

## ON THE BRINK OF-NOUN VS. ON THE VERGE OF-NOUN: A DISTINCTIVE-COLLEXEME ANALYSIS

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### Abstract

This paper uses the terminology of Construction Grammar (Goldberg 1996; 2006) and a corpus-based method to investigate a pair of semantically similar constructions and the lexemes that occur in both of them. The method, referred to as distinctive-collexeme analysis (Gries and Stefanowitsch 2004a), seeks to identify lexemes that exhibit a strong preference for one construction as opposed to another: in other words, to uncover subtle distributional differences between two semantically or functionally near-equivalent constructions. On the basis of the case study dealing with the *on the brink of-* noun construction versus the *on the verge of-* noun construction, the paper shows that there are lexemes that prefer one of the investigated patterns over the other. Moreover, the results of the distinctive-collexeme analysis reveal that the frame-constructional semantics is a relevant factor in the choice between these two patterns.

**Keywords:** construction grammar, distinctive collexeme analysis, frame semantics, Fisher exact test.

### 1. Introduction

Recent years have seen enormous advances in quantitative corpus-driven techniques used for the investigation of various aspects of language (e.g., Glynn and Fischer 2010; Janda 2013; Glynn and Robinson 2014; Yoon and Gries 2016). In the light of these developments, numerous research methods and theoretical proposals have been adopted across the field of cognitive linguistics in recent years, with particular emphasis on the quantification of linguistic data and the empirical verification of previous theories and hypotheses about the nature of language.

Some research focused on the application of more traditional frequency-based approaches and collocation association measures (Newman and Rice 2006; Lewandowska-Tomaszczyk and Dziwirek 2009; Dziwirek and Lewandowska-Tomaszczyk 2009; Newman 2009; Lewandowska-Tomaszczyk 2010; Vázquez Rozas and Miglio 2016) for the validation of prior assumptions and expectations about linguistic usage. Other research studies (e.g., Fabiszak *et al.* 2014; Levshina

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2016) employed multifactorial hypothesis-testing techniques and multivariate exploratory tools to discover patterns in corpus data that simple statistical tools would be incapable of uncovering.

To date, however, collocation analysis has proven to be one of the most widely applied techniques in cognitive corpus-driven research. This uses inferential statistical measures to explore lexically specific preferences and patterns in constructional slots. The method consists of three various 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). Collexeme Analysis is used to explore which lexical items typically occur in a given slot of a grammatical construction such as the *it is ADJ that*-construction, whereas Covarying Collexeme Analysis aims to reveal interdependencies between lexical items that occupy two different slots within the same construction. Distinctive Collexeme Analysis contrasts two or more constructions with regard to the lexemes that occur with them. Recently, the publications of its two proponents and developers have provided a strong incentive for much research into various types of constructions in many different languages (e.g., Hilpert 2008; Coleman 2010; Desagulier 2014; Wiliński 2015a, 2015b, 2016; Pedersen 2016).

This paper adopts the distinctive collexeme analysis, a corpus-based method that aims to determine lexemes that occur significantly more frequently with one construction than with another: in other words, to discover subtle distributional variations between two semantically or functionally near-equivalent constructions. Thus far, this method has been applied to various grammatical alternations, including the dative alternation in Dutch (Coleman 2009) and the variation between the *go-V* and *go-and-v* constructions in English (Wulff 2006), to give but two examples. However, no study has been found that attempted to contrast two semantically related constructions such as the *on the brink of*-noun construction and the *on the verge of*-noun construction in their respective collocational preferences. Thus, there is still a need for the investigation of both constructions. On the basis of the study comparing the *on the brink of*-noun construction versus the *on the verge of*-noun construction, the paper attempts to indicate that there are nouns that exhibit a strong preference for one construction as compared to another.

The rest of the paper is structured in the following order. Section 2 discusses the theoretical and methodological background for the distinctive collexeme analysis. Section 3 provides a brief description of the corpus, the data, and the tools employed in the analysis. In Section 4, the statistical procedure is explained. Section 5 gives an overview of the function and usage of two synonymous constructions. The results of the distinctive collexeme analysis are presented and evaluated in Section 6. The article ends with a few concluding remarks addressed in Section 7.

## 2. Theoretical and methodological background

Distinctive Collexeme Analysis is generally framed in the terminology of Construction Grammar (Goldberg 1995, 2006), but it is also perfectly compatible with any usage-based approach to grammar that accepts that at least some grammatical structures are symbolic units (Langacker 1987), i.e. arbitrary form-meaning pairings. Various approaches differ in terms of the range of grammatical structures that they are willing to treat as linguistic signs (see Croft 2001; Goldberg 1995). Proponents of collostructional analysis have been using the notion of construction to refer to a variety of meaning-bearing aspects of morpho-syntax ranging from the relatively specific to the very abstract: namely, morphemes, lexemes, multi-morphemic words, phrasal verbs, partially filled idiomatic expressions, idioms, abstract morphological structures, and syntactic structures.

Since all constructions bear a certain meaning or function, they can be interpreted with respect to the semantic frames they evoke. The semantic frame is central to the theory of Frame Semantics (Fillmore 1982, Fillmore and Atkins 1994, 2000) according to which each frame is a specific knowledge structure required to understand a particular word or a related set of words. For example, in order to interpret the meanings of the related group of words *hike*, *hiker*, *hiking*, *hiking gear*, we need access to a WALKING frame, which provides the background knowledge necessary to understand these words. This knowledge encompasses a number of participants, props and roles called frame elements: WALKER, PATH, DISTANCE, PLACE, etc. In the present study, this notion will be used to interpret the meanings of the nouns collocating with the constructions *on the brink of* and *on the verge of* and to group these nouns according to the semantic frames they evoke.

Distinctive Collexeme Analysis is a quantitative corpus-based method aimed at determining the lexemes that are significantly biased towards one of two functionally similar constructions in a particular corpus through the statistical evaluation of these observed frequencies of the lexemes in question in each of the synonymous constructions in relation to the overall frequencies of the closely related constructions in the corpus. The output is a ranking list of so-called *distinctive collexemes*, i.e. of those lexemes that exhibit a strong preference for one of the investigated constructions over the other. Quantitative though this technique is, the results of this analysis are evaluated qualitatively and subjectively. In particular, the lexemes that are strongly associated with alternating constructions can be grouped into semantic frames to which they are relativised.

In recent years, the method has been applied to various near-synonyms and alternations from several languages (see Coleman 2009; Desagulier 2014; Wiliński 2016; Bernolet and Coleman 2016, to mention a few studies). Desagulier (2014), for example, attempted to uncover semantic aspects of the conceptual structure of four English moderators and shed new light on the use of

degree modifiers, whereas Bernolet and Coleman (2016) conducted a sense-based distinctive collexeme analysis of Dutch dative alternating verbs that indicated that distinct senses of the same verb may display different alternation biases. In the current study, the technique is used to identify the nouns that significantly prefer the *on the brink of*-noun construction over the *on the verge of*-noun construction.

### 3. Corpora, data and tools

The data to be examined were collected from the well-balanced Corpus of Contemporary American English (COCA), covering the years between 1990 and 2015. This corpus is composed of more than 520 million words of text, and it is equally divided among spoken, fiction, popular magazines, newspapers, and academic texts. COCA contains 20 million words each year from the years 1990–2015 and is updated regularly. With COCA, it is possible to search for exact words and/or phrases, parts of speech, lemmas, wildcards, or any combination of these. One can also extract collocates of a node word within a particular span along with their frequencies, conduct semantically-based queries, as well as restrict searches by frequency and compare the frequency. Owing to these features, COCA is perhaps the only corpus of contemporary English that is tailored for the investigation of current, ongoing changes in the English language.

COCA's search engine was used to retrieve all the occurrences of the constructions under scrutiny and the immediate context in which both constructions occurred. Each concordance line was then manually inspected to identify the nouns with which these items occurred. The concordance lines were read one by one and all false hits were excluded from a further analysis. The observed frequencies of the remaining collocates of the constructions were calculated manually. The rest of the frequencies and expected values were computed by means of Microsoft Excel spreadsheets. The resulting frequency lists then provided the input to the distinctive collexeme analysis.

All values required for the calculation of the association strengths were entered in the 2-by-2 table and submitted to the Fisher exact test. The p-value resulted from this test was used as an index of association strength, i.e., a noun's strength of attraction/repulsion to one of the near-synonymous constructions: the smaller the p-value, the stronger the association. An on-line Fisher's exact test calculator for two-by-two contingency tables was employed to conduct this statistical analysis. An advantage of the Fisher exact test is that, in comparison to other statistical tests, it can be applied to data that are very unevenly distributed and/or infrequent in the corpus (cf. e.g. Stefanowitsch and Gries 2003: 9; Gries and Stefanowitsch 2004a: 101).

However, it noteworthy that the application of the Fisher exact test for the computation of the association strengths has come under criticism in recent publications (Schmid and Küchenhoff 2013; Küchenhoff and Schmid 2015).

These criticisms centred upon the validity of the p-value as a measure of statistical significance. Schmid and Küchenhoff held that the p-value is not an effect size, and that it is unclear whether the Fisher exact test incorporates this quantitative measure. In response to this major point of critique, Gries (2015: 520) advanced valid arguments for the use of this test as a measure of collocation strength, namely that although “p-values are not effect sizes, p-values by their very nature reflect a combination of different things including the size of the sample (s), the variability of the sample(s), and the effect size.”

4. Procedure

Three steps were involved in the statistical procedure followed in this study. These steps can be illustrated by means of the noun *war*. First, the observed frequencies of this noun and the constructions were extracted from the corpus: the frequency of *war* in the *on the verge of-noun* construction: 49, the frequency of this lexeme in the *on the brink of-noun* construction: 96, the total frequency of the *on the verge of-noun* construction: 1693, and the total frequency of the *on the brink of-noun* construction: 808. These and the remaining frequencies required to compute the distinctiveness of *war* (i.e. its strength of association to both synonymous constructions) are rendered in Table 1. For illustrative purposes, this table also provides the expected frequencies for the lemma *war* in each construction in parentheses. The figures in italics were obtained directly from the corpus while the other figures were the results of addition and subtraction.

Table 1. *War* in the *on the verge of-noun* construction vs. the *on the brink of-noun* construction

	<i>Noun (war)</i>	<i>All other nouns</i>	<i>Total</i>
<i>On the verge of- noun construction</i>	A: Frequency of noun ( <i>war</i> ) in ‘on the verge of-noun’ construction 49 (98.15)	B: Frequency of all other nouns in ‘on the verge of-noun’ construction 1644	X: Total frequency of ‘on the verge of-noun’ construction 1693
<i>On the brink of- noun construction</i>	C: Frequency of noun ( <i>war</i> ) in ‘on the brink of-noun’ construction 96 (46.85)	D: Frequency of all other nouns in ‘on the brink of-noun’ construction 712	Y: Total frequency of ‘on the brink of-noun’ construction 808
<i>Total</i>	E: Total frequency of noun ( <i>war</i> ) 145	F: Total frequency of all other nouns 2356	Z: Total frequency of two constructions 2501

Then, these observed frequencies allowed for the estimation of the expected frequencies of the noun *war* in both constructions. This arithmetical calculation was performed by means of Microsoft Excel spreadsheets in the following order.

For the lemma *war* in each construction, its column total was multiplied by its row total, and the result was divided by the overall table total. For instance, in order to receive the value (98.15), the column total (145) was multiplied by the row total (1693) and the result was divided by the table total (2501). If the observed frequency of the noun (*war*) in the *on the verge of*-noun construction is significantly higher than expected, the association between the noun *war* and this construction is one of attraction. In other words, the lexeme *war* is perceived as a *distinctive collexeme* of the *on the verge of*-noun construction. By contrast, if the observed frequency of the noun (*war*) in the *on the brink of*-noun construction is significantly lower than expected, then the lexeme (*war*) is considered to be a significantly repelled *collexeme* of the *on the brink of*-noun construction.

Finally, the strength of attraction between the noun *war* and the constructions (in this case, its distinctiveness) was calculated. In order to do this, the following four frequencies were employed: the frequency of the noun (*war*) in the *on the verge of*-noun construction, the frequency of all other nouns in the *on the verge of*-noun construction, the frequency of the noun (*war*) in the *on the brink of*-noun construction; the frequency of all other nouns in the *on the brink of*-noun construction. These figures were entered in a two-by-two contingency table and submitted to the Fisher exact test. The p-value resulting from the computation of the Fisher exact test for these frequencies turned out to be exceptionally small: 7.14264E-18. This points to the special significance of the noun *war* (its distinctiveness) for one of the two constructions, but it fails to provide a rational explanation for which one. In order to determine this, the observed frequencies of the noun *war* were compared with the expected ones. As this comparison revealed, the noun *war* occurs more frequently than expected in the *on the brink of*-noun construction and less frequently than expected in the *on the verge of*-noun construction. In other words, *war* is a highly significant, very strongly distinctive collexeme of the *on the brink of*-noun construction if compared to the *on the verge of*-noun construction.

As in the case of all collostructional techniques, such findings became interpretable, since this standard procedure was applied to every single noun in the two constructions. Then the nouns were arranged in a ranking list, first, according to their direction of distinctivity, and second, according to their strength of distinctivity. The results were also interpreted qualitatively by pointing out that the two synonymous constructions do indeed possess distinctive collexemes, and that these collexemes evoke certain semantic frames.

## 5. On the brink of-noun versus on the verge of-noun

Distinctive collexeme analysis allows us to uncover subtle semantic differences between any pair of constructions carrying approximately the same meaning, for example, the two near-equivalent patterns: the *on the brink of*-noun construction versus the *on the verge of*-noun construction. Both patterns under study are

partially lexically-filled structures requiring one fixed lexical item (*on the brink of* and *on the verge of*) and one flexible slot that can be filled by nouns. Their syntactic form and meaning can be represented structurally and schematically as [PP *at the point when something is about to happen* NOUN<sub>event, situation</sub>], where each prepositional phrase precedes a noun. The following examples extracted from the corpus can be provided to illustrate the use of both constructions:

- (1) *Starved for funds, the state's largest cyber charter company is on the verge of collapse.*
- (2) *She seemed to me to be constantly on the verge of tears.*
- (3) *They announced that dozens of species of primates are now on the brink of extinction, dozens more are in serious danger.*
- (4) *The disastrous occupation has left Iraq teetering on the brink of all-out civil war.*

The illustrative sentences presented in (1), (2), (3), and (4) show that the near-equivalent expressions are used to refer to a point at which a situation or an event, usually an unwelcome one, is about to happen or is very likely to happen. The definitions of these prepositional phrases provided by the *Oxford Advanced Learner's Dictionary* (7<sup>th</sup> edition) and the usage examples seem to confirm this meaning. The dictionary offers the following explanation of the semantic properties of the terms, accompanied by the illustrative examples:

- (5) **brink** 1. **the ~ (of sth)** if you are on the brink of sth, you are almost in a very new, dangerous or exciting situation: *on the brink of collapse/war/death/disaster* ○ *Scientists are on the brink of making a major new discovery.* 2. (literary) the extreme edge of land, for example at the top of a cliff or by a river: *the brink of the precipice.* IDIOM **teeter on the brink/edge of sth** to be very close to a very unpleasant or dangerous situation: *The country is teetering on the brink of civil war.*
- (6) **verge** (BrE) a piece of grass at the edge of a path, road, etc.: a grass verge IDIOM **on/ to the verge of sth/of doing sth** very near to the moment when sb does sth or sth happens: *He was on the verge of tears* ○ *They are on the verge of signing a new contract.*

As the dictionary entry for *brink* in (5) shows, the expression *on the brink of* is applied to something dangerous or exciting that is likely to happen and collocates with the nouns carrying pejorative connotations, e.g. *collapse*, *war*, *death*, and *disaster*. This metaphorical extension might have derived from a literal sense of the word *brink* denoting 'the edge at the top of a steep place.' Interestingly, the prepositional phrase *on the brink of* also tends to co-occur in the idiomatic construction with the verb *teeter*, meaning, in its concrete sense, 'to stand in a way that is not steady and makes you seem about to fall'.

In the entry for *verge* in (6), *on the verge of* is treated as the idiom meaning ‘very close to experiencing something’. The expression is variable: the preposition *on* can be replaced with *in*. Unlike *on the brink of*, this idiom seems not to possess any negative connotations, since its meaning is a figurative extension of a literal sense of the word *verge* carrying no negative overtones and denoting ‘the edge or border of something’, as the definition of this term in the *Cambridge Advanced Learner’s Dictionary* (2<sup>nd</sup> edition) might suggest:

- (6) **Verge** noun [C] the edge or border of something: *They set up camp on the verge of the desert.* IDIOM **on the verge of** (also **to the verge of**) if you are on the verge of something or come to the verge of something, you are very close to experiencing it: *on the verge of collapse/success/tears/death/disaster/war* ○ *Her husband’s violent and abusive behaviour drove her to the verge of despair.*

The usage examples in (7) show that, in the comparison to *on the brink of*, *on the verge of* may display a broader tendency to collocate with nouns triggering not only negative associations (*collapse, tears, death, disaster, war*) but also positive ones (e.g. *success*). On the basis of the illustrative examples, however, we can also observe a number of striking similarities in meaning, usage and collocability. First, both expressions seem to co-occur with the same negative nouns, since the dictionaries list *collapse, war, death, and disaster* as their most frequent collocates. Second, they can be linguistic manifestations of the same underlying conceptual metaphor: TIME IS SPACE. More specifically, the point in time when something is about to happen is viewed as the point in space (i.e. an edge or a border) where something is very likely to happen. Finally, the phrases can be used both with a noun and a gerund, as shown in the above entries.

Given these similarities, we could expect that *on the brink of* and *on the verge of* are semantically near-equivalent expressions co-occurring with a multitude of closely related nouns. However, because of slight nuances in their meaning, we could also anticipate unveiling subtle differences between both metaphorical constructions with respect to the semantic constraints they place on the nouns that can occur with them. The meaning of the phrases and the nouns collocating with them might be the primary factor determining the choice between these two constructions. Thus, the frame-semantic information on the nouns occurring with them may play a vital part in predicting the differences between these constructions in terms of their preferred nouns. Considering the illustrative examples in (5), (6) and (7), we could predict that the nouns collocating with *on the brink of* and *on the verge of* should evoke similar semantic frames: for example, the HOSTILE ENCOUNTER frame, the CATASTROPHE frame and the DESTRUCTION frame. The only difference in their collocability may lie in the tendency of the former to collocate with nouns carrying negative overtones and of the latter to combine with the nouns possessing positive associations, e.g. with the



word *success* reflecting the SUCCESS OR FAILURE frame, as the illustrative example in (7) may suggest.

The application of the distinctive-collexeme analysis allows us to corroborate or refute such pre-set expectations, hypotheses and assumptions. This corpus-based method can be employed to substantiate the existence and degree of semantic differences between the constructions as well as the semantic restrictions they impose on the nouns. This substantiation may be provided by virtue of indicating the nouns that are highly distinctive for one of the constructions, i.e. occur more or less frequently than expected in the *on the verge of*-noun construction as compared to the *on the brink of*-noun construction.

## 6. Results and discussion

The data extracted from the corpus included 1693 occurrences of the *on the verge of*-noun construction and 808 occurrences of the *on the brink of*-noun construction. In other words, the occurrence of the former turned out to be approximately twice as frequent as the latter in COCA. The observed frequencies resulted from the calculation of the tokens of nouns in both constructions show that *on the verge of* collocates with 483 types of nouns, out of which 291 types occurred only once in the construction. By contrast, *on the brink of* combines with 233 types of nouns, out of which 154 types were used only once with this phrase. This means that a vast majority of nouns are rather loosely associated with both expressions, and that the remaining ones are more strongly attracted to one of these near-synonyms.

The results of this investigation corroborate the hypothesis concerning the existence of the collexemes distinguishing between the *on the verge of*-noun construction and the *on the brink of*-noun construction. In addition, the specific predictions about the semantic discrepancies between the constructions and about the semantic restrictions they impose on the nouns co-occurring with them are also confirmed. Table 2 displays the twenty most distinctive collexemes of the pattern with *on the verge of*, the observed frequencies used to calculate the direction of association (attracted or repelled) and the strength of association (the distinctiveness of nouns), the expected frequencies for each noun: (a) and (c), as well as the results of the distinctive-collexeme analysis ( $P_{\text{Fisher exact}}$ ).

**Table 2.** The twenty most distinctive collexemes of the *on the verge of*-noun construction

Rank	Noun	a	c	e	f	x	y	z	b	d	(a)	(c)	P <sub>Fisher exact</sub>
1.	tears	176	6	182	2319	1693	808	2501	1517	802	123.20	58.80	9.42E-24
2.	collapse	163	45	208	2293	1693	808	2501	1530	763	140.80	67.20	0.000474
3.	breakthrough	31	4	35	2466	1693	808	2501	1662	804	23.69	11.31	0.005977
4.	breakdown	45	8	53	2448	1693	808	2501	1648	800	35.88	17.12	0.006897
5.	sleep	14	0	14	2487	1693	808	2501	1679	808	9.48	4.52	0.007206
6.	victory	13	0	13	2488	1693	808	2501	1680	808	8.80	4.20	0.013053
7.	panic	15	1	16	2485	1693	808	2501	1678	807	10.83	5.17	0.028895
8.	crying	10	0	10	2491	1693	808	2501	1683	808	6.77	3.23	0.036241
9.	happening	8	0	8	2493	1693	808	2501	1685	808	5.42	2.58	0.060404
10.	agreement	9	0	9	2492	1693	808	2501	1684	808	6.09	2.91	0.065824
11.	laughter	9	0	9	2492	1693	808	2501	1684	808	6.09	2.91	0.065824
12.	meltdown	9	0	9	2492	1693	808	2501	1684	808	6.09	2.91	0.065824
13.	century	5	0	5	2496	1693	808	2501	1688	808	3.38	1.62	0.182105
14.	comeback	5	0	5	2496	1693	808	2501	1688	808	3.38	1.62	0.182105
15.	age	5	0	5	2496	1693	808	2501	1688	808	3.38	1.62	0.182105
16.	exhaustion	5	0	5	2496	1693	808	2501	1688	808	3.38	1.62	0.182105
17.	drowning	5	0	5	2496	1693	808	2501	1688	808	3.38	1.62	0.182105
18.	smile	6	0	6	2495	1693	808	2501	1687	808	4.06	1.94	0.185999
19.	decline	6	0	6	2495	1693	808	2501	1687	808	4.06	1.94	0.185999
20.	boom	6	0	6	2495	1693	808	2501	1687	808	4.06	1.94	0.185999

Note!

a = Observed frequency of noun (e.g. *war*) in the *on the verge of*-noun construction; b = Frequency of all other nouns in the *on the verge of*-noun construction; c = Observed frequency of noun (e.g. *war*) in the *on the brink of*-noun construction; d = Frequency of all other nouns in the *on the brink of*-noun construction; e = Total frequency of noun (e.g. *war*); f = Total frequency of all other nouns; x = Total frequency of the *on the verge of*-noun construction; y = Total frequency of the *on the brink of*-noun construction; z = Total frequency of both constructions; (a) = Expected frequency of noun (e.g. *war*) in the *on the verge of*-noun construction; (c) = Expected frequency of noun (e.g. *war*) in the *on the brink of*-noun construction; P<sub>Fisher exact</sub> = index of distinctive collostructional strength.

For the *on the verge of*-noun construction, it was found that the twenty most distinctive nouns are *tears*, *collapse*, *breakthrough*, *breakdown*, *sleep*, *victory*, *panic*, *crying*, *happening*, *agreement*, *laughter*, *meltdown*, *century*, *comeback*, *age*, *exhaustion*, *drowning*, *smile*, *decline* and *boom*. The p-values taken to be indicators of their distinctivity are very small, as shown in Table 2. A comparison of the observed and the expected frequencies of each of these nouns and each of

the two constructions indicates that the nouns occur more frequently than expected in the pattern with *on the verge of* and less frequently than predicted in the pattern with *on the brink of*. In other words, they are highly significant, very strongly distinctive collexemes of the former as compared to the latter. Note also that *tears* is the strongest collexeme for the *on the verge of*-noun construction, since its p-value resulting from the calculation of the Fisher exact test is exceptionally small ( $p = 9.419\text{E-}24$ ), and a comparison of the observed and the expected frequencies reveals that *tears* occurs more frequently than expected in the *on the verge of*-noun construction and less frequently than expected in the *on the brink of*-noun construction.

These findings confirm the hypothesis predicting two different sets of nouns in the majority of the top ranks of the collexeme list. All these distinctive nouns can be grouped under two broad categories: the nouns carrying negative associations and those holding positive or neutral ones. The first category consists of *tears*, *collapse*, *breakdown*, *panic*, *crying*, *meltdown*, *exhaustion*, *drowning*, and *decline*. *Tears* (in rank 1) and *crying* (in rank 8) evoke the CRY frame representing a situation in which an experiencer is in an emotional state leading to the production of tears from the eyes, as in *She seemed to me to be constantly on the verge of tears*. Another very strongly attracted group of negative nouns appearing among the most central collexemes of the pattern is constituted by a set of nouns related to the FAILURE frame and the MEDICAL CONDITION frame. Its leading collexeme *collapse* in rank 2 is accompanied by *breakdown* and *meltdown* in ranks 4 and 12. As the illustrative sentences in COCA show, *collapse* collocates with *on the verge of* in many contexts and thus can be characterized with respect to at least three semantic frames: BUILDING COLLAPSE, FAILURE, and MENTAL CONDITION. The BUILDING COLLAPSE frame describes an occasion when a building or other structure falls down, as in *The whole landscape of Spyre was transforming as trees fell and buildings quivered on the verge of collapse*. The FAILURE frame concerns a situation in which a company, organization or system fails or stops operating (as in *Because the economy was on the verge of collapse*), whereas the MEDICAL CONDITION frame refers to an occasion when a patient falls down and becomes very ill or unconscious or to a mental condition in which a person is so upset and unhappy that they cannot deal with a problem (e.g., in *Ed's face was scarlet, running with sweat. He looked on the verge of collapse*). These last two frames also provide a particular kind of knowledge representation against which other lexical units such as *breakdown* and *meltdown* can be understood.

*Panic* and *exhaustion* are other negative nouns appearing among the construction's attracted collexemes. The former, ranked seventh, invokes the PANIC frame, a situation in which an experiencer has a sudden strong feeling of fear or worry caused by a stimulus and is unable to think clearly and calmly or to decide what to do, as in *Vincent realizes Max is on the verge of panic*. The latter, ranked number sixteen, is relativised to the BIOLOGICAL URGE frame. In this frame, an experiencer is in a state where a biological urge, i.e. a feeling of being extremely tired and without energy, is signaling the need to have a rest, as in

*Finally, out of breath and on the verge of exhaustion, he came to the very center of the forest.*

The last two nouns belonging to the first category are *drowning* and *decline*. The meaning of the first lexeme can be understood relative to the DEATH frame, the background knowledge of the death of a protagonist (e.g., in *They were all on the verge of drowning*). The meaning of the second one, by contrast, should be interpreted with respect to the DETERIORATION frame, a coherent knowledge structure about an entity in a prior state that deteriorates into a less desirable state (in *Britain was fatigued and its empire on the verge of decline*).

The second category of the most distinctive collexemes of the *on the verge of*-noun construction comprises *breakthrough*, *sleep*, *victory*, *happening*, *agreement*, *laughter*, *century*, *comeback*, *age*, *smile*, and *boom*. *Breakthrough*, occupying the highest position among the nouns triggering positive associations in the ranking list, precedes *sleep* and *victory* in ranks 5 and 6, which are followed by *happening* and *agreement* in ranks 9 and 10. This lexeme denotes a discovery or achievement that comes after much hard work and hence it reflects the DISCOVERY frame, as in *I believe we may be on the verge of a major breakthrough*. It may also describe a time when a person begins to be successful at something, thereby being interpreted against the SUCCESS OR FAILURE frame, as in *We are on the verge of a huge breakthrough on border security*.

*Sleep* invokes the SLEEP frame, an altered state of consciousness with greatly reduced external awareness in which a sleeper stays for a time, as in *I was on the verge of sleep when I thought I heard a tap on the living room window*. *Victory* can be understood in relation to the FINISH COMPETITION frame, a final stage of a competition at which a competitor wins or defeats an opponent, as in *The White House appeared to be on the verge of victory last night*. *Happening*, appearing at rank 9, refers to an occurrence or an event that is likely to happen (as in *In Bryzgalov, that could be on the verge of happening*), whereas *agreement* means a situation in which two or more parties make an arrangement or decision about what to do, as in *Former Israeli Prime Minister Shimon Peres says the two sides were on the verge of an agreement at Camp David*. *Laughter* and *smile* provide access to the LAUGH frame and the FACIAL EXPRESSION frame, respectively (as in *She was on the verge of hysterical laughter* and *He gave me a look, eyebrows raised, mouth on the verge of a smile*). *Century* and *age*, in turn, mean two different parts of the calendric cycle, thereby evoking the CALENDRIC UNIT frame, as in *America was on the verge of a new century*. *Comeback*, understood against the REVIVAL frame, is applied to a period when someone or something becomes successful or popular again (e.g., in *They're on the verge of a remarkable comeback*). *Boom* denotes a sudden increase in a trade, profits, etc. Hence, this word can be characterised with respect to the coherent knowledge related to INCREASE, as in *Boulder was on the verge of a population boom*.

Concerning the *on the brink of*-noun construction, the results of the distinctive-collexeme analysis confirm the hypothesis on the use of negative nouns in the construction. Table 3 below displays the twenty most distinctive collexemes of

this pattern. In accordance with the prediction, the bulk of the colllexemes in the ranking list is constituted by the nouns carrying negative connotations. As can be seen in Table 3, *war* is the strongest colllexeme of the *on the brink of*-noun construction, since its p-value resulting from the computation of the Fisher exact test is exceptionally small ( $p = 7.14264\text{E-}18$ ), and a comparison of the expected frequencies with the observed ones indicates that *war* occurs more frequently than expected in this pattern in direct comparison with the pattern with *on the verge of*. This lexeme can be relativised to the HOSTILE ENCOUNTER frame including the words describing a hostile encounter between two opposing sides over a disputed issue or in order to achieve a certain purpose, as in *Finland was on the brink of civil war*.

**Table 3.** The twenty most distinctive colllexemes of the *on the brink of*-noun construction

Rank	Noun	a	c	e	f	x	y	z	b	d	(a)	(c)	P <sub>Fisher exact</sub>
1.	war	49	96	145	2356	1693	808	2501	1644	712	98.15	46.85	7.14E-18
2.	disaster	7	39	46	2455	1693	808	2501	1686	769	31.14	14.86	1.63E-13
3.	insolvency	3	13	16	2485	1693	808	2501	1690	795	10.83	5.17	7.64E-05
4.	ruin	7	16	23	2478	1693	808	2501	1686	792	15.57	7.43	0.000381
5.	starvation	14	22	36	2465	1693	808	2501	1679	786	24.37	11.63	0.000443
6.	recession	8	16	24	2477	1693	808	2501	1685	792	16.25	7.75	0.000629
7.	extinction	53	49	102	2399	1693	808	2501	1640	759	69.05	32.95	0.000755
8.	self-destruction	0	6	6	2495	1693	808	2501	1693	802	4.06	1.94	0.001123
9.	failure	12	18	30	2471	1693	808	2501	1681	790	20.31	9.69	0.002447
10.	abyss	2	8	10	2491	1693	808	2501	1691	800	6.77	3.23	0.00267
11.	catastrophe	4	10	14	2487	1693	808	2501	1689	798	9.48	4.52	0.003037
12.	oblivion	0	5	5	2496	1693	808	2501	1693	803	3.38	1.62	0.00349
13.	destruction	1	6	7	2494	1693	808	2501	1692	802	4.74	2.26	0.005694
14.	change	9	13	22	2479	1693	808	2501	1684	795	14.89	7.11	0.010531
15.	death	41	35	76	2425	1693	808	2501	1652	773	51.45	24.55	0.012292
16.	crisis	10	13	23	2478	1693	808	2501	1683	795	15.57	7.43	0.022371
17.	precipice	0	3	3	2498	1693	808	2501	1693	805	2.03	0.97	0.033636
18.	annihilation	0	3	3	2498	1693	808	2501	1693	805	2.03	0.97	0.033636
19.	demise	0	3	3	2498	1693	808	2501	1693	805	2.03	0.97	0.033636
20.	success	10	11	21	2480	1693	808	2501	1683	797	14.22	6.78	0.060151

In full confirmation of the prediction, the list of distinctive collexemes for the pattern contains the nouns evoking both the CATASTROPHE frame in ranks 2, 11 and 16 (*disaster, catastrophe, crisis*) and the DESTRUCTION frame in ranks 4, 8, 13 and 18 (*ruin, self-destruction, destruction, annihilation*). The former frame consists of the words associated with an undesirable event affecting the patient negatively (e.g., in *Iraq today stands on the brink of disaster*), whereas the latter contains the words describing a situation in which a destroyer (usually a person) or cause (an event or an entity) affects the patient so that the patient no longer exists, as in *The country totters on the brink of ruin, brought about by the withdrawal of Soviet subsidies and the U.S. trade*.

Moreover, in comparison with the pattern with *on the verge of*, another group of highly distinctive collexemes consists of a set of nouns describing the death of a protagonist: *starvation, extinction, death, and demise* in ranks 5, 7, 15, and 19 (e.g., in *It felt like I was on the brink of death*). Its leading collexeme, *starvation*, follows only *war, disaster, insolvency* and *ruin* in frequency and even precedes a range of other negative nouns in the subsequent ranks, e.g. *recession, failure, and abyss*. *Insolvency*, ranked third, can be interpreted through the BANKRUPTCY frame, a situation in which a company or a person does not have enough money to pay what they owe, as in *Countries such as Italy, Spain, Greece, and Portugal found themselves on the brink of insolvency*. *Recession*, holding a position directly after *starvation*, is related to the ECONOMIC PROBLEM frame providing the background knowledge concerning a period when trade and industry are not successful, as in *The economy is teetering on the brink of recession*.

The next two groups are constituted by a range of nouns evoking the SUCCESS OR FAILURE frame and the RISKY SITUATION frame. *Failure* and *success* in ranks 9 and 20 belong to the first category, while *abyss* and *precipice* in ranks 10 and 17 fall into the second one. The SUCCESS OR FAILURE frame constitutes the knowledge of an agent's attempt to achieve a goal and the actual outcome of this attempt, i.e. the agent's success or failure, as in *The bank was on the brink of failure*. The RISKY SITUATION frame, in turn, contains the words describing a situation resulting in a harmful event befalling something desirable or valuable which might be lost or damaged, as in *Russia stands on the brink of an economic abyss*.

Among the distinctive collexemes in the ranking list, there are also *oblivion* and *change* in ranks 12 and 14. The former, evoking the FORGETFULNESS frame, the UNCONSCIOUSNESS frame and the DESTRUCTION frame, denotes the state of being completely destroyed, forgotten or unconscious (e.g., in *This tribe believes its entire world is on the brink of oblivion*). The latter can be interpreted through a coherent knowledge structure, i.e. the CHANGE frame, pertaining to a situation in which a concrete or abstract entity undergoes a change either in its category membership, its situation, or in terms of the quality of an attribute, as in *The natural gas business is on the brink of profound change*.

At the final stage of this discussion, it may also be useful to examine nouns that are not significantly attracted to both constructions: that is, nouns that are not

strongly 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 4. Obviously, in the case of both constructions, the nouns such as *retreat*, *return*, *remoteness*, *poisoning*, *misbehavior*, *misunderstanding*, *vulgarity* and many others listed in Table 4 are not strongly distinctive collexemes, since their p-values resulting from the calculation of the Fisher exact test are very high: 1. 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. Hence, these nouns are not significantly attracted to both constructions.

**Table 4.** The twenty most strongly repelled nouns

Rank	Noun	a	c	e	f	x	y	z	b	d	(a)	(c)	P <sub>Fisher exact</sub>
1.	retreat	1	0	1	2500	1693	808	2501	1692	808	0.68	0.32	1
2.	return	1	0	1	2500	1693	808	2501	1692	808	0.68	0.32	1
3.	remoteness	1	0	1	2500	1693	808	2501	1692	808	0.68	0.32	1
4.	poisoning	1	0	1	2500	1693	808	2501	1692	808	0.68	0.32	1
5.	popularity	1	0	1	2500	1693	808	2501	1692	808	0.68	0.32	1
6.	poverty	1	0	1	2500	1693	808	2501	1692	808	0.68	0.32	1
7.	outrage	1	0	1	2500	1693	808	2501	1692	808	0.68	0.32	1
8.	participation	1	0	1	2500	1693	808	2501	1692	808	0.68	0.32	1
9.	obsession	1	0	1	2500	1693	808	2501	1692	808	0.68	0.32	1
10.	obstruction	1	0	1	2500	1693	808	2501	1692	808	0.68	0.32	1
11.	nausea	1	0	1	2500	1693	808	2501	1692	808	0.68	0.32	1
12.	mutilation	1	0	1	2500	1693	808	2501	1692	808	0.68	0.32	1
13.	mystery	1	0	1	2500	1693	808	2501	1692	808	0.68	0.32	1
14.	monopoly	1	0	1	2500	1693	808	2501	1692	808	0.68	0.32	1
15.	misbehavior	1	0	1	2500	1693	808	2501	1692	808	0.68	0.32	1
16.	mistake	1	0	1	2500	1693	808	2501	1692	808	0.68	0.32	1

Rank	Noun	a	c	e	f	x	y	z	b	d	(a)	(c)	P <sub>Fisher exact</sub>
17.	misunderstanding	1	0	1	2500	1693	808	2501	1692	808	0.68	0.32	1
18.	understanding	1	0	1	2500	1693	808	2501	1692	808	0.68	0.32	1
19.	violation	1	0	1	2500	1693	808	2501	1692	808	0.68	0.32	1
20.	vulgarity	1	0	1	2500	1693	808	2501	1692	808	0.68	0.32	1

As can be seen in Table 4, the ranking list contains the nouns carrying pleasant, neutral and unpleasant associations, and thus evoking semantic frames describing either negative or positive situations. For example, popularity can be interpreted with respect to the POPULARITY frame, while poverty in terms of the WEALTHINESS frame. The former refers to a situation in which a person or an object is evaluated according to an amount of acceptability or utilization. The latter relates the words describing a person or institution in terms of their wealthiness, i.e. the amount of money in their possession.

7. Concluding remarks

The results of the distinctive-collexeme analysis of the *on the verge of*-noun construction and the *on the brink of*- noun construction reveal that the frame-constructional semantics is a relevant factor determining the choice between these two patterns. Moreover, the findings support the prediction about the occurrence of clearly distinctive collexemes for each of the two constructions. Finally, the specific suggestions concerning the nuances of their meaning are also confirmed.

With respect to the *on the verge of*-noun construction, it was found that *tears* is the most distinctive collexeme. The other distinctive collexemes for this pattern are the nouns triggering both negative and positive (or neutral) associations, e.g. *collapse*, *breakthrough*, *breakdown*, *sleep*, *victory*, and *panic*. In contrast to the pattern with *on the brink of*, *on the verge of* appears not to impose many semantic restrictions upon the nouns with which it collocates and hence this may occur with a more extensive range of nouns than the former. The simplest explanation for this lies in the origin of the expression. As mentioned in Section 5, the meaning of *verge* in the phrase *on the verge of* is a figurative extension of its literal sense: an edge or a border of something. This sense provides a basis for the figurative meaning of the phrase and determines its patterns of usage. In this literal sense, *verge* holds neutral associations and is used in a variety of contexts, both negative and positive ones, thereby also placing fewer limitations on the choice of nouns in its figurative sense.

For the *on the brink of*-noun construction, we find that *war* is the most distinctive collexeme. This and other nouns significantly attracted to this pattern



(such as *disaster*, *catastrophe* or *crisis*) match the proposed frame-constructional semantics of ‘a point at which a situation or an event, usually an unwelcome one, is about to happen or is very likely to happen’ perfectly. Similarly, the other distinctive colllexemes for this construction (e.g. *ruin*, *self-destruction*, *destruction*, *annihilation*) clearly confirm the meaning of this pattern, and thus the claim that it is a semantic construction that primarily prefers negative nouns over positive ones.

In comparison with the pattern with *on the verge of*, *on the brink of* appears to impose semantic restrictions upon the nouns with which it occurs, thus collocating with a more limited number of nouns, mainly with those possessing pejorative connotations. A possible explanation for this preference is that *on the brink of* is a metaphorical construction deriving its figurative meaning from the sense: ‘at the top of a very steep cliff’. This origin of the word *brink*, in particular its negative overtone in the literal sense, seems to be a crucial factor determining the construction’s preference for negative nouns. This claim can be also substantiated by indicating the tendency of *on the brink of* to co-occur very frequently with a set of closely related words, such as *teeter*, *precipice*, and *abyss*, coming from the same source domain: a situation in which a person stands at the top of a steep place. The verb *teeter* is a derivative of the sense: ‘to appear to be about to fall while moving or standing’, whereas *precipice* and *abyss* denoting a very dangerous situation are figurative extensions of the senses: ‘a very steep high cliff’ and ‘a large deep hole that appears to have no bottom’, respectively. Thus, the idiom *teeter on the brink of something* (*precipice*, *abyss*, etc) is a manifestation of the metaphorical correspondence: being in a situation in which something bad is very likely to happen is like standing at the top of a very steep place in a way that is not steady and makes you seem about to fall.

The results of the distinctive-colllexeme analysis can have a wide range of applications in applied linguistics and language pedagogy. First, they can be employed for second language instruction, i.e. for the development of language learning materials and exercises aimed at raising students’ awareness of the use of such synonymous expressions. Second, they can be used in pedagogical lexicography for the compilation of learner’s dictionaries providing information about the collocability of the patterns. Finally, the findings can be adopted for a further analysis of the near-synonymous constructions. For example, a comparative study of the nouns distinctive for *on the point of*, *on the brink of*, *on the verge of* and *on the edge of* may help us elucidate the existence and degree of semantic differences between them. Future research might, therefore, concentrate on uncovering subtle distributional variations between this group of synonymous phrases. For this purpose, an extension of this technique, called multiple distinctive colllexeme analysis (Gries and Stefanowitsch 2004a), might be perfectly suitable, as the approach allows for the investigation of more than two synonymous constructions.

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