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A Corpus-Driven Study of Syntactic And Semantic Models of Transitivized English Intransitive Verbs

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Abstract: Transitivized English intransitive verbs, abbreviated as transitivized EIVs in the present study, refer to the English intransitive verbs which are transitively used taking direct objects as normal transitive verbs do. This study aims to systematically explore their syntactic and semantic patterns through a specialized corpus with 585 instances of 211 transitivized EIVs from the EIV corpus and approximately 97,000 words from the instances of 210 transitivized EIVs from the Corpus of Contemporary American English. To code the syntactic and semantic patterns of transitivized EIVs, conventional lexical and phrasal categories as well as the Ideal Motion Event Category were employed. The results of investigation indicate that the transitivized EIVs feature three major syntactic patterns: "EIVs + NP/Pron. + Zero", "EIVs + NP/Pron. + meaning-supplementing expressions" and "EIVs + one's way + Prep.-Phr." while their semantic patterns are governed by law: The basic semantic pattern of the transitivized EIVs is the cause sense, but with its weakening or backgrounding, the other semantic patterns take the stage involving the sense combination of cause and manner, the sense of manner or the sense of abstract motion. This study offers a relatively comprehensive landscape of the linguistic phenomenon of transitivized EIVs and is believed capable of facilitating a better understanding of EIVs, thereby flexible and appropriate use of EIVs in intercultural communication.

Keywords: Transitivized EIVs, Corpus-Driven Method, Traditional Lexical and Phrasal Categories, The Ideal Motion Event Category, Syntactic Models, Semantic Models

1. Introduction

There is a tendency toward an increasingly detailed classification of English verbs (e.g., Levin, 1993; Korhonen & Briscoe, 2004; Kipper et al., 2008). English content verbs are traditionally divided into transitive and intransitive ones. Compared with English transitive verbs (ETVs), the data collected by Wu et al. (2023) from the four most widely dictionaries show that English intransitive verbs (EIVs) are relatively small in number. Despite their limited quantity, EIVs, as relevant studies (e.g., Richards, 1973; Yip, 1995; Hubard, 1994; Montrul, 1999; Ju, 2000; Oshita, 2000; Zhu & Wang, 2016; Choi, 2019; Zhu, 2021; Okada, 2021) demonstrate, are more difficult for L2 English learners to acquire because they are easily misused as transitive verbs. For example, Oshita (2000) highlights the prevalence of the passive unaccusative error like "What is happened", one of the misusages of EIVs, among Chinese, Japanese, and Korean learners of English. Nevertheless, daily English reveals that some EIVs do possess the syntactic features of ETVs, taking direct objects. The *Corpus of Contemporary American English* (*COCA*) provides many instances of the transitive usage of EIVs, such as "Do you *age* chocolate?" "…It can even *walk* you to your gate…," "the ones who made him *sneeze cereal milk through his nose*," and so forth.

This paradox between so-called L2 English learners' misuse of EIVs as transitive verbs and the observed flexibility of EIVs in actual language use raises several pertinent questions: "Why is the transitive use of some EIVs by L2 learners considered a misuse?" "What is the transitive use of EIVs like in daily communications?" "How are EIVs transitively used in daily communications?" and "What do these transitivized EIVs mean?" Addressing these questions necessitates a systematic and comprehensive examination of the characteristics of transitivized EIVs because the inherent characteristics of L2 structures (which refer to transitivized EIVs in the present study) play an important role in influencing learners' acquisition of the structures (Mahdun et al., 2023). Accordingly, this study is designed to systematically explore the syntactic and semantic patterns of transitivized EIVs by using a corpus-driven method (Biber, 2009). With the findings obtained, the study seeks to enhance L2 English learners' better understanding and appropriate use of EIVs in their intercultural communication.

2. Literature Review

To date, studies on the syntactic and semantic patterns of transitivized EIVs can be categorized into four types: example illustration, longitudinal description, horizontal

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description, and description with uniform annotation.

The example illustration studies focus on using transitivized EIVs as examples to illustrate a certain construction (e.g., Goldberg, 1995). In these studies, the syntactic and semantic patterns of transitivized EIVs are analyzed in association with the construction which they exemplify. For example, Goldberg (1995:152) uses "*They laughed the poor guy out of the room*" and "*Frank sneezed the tissue off the table*" to illustrate the English caused-motion construction. Therefore, the transitivized EIVs *laugh* and *sneeze* would share the syntactic and semantic patterns of this construction, i.e., "verbs + independent PPs" and "X CUASES Y to MOVE Z". Although these studies can reveal the syntactic and semantic features of transitivized EIVs, their focus is on the constructions rather than transitivized EIVs, hence the lack of systematic analysis of transitivized EIVs.

In contrast to example illustration studies, longitudinal description studies offer greater systematicity by concentrating on one specific model of transitivized EIVs, namely the cognate model. These studies examine the cognate model from various perspectives, including descriptive grammar (e.g., Sweet, 1891; Levin, 1993), generative grammar (e.g., Jones, 1988; Moltmann, 1989; Massam, 1990; Nakajima, 2006; Pereltsvaig, 2001), functional linguistics (e.g., Halliday, 1985; Kuno & Takami, 2004), and cognitive linguistics (e.g., Rice, 1988; Langacker, 1991). They explore the cognate model's structure, the nature of its objects, its functions, and its access conditions. However, since these studies focus only on the cognate model, they fail to examine other models of transitivized EIVs, hence being inadequate in comprehensiveness.

Horizontal description studies aim to comprehensively generalize the various syntactic and semantic patterns of transitivized EIVs based on a certain amount of linguistic data (e.g., Shen, 1979; Gu, 1981; Zou, 1984). For example, Zou (1984) identifies four types of transitivized EIVs: cognate object structure, adverbial manner, spatial-or-planar-displacement EIVs taking locative objects, and EIVs taking noun or pronoun objects followed by complementary adverbs (or prepositional phrases or adjectives). Similarly, Shen (1979) categorizes five major types: omission of prepositions after EIVs, the causal function of EIVs, the cognate object construction, EIVs taking the objects of emotions or results, and EIVs with objects followed by adverbs (adverbial phrases). These studies stand out in coding the data of transitivized EIVs either semantically, syntactically, or through a combination of both. However, they lack uniform terminology for categorizing each type of transitivized EIVs. The use of uniform terms to annotate a complex linguistic phenomenon, as is known, is important because it can contribute to systematizing the phenomenon and improving language users' understanding of this phenomenon. Additionally, the sources of data used for the analysis are not explicitly introduced in these studies.

Different from horizontal description studies, the fourth type of research systematically describes transitivized EIVs using uniform terminology based on corpus data (e.g., Wang & Chen, 2014; Wang & Luo, 2016). However, maybe due to the extensive data involved, these studies often concentrate on one of the types and cases, such as the cognate object structure and the verb case of *sneeze*. For instance, Wang and Luo (2016) analyze the semantic typologies of adjectival modifiers in the cognate models of five EIVs—*die*, *smile*, *sigh*, *dream*, and *live*—based on the data from *COCA* and *BNC*. They categorize these adjectival modifiers into manner, state, process, cause, degree, judgments, and subjective features. Wang and Chen (2014) examine 96 instances of the transitivized *sneeze* from five corpora (*BNC*, *COCA*, *TIME*, *ukWaC*, and *COHA*), and identify five syntactic transitive patterns of *sneeze*: "Sneeze + NP," "Sneeze + NP + PP," "Sneeze + NP + AdvP," "Sneeze + NP + Adj," and "Sneeze + NP + NP."

In summary, the above four types of studies on transitivized EIVs provide valuable references and insights for the present study in terms of research paths, methods, and annotations. However, they fail to achieve simultaneous systematicity, comprehensiveness, and consistency in annotations. They do not systematically and comprehensively investigate, classify, or annotate the various usages of transitivized EIVs. This gap may lead to confusion for L2 English learners regarding EIVs which are not covered in these studies. Accordingly, the present study aims to utilize the two corpora to collect data on transitivized EIVs, and then comprehensively and systematically analyze and summarize the specific syntactic and semantic patterns of transitivized EIVs using a set of uniform terms.

In the subsequent sections, we will first elaborate on the research methodology for data collection and analysis. Then, we will present and explain the results in detail, focusing on the specific syntactic and semantic patterns with illustrative examples. And finally, we will discuss the findings and conclude the paper.

3. Research Methodology

3.1. Corpora for Collecting Data on Transitivized EIVs

Two corpora were combined to collect the data of transitivized EIVs. The first is a specialized EIV corpus (see Wu et al., 2023). This multimodal corpus contains approximately 710 photos of EIVs, each of which presents various relevant information—their basic English and Chinese meanings and relevant usages, their extended meanings followed by illustrations, and necessary attached pictures. Among these, the extended meanings of EIVs and related usages formed the basis for collecting targeted transitivized EIVs.

The second is *COCA*. As one of the world's most widely used English corpora, *COCA* is characterized by its large size (one billion words), timely updates, a wide range of genres (spoken word, fiction, magazines, newspapers, academic articles, websites, blogs, newspapers, and TV/movie subtitles), and the powerful search function (from specific searches for a word to very general ones like VERB NOUN). The search function covers

a wide range of search types, including words, phrases, substrings, lemmas, parts of speech, synonyms, and customized wordlists. For example, the search "WEAR * ADJ @CLOTHES" takes just one or two seconds to search through a billion words to find numerous strings like "WEARING A TOP HAT," "WEARING A SHORT SKIRT," and "WEARING A HARD HAT," as well as their frequencies. Meanwhile, it also allows very general searches like "NOUN + NOUN."

The search function made *COCA* an ideal data collection instrument for this study. In this study, we needed to search all instances of all EIVs, taking direct objects to generalize the comprehensive syntactic and semantic patterns of transitivized EIVs. If we typed each EIV into the search window and browsed all contexts one by one, it would not be possible to complete this task because we would first need to determine whether the word in question is used as a verb, and then see whether it is used together with an object in a large number of contexts, which would be rather time-and-energy consuming. However, if we used the search format of "EIV_V ART ADJ NOUN" like "laugh_V ART ADJ NOUN" (see Figure 1 (A)), the related instances of the transitive use of a given EIV like "laugh" would appear within one to two seconds (see Figure 1 (B)). From these usages, we could quickly judge whether an EIV was used as a transitive verb and how it was used.

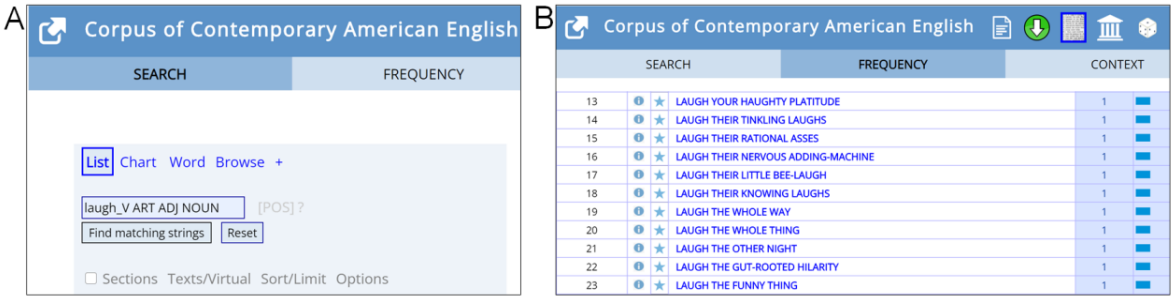

Figure 1: Search for usages of transitivized "laugh" in *COCA*. (A) The search "laugh_V ART ADJ NOUN," (B) Excerpts of the search results for "laugh_V ART ADJ NOUN"

In Figure 1(B), the instances show that the EIV "laugh" is used as a transitive verb and that one of its syntactic models is "EIVs + Art. /De./Pron. + Adj. + N." Accordingly, *COCA* was suitable for this study and saved time in collecting data on transitivized EIVs.

3.2. Procedure for Collecting Data on Transitivized EIVs

The procedure for collecting the data of transitivized EIVs in this study consisted of two steps. The first step was observing the extended meanings and relevant usages of each EIV in the EIV corpus, to determine whether there were instances of transitive usage. If the answer was "Yes," this EIV was retained in the EIV corpus, and the instances of its transitive usage were counted. If "No," the second step was implemented, inputting it into the search window (as shown in Figure 1 (A)) of *COCA* in the form of expressions such as "EIV_V Det," "EIV_V ART," "EIV_V PRON," "EIV_V NOUN," and "EIV_V ADJ NOUN." If the search results displayed the relevant specific instances in one or more of these forms, the EIV in question remained in the EIV corpus, and the typical instances of its transitive usage were copied into Word files from *COCA*. If *COCA* did not present such an instance, it was removed from the EIV corpus.

In this way, a corpus of transitivized EIVs was created[3]. Zibin (2021) call this a specialized corpus, and it consists of two parts: photos of EIVs with their transitive meanings and usages and Word files of *COCA* instances of those EIVs whose transitive usages are not found in the EIV corpus.

3.3. Data Coding and Analysis

In coding and analyzing the syntactic models of transitivized EIVs, we mainly used terms from the class of words and syntactic categories, two technical terms reviewed in Haspelmath's (2001) study. Traditional categories of word classes include nouns, verbs, adjectives, adverbs, pronouns, prepositions, conjunctions, numerals, articles, and interjections. In addition to these lexical categories, syntactic categories also refer to phrasal categories such as noun phrases and prepositional phrases. In the present study, we combined these lexical and phrasal categories to analyze transitive instances of EIVs. To be precise, we adopted abbreviated forms. Noun phrases, prepositional phrases, adjectives, adverbs, pronouns, and prepositions were shortened to NP, Pre.-Phra., Adj., Adv., Pron., and Pre., respectively. For example, for the transitivized EIV, *stare*, in "*She stared him into silence*," the syntactic model included is "EIV + Pron. + Pre.-Phra." Specifically, *stared* is an EIV, and *him* and *into silence* embody Pron. and Pre.-Phra., respectively.

To code the semantic models of transitivized EIVs, the Ideal Motion Event Category (Wu et al., 2023) developed from Talmy's (1985, 2000) basic components of the motion event category was utilized, which claims that the occurrence of a motion usually involves relatively fixed procedures that correspond to the semantic components such as [Agent], [Cause], [Manner], and [Result]. We applied these components to code the semantic models of the transitivized EIVs. Take the above transition *stared* as an example. It could be paraphrased as

[3] One limitation of this study is that we cannot guarantee an exhaustive collection of every instance of transitive usage of each English intransitive verb (EIV), although we have made every effort to achieve it.

"She caused him to keep silent by staring." Here, the original EIV *stare* is both [Cause] and [Manner] to have the object *him* keep silent in its transitive usage, so its semantic pattern is a "combination of cause and manner."

4. Results

4.1. Results of Data Collection

4.1.1. Data on Transitivized EIVs

Among the 602 EIVs (Wu et al., 2023), 421 were transitivized (Table 1), accounting for 69.93% of the total.

Table 1: Number of transitivized EIVs.

Number of EIVs	Number of transitivized EIVs	Number of transitivized EIVs from the EIV corpus	Number of transitivized EIVs from *COCA*
602	421	211	210

Source: By the Author

Among the 421 transitivized EIVs, 211 were recorded in the EIV corpus, while 210 were not transitively used in this corpus but were in *COCA*. This result demonstrates that the data in the paper dictionary probably lag behind those of the corpus, which further proves that it is necessary to use an updated corpus when conducting a comprehensive and systematic exploration of the usage models of transitivized EIVs.

4.1.2. Data in the Corpus of Transitivized EIVs

As discussed above, the corpus of transitivized EIVs was built using instances from the EIV corpus and *COCA*. By counting the instances of the 211 transitivized EIVs, we obtained 585 data points on the transitive usage of EIVs (see Table 2). Except for K, Q, X, Y, and Z, the transitivized EIVs under all letters showed specific transitive instances.

Concerning the data from *COCA*, as is shown in the column "number of words from transitive instances from *COCA*" in Table 2, about 97,000 words from instances were collected. Except for K, N, U, X, and Z, the transitivized EIVs under all letters showed their various specific transitive instances.

Table 2: Data from the EIV corpus and *COCA*

Number of transitivized EIVs from the EIV corpus	Number of transitive instances from the EIV corpus	Number of transitivized EIVs from *COCA*	Number of words from transitive instances from *COCA*
211	585	210	about 97,000

Source: By the author

4.2. Syntactic Patterns of Transitivized EIVs

Through careful analysis of the transitive instances of EIVs from the corpus of transitivized EIVs, we obtained three major types of syntactic patterns of transitivized EIVs, i.e., "EIVs + NP/Pron. + Zero," "EIVs + NP/Pron. + meaning-supplementing expressions," and "EIVs + one's way + Prep.-Phr." The second pattern can be further divided into five subtypes. Therefore, there are seven syntactic patterns of transitivized EIVs (see Figure 2).

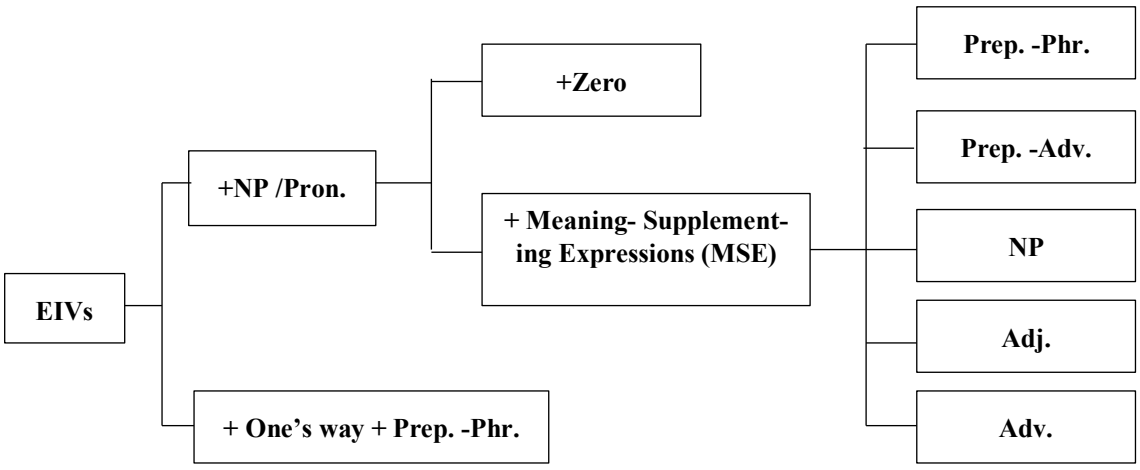

Figure 2: Syntactic models of transitivized EIVs

The following three sections will explain them in detail.

4.2.1. EIVs + NP/Pro. + Zero

In this type of syntactic pattern, zero indicates empty. This pattern refers to a case in which intransitive verbs are followed by objects represented in the form of nouns, noun phrases, or pronouns. For example,

a. People are campaigning to *abate the noise* in our cities.

b. The batsman *ran two*.

c. I *smiled my thanks*.

d. The English could *graze sheep* for their woollen mills.

e. I *apologize parents*.

f. You can not *moralize biology*.

In these instances, the "EIVs + NP" constructions are realized as "abate the noise," "ran two," "smiled my thanks, "graze sheep," apologize parents," and "moralize biology." Among them, "abate," "ran," "smiled," "graze", "apologize", and "moralize" are initially intransitive verbs.

4.2.2. EIVs + NP/Pro. + Meaning-Supplementing Expressions

This transitive pattern refers to the cases in which intransitive verbs are followed not only by nouns, noun phrases, or pronouns but also by additional expressions that function as semantic supplements to the former parts. Without supplementary expressions of meaning, the former parts will not be clear or complete in their meanings. These expressions are therefore regarded as "meaning-supplementing expressions (abbreviated as MSE)," including "Prep.-Phr.," "Prep.-Adv.," "NP," "Adj.," and "Adv.", which are to be explained individually in the coming sections.

4.2.2.1. EIVs + NP/Pron. + Prep.-Phr.

In this pattern, intransitive verbs are first followed by nouns, noun phrases, or pronouns and then by prepositional phrases that make the entire pattern semantically clear and complete. Consider the following sentences:

a. He could tell she was in a bad mood and tried to *laugh her out of it*.

b. She *stared him into silence*.

c. You know, you *talk people into anything*.

d. Day and night, I cry for my son. When would I *cry myself to death*?

e. the ones who made him *sneeze cereal milk through his nose*.

f. Can we *moon people out of the limo*?

g. They *argued him into withdrawing his complaint*.

In these examples, "laugh," "stared," "talk," "cry," "sneeze," "moon," and "argue" are initially intransitive verbs. They are followed by the noun phrases or pronouns "her," "him," "people," "myself," "cereal-milk," "people," and "him," and then respectively by the meaning-supplementing prepositional phrases "out of it," "into silence," "into anything," "to death," "through his nose," "out of the limo," and "into withdrawing his complaint," adding information on the result and path to the intransitive verbs concerned.

4.2.2.2. EIVs + NP/Pron.+ Prep.-Adv.

In this pattern, the "Prep.-Adv." part after "NP/Pron." means the prepositional adverbs that refer to the prepositions which play the role of adverbs in the structure, such as "out," "off," "up," "around," and "down." The collected data showed that when taking direct objects, many EIVs need prepositional adverbs to make their meanings clear or complete, and that prepositional adverbs are usually added to the end of the whole phrase. However, if the objects are relatively long, prepositional adverbs are placed immediately after EIVs. For example,

a. Rattle something off: The child *rattled off the poem he had learnt*.

b. Grub something out/up: *Grub out a dead tree*.

c. I bet the details of that would *perk things up* in this hearing.

d. …if Cade meant to cuss him or to *brag him up*, to say that Jesse had been one tough kid.

e. Why didn't you just *conflict yourself out*?

The intransitive verbs "rattle," "grub," "perk," "brag," and "conflict" take the direct objects expressed by "the poem he had learnt," "a dead tree," "things," "him," and "yourself", and then the meaning-supplementing prepositional adverbs "off," "out," "up," "up," and "out" follow to specify the direction of the five intransitive verbs.

4.2.2.3. EIVs + NP /Pron. + NP

In this pattern, the meaning-supplementing expressions are nouns, noun phrases, or pronouns. This pattern is equivalent to the construction of a double object. For example,

a. He asked his employer to *advance him a month's salary*.

b. Please *boil me an egg*.

c. He *nodded me a welcome*.

The intransitive verbs "advance," "boil," and "nodded" all take two objects. They are "him" and "a month's salary," "me" and "an egg," and "me" and "a welcome," respectively. Without the ending objects, the meanings of "advance him," "boil me," and "nodded me" are not complete and may even be confusing.

4.2.2.4. EIVs + NP /Pron. + Adj.

In this pattern, the meaning-supplementing expression is an adjective. For example,

a. At that time did people *cry themselves hoarse* about "innovation"?

b. They would *laugh themselves silly* at the news that they don't need business skills.

c. As Mormons, we can *talk ourselves hoarse* trying to demonstrate our commitment to Christ.

The intransitive verbs are "cry," "laugh," and "talk." The objects following them are the pronouns "themselves," "themselves," and "ourselves." The adjectives are "hoarse," "silly," and "hoarse," which add information on the results of the motions expressed by the three intransitive verbs. Without them, the phrases "cry themselves," "laugh themselves," and "talk ourselves" have incomplete meanings.

4.2.2.5. EIVs + NP /Pron. + Adv.

In this pattern, the supplementary expression is an adverb. For example:

a. I can *walk you home*.

b. You can't go on *lazing your life away*.

c. That's because you *dawdle time away*.

d. Well, there's a card. A proper lady does not *doodle the evening away*.

The adverbs are "home" and "away," which add information on the location and results to the motions expressed by "walk," "laze," "dawdle," and "doodle."

4.2.3. EIVs + One's Way + Prep.-Phr.

This syntactic pattern is a special one because the object taken by the intransitive verb is fixed, i.e., "one's way." For example,

a. *Grope one's way along a darkened corridor*.

b. He's *lied his way into a really plum job*.

c. The rescuers *tunnelled their way to the pot-holers*.

d. The road *snakes its way through the mountains*.

e. …you can not just *barge your way into the precinct* and *talk your way onto a case anymore*.

The intransitive verbs "grope," "lied," "tunnelled," "snakes," "barge," and "talk" all are followed by the various forms of "one's ways" and then prepositional phrases that supplement the information of the paths and target points.

4.3. Semantic Patterns of Transitivized EIVs

By observing and analyzing the instances in the corpus of transitivized EIVs, we discovered a law existing in the semantic models of transitivized EIVs. That is, the fundamental semantic model of transitivized EIVs is the cause sense, but with the weakening or backgrounding of this sense, other semantic models will take the stage, which primarily involves a combination of causes, manners, and abstract motions. Generally, the semantic models of transitivized EIVs change with the strengthening, weakening, and backgrounding of their basic cause–sense models (see Figure 3).

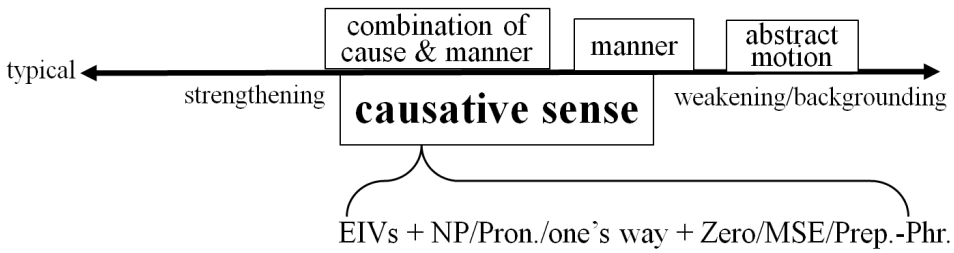

Figure 3: Semantic models of transitivized EIVs

To demonstrate this law, we selected three example sentences of transitivized EIVs "graze," "sneeze," and "smile" listed above. In these examples, "graze," "sneeze," and "smile" are intransitive verbs initially, meaning "eat growing grass," "make a sneeze," and "give a smile or smiles." In their transitive usages, their meanings

have changed to "cause sheep to eat growing grass," "cause cereal milk to go out through his nose by sneezing," and "express my thanks by smiling." They obtain the cause sense, the sense combination of cause and manner, and the manner sense, respectively, in their meanings. In the first two instances, the cause sense is obvious, whereas, in the third instance, it does not seem obvious or direct. However, this does not imply that the causal sense disappears in the third stage. There is a force that causes the word "thanks" to be expressed, but it is backgrounded and not as obvious as the former two. Consequently, other meanings become more prominent. In this instance, the manner sense is highlighted.

By further analyzing the instances under each semantic model in Figure 3, we discovered that they had their typical semantic structures (see Table 3).

Table 3: Typical sense structures of transitivized EIVs.

Syntactic transitive patterns	Senses	Typical semantic patterns
EIVs + NP/ Pron./one's way + Zero/ meaning-supplementing expressions/Prep.-Phr.	Cause	Cause somebody/something to do/experience/become the motions/states expressed in EIVs.
	Combination of cause & manner	Cause somebody/something to do something else by the actions denoted by EIVs.
	Manner	Do something/somebody by the actions designated by EIVs.
	Abstract motion	Have/make/give the things denoted by the noun forms of EIVs.

The following sections will explain each pattern in Table 3 one by one.

4.3.1. Transitive Pattern of the Cause Sense

In the transitive usage of transitive verbs that take objects, many EIVs obtain a sense of cause in their meanings. As shown in Table 3, the typical pattern of their cause sense is "Cause somebody/something to do/experience/become the motion/state expressed in the EIV." This means that the objects after the EIVs are caused to perform or experience the actions designated by the EIVs, or to become the states expressed by them. For example,

a. He's out *walking the dog*.
b. The strong sunlight had *faded the curtains*.
c. You should *rest your eyes* after a long reading.
d. He *galloped the horse* along the track.
e. How long does it take to *boil an egg*?
f. People are campaigning to *abate the noise* in our cities.
g. I am going to tell my dad to *disappear you*.

In these examples, the intransitive verbs "walk," "fade," "rest," "gallop," "boil," "abate," and "disappear" all obtain the cause meaning in their transitive usages. They respectively mean "cause the dog to walk," "cause the curtains to become faded," "cause your eyes to rest," "cause the horse to gallop," "cause an egg to become boiled," "cause the noise to become less," and "cause you to disappear."

In this case, the objects expressed by noun phrases or pronouns play the theta role of the patient at first because they are affected by a certain external force to perform the actions or to become the states expressed in EIVs. For example, the objects "dogs" and "curtains" are things that do not possess the willingness to do the action of "walk" or become the state of "fade," but they are compelled to do so or to become so due to external forces from the subjects "he" and "the strong sunlight."

4.3.2. Transitive Pattern of the Combination of Cause and Manner

The transitive pattern of the combination of cause and manner in EIVs means that they possess both the senses of cause and manner in their transitive usages. As shown in Table 3, the typical pattern is "Cause somebody/something to do something else by EIV." This means that EIVs play the roles of both cause and manner to have sb/sth do sth else. For example,

a. At that time, did people *cry themselves hoarse* about "innovation"?
b. They would *laugh themselves silly* at the news that they don't need business skills.
c. Doctors can *talk themselves blue in the face*.

The intransitive verbs "cry," "laugh," and "talk" take the objects expressed by "themselves" and then the adjectives of "hoarse," "silly," and "blue." The three constructions could be respectively paraphrased as "cause themselves to become hoarse by crying," "cause themselves to become silly by laughing," and "cause them-

selves to feel tired by talking." The actions expressed by three verbs are both cause and manner of the results "become hoarse," "become silly," and "feel tired."

Usually, in this case, the actions designated by the EIVs are the direct forces that cause the object to do something. Simultaneously, they are used by the object to accomplish this. For example, in the phrase "cry themselves hoarse," it is the action "cry" that provides the direct causative force that makes their throat hoarse. It also specifies how throats become hoarse. Therefore, in this transitive usage, "cry" has integrated both cause and manner senses.

4.3.3. Transitive Pattern of the Manner Sense

The sense transitive pattern of manners means that the action designated by the intransitive verb is the manner in which a thing is expressed by a transitive structure. As shown in Table 3, a typical pattern is "Do something via the actions designated by the EIVs." Take the following examples:

a. They *whisper words* of warning, guidance, and encouragement.

b. She *nodded her approval*.

c. She *nestled the baby* in her arms.

d. The rescuers *tunnelled their way to the pot-holers*.

e. The horse *jumped all the fence*.

f. I'll *walk you home*.

g. Rose closed the book on its marker and watched the ducks *gobble popcorn*.

The transitive structures in these examples could be respectively paraphrased as "talk or say words by whispering," "express approval by the manner of nodding," "hold the baby as if in a nest," "dig their way to the pot-holers by tunnelling," "get over all the fence by jumping," "escort you home on foot," and "eat popcorn with the manner of gobbling". Among them, "as if in a nest" could be regarded as a form variation of "by EIVs" for they specify the manner in which she holds the baby.

From the explanations above, it can be seen that in this case, the manner sense is highlighted, whereas the cause sense is backgrounded or weakened. For example, in the second example sentence which could be paraphrased as "She showed or expressed her approval by the manner or way of nodding," there does exist a force, in reality, to cause "her approval" to be expressed, but this force is backgrounded. Instead, the sense of manner enters centre stage.

4.3.4. Transitive Pattern of the Abstract Motion Sense

This semantic model means that the EIVs are abstracted into more general verbs like "have," "make," "give," and "suffer," followed by the things expressed in the noun forms of these EIVs. Its typical semantic pattern is "Have/make/give the things denoted by the noun forms of EIVs," in which "have," "make," and "give" are the abstract motions. This transitive sense model often occurs in syntactic structures in which the verb and its object are expressed by the same word or words with the same meaning. For example,

a. She *smiles a strange smile*.

b. They *laugh their knowing laughs*.

c. Take some time to *dream a new dream*.

d. He should *die a horrible death*.

The verbs "smile," "laugh," "dream," and "die" are followed by objects expressed by their noun forms "smile," "laugh," "dream," and "death." They are abstracted to refer to the general motions expressed by "give," "have," and "suffer." Accordingly, the four italicized constructions above can be paraphrased as "give a strange smile," "give their knowing laughs," "have a new dream," and "suffer a horrible death." In this transitive sense model, the sense of cause is completely backgrounded.

5. Discussion

Based on an analysis of the data from the corpus of transitivized EIVs, this study identifies three major syntactic transitive patterns: "EIVs + NP/Pron. + Zero," "EIVs + NP/Pron. + meaning-supplementing expressions," and "EIVs + one's way + Pre.-Phr." The second pattern can be further categorized into five subtypes: "EIVs + NP/Pron. + Pre.-Phr.," "EIVs + NP/Pron. + Pre.-Adv.," "EIVs + NP/Pron. + NP," "EIVs + NP/Pron. + Adj.," and "EIVs + NP/Pron. + Adv." These findings include all the syntactic transitive patterns of EIVs discovered in previous studies (Gu, 1981; Zou, 1984; etc.). This indicates that, with the assistance of the corpus, the generalization of the transitive patterns of EIVs is more comprehensive. Meanwhile, both this study and previous research reveal a similar tendency in the syntactic transitive models of EIVs: EIVs usually take direct objects followed by meaning-supplementing expressions. For example, Levin and Rappaport Hovav (1995:111) emphasize that directional phrases are obligatory in the transitive use of agentive verbs of the manner of motion like *march*, *jump*, and *run*. Although Levin and Rappaport Hovav's argument does not involve all EIVs, it also seems to imply the syntactic tendency for transitivized EIVs to require meaning-supplementing expressions.

Concerning the semantic patterns of transitivized EIVs, this study has discovered a law: The basic pattern is the cause sense, but with the weakening or backgrounding of this sense, the other patterns will take the stage, mainly involving the combination of cause and manner, manner, and abstract motion. These findings partially align with those of Gu's (1981) and Zou's (1984) studies, where the cause sense is emphasized as one of the major senses of transitivized EIVs, though not the basic one, as concluded in the present study. These results might explain why the cause sense of transitivized EIVs, rather than their other senses, has become a focal point for researchers. They have attempted to explain the motivations behind the causal pattern of transitivized EIVs from various theoretical perspectives (Levin & Rappaport Hovav, 1995; Goldberg, 1995; Rosen, 1996; Fauconnier, 1997; Fauconnier & Turner, 2002; Boas, 2003; Han & Xu, 2016; Chen, 2017). For example, Levin and Rappaport Hovav (1995) propose that the causative use of agentive verbs of the manner of motion such as *jump*, *run*, and *march* arises from a process of causativization. They argue that these verbs must first transition from unergative to unaccusative before they can be used transitively in a causative structure. In contrast, Han and Xu (2016) contend that the transitive causative use of these agentive verbs results from lexical causativization alone, without necessitating prior unaccusativization. Chen (2017), however, points out that both perspectives for explaining the transitive causative use of English unergative verbs are of pure syntactic theories, overlooking the external causes and underlying linguistic factors contributing to the phenomenon. Accordingly, Chen (2017) examines the issue from the perspective of linguistic memetics.

Meanwhile, the data of the current study does not fully align with one of the conclusions proposed by Levin and Rappaport Hovav (1995). They argue that agentive verbs of the manner of motion require a directional phrase in their transitive causative use, whereas non-agentive verbs do not. The present study supports this claim, as it shows that most agentive EIVs adhere to this pattern. However, there is an exception among agentive EIVs. Specifically, the verb *walk* in the expression "*walk the dog*" does not include a directional phrase, contradicting the observed pattern. This finding seems to support Han and Xu's (2016) viewpoint that a directional phrase is not an essential element in the causative use of agentive EIVs and that its use is determined by the specific meaning of the sentence.

Furthermore, these results may explain why English L2 learners tend to make passive unaccusative uses like "What is happened" (Oshita, 2000). We assume that the cause model of transitivized EIVs is basic and so prevalent that it may lead English L2 learners into thinking that all EIVs may have an implicit cause sense which can be elicited in a certain communication context. Therefore, we propose a hypothesis on the influence of the cause model of transitivized EIVs, a hypothesis based on the transitive usages of EIVs themselves, to add to the list of hypotheses explaining why English L2 learners tend to misuse EIVs. Previous studies covered the L1 transfer of "a tense/aspect auxiliary verb+a past participle" (Richards, 1973), non-target lexical causativization (Yip, 1995), the unaccusative trap (Oshita, 1997), the effects of conceptualizable agents (Ju, 2000), the negative transfer of L1 (Liu, 2016), and so forth.

Moreover, in contrast to studies (e.g., Sweet, 1891; Pereltsvaig, 2001; Nakajima, 2006) in which a cognate object like in *dream a sweet dream* is regarded as one of the sense changes of EIVs, the law of the semantic patterns of transitivized EIVs found in the present study considers the first *dream* as an expression that conveys the sense of abstract action. This finding guarantees consistency in annotating the transitive senses of EIVs. This may avoid conflicts in the expression of the *cognate object* itself. Strictly speaking, it is neither a semantic term like "cause sense" or "manner sense" denoting the semantic models of transitivized EIVs, nor syntactic ones like "EIVs + NP" or "EIVs + NP/Pro. + Adj.," designating the syntactic patterns of transitivized EIVs.

In fact, this method of annotating the syntactic and semantic patterns of verbs or constructions is common in the existing literature like Shen (1979), Talmy (1985), Levin and Rappaport Hovav (1995) and Goldberg (1995). Shen (1979) describes that EIVs can be transitivized when used together with adverbs or adverbial phrases. Levin and Rappaport Hovav (1995) adopt the syntactic term "a postverbal NP" to annotate the elements following unergative verbs in the resultative constructions. Talmy (1985) categorizes various semantic patterns of verbs like *Motion+Manner/Cause*, *Motion+Path*, and *Motion+Figure*. Goldberg (1995) uses the form of "X CAUSES Y to MOVE/RECEIVE/BECOME Z" to designate the basic semantic patterns of the English ditransitive construction, the English caused-motion construction, and the English resultative construction. These syntactic and semantic annotations of verbs or constructions have provided an important reference for the present study in annotating the syntactic and semantic patterns of transitivized EIVs. However, compared with them, this study is more detailed in both syntactic and semantic annotations. Syntactically, both the terms of "adverbs or adverbial phrases" and "a postverbal NP" are abstract, without displaying the specific syntactic elements after EIVs. Instead, the present study specifies these elements into "NP/Pron.," "NP/Pron. + Pre.-Phr.," "NP/Pron. + Pre.-Adv.," "NP/Pron. + NP," "NP/Pron. + Adj.," and "NP/Pron. + Adv.". Semantically, the annotations in the present study not only demonstrate each abstract sense of transitivized EIVs like cause and manner but also specify their conceptualizations like "Cause somebody/something to do/experience/become the motions/states expressed in EIVs" and "Do something/somebody by the actions designated by EIVs", hence easy to understand.

Last but not least, this corpus-driven study finds that approximately 421 out of 602 EIVs have been transitivized, accounting for about 69.93%. Among the 421 transitivized EIVs, 211 were entrenched in dictionaries, whereas 210 were not but were found in *COCA*. Notably, some of these 210 transitivized EIVs, such as *happen*,

die, *arrive*, and *disappear*, were previously considered to be misused in studies like Oshita (2000) and Liu (2016). The Usage-Based Theory (Langacker, 1987, 1988, 2000; Bybee, 2010; etc.) can offer a convincing explanation for this phenomenon. According to the Usage-Based Theory, language patterns arise from actual language use, with the complexity of language emerging from the interaction between five domain-general cognitive processes (categorization, analogy, chunking, rich memory, and cross-model association) and language-use factors (exemplar, frequency, and language experience). Specifically, a novel use of language is often analogized to previous ones, which serve as references. The more frequently this new usage occurs, the more likely it is to be classified as a legitimate linguistic phenomenon. This is true of the transitive usage of EIVs, particularly those previously regarded as misuses. For example, the verb *disappear*, typically an EIV, is transitivized in the sentence "*I am going to tell my dad to disappear you*". This usage may result from the user's analogy with other existing transitive uses of EIVs like "*He's out walking the dog*". Its similarity to the latter lies in the causative sense. That is, *disappear* here means "cause somebody or something to disappear". As this usage becomes more common, it is likely to be categorized as a category "disappear + object" and stored in rich memory. Thus, those EIVs previously considered misused in their transitive forms are probably not errors. Instead, they arise from the interaction between domain-general cognitive processes and language use.

6. Conclusion and Outlook

This study used a corpus-driven method to explore both syntactic and semantic transitive models of EIVs. Three major types of syntactic models and laws were identified in the semantic models of the transitivized EIVs. The former includes "EIVs + NP/Pron. + Zero," "EIVs + NP/Pron. + meaning-supplementing expressions," and "EIVs + one's way + Pre.-Phr." The second type can be further divided into five subtypes. The latter implies that the cause sense is the basic model of transitivized EIVs, whereas, with the backgrounding or weakening of the cause sense, other senses will be salient, mainly involving the combination of cause and manner, sense of manner, and sense of abstract motion.

These findings have important implications for learning and using EIVs. As Mahdun et al. (2023) point out, the more complex the target structure is, the more effort is needed to process it and to reconfigure its rules. This study has uncovered the complex inherent characteristics of transitivized EIVs, a commonly-recognized challenge for L2 English learners, and has generalized their syntactic and semantic rules. These rules would provide effective guidance for them to assess whether EIVs are properly transitivized or not, to accurately understand the transitive usages of EIVs, and to better use them in the communication "which is usually materialized through the medium of language".

However, two points on the number of transitivized EIVs need to be noted. First, although 421 out of 602 EIVs are found to be transitivized, 181 EIVs are not transitivized in either the EIV corpus or COCA. The reasons for their lack of transitivization and their specific features warrant further investigation. Second, the number of transitivized EIVs is subject to change, reflecting the dynamic nature of language use, as supported by the Usage-Based Theory and demonstrated by the data in the corpus built in this study. Therefore, it is reasonable to speculate that verbs which are not currently transitivized may become so in the future. This speculation seems to suggest that English verbs do not inherently possess transitive or intransitive properties but rather exhibit these usages based on context and language evolution. These hypotheses are of course awaiting for being tested in future research.

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