnibal and Johnson 2015). The dependency parser was used to identify attributive versus predicative tokens of adjectives, again excluding attributive adjectives within predicative noun phrases (*that's a great idea*; Bybee and Thompson 2022) as well as appositives and prepositional complements to verbs such as *see, regard, sound, seem,* and *feel*. These data were arranged into a type-level dataframe recording, for each adjective (in captions and in descriptions), its percentage of attributive versus predicative tokens; and the percentage of definite versus indefinite determiners on the noun phrases in which it occurs as an attributive modifier.

6 https://www.nga.gov/visit/accessibility/collection-image-descriptions.html.

Captions and descriptions are compared separately in the study of visual adjectives below, but I look only at captions in this exploration of subjectivity because descriptions rarely contain subjective adjectives. Among the top twelve most subjective adjectives in the corpus (*handsome, beautiful, happy, fantastic, charming, romantic, creative, best, special, amazing, pleasant, good*), all of their tokens appear in captions rather than descriptions. In captions, focusing on adjectives that appear at least twice, there are 2,861 tokens of 268 adjective types for which subjectivity ratings are available, of which 90 % are attributive, 10 % predicative.

First, I tested the hypothesis (16a) from Vartiainen (2013) that subjective adjectives favor indefinite NPs when they are attributive. The independent variable is the adjective's subjectivity rating from Futrell et al. (2020) and Dyer et al. (2023); the dependent variable is the percentage of indefinite versus definite determiners on the noun phrase in which an adjective occurs as an attributive modifier. As predicted (Figure 2), when used in attributive contexts, more subjective adjectives are associated with a greater percentage of indefinite determiners – a subtle but significant effect (β = 0.29 on a 0-to-1 scale, $t(231) = 2.03$, $p < 0.05$, adjusted $R^2 = 0.013$).

The colloquial word *cute* does not appear in the National Gallery data, so I use *successful* as an example of a subjective adjective, with a subjectivity rating of 0.73.

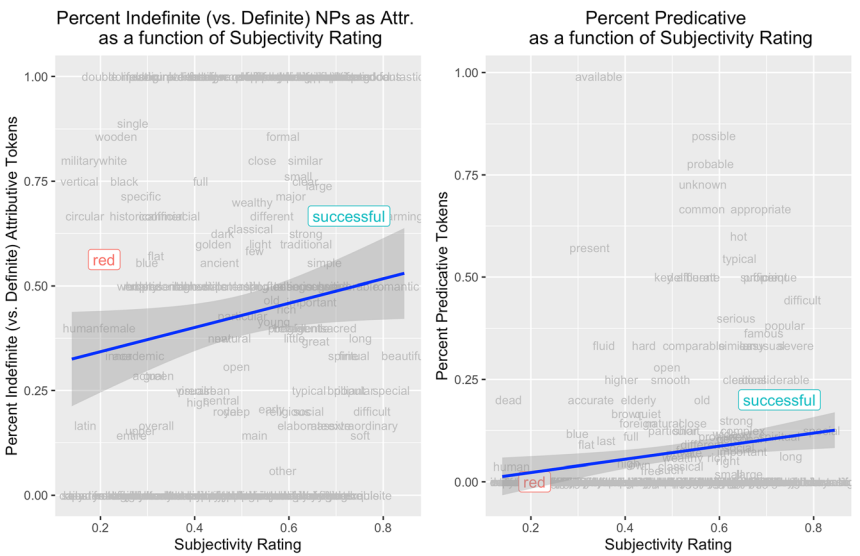

Figure 2: Percentage of indefinite versus definite determiners on the noun phrases in which an adjective occurs as an attributive modifier (left), and percentage of predicative versus attributive tokens of adjectives (right), as a function of the adjective's subjectivity rating, in 81,692 words of National Gallery captions.

For *successful*, 66 % of attributive tokens occur in indefinite noun phrases (24), compared to 56 % for *red* (25).

(24) a. Avercamp had **a successful** and independent career as a painter of popular winter scenes.
b. He had **a successful** and productive career in Florence.

(25) a. The wife points to **the red** robe Joseph left behind.
b. Behind **the** parted **red** curtain of her bed, Mary's mother, Anna, rests after giving birth.

Turning to (16b), as predicted (Figure 2), more subjective adjectives are more often predicative (β = 0.16 on a 0-to-1 scale, $t(266) = 2.75$, $p < 0.01$, adjusted $R^2 = 0.024$). The effect is smaller than the one found above for CoCA, perhaps because predicative tokens are so rare in the National Gallery, but still meaningful.

To illustrate, 20 % of tokens of *successful* are predicative (26), versus 0 % of tokens for *red*. (26) shows examples of *successful* in both predicative and attributive positions; above, (25) shows *red* in attributive position.

(26) a. He was enormously **successful** in his own lifetime.
b. Here he had numerous opportunities to paint portraits in which he was marvelously **successful** and had few equals.
c. Because of his fear of government reprisals after Louis–Napoleon's **successful** coup in 1851, Daumier reportedly hid the statuette for the rest of his life.

In sum, both predictions (16a)–(16b) are consistent with the data, both in CoCA and in the National Gallery of Art.

4 Discourse-new visual adjectives in corpora

This section tests predictions (17a)–(17b) about discourse-new visual adjectives such as *red* using text scraped from the National Gallery website introduced above.

I focus on colors as prototypical visual adjectives. Among all adjectives in the National Gallery data, eleven of them describe colors: *black, blue, brown, gray, green, pink, purple, red, scarlet, white, yellow*. Because descriptions focus on the visual domain while captions discuss historical context and artistic significance, it is perhaps not surprising that these eleven adjective types account for 2,681/8,331 = 32 % of all adjective tokens in descriptions, but only 128/5,278 = 2 % of all tokens in captions.

Using these data, I tested the prediction (17a) that visual adjectives, when attributive, should favor indefinite NPs in descriptions where the visual field is

discourse-new, more so than in captions where the visual field is already Common Ground. I limited the data to nine color adjectives with at least one attributive token in both descriptions and captions (*black, blue, brown, gray, green, pink, red, white, yellow*). Comparing the percentage of indefinite (vs. definite) attributive tokens across descriptions versus captions, a paired *t* test finds, as predicted (17a), that such adjectives appear more often in indefinite noun phrases in descriptions versus captions (*t* statistic = –3.54, $p < 0.01$; Figure 3). The percentage of indefinite attributive tokens shows higher variance in captions presumably because there are fewer tokens of color adjectives there.

To illustrate, in descriptions, 88 % of tokens of *red* appear in indefinite noun phrases. In captions, on the other hand, only 56 % of tokens of *red* appear in indefinite NPs. (27)–(28) show examples of both adjectives in both definite and indefinite noun phrases.

(27) **Descriptions**

a. Ten men and women sit or stand closely around a long table along the left, next to the exterior wall of **a red** brick building.

b. **A red** drape flutters above the pair, along the top edge of the canvas, and **the red** and brown woven carpet below kicks up at the base of the column closer to us.

c. The artist signed and dated the painting in the lower left corner of **the red** patterned wall.

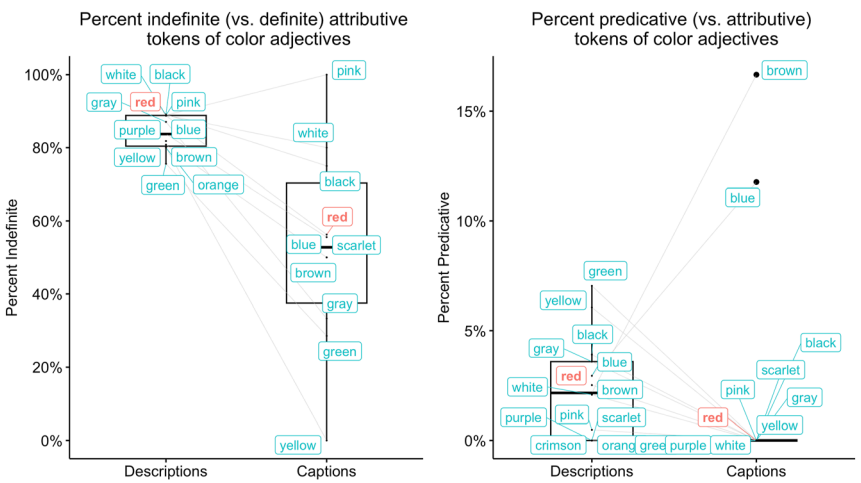

Figure 3: Percentage of indefinite versus definite determiners on the noun phrases in which a color adjective occurs as an attributive modifier (left), and percentage of predicative versus attributive tokens of color adjectives (right), in National Gallery descriptions versus captions.

(28) **Captions**

a. **The red** sunshade emphasizes the viewer's position beneath hers and extends her presence, forming a halo around her head against a dramatic sky.

b. However, in the greens of the animal skin and **the red** accent we see Renoir's own preference for the bright, luminous colors that would distinguish his impressionist pictures only a few years later.

c. Scattered about are a gardener's ladder, a hoop, a doll on **a red** chair, and an open portfolio of pictures that have been just left behind by figures watching the Lord Mayor's ceremonial barge.

Next, using all eleven color adjectives, I explored the hypothesis (17b) that color adjectives should be more often predicative in descriptions, where they are discourse-new. Comparing the percentage of predicative tokens, a paired *t* test finds no difference between descriptions and captions (*t* statistic = 0.11, $p = 0.91$). Contrary to the prediction (17b), we find no evidence that color adjectives are more often predicative when they are discourse-new. 97 % of tokens of *red* are attributive in descriptions, versus 100 % in captions – scarcely distinct (Figure 3). Here too, the percentage of predicative tokens shows higher variance in captions because captions use fewer tokens of color adjectives. But because color adjectives are so common in descriptions, there is very robust data to show that such adjectives are scarcely ever predicative there.

5 Discussion

These corpus studies find evidence consistent with three of the four predictions laid out above – repeated below.

Consistent with (29a) and with Vartiainen (2013), subjective attributive adjectives tend to appear in indefinite noun phrases (*a cute dress*). These results are consistent with Vartiainen's claim that subjective adjectives tend to describe new information because subjective opinions are inherently private.

Consistent with (29b) and with Wiegand et al. (2013), subjective adjectives are also more often predicative (*the dress is cute*). This finding is consistent with multiple several explanations: that predicative adjectives are discourse-new and thus not useful for reference, or that speakers feel pressure to foreground opinions for debate in case hearers/readers disagree.

(29) **Subjective adjectives**

a. When attributive: Subjective adjectives should tend to appear in indefinite NPs. = (16a)
Finding: Consistent with corpus data.

b. Subjective adjectives should be more often predicative than objective adjectives. = (16b)
Finding: Consistent with corpus data.

Turning to visual adjectives, consistent with (30a), attributive visual adjectives favor indefinite noun phrases (*a red dress*) in contexts where the visual field is discourse-new. Attributive color adjectives appear more often in indefinite noun phrases in descriptions for low-vision people compared to captions for seeing people. Just as attributive subjective adjectives favor indefinite noun phrases because they are discourse-new, attributive visual adjectives similarly favor indefinite noun phrases in contexts where they describe new information.

Finally, contrary to (30b), visual adjectives are *no* more often predicative when they are discourse-new than when they are discourse-old. Color adjectives are no more often predicative in descriptions compared to captions.

(30) **Discourse-new visual adjectives**

a. When attributive: Visual adjectives should favor indefinite NPs when discourse-new. = (17a)
Finding: Consistent with corpus data.

b. Visual adjectives should be more often predicative in contexts where they are discourse-new than in contexts where they are discourse-old. =(17b)
Finding: **Not** consistent with corpus data.

These findings help to disentangle competing explanations for the result (29b) that subjective adjectives tend to be predicative. If subjective adjectives favored predicative position simply because they are discourse-new or not useful for reference, then we would expect discourse-new visual adjectives to favor predicative position for the same reasons. But the failure of (30b) suggests that subjective adjectives and discourse-new visual adjectives crucially come apart. Namely, I argue that they are distinguished by the speaker/writer's epistemic authority (Chemla 2008; Schlenker 2012): the seeing writer of an image description is an authority over the visual scene, so a writer may place visual descriptions in the relatively backgrounded attributive position because they know that readers will take their word for it. In contrast, it is less common to claim authority over whether others will share one's subjective opinions, so speakers/writers may feel more pressure to foreground subjective opinions for discussion. This analysis would explain why subjective adjectives favor predicative position while discourse-new visual adjectives do not.

Summarized in Table 2, these results illuminate the role of lexical semantics and the pragmatic context in shaping the information structure of discourse and thus the syntax of sentences.

Table 2: Pragmatic functions and distributional findings for adjectives in each syntactic position.

Syntactic position	Information status	Which adjectives?
Attributive within definite (*The **{cute/red}** dress*)	Old info.	Visual adjectives (*red*) when visual context is common ground.
Attributive within indefinite (*A **{cute/red}** dress*)	Secondary new info.	Visual adjectives (*red*) when visual context is discourse-new; subjective adjectives (*cute*) in general.
Predicative (*The dress is **{cute/red}***)	Main-point new info.	Subjective adjectives (*cute*) in general.

6 Experiment

These corpus results are consistent with the claim that adjectives are more often used as predicative when they describe controversial information. So far this claim is supported in part by negative evidence: that discourse-new visual adjectives are *not* more often predicative. To add positive evidence for this claim, and to probe the extent to which this effect stems from the meaning of an adjective type versus the discourse context of its tokens, I turn to an experiment.

The experiment describes online shopping, a context where both visual features and subjective evaluations are relevant. In online images such as the viral meme of a blue-and-black dress which many people saw as white-and-gold (Chetverikov and Ivanchei 2016), it is at least possible that people's color perceptions may be controversial. Each experimental item introduces a garment, using predicative adjectives to describe both its color (*red*) and its subjective quality (*cute*).

In one condition (31a), the color is framed as an objective fact while the subjective quality is framed as a controversial personal opinion. In the other condition (31b), these framings are reversed, so that the color is framed as a controversial opinion. By design, (31b) is discordant, in that the type-level meaning of the adjective conflicts with its token context: *red* generally describes an objective property, but here it is framed as a subjective opinion; *cute* generally describes a subjective evaluation, but here it is cast as a fact.

(31) Thrift-shopping online with your friend, you see a dress.
   a. **Is-obj, think-subj condition**
   You're not sure if your friend will agree, but you think it is **cute**. It is **red**.
   b. **Is-subj, think-obj condition** You're not sure if your friend will agree, but you think it is **red**. It is **cute**.

Then participants answered a forced-choice question (32) requiring them to place one of these adjectives in attributive position and the other in predicative position.

(32) To describe this dress to your friend, which would you say?
  a. **subj-attr,obj-pred** The cute dress is red.
  b. **obj-attr,subj-pred** The red dress is cute.

This experiment tests one hypothesis about adjective types, and one about adjective tokens; to preview, both are consistent with the data reported below. The obvious type-level hypothesis (33a) is just that subjective adjective types are more often predicative (Wiegand et al. 2013). The subtler token-level hypothesis (33b) arises if adjectives are more often predicative when they are framed as controversial in the discourse context, even when their type-level meaning is typically objective. Of course, when a property is framed as controversial, it may be interpreted as more subjective than it would be otherwise, if we assume with Vardomskaya (2018) that subjectivity arises from a lack of social consensus about what constitutes evidence for that property. Thus, if manifested, (33b) would also be consistent with the claim that an adjective is more likely to be used as predicative when it is interpreted as more subjective in context.

(33) a. **Type-level:** Overall, participants should prefer the response where the subjective adjective type is placed in predicative position (*the red dress is cute*).
  b. **Token-level:** The objective adjective should be more likely to be placed in predicative position (*the cute dress is red*) in the condition where it is framed as an opinion (31b).

The experiment used four target items like (31), each randomly assigned to one of the two conditions. Acknowledging the importance of emotional valence (Osgood et al. 1957), two items use positive-sentiment subjective adjectives (*cute, pretty*), and two use negative ones (*weird, ugly*).

(34) a. red/cute dress
  b. blue/pretty hat
  c. pink/weird belt
  d. yellow/ugly shirt

The experiment contained three fillers, in which both properties are equally objective at the type level, and both are framed as facts in the narrative. Each filler was followed by an attention-check question (e.g., *how much did the pants cost?*), yielding six non-target questions overall (three fillers plus three attention checks).

(35) a. pants that cost $100 from the 1970s
b. boots that cost $200 from the 1980s
c. vest that costs $50 from the 1990s

These ten questions were presented in a random order on the Qualtrics survey platform. The Prolific web service was used to recruit 35 participants geo-located in the United States who had stated, upon creating their accounts, that they were native speakers of English. All participants answered at least two of the three attention checks correctly.

Following a pre-registered plan,[7] the data were analyzed using a mixed-effects logistic regression in R (R Core Team 2024) predicting "response" as a function of "condition," with random intercepts for each item and each participant.

Consistent with the type-level hypothesis (33a), participants overwhelmingly prefer to place the color adjective in attributive position, and the subjective adjective in predicative position (*the red dress is cute*; Figure 4). Of the 140 total responses across 35 participants, 132 of them (94 %) manifest this pattern.

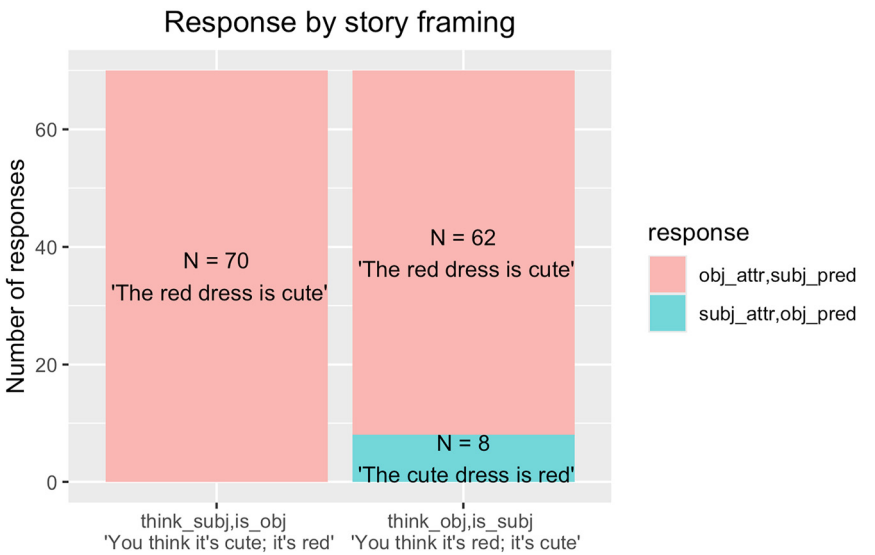

Figure 4: Number of responses in each format (*the red dress is cute, the cute dress is red*) in each experimental condition.

7 https://osf.io/j9nrb/.

Consistent with the token-level hypothesis (33b), the only time that the subjective adjective is placed in attributive position (*the cute dress is red*) is in the condition where the subjective evaluation is framed as an objective fact and the color is framed as a controversial opinion (31b). The effect of "condition" is highly significant in the mixed-effects logistic regression (β = 1,563.1, z = 6.95, $p < 0.001$).

The adjective's type-level meaning has a very strong effect on the choice to place an adjective in attributive or predicative position (affecting 132/140 = 94 % of responses), while the effect of the discourse context is subtler (affecting 8/70 = 11 % of responses in the target condition (31b)). These type- and token-level effects can only be disentangled in discordant experimental contexts such as (31b), where the token context conflicts with the adjective's type-level meaning. More commonly, we expect both the type-level and token-level meaning to work together to favor the structure of *The red dress is cute* (32b).

This experiment shows that adjectives are more often used as predicative when they describe controversial information in the discourse context. The claim that subjective adjectives are more often predicative applies not just to adjective types (i.e., *cute* is more often predicative than *red*), but to different tokens of the same type: *red* is more often predicative in contexts where it is framed as an opinion.

7 Conclusions

This paper set out to explain which adjectives tend to occur as attributive versus predicative and why. My answer is that subjective adjectives are more often predicative (Wiegand et al. 2013), not just because subjective opinions are discourse-new, but because speakers prefer to place controversial information in the foreground.

It is ironic that attributive adjectives are far more common (86 % of all adjective tokens in CoCA, over 90 % in the National Gallery of Art), yet many papers about the semantics of adjectives focus on predicative cases such as *The coffee is expensive* (Kennedy 2007) – pragmatically foregrounding the adjective to isolate its meaning. This paper widens the lens in the study of adjective meaning by confronting their pragmatic contribution as well as their semantics, in attributive as well as predicative position.

As previewed above, the dual attributive/predicative roles of adjectives raise questions about the essence of adjectives as a lexical category (Thompson 1989). We have seen that adjectives can aid in reference by restricting the meaning of a noun (*the red dress*), they can supply discourse-relevant ancillary information in their non-restrictive attributive use (*my lovely husband*), and they can offer the main point of a sentence in their predicative use (*the dress is cute*). Although adjectives as a whole perform all these diverse functions, different classes of adjectives are biased towards

some over others in ways that can be quantifiably predicted from their meaning. There is no single functional essence to the class of adjectives, but there are patterns within it.

This paper expands a research tradition aiming to understand how a word's syntactic potential is grounded in its meaning (Francez and Koontz-Garboden 2017; Levin 1993; Rappaport Hovav and Levin 2005). While the syntactic contexts in which a word grammatically *can* appear are directly shaped by its semantics, the contexts in which it *tends to* appear are shaped by semantics as mediated by pragmatic factors such as the ease of accommodating information in light of the speaker's epistemic authority. Therefore, this paper asks not just how a word's syntactic *potential* is grounded in its meaning, but how its syntactic *preferences* (to occur as attributive versus predicative) are grounded in the contribution of its meaning to its conversational context.

Stepping back, this paper brings together formal and usage-based approaches to linguistics. My corpus predictions are synthesized from formal work on the lexical semantics of subjective adjectives, the pragmatics of dialog, and the role of the speaker's epistemic authority. At the same time, the study is grounded in usage data, and the driving hypothesis – that the meaning of an adjective helps to shape its discourse contribution, which in turn shapes the syntax of the sentence using it – leverages the insight that the structure of language emerges from its pragmatic function.

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References

Abbott, Barbara. 2000. Presuppositions as nonassertions. *Journal of Pragmatics* 32(10). 1419–1437.

Acton, Eric K. & Christopher Potts. 2014. That straight talk: Sarah Palin and the sociolinguistics of demonstratives. *Journal of Sociolinguistics* 18(1). 3–31.

Baker, Mark C. 2003. *Lexical categories*. Cambridge: Cambridge University Press.

Barker, Chris. 2013. Negotiating taste. *Inquiry* 56(2–3). 240–257.

Biber, Douglas & Bethany Gray. 2011. Grammatical change in the noun phrase: The influence of written language use. *English Language and Linguistics* 15(2). 223–250.

Biber, Douglas, Stig Johansson, Geoffrey Leech, Susan Conrad & Edward Finnegan. 1999. *Longman grammar of spoken and written English*. Harlow: Pearson Education.

Biber, Douglas, Jack Grieve & Gina Iberri-Shea. 2010. Noun phrase modification. In Günter Rohdenburg & Julia Schlüter (eds.), *One language, two grammars? Differences between British and American English*, 182–193. Cambridge: Cambridge University Press.

Blackwell, Aleka Akoyunoglou. 1998. *Adjectives in acquisition: On the semantic and syntactic development of English adjectives*. Boston, MA: Boston University dissertation.

Bolinger, Dwight. 1967. Adjectives in English: Attribution and predication. *Lingua* 18. 1–34.

Büring, Daniel. 2003. On D-trees, beans, and B-accents. *Linguistics and Philosophy* 26. 511–545.

Bybee, Joan & Ricardo Napoleão de Souza. 2019. Vowel duration in English adjectives in attributive and predicative constructions. *Language and Cognition* 11(4). 555–581.

Bybee, Joan & Sandra A. Thompson. 2022. Interaction and grammar: Predicative adjective constructions in English conversation. *Language* 7(1). 2.

Carlson, Gregory N. 1977. *Reference to kinds in English*. Amherst, MA: University of Massachusetts Dissertation.

Chemla, Emmanuel. 2008. An epistemic step for anti-presuppositions. *Journal of Semantics* 25(2). 141–173.

Chetverikov, Andrey & Ivan Ivanchei. 2016. Seeing 'the dress' in the right light: Perceived colors and inferred light sources. *Perception* 45(8). 910–930.

Chomsky, Noam. 1970. Remarks on nominalization. In Roderick Jacobs & Peter Rosenbaum (eds.), *Readings in English transformational grammar*, 184–221. Waltham, MA: Ginn and Company.

Coppock, Elizabeth & David Beaver. 2015. Definiteness and determinacy. *Linguistics and Philosophy* 38. 377–435.

Croft, William. 1990. A conceptual framework for grammatical categories (or: a taxonomy of propositional acts). *Journal of Semantics* 7(3). 245–279.

Davies, Mark. 2008. *The corpus of contemporary American English: One billion words, 1990-present*. Available at: https://www.english-corpora.org/coca/.

Davies, Mark. 2009. The 385+ million word corpus of contemporary American English (1990–2008+): Design, architecture, and linguistic insights. *International Journal of Corpus Linguistics* 14(2). 159–190.

Dixon, R. M. W. 1977. Where have all the adjectives gone? *Studies in Language* 1(1). 19–80.

Doron, Edit. 1992. Appositive predicates. *Belgian Journal of Linguistics* 7(1). 23–33.

Dyer, William, Charles Torres, Gregory Scontras & Richard Futrell. 2023. Evaluating a century of progress on the cognitive science of adjective ordering. *Transactions of the Association for Computational Linguistics* 11. 1185–1200.

Englebretson, Robert. 1997. Genre and grammar: Predicative and attributive adjectives in spoken English. In Matthew L. Juge & Jeri L. Moxley (eds.), *Annual meeting of the Berkeley linguistics society*, vol. 23, 411–421. Berkeley, CA: Berkeley Linguistics Society.

Farkas, Donka & Kim Bruce. 2010. On reacting to assertions and polar questions. *Journal of Semantics* 27. 81–118.

Ferris, Connor. 1993. *The meaning of syntax: A study in the adjectives of English*. London & New York: Longman.

von Fintel, Kai. 2008. What is presupposition accommodation, again? *Philosophical Perspectives* 22(1). 137–170.

Francez, Itamar & Andrew Koontz-Garboden. 2017. *Semantics and morphosyntactic variation: Qualities and the grammar of property concepts*. Oxford: Oxford University Press.

Futrell, Richard, William Dyer & Greg Scontras. 2020. What determines the order of adjectives in English? Comparing efficiency-based theories using dependency treebanks. In Dan Jurafsky, Joyce Chai, Natalie Schluter & Joel Tetreault (eds.), *Proceedings of the annual meeting of the association for computational linguistics (ACL)*, vol. 58, 2003–2012.

Gantt, William, Lelia Glass & Aaron Steven White. 2022. Decomposing and recomposing event structure. *Transactions of the Association for Computational Linguistics* 10. 17–34.
Givón, Talmy. 1984. *Syntax: A functional-typological introduction*, vol. 1. Amsterdam, Philadelphia, PA: John Benjamins.
Grice, H. Paul. 1989 [1975]. Logic and conversation. In *Studies in the way of words*. Cambridge: Harvard University Press. Originally published as Grice (1975), in *Syntax and semantics* (edited by Peter Cole and Jerry L. Morgan), volume 3: Speech acts, 41–58. New York: Academic Press.
Gunglogson, Christine. 2008. A question of commitment. *Belgian Journal of Linguistics* 22. 101–136.
Hahn, Michael, Judith Degen, Noah D. Goodman, Dan Jurafsky & Richard Futrell. 2018. An information-theoretic explanation of adjective ordering preferences. In Charles Kalish, Martina Rau, Jerry Zhu & Timothy T. Rogers (eds.), *Proceedings of the cognitive science society (CogSci)*, 1766–1771. Madison, WI.
Heim, Irene. 1982. *The semantics of definite and indefinite noun phrases*. Amherst, MA: University of Massachusetts Dissertation.
Hollmann, Willem B. 2021. The 'nouniness' of attributive adjectives and 'verbiness' of predicative adjectives: Evidence from phonology. *English Language and Linguistics* 25(2). 257–279.
Honnibal, Matthew & Mark Johnson. 2015. An improved non-monotonic transition system for dependency parsing. In Lluís Màrquez, Chris Callison-Burch & Jian Su (eds.), *Empirical methods in natural language processing (EMNLP)*, 1373–1378. Lisbon, Portugal: Association for Computational Linguistics (ACL) Anthology.
Hopper, Paul J. & Sandra A. Thompson. 1985. The iconicity of the universal categories 'noun' and 'verb'. In John Haiman (ed.), *Iconicity in syntax*, 151–183. Amsterdam: John Benjamins.
Kaiser, Elsi & Catherine Wang. 2021. Packaging information as fact versus opinion: Consequences of the (information-) structural position of subjective adjectives. *Discourse Processes* 58(7). 617–641.
Karttunen, Lauri. 1974. Presupposition and linguistic context. *Theoretical Linguistics* 1(1–3). 181–194.
Kennedy, Christopher. 1999. *Projecting the adjective: The syntax and semantics of gradability and comparison*. New York: Garland.
Kennedy, Christopher. 2007. Vagueness and grammar: The semantics of relative and absolute gradable adjectives. *Linguistics and Philosophy* 30(1). 1–45.
Kennedy, Christopher. 2013. Two sources of subjectivity: Qualitative assessment and dimensional uncertainty. *Inquiry* 56(2–3). 258–277.
Kölbel, Max. 2004. Faultless disagreement. *Proceedings of the Aristotelian Society* 104(1). 53–73.
Kratzer, Angelika. 1995. Stage-level and individual-level predicates. In Gregory N. Carlson & Francis Jeffry Pelletier (eds.), *The generic book*, 125–175. Chicago: The University of Chicago Press.
Kreiss, Elisa, Noah D. Goodman & Christopher Potts. 2022. Concadia: Tackling image accessibility with context. In Noah Smith, Yoav Goldberg, Zornitsa Kozareva & Yue Zhang (eds.), *Empirical methods in natural language processing (EMNLP)*. Abu Dhabi: Association for Computational Linguistics.
Lasersohn, Peter. 2005. Context dependence, disagreement, and predicates of personal taste. *Linguistics and Philosophy* 28(6). 643–686.
Leech, Geoffrey, Paul Rayson & Andrew Wilson. 2011. *Word frequencies in written and spoken English: Based on the British national corpus*. Harlow, UK: Longman.
Leffel, Timothy James. 2014. *The semantics of modification: Adjectives, nouns, and order*. New York: New York University dissertation.
Levin, Beth. 1993. *English verb classes and alternations*. Chicago: University of Chicago Press.
Lewis, David. 1979. Scorekeeping in a language game. *Journal of Philosophical Logic* 3(8). 339–359.
Loper, Edward & Steven Bird. 2002. NLTK: The natural language toolkit. In Pierre Isabelle, Eugene Charniak & Dekang Lin (eds.), *Proceedings of the association for computational linguistics (ACL)*, vol. 40. Philadelphia.

Maienborn, Claudia. 2004. A pragmatic explanation of the stage level/individual level contrast in combination with locatives. In Brian Agbayani, Vida Samiian & Benjamin Tucker (eds.), *Proceedings of the western conference on linguistics (WECOL)*, vol. 15, 158–170. Fresno, CA: Department of Linguistics, California State University.

Malamud, Sophia & Tamina Stephenson. 2014. Three ways to avoid commitments: Declarative force modifiers in the conversational scoreboard. *Journal of Semantics*. 1–37. https://doi.org/10.1093/jos/ffu002.

Martin, Fabienne. 2014. Restrictive vs. nonrestrictive modification and evaluative predicates. *Lingua* 149. 34–54.

Nelson, Katherine. 1976. Some attributes of adjectives used by young children. *Cognition* 4(1). 13–30.

Osgood, Charles Egerton, George J. Suci & Percy H. Tannenbaum. 1957. *The measurement of meaning*. Urbana-Champaign, IL: University of Illinois Press.

Pang, Bo & Lillian Lee. 2008. Opinion mining and sentiment analysis. In *Foundations and trends in information retrieval*, vol. 2, 1–135. Boston & Delft: NOW Publishers.

Pearson, Hazel. 2013. A judge-free semantics for predicates of personal taste. *Journal of Semantics* 30(1). 103–154.

Poesio, Massimo & Renata Vieira. 1998. A corpus-based investigation of definite description use. *Computational Linguistics* 24(2). 183–216.

Potts, Christopher. 2005. *The logic of conventional implicatures*. Oxford: Oxford University Press.

Potts, Christopher. 2007. The expressive dimension. *Theoretical Linguistics* 33(2). 165–197.

Quirk, Randolph, Sidney Greenbaum, Geoffrey Leech & Jan Svartvik. 1972. *A grammar of contemporary English*. London: Longman.

R Core Team. 2024. *R: A language and environment for statistical computing*. Vienna, Austria: R Foundation for Statistical Computing. Available at: http://www.R-project.org/.

Rappaport Hovav, Malka & Beth Levin. 2005. Change-of-state verbs: Implications for theories of argument projection. In Nomi Erteschik-Shir & Tova Rapoport (eds.), *The syntax of aspect: Deriving thematic and aspectual interpretation*, 274–286. Oxford: Oxford University Press.

Roberts, Craige. 2012 [1998]. Information structure: Towards an integrated formal theory of pragmatics. *Semantics and Pragmatics* 5(6). 1–69.

Saylor, Megan M. 2000. Time-stability and adjective use by child and adult English speakers. *First Language* 20(58). 091–120.

Schlenker, Philippe. 2005. Minimize restrictors! (Notes on definite descriptions, condition C and epithets). In Emar Maier, Corien Bary & Janneke Huitink (eds.), *Proceedings of Sinn und Bedeutung*, vol. 9, 385–416. Nijmegen: Radboud University.

Schlenker, Philippe. 2012. Maximize presupposition and Gricean reasoning. *Natural Language Semantics* 20(4). 391–429.

Schlüter, Julia. 2008. Constraints on the attributive use of "predicative-only" adjectives: A reassessment. In Graeme Trousdale & Nikolas Gisborne (eds.), *Constructional approaches to English grammar*, vol. 57 Topics in English Linguistics, 145–179. Berlin: Mouton de Gruyter.

Scontras, Gregory, Judith Degen & Noah D. Goodman. 2017. Subjectivity predicts adjective ordering preferences. *Open Mind* 1(1). 53–66.

Scontras, Gregory, Judith Degen & Noah D. Goodman. 2019. On the grammatical source of adjective ordering preferences. *Semantics and Pragmatics* 12(7). 1–24.

Simons, Mandy, Judith Tonhauser, David Beaver & Craige Roberts. 2010. What projects and why. In Nan Li & David Lutz (eds.), *Semantics and linguistic theory (SALT)*, vol. 20, 309–327. Ithaca: Cornell Linguistics Club Publications.

Stalnaker, Robert C. 1978. Assertion. In Peter Cole (ed.), *Pragmatics*, 315–332. Leiden: Brill.

Stalnaker, Robert. 1979. Assertion. In Peter Cole (ed.), *Pragmatics*, vol. 9 Syntax and semantics. New York: Academic Press.

Stephenson, Tamina. 2007. Judge dependence, epistemic modals, and predicates of personal taste. *Linguistics and Philosophy* 30(4). 487–525.

Strawson, Peter Frederick. 1950. On referring. *Mind* 59(235). 320–334.

Stubbs, Michael. 1995. Collocations and semantic profiles: On the cause of the trouble with quantitative studies. *Functions of Language* 2(1). 23–55.

Taboada, Maite, Julian Brooke, Milan Tofiloski, Kimberly Voll & Manfred Stede. 2011. Lexicon-based methods for sentiment analysis. *Computational Linguistics* 37(2). 267–307.

Thompson, Sandra A. 1989. A discourse approach to the cross-linguistic category 'adjective'. In Roberta Corrigan, Fred R. Eckman & Michael Noonan (eds.), *Linguistic categorization*, vol. 61, 245–265. Amsterdam & Philadelphia: John Benjamins.

Umbach, Carla. 2006. Non-restrictive modification and backgrounding. In Chris Piñón Beáta Gyuris, László Kálmán & Károly Varasdi (eds.), *Proceedings of the ninth symposium on logic and language*, 152–159. Budapest: Hungarian Academy of Sciences.

Vardomskaya, Tamara Nikolaevna. 2018. *Sources of subjectivity*. Chicago: University of Chicago Dissertation.

Vartiainen, Turo. 2013. Subjectivity, indefiniteness and semantic change. *English Language and Linguistics* 17(1). 157–179.

Waugh, Linda R. 1977. *A semantic analysis of word order: Position of the adjective in French*. Leiden: Brill.

Wiegand, Michael, Josef Ruppenhofer & Dietrich Klakow. 2013. Predicative adjectives: An unsupervised criterion to extract subjective adjectives. In Lucy Vanderwende, Hal DauméIII & Katrin Kirchhoff (eds.), *Proceedings of the 2013 conference of the North American chapter of the association for computational linguistics: Human language technologies (NAACL-HLT)*, 534–539. Atlanta, GA: Association for Computational Linguistics.

Wierzbicka, Anna. 1986. What's in a noun? (or: How do nouns differ in meaning from adjectives?). *Studies in Language* 10(2). 353–389.

Wilson, Theresa, Janyce Wiebe & Paul Hoffmann. 2005. Recognizing contextual polarity in phrase-level sentiment analysis. In Raymond Mooney, Chris Brew, Lee-Feng Chien & Katrin Kirchhoff (eds.), *Proceedings of the human language technology conference and the conference on empirical methods in natural language processing (HLT-EMNLP)*, 347–354. Vancouver: Association for Computational Linguistics.