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The Study of Collostruction Strength between Verb Collexemes and "V+Through" Construction In American English

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Abstract: Construction grammar has attracted increasing attention in the field of linguistics study. With the help of related linguistics software, this paper aims to explore which verbs show strong collostruction strength with the particle "through" in "V+through" construction in American English.

Keywords: Construction grammar; Collostruction strength; Collexeme analysis

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1. Introduction

Construction grammar is a grammatical theory that emerged in the late 1980s and a research method adapted to almost the entire linguistics category. There exist numerous studies on verb-particle constructions. However, "V+through" construction, a particular subtype of verb-particle constructions, has not aroused much attention from linguists because of relative low frequency of particle "through" in the corpus. On the basis of linguistic data collected from COCA, the present analysis applies Coll. Analysis 3.2a as an analytical tool to calculate the collostruction strength between verb collexemes and "V+through" construction in American English.

2. Identification of "V+through" construction

On the basis of construction grammar proposed by A.E. Goldberg in 1995, as long as the sense of combinations of words is not predictable from its components, such combinations can be viewed as constructions [1]. Thus, it is reasonable to classified "V+through" construction into the following three types:

(1) The intransitive verb-particle structure of "V+through"
Eg. It's a process which we have to *go through*.

(2) The transitive verb-particle structure of "V+through+NP"
Eg. This enabled us to *see through* their subtle scheme.

(3) The transitive verb-particle structure of "V+NP+through"
Eg.You need time to *think things through* before responding.

Therefore, "V+through" constructions can be retrieved from COCA through the following search string:

(1) [v*] through
(2) [v*] [p*] through
(3) [v*] [n*] through

The [v*] represents all the verbs in COCA regardless of their tenses. [p*] stands for any pronoun, and similarly, [n*] signifies any noun. Such set of search strings aim at covering all the possible cases of the target constructions.

As a result, every fitting type or form of "v + through" constructions are recorded. And then the quantitative methodology is used to calculate raw frequencies and the collostruction strengths of various verbs and the target constructions with the help of Coll. analysis. 3.2a designed by Gries.

3. Collexeme analysis

Collexeme analysis was first put forward by Stefanowitsch & Gries [2]. As a subtype of collostructional analysis, collexeme analysis is probably the most commonly used in measuring the co-occurrences of words and grammatical units or constructions. It aims at identifying whether a lexeme is attracted or rejected by a particular slot in a particular construction. In order to calculate association measure score of collexeme Wn for the target construction C, four groups of frequencies are necessary:

(1) The frequency of collexeme Wn in the target construction.
(2) The frequency of the collexeme Wn in all other constructions.
(3) The frequency of the target construction with collexemes apart from Wn.
(4) The frequency of other constructions with collexemes apart from Wn.

The above four frequencies are represented as letter a, b, c, d respectively in the following **Table 1**:

Table 1. Association Measure Score of Collexeme Wn for the Target Construction C

	Wn(word)	**¬Wn(other words)**	**Raw totals**
C (Target Construction)	a	b	a+b=X
¬C (Other Construction)	c	d	c+d=Y
Column Totals	a+c=M	b+d=N	a+b+c+d=W

On the basis of the above frequencies, Fisher exact test is applied to calculate the collostructional strength between the collexem Wn and the target construction [3].

In this study, the collostructional analysis software Coll. analysis 3.2a will be used to perform calculations in the R language environment [4]. This software can conduct Fisher exact test, and get the collostructional strength between the Wn and the target construction. After a careful selecting and examine of the "V+through" construction, top-10 verb collexemes are shown in the following **Table 2**:

Table 2. Top-10 Verb Collexemes in "V+through" Construction

NO.	**WORD**	**FREQ**	**NO.**	**WORD**	**FREQ**
1	go	72,299	6	see	4,809
2	be	14583	7	walk	3,888
3	come	9584	8	cut	2,902
4	pass	8,669	9	work	2,869
5	run	6,133	10	look	2,366

Table 2 ranks verbs that occur in the verb slot of through constructions in a descending order on the basis of their raw frequencies. Obviously, there exists a comparatively large discrepancy of co-occurrence frequencies among verbs that collocate with the particle "through." Among them, the verb collexeme "go"

has the highest raw frequency, appearing 72,299 times totally in the through construction. Other top-10 verb collexemes such as "be," "come," "pass," "run," "see," "walk," "cut," "work" and "look" follow them with the frequencies of 14583, 9584, 8669, 6133, 4089, 3888, 2902, 2869 and 2366 times respectively.

4. Collostruction strengths of verb collexemes

Using collected linguistic data, we can get collostruction strength between verbs and the target construction. In the collostruction analysis, the statistical tool of log-likelihood in R software is applied in order to calculate the collostruction strengths of the targets [5]. If the collostruction strength is based on p-values, it can be interpreted as follows: Coll.strength>3 => p<0.001; coll.strength>2 => p<0.01; coll.strength>1.30103 => p<0.05. P value refers to the significance level of the computing results. If the P value is no more than 0.05, it is said that the collexeme is attracted to the verb slot of "v + away" constructions. In contrast, it is repelled by the "v + away" constructions if its P value is over 0.05 [6]. As it is introduced in the former context, the four prerequisite statistics can then be entered a 2-by-2 table and submit to the program Coll.analysis to conduct the Fisher exact test to calculate the collostruction strength [7]. Take the verb "see" in the "V+through" construction as an example, see details in **Table 3** as below:

Table 3. Association Measure Score of Collexeme "see" for the Target Construction "V+through"

	see	**¬ see**	**Total**
[V+through]	4809	381156	385965
¬ [V+through]	1956119	178164448	180120569
Total	1960928	178545604	180506532

Input the above data in the right format in the environment of R language, and the collostruction strength of verb "see" can be computed as 87.57932. Therefore, the verb slot of through constructions shows attraction to the verb collexeme "see." On the basis of the aforementioned principle, we can reveal the relation and degree of association between a collexeme and "V+through" construction. The computing outcomes of the top-10 verb collexemes that show the highest collostruction strength are presented in the **Table 4**.

Table 4. Top-10 Verb Collexemes in "V+through" Construction

Words	**Words.freq**	**Obs.freq**	**Relation**	**Faith**	**Delta.p.constr.to.word**	**Delta.p.word.to.constr**	**Coll.strength**
go	3571994	72299	attraction	0.020241	0.16789	0.018468	**208636.385182**
come	1801940	19584	attraction	0.010868	0.040845	0.008818	**33016.102056**
pass	243955	8669	attraction	0.035535	0.021154	0.033442	**32884.084556**
run	543846	6133	attraction	0.011277	0.012905	0.009166	**10565.831899**
walk	291456	3888	attraction	0.01334	0.008477	0.01122	**7771.143873**
be	3349996	14583	attraction	0.004353	0.019266	0.002257	**6057.857891**
cut	266566	2902	attraction	0.010887	0.006055	0.008761	**4816.957771**
see	1960928	4809	attraction	0.002452	0.0016	0.000318	**87.57932**
work	1310264	2869	attraction	0.00219	0.000175	5.2e-05	**1.621589**
look	1498185	2366	repulsion	0.001579	-0.002174	-0.000564	**243.287071**

The collostruction strengths of these collexemes are higher than 1.30103, indicating strong attraction

for the target construction. The collostruction strength of "go" is 208636.385182, which tops all the verb collexemes. This calculation methodology operates in the same way for other targets. Other verb collexemes following the first one, such as "come," "pass," "run," "walk," "be," "cut," "see," "work" also show some positive association with the target constructions for their collostruction strengths are all over 1.30103. All of them show strong association with "V+through" constructions except "look" showing the repulsion relation.

For now, here comes the answer to the first question, that is, the verb "go," "come," "pass," "run," "walk," "be," "cut," "see," "work" show strong collostruction strength with the particle "through" in "V+through" construction.

Disclosure statement

The author declares no conflict of interest.

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