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IMMINENT VERSUS IMPENDING: A DISTINCTIVE-COLLEXEME ANALYSIS

This paper adopts a constructional approach to grammatical structure (Goldberg 1995; 2006) and a corpus-based method for investigating pairs of semantically similar constructions and the lexemes that occur in them. The method, referred to as *distinctive-collexeme analysis* (Gries and Stefanowitsch 2004a), is used to determine which of the lexemes occurring in two constructions are most distinctive for either of them. On the basis of the case study concerning the *imminent*-NOUN construction versus the *impending*-NOUN construction, the paper demonstrates that one construction attracts some nouns more strongly than the other does. Moreover, the results of the distinctive-collexeme analysis of this pair of constructions reveal that there are clearly distinctive collexemes for each of the two constructions, and that the frame-constructional semantics is a contributing factor in the selection between these two patterns.

1. Introduction

Cognitive Linguistics currently seems to be undergoing a paradigm shift. The field originally arose out of dissatisfaction with formal models of language and attempted to reveal the inadequacies of the theories based upon them. Today, the emphasis has moved towards the empirical verification of the previous theories and hypotheses about the nature of language (Gries and Stefanowitsch 2006; Stefanowitsch and Gries 2006; Gonzalez-Marquez et al. 2007). This has brought quantitative corpus-driven methods, based on observable and quantifiable data, into central focus (e.g., Glynn and Fischer 2010; Glynn and Robinson 2014). In the light of these developments, a number of research techniques and theoretical perspectives have been adopted across the field of cognitive linguistics in recent years, with a particular focus on the investigation of conceptual structure in Cognitive Semantics.

Some research studies have concentrated on the quantification of linguistic data and the employment of tests for statistical significance, such as the

t-test or chi-square test (Dziwirek and Lewandowska-Tomaszczyk 2009). Other research has used exploratory techniques such as Cluster Analysis and Correspondence Analysis to determine patterns and associations in linguistic data (Szelid and Geeraerts 2008; Divjak and Gries 2009; Glynn 2009). Logistic Regression Analysis (Glynn 2010), a confirmatory multivariate technique, has appeared to be useful for the comparison of near-synonyms in corpora. This advanced form of statistical modeling offers a wide range of possibilities for the multivariate description of linguistic data and the interpretation and verification of that description.

Finally, the collocation method has proved popular in recent Cognitive Linguistic research. This method covers in fact three procedures, Collexeme Analysis (Stefanowitsch and Gries 2003), Distinctive Collexeme Analysis (Gries and Stefanowitsch 2004a) and Covarying Collexeme Analysis (Gries and Stefanowitsch 2004b; Stefanowitsch and Gries 2005). Recently, the papers of its two proponents and developers have provided an inspiration to many researchers, who have applied the methods for various purposes (e.g., Coleman 2010; Fuhs 2010; Hilpert 2008; Desagulier 2014). In this paper, the distinctive-collexeme analysis is used to identify lexemes that occur significantly more often with one construction than with the other: in other words, to examine subtle distributional differences between two semantically or functionally near-equivalent constructions. On the basis of the case study comparing the *imminent*-NOUN construction with the *impending*-NOUN construction, the paper seeks to show that there are nouns that exhibit a strong preference for one construction as compared to the other.

The paper is organized as follows. The theory and the methods are presented in Section 2. The corpus, the data, and the tools applied in the analysis are discussed in Section 3. The procedure is outlined in Section 4. Section 5 gives an overview of the function and usage of the *imminent*-NOUN construction and the *impending*-NOUN construction. Section 6 reports the results of the distinctive collexeme analysis and additional tests, which are then interpreted linguistically and cognitively. The discussion ends with a conclusion (Section 7).

2. Theory and methodology

The present study adopts the theoretical framework of Construction Grammar (1995, 2006) and Frame Semantics (Fillmore 1982, Fillmore and Atkins 1994, 2000). A central idea in Construction Grammar is that there is no strict separation between syntax and the lexicon. Grammar is a large inventory of symbolic units (Langacker 1987) or constructions, that is, form-meaning pairs of various degrees of complexity and schematicity (Croft 2001; Goldberg 2006). All grammatical units can be represented as constructions, from free and bound morphemes such as *destroy* or *-s*, through multimorphemic words (like *bookcase* or *put up*) and fixed expressions (like *curiosity killed the cat* or *in*

every nook and cranny), to partially filled expressions (like SUBJECT be considered as NP, as in *John is considered as my best friend* or NP+ VERB+ imminent, as in *His death is imminent*) and fully abstract grammatical structures (like the ditransitive construction SUBJECT + VERB+ OBJECT, as in *John bought me a new computer*).

Frame Semantics assumes that word senses must be understood and described with respect to *semantic frames*, that is “schematic representations of the conceptual structures and patterns of beliefs, practices, institutions, images, etc. that provide a foundation for meaningful interaction in a given speech community” (Fillmore *et al.* 2003: 235). In Frame Semantics, the basic unit of analysis is the lexical unit, which can be defined as a combination of a form with a meaning. Each meaning is described and interpreted in relation to the semantic frame that a word evokes. An example is the KILLING frame, which is evoked by semantically related words such as *to kill*, *a killer*, *killing*, *to murder*, and *a murderer*, among many others. The KILLING frame represents a situation in which various kinds of relationship hold between the so-called *frame elements* (FEs), which are perceived as situation-specific semantic roles. This frame is activated by words that relate to situations in which an agent, called a killer, causes the death of the victim.

The current study employs the quantitative method of Distinctive Collexeme Analysis, a member of the family of collostructional methods which is specifically tailored for the investigation of grammatical alternations (Gries and Stefanowitsch 2004a). This approach aims to determine areas of lexical divergence and parallelism between constructions, i.e. can identify which of the lexemes occurring in two constructions are most distinctive for either of them (cf. Hilpert 2014). In this method, the frequency of a lexeme in a given construction is compared to its occurrence in a semantically similar construction and to the frequency of both constructions in the whole corpus. The technique has been hitherto applied to different grammatical alternations, including the dative alternation in Dutch (Colleman 2009) and the variation between the *go*-V and *go*-and-*v* constructions in English (Wulff 2006), to give but two examples. It is noteworthy that Distinctive Collexeme Analysis and other collostructional techniques have come under criticism in recent publications. The interested reader is especially referred to the criticisms in Bybee (2010), Schmid and Küchenhoff (2013) and Küchenhoff and Schmid (2015) as well as the responses in Gries (2012; 2015). In this paper, the distinctive collexeme method is used to compute the degree of association between nouns and the *imminent*-NOUN construction and the *impending*-NOUN construction on the basis of their co-occurrence and overall frequencies. The output is a ranked list of distinctive collexemes for each of the constructions investigated, i.e. those nouns that exhibit a marked preference for that particular construction over the other.

The method involves the following steps (cf. Gries and Stefanowitsch 2004a): a) the retrieval of all occurrences of the constructions under investigation from a corpus by means of a software tool (AntConc); b) the manual

extraction and calculation of all instances of the constructions under study; c) the generation of two frequency lists of particular nouns in each construction; d) the determination of the frequency of a noun in each construction, and the creation of co-occurrence tables; e) the derivation of the rest of the 2-by-2 table and the expected frequencies by means of Microsoft Excel spreadsheets; f) the evaluation of the table by means of statistical techniques; g) the calculation of the association strengths by means of an on-line Fisher's exact test calculator for two-by-two contingency tables; h) the manual arrangement of the results according to the direction of association and the strength of association; i) the interpretation of the results. The first three of these steps are concerned with data retrieval, and will be dealt with in section (4). The last step is concerned with how the results can be interpreted meaningfully; that will be covered in section (6).

3. Corpora, data, and tools

The data to be analyzed in this study were retrieved from the Corpus of Contemporary American English (COCA). This is the most widely used corpus of American English currently available and the only huge and balanced corpus of that variety of English. The corpus is composed of more than 440 million words in 190,000 texts, including 20 million words each year from 1990 to 2012. Although the most recent update was completed in December 2015, this analysis is based on various texts covering the years between 1990 and 2012. These texts are evenly divided between the five genres: spoken, fiction, popular magazines, newspapers, and academic journals.

The current study rests on a dataset consisting of 1069 instances of *impending* and 1398 instances of *imminent* selected from the 2189 occurrences of the former and the 3161 occurrences of the latter in the corpus. The data were retrieved from the corpus by means of the concordancing program, AntConc. This tool was used to search through the corpus for all the occurrences of the adjectives and their collocates as well as the immediate context in which each instance occurred, creating a concordance. Each concordance line was manually skimmed to identify all phrases with the relevant patterns: the *imminent*-NOUN construction and the *impending*-NOUN construction. All false hits were discarded from further analysis, and the observed frequencies of the remaining instances of the adjectives and nouns in the constructions were calculated manually by reading concordance lines. The rest of the values and expected frequencies were computed by means of Microsoft Excel spreadsheets. The resulting frequency lists then provided the input to the distinctive collexeme analysis.

All figures required for the computation of the association strengths between constructions and nouns were entered in the 2-by-2 table and submitted to the Fisher exact test. The measure selected to gauge the degree of attraction was the p-value provided by this test. Technically speaking, given a particular

set of frequencies observed in the corpus, the p-value indicates the likelihood of achieving this distribution or a more extreme one, accepting the null hypothesis that the distribution was the result of coincidence. In other words, the smaller the p-value, the higher the likelihood that the observed distribution is not due to chance and the higher the strength of the association between a noun and a given construction (cf. Schmid and Küchenhoff 2013). This statistical test was performed by means of an on-line Fisher's exact test calculator for two-by-two contingency tables.

It is important to mention that the Fisher exact test was strongly criticized by Schmid and Küchenhoff in their last publication (2013: 539). This criticism concentrates on the issues regarding the use of a p-value as a significance measure. They claim that a p-value is not an effect size, and that it is not obvious whether the Fisher exact p-value incorporates this quantitative measure of the strength of a phenomenon. This major point of critique was countered by Gries (2015: 519), who presents strong arguments for the use of this measure as a significance test (see also Gries 2012 for relevant arguments). The rationale for its use is that, in comparison to other statistical tests, the Fisher exact can be used to evaluate the interaction among variables when data is very unevenly distributed and/or infrequent (cf. e.g. Stefanowitsch and Gries 2003: 9; Gries and Stefanowitsch 2004a: 101).

In addition to the Fisher exact test, Schmid's (2000) measures of attraction and reliance were employed to gauge the reciprocal interaction between nouns and constructions. Attraction computes the degree to which a given construction attracts a noun, while reliance measures the degree to which a noun appears in one construction versus other constructions in the corpus. The former is computed by dividing the observed frequency of occurrence of a noun in a construction by the total frequency of the construction in the corpus, whereas the latter is measured by dividing the frequency of occurrence of a noun in a construction by its frequency of occurrence in the whole corpus (cf. Schmid 2000: 54). In order to express the result as a percentage, the observed frequency of a noun in a construction in each case is multiplied by one hundred. Both measures were computed in Microsoft Excel. The percentage provided by both measures was taken as an indicator of attraction and reliance: the higher the percentage, the stronger the attraction and reliance.

4. Statistical procedure, data retrieval and evaluation

Let us go over the procedure and the data retrieval steps in somewhat more detail (cf. Gries and Stefanowitsch 2004a). By way of illustration, consider the noun *danger* in the *impending*-noun construction and the *imminent*-noun construction. The actual frequencies required to compute the direction of association (attracted or repelled) and the strength of association (the distinctiveness of *danger*) are shown below in Table 1. The values in italics were directly derived

from the corpus while the other figures are the outcomes of additions and subtractions.

The first step of the procedure required the application of the concordancer (AntConc) to retrieve all nouns collocating with the adjectives *impending* and *imminent* in both synonymous constructions. In the second step, all occurrences of the collocations under study were extracted manually and grouped into semantic classes together with the types of constructions they represent. In the third step, frequency lists of lexemes and constructions were created. The frequencies were then entered in Microsoft Excel spreadsheets, where the rest of data required for the 2-by-2 table and the expected frequencies were calculated.

Table 1. Input data for a distinctive collexeme analysis

	Noun (<i>danger</i>)	All other nouns	Total
Impending-noun construction	a: Frequency of noun (<i>danger</i>) in 'impending-noun' construction	b: Frequency of all other nouns in 'impending-noun' construction	x: Total frequency of 'impending-noun' construction
Imminent-noun construction	c: Frequency of noun (<i>danger</i>) in 'imminent-noun' construction	d: Frequency of all other nouns in 'imminent-noun' construction	y: Total frequency of 'imminent-noun' construction
Total	e: Total frequency of noun (<i>danger</i>)	f: Total frequency of all other nouns	z: Total frequency of both constructions

The observed frequencies were computed as follows. First, all impending-noun constructions in the corpus were identified: 1069. Second, all imminent-noun constructions were determined: 1398. These two figures were derived by extracting all noun phrases containing the noun *danger* and the adjectives *imminent* and *impending*. Finally, the frequency of the lemma *danger* in each construction was counted: 25 and 261 respectively. These four values were obtained from the corpus directly while the remaining ones result from addition and subtraction. Table 2 below shows the actual frequencies needed for a distinctive collexeme analysis of the noun *danger* in the *impending*-noun construction and the *imminent*-noun construction (for expository purposes, it also gives the expected frequencies for the lemma *danger* in each construction in parentheses). In addition to these values, the frequency of occurrence of the noun *danger* in the whole corpus was calculated for the purpose of Schmid's measures of attraction and reliance.

The fourth step entailed the calculation of the expected frequencies of noun (*danger*) in the *impending*-noun construction and the *imminent*-noun

construction. It was performed in a straightforward fashion. For the lemma *danger* in each construction, its column total was multiplied by its row total, and the outcome was divided by the overall table total. For instance, for the top left cell in Table 2 – the one including the value (25), the column total (1069) was multiplied by the row total (286), producing the rather large value (305734). This value then was divided by the table total (2467), yielding the result (123. 9295). As mentioned above, these computations were carried out in Microsoft Excel. If the observed frequency of noun (*danger*) in the *impending*-noun construction is significantly higher or lower than expected, the relation between the noun *danger* and this construction is one of attraction or repulsion respectively (the noun *danger* is then considered to be a significantly attracted or repelled *distinctive collexeme* of the *impending*-noun construction). Likewise, if the observed frequency of the noun (*danger*) in the *imminent*- noun construction is significantly higher or lower than expected, then the noun (*danger*) occurs either more frequently than expected or less frequently than expected in this construction. Strictly speaking, the noun *danger* is then said to be a significantly attracted or repelled *collexeme* of the *imminent*- noun construction.

Table 2. The distribution of *danger* in the *impending*-noun construction and the *imminent*- noun construction

	Noun (<i>danger</i>)	All other nouns	Total
Impending- noun construction	25 (123. 9295)	1044	1069
Imminent- noun construction	261 (162.0705)	1137	1398
Total	286	2181	2467

In the next step, all data needed for the computation of the association strength between the noun *danger* and two near-equivalent constructions (in this case, its distinctiveness) were entered in the 2-by-2 table and subjected to the Fisher exact test. The following four figures were employed to measure the strength of attraction: a) frequency of noun (*danger*) in *impending*-noun construction; frequency of all other nouns in *impending*-noun construction; frequency of noun (*danger*) in *imminent*-noun construction; frequency of all other nouns in *imminent*-noun construction. This statistical test was performed by means of an on-line Fisher's exact test calculator for two-by-two contingency tables. The p-value resulting from the calculation of the Fisher exact test for this distribution is exceptionally small: 4.85E-42. This indicates that the noun *danger* is highly significant (distinctive) for one of the two constructions, but it does not tell us for which one. In order to determine this, the observed frequencies of the noun *danger* were compared with the expected ones. As this comparison

shows, the noun *play* occurs more frequently than expected in the *imminent*-NOUN construction and less frequently than expected in the *impending*-noun construction. In other words, *danger* is a highly significant, very strongly distinctive collexeme of the *imminent*- noun construction if compared to the *impending*-noun construction.

In the final step, the results were arranged according to their direction of association and their association strength as well as interpreted in a variety of ways. Suffice it to say that (i) there are indeed nouns (distinctive collexemes) that are significantly attracted to or repelled from the construction is determined by frame-semantic knowledge. The result of these steps is a table, in each case of analysis, with co-occurrence information: the raw frequencies, the expected frequencies, the scores of attraction and reliance and the p-values taken as indicators of the association strength.

5. Impending and imminent: two near-equivalent constructions

As mentioned in Section 2, the method of distinctive collexemes can be applied to any pair of patterns expressing roughly the same meaning, for example, the two near-equivalent constructions: the *imminent*-NOUN construction versus the *impending*-NOUN construction. Both patterns to be investigated are partially lexically-filled structures involving one fixed lexical item (imminent or impending) and one flexible slot that can be filled by nouns. Their syntactic and semantic form can be represented structurally and schematically as [ADJECTIVE likely to happen very soon NOUN event, situation], where each adjective is used in attributive position. The use of both constructions can be exemplified by the following sentences extracted from the corpus:

- (1) a. *Television weather forecasters treat the threat of two to four inches of snow as impending catastrophe.*
 b. *He tried to inform West Coast and Hawaiian naval authorities of the impending attack.*
- (2) a. *At least two other tortoise populations are in imminent danger.*
 b. *Three types of alarms indicate varying levels of danger, imminent explosion being the most serious.*

The examples in (1) and (2) seem to suggest that both adjectives are used to refer to a situation or an event, in particular a bad one, that is going to happen very soon. The definitions of these adjectives proposed by the *Macmillian English Dictionary* (2nd edition) and the usage examples seem to confirm this assumption. The dictionary, edited by Rundell (2007: 755-6), provides the following explanation of the meaning of the adjectives, accompanied by the illustrative examples:

- (3) Imminent = adj likely or certain to happen very soon: *Many species of animals are in imminent danger of extinction.*
- (4) Impending = adj [only before a noun] an impending event or situation, especially an unpleasant one, is one that will happen very soon: *He was unaware of the impending disaster.*

It is noteworthy that both adjectives are figurative extensions of two different Latin verbs denoting *to overhang*. *Impending* is derived from Latin *impendēre* ‘to overhang’, while *imminent* originated from the present participle of *imminere* ‘to overhang, lean towards’ (see <http://www.collinsdictionary.com>). The phrases *imminent danger* and *impending disaster* in (3) and (4) refer to a dangerous situation that is perceived as an overhanging object in space, something dangerous that is close to you and that can fall suddenly onto your head.

Notwithstanding these similarities in meaning, *impending* and *imminent* differ from each other in that the former is solely used in attributive position, whereas the latter is used in both attributive and predicative position, as shown by the following examples found in the corpus:

- (5) a. *The end of their driver-crew chief relationship appeared imminent.*
 b. *The inescapable conclusion: A titanic Jupiter-comet impact was imminent.*

As examples (5a) and (5b) demonstrate, *imminent* occurs in the SVsC structure, i.e., in the pattern containing the following major sentence constituents: subject + verb + subject complement. The subject here denotes the situation or event that is characterized by the complement. The verb is a linking verb requiring the subject complement to complete the sentence. The subject complement, realized by the adjective *imminent* in the above sentences, typically identifies or characterizes the situation or event denoted by the subject.

A possible explanation for this structural variation might be offered by the iconic principle of proximity, or distance. This principle accounts for the fact that units that belong together conceptually are placed next to each other in language structure and, conversely, units that do not belong together conceptually are placed at a distance from each other (Dirven and Verspoor 2004: 10).

In the phrase *imminent danger*, the order of the modifier cannot be freely altered without making the phrase sound odd or even ungrammatical: **danger imminent* sounds odd. The order of the modifier reflects its conceptual proximity to the entity designated by its head noun, i.e. *danger*. The modifier *imminent* occupies the closest position to the noun because it denotes a temporal and spatial property that inherently belongs to this situation. Each situation consists of the set of conditions that exist at a particular time in a particular place. Events and situations close to us in time metaphorically correspond to events and situations that are close to us in space. Hence, *imminent danger* is a situation that is near to us and is about to happen very soon.

In the clause (5a), the adjective *imminent* is placed further away from the head noun because it denotes a property that is ascribed to the subject. In addition, since *imminent* is a deverbal adjective, derived from the present participle of Latin *imminēre* [‘to overhang’], it is used in the same way as the verb *overhang* in the progressive aspect: thus, a situation that is imminent metaphorically corresponds to something that is hanging threateningly over one’s head, i.e., something that is close to us in space and time.

Since *imminent* and *impending* are semantically near-equivalent adjectives, we could expect that there are a number of remarkably similar nouns occurring in both of these constructions. In addition, it can be predicted that there are subtle differences between the *impending*-noun construction and the *imminent*-noun construction with respect to the semantic constraints they place on the nouns that can occur in them. The meaning of the two adjectives and the nouns co-occurring with them may be the relevant factor affecting the choice between these two constructions. Hence, the frame-semantic information on nouns that occur in them may occupy a pivotal role in predicting the differences between these constructions with respect to their preferred nouns, i.e., their collocability. For example, as sentences in (1)–(5) show, the nouns that instantiate the *impending*-noun construction may evoke either the CATASTROPHE frame or the ATTACK frame. Likewise, the nouns that instantiate the *imminent*-noun construction may reflect the RISKY SITUATION frame and the EXPLOSION frame. Thus, on the basis of frame-semantic information, we could predict that the *impending*-noun construction would prefer nouns associated with a disaster, while the *imminent*-noun construction would prefer nouns related to danger. Moreover, we could assume that a vast majority of nouns ranked highly according to the association strength would evoke mainly negative associations and semantic frames describing unpleasant situations.

The distinctive-collexeme analysis allows us to test and verify such pre-set assumptions and expectations. This corpus-based method can be used to elucidate the existence and degree of semantic differences between these adjectives as well as the semantic restrictions they impose on the nouns. This may be done by means of indicating nouns that are highly distinctive for one of the two constructions (i.e., occur more or less frequently than expected in the *impending*-noun construction as compared to the *imminent*-noun construction).

6. Results and discussion

The corpus search for all noun phrases collocating with the adjectives provided 5350 sentences, which comprised 2467 true hits. Of these, 1069 exhibit instances of the *impending*-noun construction. Instances of the pattern with *imminent*, i.e. the *imminent*-noun construction, are by far the most numerous ones, containing 1398 true hits. Apart from the observed frequencies of both constructions, the data turned out to include 469 types of nouns. However, this

section will only report the results for the most strongly attracted and repelled collexemes of the constructions, since it is impossible to present and evaluate the results for all these nouns in the space here allotted.

The results support the hypotheses that the two patterns with *impending* and *imminent* exhibit functional differences, and that there are highly distinctive collexemes of the former as opposed to the latter. In addition, specific predictions about the tendency of the adjectives to occur with the nouns carrying negative connotations prove to be confirmed also. Consider Table 3, which shows the frequencies required to calculate the direction of association (attracted or repelled) and the strength of association (the distinctiveness of *nouns*) in the *impending*-noun construction. It also provides the expected frequencies for each noun: (a) and (c), as well as the results of the distinctive-collexeme analysis ($P_{\text{Fisher exact}}$) for the most strongly attracted lexemes of the *impending*-noun construction. The figures (a, c, x, y) were derived directly from the corpus data, the other figures (b, d, f, z) are the results of addition and subtraction.

For the *impending*-noun construction, we find that the five most distinctive nouns are *doom*, *disaster*, *crisis*, *loss* and *shortage*, which evoke many semantic frames. P-values taken to be indicators of their distinctivity are very small: 7.95E-36; 1.51E-17; 1.01E-06; 3.88E-06 and 6.66E-06, respectively. When comparing the observed and the expected frequencies of each of these nouns and each of the two constructions, we can notice that the nouns occur more frequently than expected in the *impending*-noun construction and less frequently than expected in the *imminent*-noun construction. In other words, they are highly significant, very strongly distinctive collexemes of the former if compared to the latter. Note also that *doom* is the strongest collexeme for the *impending*-noun construction, since its p-value resulting from the calculation of Fisher exact is exceptionally small ($p = 7.95\text{E-}36$) and the expected frequencies indicate that *doom* occurs more frequently than expected in the *impending*-noun construction and less frequently than expected in the *imminent*-noun construction.

These quantitative findings are substantially strengthened by the results of the measures of attraction and reliance. Table 4 displays the results of the calculation of attraction and reliance for the 23 nouns. It also provides the total frequency of each noun in the corpus that was applied to calculate the reliance between a noun and one particular pattern. The results confirm that the most strongly attracted collexemes of the *impending*-noun construction are *doom*, *disaster*, *crisis*, *loss*, *shortage* and *change*. The scores indicate that the noun *doom* accounts for 11.51% of the uses of the *impending*-noun construction and 0.64% of the uses of the *imminent*-noun construction in the Corpus of Contemporary American English, and that 5.76% of the uses of the same noun are found in the *impending*-noun construction and 0.42% in the *imminent*-noun construction. The noun is thus attracted in a proportion of 11.51% by the first pattern and in a proportion of 0.64% by the second pattern and relies on the first construction in a proportion of 5.76% and on the second in a proportion of 0.42%. Thus, the noun is the most distinctive collexeme for the *impending*-noun construction

Table 3. The results of the distinctive collexeme analysis for the twenty three most distinctive collexemes of the *impending-* noun construction

	noun	a	c	e	f	x	Y	z	b	d	(a)	(c)	P _{Fisher exact}
1.	doom	123	9	132	2335	1069	1398	2467	946	1389	57.19822	74.80178	7.95E-36
2.	disaster	86	17	103	2364	1069	1398	2467	983	1381	44.63194	58.36806	1.51E-17
3.	crisis	49	18	67	2400	1069	1398	2467	1020	1380	29.03243	37.96757	1.01E-06
4.	loss	43	16	59	2408	1069	1398	2467	1026	1382	25.56587	33.43413	3.88E-06
5.	shortage	17	1	18	2449	1069	1398	2467	1052	1397	7.799757	10.20024	6.66E-06
6.	change	36	15	51	2416	1069	1398	2467	1033	1383	22.09931	28.90069	8.65E-05
7.	development	16	2	18	2449	1069	1398	2467	1053	1396	7.799757	10.20024	0.000113
8.	cuts	16	4	20	2447	1069	1398	2467	1053	1394	8.666396	11.3336	0.001073
9.	election	14	3	17	2450	1069	1398	2467	1055	1395	7.366437	9.633563	0.002019
10.	move	14	3	17	2450	1069	1398	2467	1055	1395	7.366437	9.633563	0.002019
11.	trouble	11	2	13	2400	1069	1398	2467	1058	1396	5.633158	7.366842	0.003419
12.	failure	13	4	17	2450	1069	1398	2467	1056	1394	7.366437	9.633563	0.006683
13.	visit	5	0	5	2407	1069	1398	2467	1064	1398	2.166599	2.833401	0.015196
14.	marriage	4	0	4	2447	1069	1398	2467	1065	1398	1.733279	2.266721	0.035144
15.	exhaustion	6	1	7	2455	1069	1398	2467	1063	1397	3.033239	3.966761	0.047595
16.	transition	3	0	3	2454	1069	1398	2467	1066	1398	1.299959	1.700041	0.081233

18.	suicide	3	0	3	2456	1069	1398	2467	1066	1398	1.299959	1.700041	0.081233
19.	fatherhood	3	0	3	2450	1069	1398	2467	1066	1398	1.299959	1.700041	0.081233
20.	activity	3	0	3	2462	1069	1398	2467	1066	1398	1.299959	1.700041	0.081233
21.	problem	6	2	8	2464	1069	1398	2467	1063	1396	3.466559	4.533441	0.083984
22.	resolution	5	1	6	2464	1069	1398	2467	1064	1397	2.599919	3.400081	0.091302
23.	war	10	7	17	2450	1069	1398	2467	1059	1391	7.366437	9.633563	0.224405

a = Observed frequency of noun (e.g. danger) in the *impending*-noun construction; **b** = Frequency of all other nouns in the *impending*-noun construction; **c** = Observed frequency of noun (e.g. danger) in the *imminent*-noun construction; **d** = Frequency of all other nouns in the *imminent*-noun construction; **e** = Total frequency of noun (e.g. danger); **f** = Total frequency of all other nouns; **x** = Total frequency of the *impending*-noun construction; **y** = Total frequency of the *imminent*-noun construction; **z** = Total frequency of both constructions; **(a)** = Expected frequency of noun (e.g. danger) in the *impending*-noun construction; **(c)** = Expected frequency of noun (e.g. danger) in the *imminent*-noun construction; **P_{Fisher exact}** = index of distinctive collostructional strength.

in direct comparison with the *imminent*- noun construction. By contrast, the noun *visit* is a much less important slot filler for the *impending*-noun construction (Attraction score 0.47%), and relies on this construction to a considerably lesser degree (Reliance score 0.02%).

Table 4. The results of the calculation of attraction and reliance

Noun	Frequency of the noun in the corpus	Attraction (impending)	Attraction (imminent)	Reliance (impending)	Reliance (imminent)
doom	2137	11.51	0.64	5.76	0.42
disaster	16653	8.04	1.22	0.52	0.10
crisis	36835	4.58	1.29	0.13	0.05
loss	53946	4.02	1.14	0.08	0.03
shortage	7300	1.59	0.07	0.23	0.01
change	122695	3.37	1.07	0.03	0.01
development	99812	1.50	0.14	0.02	0.00
cuts	28101	1.50	0.29	0.06	0.01
election	56162	1.31	0.21	0.02	0.01
move	29235	1.31	0.21	0.05	0.01
trouble	42838	1.03	0.14	0.03	0.00
failure	30725	1.22	0.29	0.04	0.01
visit	27372	0.47	-	0.02	-
marriage	42001	0.37	-	0.01	-
exhaustion	2314	0.56	0.07	0.26	0.04
transition	17588	0.28	0.00	0.02	-
suicide	16441	0.28	0.00	0.02	-
fatherhood	806	0.28	0.00	0.37	-
activity	84618	0.28	0.00	0.00	-
problem	233655	0.56	0.14	0.00	0.00
resolution	9167	0.47	0.07	0.05	0.01
war	2570	0.94	0.50	0.39	0.27

The first confirmation of the hypothesis that the adjective *impending* collocates with a set of words carrying unpleasant associations is provided by the fact that the top five collexemes, mentioned above, are the nouns that evoke negative connotations. *Doom* can be interpreted with reference to the DESTINY frame, which describes a bad event, usually destruction, death, or failure, that will happen in the future and cannot be avoided. *Disaster* and *crisis* instantiate the CATASTROPHE frame. The words in this frame involve an undesirable event that causes serious difficulty for a particular person and makes a lot of people suffer. *Loss* can be described in relation to the LOSS frame, whereas *shortage* with reference to the LACK frame. The former frame explains a general situation in which an owner decreases their amount of a possession. The decrease may either be physical or metaphorical. The latter frame depicts a situation in which an owner lacks a possession.

The top collexemes referring to unpleasant situations and events also include nouns denoting a reduction, a problem, a lack of success, a feeling of being without energy, the act of killing yourself, and an armed conflict. *Cuts* in rank 5 evokes the REDUCTION frame. In this frame, an agent causes an entity to change its position on a scale with respect to some property by making this entity less or smaller in size, quantity, or price. *Trouble* and *problem* in ranks 11 and 21 relate to the PROBLEM frame in which an experiencer is in an undesirable situation. *Failure*, ranked number twelve, can be understood with reference to the SUCCESS AND FAILURE frame. This frame consists of words that indicate that an agent attempts to achieve a goal, and this attempt either succeeds or fails. *Exhaustion* in rank 15 applies to the FATIGUE frame in which an experiencer goes into a bad state caused by a lack of energy in the muscles or by excessive and prolonged stress. The internal experience is a reaction to the physical signal, and the experiencer has a strong biological urge to perform a certain action such as sleeping, having a rest, or stopping exertion. *Suicide*, ranked number eighteen, invokes the KILLING frame in which a killer becomes a victim, since the killer deliberately kills himself/herself. Finally, *war* in rank 23 instantiates the ARMED CONFLICT frame. This frame consists of words that describe a state or period of armed fighting between countries or groups over a disputed issue and/or in order to achieve a particular purpose.

In addition to the nouns carrying unpleasant connotations, a large group of collexemes significantly attracted to the *impending*-noun construction is constituted by the nouns triggering positive or neutral associations, as shown in Table 3. Nouns like *change* ($p = 8.65E-05$) and *development* ($p = 0.000113$) appear among the construction's most attracted collexemes. The first lexical item evokes the CHANGE frame. This frame describes a situation in which a concrete or abstract entity undergoes a change in its category membership, its situation, or in terms of its characteristic or quality. *Transition*, ranked number 16, also instantiates this frame. *Development* activates the PROGRESS frame. The PROGRESS frame is concerned with the idea that an entity undergoes a gradual change from one state to another leading to development and enhancement.

Among the collexemes occupying the highest positions in the ranking list, there are also nouns; such as *election*, *move*, *visit*, *marriage*, *transition*, *fatherhood*, *activity* and *resolution*. *Election* and *move* are likewise attracted ($p=0.002019$), though by far not as strongly as any of the top five negative nouns discussed above. The former instantiates THE CHANGE OF LEADERSHIP frame, a situation in which people bring about the change in leadership by electing a new leader or overthrowing an old one. The latter is connected to the INTENTIONAL ACT frame: that is, the word is used to denote an intentional act performed by an agent. *Activity* in rank 20 also evokes this frame.

The next position behind *move* is held by *visit*. This lexical item is related to the VISIT frame, which concerns an occasion when a visitor goes to a person or a place in order to see and talk to this person or spend some time in this place. Further positions in the collexeme ranking are occupied by *marriage* and *fatherhood*, words associated with family life. *Marriage* refers to the frame that has to do with the personal relationship between two people who are husband and wife. *Fatherhood* invokes the frame that concerns the state of being a father and having one or more children. Finally, *resolution* is the last noun ranked among the collexemes that are most distinctive for the pattern. This lexical item can be understood with reference to the FORMAL PROPOSAL frame. This frame revolves around an event at which an official proposal is considered by an organization, especially by means of votes.

As for the *imminent*-noun construction, the results clearly confirm the hypothesis which predicts negative nouns in the majority of the top ranks of the collexeme list (see Table 5 below). Most strikingly, this construction attracts with significant collocation strength (i.e. a small p -value) the nouns carrying unpleasant connotations. Perfectly coinciding with the prediction about the preference of the pattern, these are the nouns evoking the RISKY SITUATION frame. This frame contains LUs, such as *threat*, *danger*, *endangerment*, *risk*, *hazard*, and *peril*, that describe a particular situation that may lead to a harmful event, such as harm, death, damage, or destruction, befalling something valuable which might be lost or damaged.

This very strongly attracted group of nouns, evoking the RISKY SITUATION frame, appears among the most central collexemes of the pattern. Its leading collexeme, *threat* in rank 1, is accompanied by *danger*, *endangerment*, *risk*, *hazard*, and *peril*, in ranks 2, 3, 4, 6 and 16. Note that *threat* is the most distinctive collexeme, as the p -value resulting from the calculation of the Fisher exact test for this noun is small: $p=3.01E-48$. A comparison of the observed frequencies and the expected ones shows that this noun occurs more frequently than expected in the *imminent*- noun construction if compared to the *impending*-noun construction.

As predicted by the hypothesis, the next group in the ranking is also constituted by a range of negative nouns referring to different semantic frames. *Demise*, ranked fifth, relates to the background knowledge of death: i.e., the semantic frame that concerns the death of a person. The seventh-ranked *hostility*

Table 5. The results of the distinctive collexeme analysis for the twenty most distinctive collexemes of the *imminent-noun* construction

	Noun	a	c	e	f	x	y	z	b	d	(a)	(c)	P _{Fisher exact}
1.	threat	15	253	268	2199	1069	1398	2467	1054	1145	116.1297	151.8703	3.01E-48
2.	danger	25	261	286	2181	1069	1398	2467	1044	1137	123.9295	162.0705	4.85E-42
3.	endangerment	0	33	33	2434	1069	1398	2467	1069	1365	14.29955	18.70045	6.92E-09
4.	risk	0	26	26	2441	1069	1398	2467	1069	1372	11.26632	14.73368	5.36E-07
5.	demise	10	50	60	2407	1069	1398	2467	1059	1348	25.99919	34.00081	1.54E-05
6.	hazard	0	12	12	2455	1069	1398	2467	1069	1386	5.199838	6.800162	0.001787
7.	hostility	0	11	11	2456	1069	1398	2467	1069	1387	4.766518	6.233482	0.003427
8.	end	8	25	33	2416	1069	1398	2467	1061	1373	14.29955	18.70045	0.032525
9.	thunder	0	6	6	2447	1069	1398	2467	1069	1392	2.599919	3.400081	0.039529
10.	return	1	8	9	2464	1069	1398	2467	1068	1390	3.899878	5.100122	0.08697
11.	collapse	20	42	62	2405	1069	1398	2467	1049	1356	26.86583	35.13417	0.090957
12.	deterioration	0	4	4	2464	1069	1398	2467	1069	1394	1.733279	2.266721	0.138074
13.	plans	0	4	4	2464	1069	1398	2467	1069	1394	1.733279	2.266721	0.138074
14.	future	1	6	7	2464	1069	1398	2467	1068	1392	3.033239	3.966761	0.147818
15.	departure	23	43	66	2459	1069	1398	2467	1046	1355	28.59911	37.40089	0.16801
16.	peril	4	12	16	2451	1069	1398	2467	1065	1386	6.93117	9.066883	0.204848
17.	victory	1	5	6	2465	1069	1398	2467	1068	1393	2.599919	3.400081	0.243071
18.	attack	15	27	42	2425	1069	1398	2467	1054	1371	18.19943	23.80057	0.348981
19.	involvement	1	4	5	2464	1069	1398	2467	1068	1394	2.166599	2.833401	0.396562
20.	chaos	1	4	5	2459	1069	1398	2467	1068	1394	2.166599	2.833401	0.396562

provides access to the HOSTILITY frame. This frame describes enmity between two opposing sides over a disputed issue and/or in order to achieve a certain goal. *End* in rank 8 profiles the final part of a period of time in the following frame: A TEMPORAL SUBPART OF A TIME PERIOD. *Thunder* in rank 9, which invokes the SOUNDS frame, denotes the loud noise perceived in the sky during a storm.

Other negative nouns strongly associated with this construction are *collapse* and *deterioration*. The first lexeme, ranked number 11, is connected with the FAILURE frame, a situation in which something (such as an institution, a business or an attempt) fails suddenly. The meaning of the second word, following *collapse* in the ranking, is relativized to the DETERIORATION frame. In this frame, a person judges how something becomes worse or inferior with respect to its character, quality or value. The evaluation may be considered according to a specific set of circumstances, i.e., a set of conditions under which the quality of something is being judged.

The nouns *attack* and *chaos* are also among the strongly attracted collexemes, occupying ranks 18 and 20, respectively, but being less distinctive in comparison with the top five collexemes. The interpretation of the first word is dependent upon the ATTACK frame. This frame is concerned with the idea that an assailant physically attacks a victim, causing or intending to cause physical damage. The meaning of the latter word should be understood relative to the CHAOS frame. The frame describes an object or phenomenon that exists in a state of disorder.

The collexeme list of the pattern is not exclusively restricted to the nouns conjuring up negative connotations. Among the most central collexemes of the construction, there is also a strongly attracted group of positive and neutral nouns. Although the group of these collexemes in this pattern is smaller than the corresponding set in the pattern with *imminent*, it includes at least *return*, *plan*, *future*, *departure*, *victory* and *involvement*. *Return*, ranked highest among the positive nouns, activates the RETURN frame, a situation in which a theme (an object in motion) goes back from one place to another. *Plan*, preceding *future* in the ranking, invokes the PLAN frame. This frame concerns a set of decisions or actions that have been considered as a way to achieve a particular goal. *Future* in rank 15 foregrounds the time that will come after the present in the TIME frame. *Departure*, also appearing in negative contexts, instantiates the DEPARTING frame. In this frame, an object, called a theme, moves away from a source (an initial location). *Victory*, evoking the FINISH COMPETITION frame, highlights the final stage of the competition at which one competitor succeeds. *Involvement*, occupying the penultimate position in the ranking list, is relativized to the PARTICIPATION frame. This frame is centered on an event with multiple participants, who may or may not be involved intentionally.

As with the *impending*-noun construction, the quantitative results of the distinctive collexeme analysis can be supported by the measures of attraction and reliance. Table 6 below displays the results of these less sophisticated arithmetic calculations. As Table 6 shows, the list for attraction (*imminent*) is dominated

by relatively frequent nouns, such as *threat*, *danger*, *risk*, *demise*, *end*, *departure*, and *attack*. The main reason for this is that the overall frequency of these nouns in the corpus obviously exerts an effect on the probability of their occurrence in this construction. For example, *threat* (Attraction score 18.10%) and *danger* (Attraction score 18.67%) obtained much higher scores for attraction than *involvement* (Attraction score 0.29%) and *chaos* (Attraction score 0.29%), as they occurred much more frequently in the *imminent*- noun construction than these nouns, as shown in Table 5. By contrast, the list for reliance (*imminent*) contains much higher scores for rather infrequent and highly specialized nouns, such as *endangerment* (Reliance score 11.58%) and *demise* (Reliance score 1.66%), occurring in the construction, since the formula applied for the computation of reliance takes the total frequency of a noun in the corpus into account. For example, although *threat* occurs much more often in the *imminent*- noun construction than *endangerment*, the latter achieves a much higher score for reliance because its overall frequency of occurrence in the corpus is much lower. Consequently, the semantic affinity between *endangerment* and the construction also appears to be immensely strong (11.58%).

Table 6. The results of the calculation of attraction and reliance

	Frequency of the noun in the corpus	attraction (impen- ding)	attraction (immi- nent)	reliance (impen- ding)	reliance (immi- nent)
threat	40235	1.40	18.10	0.04	0.63
danger	25048	2.34	18.67	0.10	1.04
endangerment	285	-	2.36	-	11.58
risk	66531	-	1.86	-	0.04
demise	3011	0.94	3.58	0.33	1.66
hazard	5591	-	0.86	-	0.21
hostility	4914	-	0.79	-	0.22
end	146344	0.75	1.79	0.01	0.02
thunder	3476	-	0.43	-	0.17
return	33623	0.09	0.57	0.00	0.02
collapse	9167	1.87	3.00	0.22	0.46
deterioration	1940	0.00	0.29	-	0.21
plans	1940	0.00	0.29	-	0.21
future	62803	0.09	0.43	0.00	0.01

Table 6 cont.

	Frequency of the noun in the corpus	attraction (impen- ding)	attraction (immi- nent)	reliance (impen- ding)	reliance (immi- nent)
departure	7568	2.15	3.08	0.30	0.57
peril	2570	0.37	0.86	0.16	0.47
victory	28602	0.09	0.36	0.00	0.02
attack	55246	1.40	1.93	0.03	0.05
involvement	17006	0.09	0.29	0.01	0.02
chaos	7965	0.09	0.29	0.01	0.05

In the context of investigating semantically near-equivalent constructions, it may also be worth considering nouns that are not significantly attracted to both constructions: that is, nouns that are non-distinctive for either construction. The results of the distinctive-collexeme analysis for the 20 most strongly repelled nouns in the two constructions are shown in Table 7. The rank list includes fairly uncommon nouns that rarely co-occur with the adjectives in the corpus, both positive ones in rank 1, 2 and 8 (*work, union, analogy*) and more negative ones in ranks 9, 12 and 20 (*self-destruction, coup, heart attack*).

Evidently, in the case of both constructions, these nouns are not strongly distinctive collexemes, since their p-values resulting from the calculation of Fisher exact are very high. In addition, a comparison of the observed and the expected frequencies for each of these nouns and each of the two constructions shows us that these nouns usually occur less frequently than expected in one of these two constructions, and that there are relatively minor differences between the observed values and expected ones. Thus, these nouns are strongly repelled collexemes of both constructions.

7. Conclusions

This paper has applied an extension of the collostructional method specifically geared to investigating distinctive collexemes for pairs of near-equivalent constructions. The method, referred to as distinctive collexeme analysis, was used to identify subtle distributional differences between the *impending*-NOUN construction and the *imminent*-NOUN construction, many of which would be difficult to determine on the basis of more traditional approaches. The results of the distinctive-collexeme analysis have indicated that frame-constructioal semantics is a relevant factor influencing the choice between these two patterns, and that there are clearly distinctive collexemes for each of the two constructions.

Table 7. The twenty most strongly repelled nouns

	Noun	a	c	e	f	x	y	z	b	d	(a)	(c)	P _{Fisher exact}
1.	work	0	1	1	2466	1069	1398	2467	1069	1397	0.43332	0.56668	1
2.	union	0	1	1	2466	1069	1398	2467	1069	1397	0.43332	0.56668	1
3.	turn	0	1	1	2466	1069	1398	2467	1069	1397	0.43332	0.56668	1
4.	conquest	0	1	1	2466	1069	1398	2467	1069	1397	0.43332	0.56668	1
5.	race	0	1	1	2466	1069	1398	2467	1069	1397	0.43332	0.56668	1
6.	percent	0	1	1	2466	1069	1398	2467	1069	1397	0.43332	0.56668	1
7.	realist	0	1	1	2466	1069	1398	2467	1069	1397	0.43332	0.56668	1
8.	analogy	0	1	1	2466	1069	1398	2467	1069	1397	0.43332	0.56668	1
9.	self-destruction	0	1	1	2466	1069	1398	2467	1069	1397	0.43332	0.56668	1
10.	impeachment	0	1	1	2466	1069	1398	2467	1069	1397	0.43332	0.56668	1
11.	devastation	0	1	1	2466	1069	1398	2467	1069	1397	0.43332	0.56668	1
12.	coup	1	2	3	2466	1069	1398	2467	1068	1396	1.299959	1.700041	1
13.	possibility	1	2	3	2466	1069	1398	2467	1068	1396	1.299959	1.700041	1
14.	insolvency	1	1	2	2466	1069	1398	2467	1068	1397	0.86664	1.13336	1
15.	cutback	1	1	2	2466	1069	1398	2467	1068	1397	0.86664	1.13336	1
16.	windfall	1	1	2	2466	1069	1398	2467	1068	1397	0.86664	1.13336	1
17.	shutdown	1	1	2	2466	1069	1398	2467	1068	1397	0.86664	1.13336	1
18.	buyout	1	1	2	2466	1069	1398	2467	1068	1397	0.86664	1.13336	1
19.	talk	1	1	2	2466	1069	1398	2467	1068	1397	0.86664	1.13336	1
20.	heart attack	1	1	2	2466	1069	1398	2467	1068	1397	0.86664	1.13336	1

With respect to the *impending*-noun construction, it was found that *doom* and *disaster* are the most distinctive collexemes. The other distinctive collexemes for this construction are also negative nouns, such as *crisis*, *loss*, *shortage*, *trouble*, etc., invoking many semantic frames. For the *imminent*-noun construction, it was found that *threat* is the most strongly attracted collexeme. This and other synonymous nouns, such as *danger*, *endangerment*, *risk*, *hazard*, and *peril*, evoke the RISKY SITUATION frame and constitute the most significant group of highly distinctive collexemes in the ranking list.

The findings of this investigation clearly confirm the prediction that *impending* and *imminent* collocate relatively frequently with nouns carrying unpleasant connotations, as the negative nouns are among the top collexemes being most distinctive for both patterns. They also support the specific suggestions concerning the meaning of the two constructions: ‘something bad is about to happen’, and thus the claim that both patterns are primarily semantic constructions that prefer negative nouns. As mentioned in section 6, a possible explanation for this is that the adjectives are derived from two different Latin words denoting ‘overhang’. Something that overhangs a highway, road or footpath may cause a danger to either vehicles or pedestrians. The interpretation of the adjectives in the sense of ‘something bad or nasty is about to happen very soon’ can be related to the sense of *overhang* as ‘something dangerous that hangs over your head is about to fall suddenly on you’ and may thus be motivated by the metaphor: A DANGEROUS SITUATION IS AN OBJECT HANGING OVER OUR HEAD, since we can perceive the relation of similarity between an overhanging object in space and a dangerous situation being close to a person in time.

Although both adjectives carry the implication of threat, danger and misfortune, they do so in varying degrees. *Impending*, particularly associated with negative words such as *doom* and *disaster*, seems to possess a weaker sense of urgency, immediacy and threat than *imminent*, as the top collexemes of the patterns suggest. In addition, it appears to be used in situations leading to long-term and long-lasting consequences (such as *doom*, *crisis*, and *loss*) and in those portending a catastrophe. In contrast, *imminent* evokes a stronger sense of threat: in particular, one from which there is no possibility of escape. It also occurs less frequently in situations resulting in long-lasting consequences, such as disaster. Neither *imminent* nor *impending*, however, sparks off exclusively negative associations. Among their distinctive collexemes in the ranking list, there are also positive nouns, which suggests that the adjectives also mean simply ‘about to happen’.

The method used in this study has turned out to be an effective way of contrasting adjectives in their respective collocational preferences, and thus this may be applied to other nearly synonymous adjectives. Although there are a number of adjectives considered to be semantically equivalent, there are also a number of discrepancies between them in terms of the semantic constraints they impose on the nouns co-occurring with them. A further analysis of nouns distinctive for each pair of adjectives may help us clarify the existence and ex-

tent of semantic differences between the two. Future research, therefore, might reveal subtle distributional differences between a group of synonymous adjectives. To this end, an extension of this technique, called multiple distinctive collexeme analysis (Gries and Stefanowitsch 2004a), might be particularly appropriate, as the approach enables us to investigate more than two synonymous adjectives.

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