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Input optimization: Verb-argument constructions in English textbooks in Türkiye

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ABSTRACT

Based on usage-based approaches to second language acquisition, studies point at a statistically significant correlation between type-token frequency, skewed distribution of items, and faster learning. Madlener (2016) shows a positive correlation between a Zipfian distribution of items in a German construction and faster, more accurate learning of the construction. While there are many studies that analyze input in English language teaching materials, no study has scrutinized selected constructions from an input optimization perspective, following Madlener (2016). Thus, using TAASSC (Kyle, 2016), the present paper analyzes four constructions, V in N, V about N, V for N, V with N, and the ditransitive constructions in the high school English textbooks in Türkiye. The results indicate that the input available for these constructions are not viable for generalizations to occur, leaving learners with unproductive one-time instantiations of the constructions, and low token frequency of these constructions also suggest that little to no entrenchment might take place. As such, the study proposes adopting a more corpus-based approach to English teaching materials.

Keywords
verb-argument construction,
input flooding,
textbooks,
usage-based approaches

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Introduction

Verb-argument constructions (VACs) have been researched in second language acquisition for some time (Ellis et al., 2014; Römer et al., 2014). Rooted in usage-based linguistics and construction grammar, the results of these VAC studies point at a correlation between lexicogrammatical knowledge of L2 learners of English and proficiency (Römer et al., 2014). Then, what remains is the issue of exposure. In countries where English is not readily available for communicative purposes outside of the classroom, English language teaching materials need to be scrutinized for their efficiency of teaching VACs optimally. So far, there is evidence that teaching various constructions optimally in German (e.g., Madlener, 2016) and in English as an L2 (e.g., Azazil, 2020) is possible with slight adjustments in the input. Such studies show that skewing the type-token ratio of the verbal slot in a construction enables learners to acquire the meaning faster and retain the form of the construction for a longer period of time. Considering textbooks in a classroom are one of the major ways of exposing students to the target language, it is possible to analyze the input readily available in them using a set of sophisticated software tools. While there are not many studies that have followed an input

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optimization analysis to textbooks in other contexts (however see Alsaif & Milton, 2012; Aziez & Aziez, 2018; Tang, 2009), to the researcher's knowledge there are no studies that analyze English textbooks in Türkiye from this perspective (see however Gedik and Kolsal (2022) and Gedik (2022) for a discussion on the lexicogrammatical diversity of the English textbooks in Türkiye). As such, the current study uses a readily available corpus of such textbooks in Türkiye to longitudinally trace the development of four VACs across high school textbooks. Such an analysis deepens our understanding of and sheds light on why Turkish learners of English may struggle with certain constructions (apart from linguistic interference and differences), how Turkish learners of English may produce non-optimal sentences, and the probability of retention of the selected constructions in the target learner group.

Input in Second Language Acquisition

Input in second language (L2) teaching is crucial as L2 learners are known to process input primarily for meaning (e.g., VanPatten, 2004). As previous studies and construction grammar suggest, input must be presented as form-meaning pairings to end up as intake in L2 learners, and this input is subject to a wide range of cognitive, i.e., attention, selective attention, memory constraints (e.g., Goldberg & Ferreira, 2022), and frequency factors, i.e., type-token (Ellis & Ferreira-Junior, 2009). Therefore, it is important that teachers provide optimal input to their students so that the learners have a high chance of attending to input and processing it maximally, cognitive constraints left aside, as such constraints (e.g., working memory, attention and so on) may hinder constructional learning on an individual level. However, what this optimal input in regard to frequency effects entails has been discussed among researchers for a while and there seems to be little agreement (Gass, 2013). For instance, Piske and Young-Scholten (2009, p. 16) argue that applied linguists lack "a deep or detailed understanding of what providing 'good', 'rich' or 'varied' input entails", suggesting that further research is needed to uncover the relationship between frequency in input and L2 learning.

One way input optimization has been discussed is under the term 'input floods' in second language acquisition research. Based on Smith's (1993) Input Enhancement approach, the pedagogical understanding Focus-on-Form (e.g., Doughty, 1999) suggests that being exposed to natural input in the target language is necessary but is not always enough (Wong, 2005). Stemming from not-being-enough, some of the problems that L2 learners and teachers report are identifying non-salient forms or establishing a form-meaning pairing of sometimes highly frequent but non-essential derivational/inflectional morphology (VanPatten 2004; Wong, 2005) or unaccusative verbs (Chung, 2011), which might be a result of selective attention due to L1 (see Ellis & Sagarra, 2011). While input enhancement to address the optimal teaching and learning of such frequent but not-salient forms is important, it is assumed that input enhancement can increase the chances of learning any type of form-meaning pairing more accurately based on evidence from usage-based approaches (e.g., Goldberg, 2006; Perek 2015).

Usage-Based Approaches and Input Flooding

There is ample evidence that points at a correlation between frequency and higher entrenchment levels of a linguistic item (Bybee, 2010; Divjak, 2019). Frequency helps learners distinguish constructions' conventionalized forms from unconventionalized forms and produce them in line with the conventionalized usage patterns. Herbst (2020, p. 84) makes it explicit by saying "layers of usage events… become linked on the basis of recognized similarities

between them". This means that usage events help learners identify conventionalized forms of a construction. In this work I subscribe to the Goldbergian understanding of the two terms, in which she considers the two terms as the different sides of the same coin, rather than analyzing them individually. Focusing on entrenchment, Divjak (2019, p. 51) illustrates it as "repeated presentations of a verb in particular constructions (e.g., *The rabbit disappeared*) cause a child [learner] to infer probabilistically that the verb cannot be used in non-attested constructions (e.g., **The magician disappeared the rabbit*)". In Goldberg's (2019, p. 77) account, this type of entrenchment is called simple entrenchment where frequency is "simply a proxy for familiarity". Another, perhaps more important type of entrenchment that needs attention is what Goldberg (2019) calls conservatism via entrenchment, i.e., statistical preemption. This ability is activated when "the more frequently a verb has been witnessed in a language in any other construction, the more resistant it should be to being used in any new way" (Goldberg, 2019, p. 77). In other words, speakers will calculate how many times an item and a construction should have occurred together based on the frequency information of the item and the construction and based on this information arrive at a conclusion of generalizability of an item. This, however, does not mean we retain all the item-specific information for a construction, since memory is lossy (Goldberg, 2019), but whenever we experience a construction it "can form a lossy structured representation that prioritizes what the word designates and includes various contextual aspects of the encounter" (Goldberg, 2019, p. 16). For Goldberg (2019, p. 94), entrenchment also explains how "better-covered constructions are easier to access, which results in more conventional language being used more often, which further strengthens the association between conventional forms and particular messages-in-context". This is the reason why a positive correlation between increasing proficiency and a higher accuracy of idiomatic speech is expected of L2 speakers of any language.

While some cognitive constraints hinder entrenchment or learning of items and may result in good-enough production (Goldberg & Ferreira, 2022), where the speaker produces an item that they think is the most optimal and cognitively accessible one, within usage-based approaches there is evidence that higher frequency counts lead to faster activation (e.g., Bybee, 2010), and accuracy (e.g., Bybee, 2008). Within usage-based approaches, also compatible with the focus-on-form approach (e.g., Doughty, 2001), it is believed that language is learned as form-meaning pairings, i.e., constructions, that exist at different levels of abstraction and are learned as item-specific constructions first (e.g., Tomasello, 2003). Therefore, we can conclude that the nature of language learning is "the piecemeal learning of many thousands of constructions and the frequency biased abstraction of regularities within them" (Ellis, 2002, p. 143).

How the very nature of this 'frequency effect', however, would affect L2 learning or how it could be enhanced was not well established and documented until the studies of Madlener (2015, 2016) and Azazil (2020). Input flooding, in its basic sense, is increasing the token count of an item in constructions. As such, the expected outcome of this flood is that learners would implicitly learn the construction and its semanto-pragmatic features. This input flooding in a way addresses the selective attention from learners' first language (L1) and attempts to minimize it. With this flooding making the construction communicatively relevant and frequent, some studies showed a positive learning outcome of such input floods (Hernández, 2008, 2011; Huang et al., 2012; Reinders & Ellis, 2009; Shintani & Ellis, 2010). On the other hand, some studies show mixed outcomes (Williams & Evans, 1998), possibly

due to implicit learning requiring a more sustained, longitudinal input (e.g., Williams & Evans, 1998). For instance, De Jong (2005) demonstrated that input floods can help with faster comprehension but do not necessarily help with more accuracy. Williams and Evans (1998) show that explicit teaching and input flooding may affect the learning outcome of different constructions, such that the stative passive was learned more accurately via input floods and explicit teaching outperformed input floods in the teaching of the prenominal past participle.

Input flooding, however, cannot only consist of increasing the number of tokens per construction. As such, representing the type count, or the prototypical examples of a construction would also theoretically help learners, as explained earlier. Evidence shows that this is the case, with more prototypical items acting as training-wheels for the learning of that construction (e.g., Goldberg, 2006; Ellis & Ferreira-Junior, 2009). Therefore, the question is how to establish this enhanced view of input flooding.

In order to discuss input flooding, one needs to mention the nature of frequency of items. Zipfian distribution of items in any given language or construction in a language (see for instance Herbst, 2020) is an important indicator that usage-based approaches can make verifiable and testable predictions about the ‘’‘good’, ‘rich’ or ‘varied’ input’’ (Piske & Young-Scholten, 2009, p. 16). This distribution, also known as skewed distribution, is characterized by having a few types with very high frequency counts, giving the construction its prototypical meaning (e.g., Goldberg, 2006), and having many different types with low frequency counts. Such a skewed representation of language is important for learnability and “allow[s] learners to get a ‘fix’ on the central tendency that will account for most of the category members” (Ellis, 2009, pp. 150–151).

While such a type-token adjustment in input flooding is likely to be affected by several factors, i.e., target construction, duration, and learner strategies, studies show general positive outcome of such an adjustment. Ellis and Ferreira-Junior (2009), and Römer et al. (2014) show that L2 learning is characterized by having a highly frequent, semantically prototypical item per argument structure construction. More evidence comes from artificial language learning studies, in which it is shown that highly frequent types, i.e., path breaking items, help with generalization, recognition and recall, and argument linking (Goldberg, Casenhiser & White, 2007; Boyd, Gottschalk & Goldberg, 2009). However, there are also studies that point at non-significant outcomes of such adjustment in language learning (e.g., Cordes, 2014; Year & Gordon, 2009).

Turning our attention to the effects of such an adjustment, drawing a simple correlation between low token count and low levels of entrenchment would be safe. Similarly, a high token count with high levels of familiarity would also be safe, albeit different constructions may prove differently. It is important to discuss the effects of type frequency. Ideally for instance, with fewer types to occur in the verbal slot of a construction, the remaining types would have a higher chance of occurring in it, assuming the token frequency is fixed. This would then lead to pattern detection because each remaining type would be more entrenched because of its high type frequency. However, such an approach has been reported to lead to a lack of productivity of the construction and failure to schematize the semi- and highly schematic constructions. When a construction is experienced with a limited number of types, schematization does not occur and the construction remains relatively conservative, i.e., it does not get extended onto novel items (Bybee & Thompson, 1997; Ellis, 2011; Ellis & Cadierno, 2009; Lieven, 2010; Tomasello, 2003). Therefore, following this and the benefits of experimental data for structured

input from Madlener (2016), ‘’in acquiring productivity [in a target language], exposure to many different types in a construction would be more helpful than exposure to many identical tokens” (Bybee, 2008, p. 222). While there is little evidence what other factors may play into extending constructions onto novel items, cognitive constraints that result in good-enough production, i.e., Goldberg and Ferreira (2022), and semanticity of items may constitute some of the factors (Barđdal, 2008).

Finally, Madlener (2016) testing structure input flooding in the teaching of a German construction to L2 learners of German found a statistically significant outcome for the mid-skew group in her study. This mid-skew group represents a very Zipfian-like distribution, in that it contains 3 high frequent types that occur 24 times, and 22 low frequent types that occur 2-4 times each. Her study spanned around two weeks, addressing the required repetition of items over a period of time. While it is important to remember that type-token count for each construction will vary from one construction to the other, based on such evidence, it is still plausible to analyze the type-token counts of given constructions in a textbook, especially when textbooks from the same publishers are used for at least a couple of years. Assuming that textbooks are used by teachers in the classroom, they become a vital aspect in second language learning with regard to exposure. Therefore, one question we need to pursue is how optimized is the input for a given construction in language teaching textbooks?

Input in Textbooks

There are many studies that analyze input in textbooks, especially in English language teaching textbooks. Most of these studies seem to analyze vocabulary input (e.g., Alsaif & Milton, 2012; Aziez & Aziez, 2018; Tang, 2009), however, some other studies also scrutinize multiword expressions (e.g., Miao, 2014), collocations (Kim & Oh, 2020) or pragmatics (e.g., Limberg, 2013).

Biber and Reppen (2002), in a study where they compared English language teaching textbooks and corpora, found that the textbooks represented infrequent items or missed frequent features. For instance, the order of frequency would not match the representation of such items in the textbooks, or highly frequent verbs would not occur in the textbooks. Similarly, Glisan and Drescher (1993) demonstrated important differences between Spanish language teaching textbooks and spoken Spanish, e.g., highly frequent items missing or representing frequent and infrequent items as equally important. Barbieri and Eckhardt (2007) found differences in the representation of discourse of direct and indirect reported speech constructions between English textbooks and the TOEFL 2000 Spoken and Written Academic Language Corpus and the Longman Spoken and Written English Corpus.

Many studies on English textbooks and their lexical coverage levels found important deficiencies in the textbooks, suggesting that there is a big gap. For instance, Underwood (2010) mentions that English as a foreign language (EFL) materials in Japan fall behind in terms of covering the general service list words. Similarly, Belkouche et al. (2010) report similar findings for Arabic language textbooks. Miller (2011), in his analysis of EFL textbooks in the US, found that the textbooks severely lacked academic words and the use of nominal modification. Finally, Chen (2016), comparing EFL textbooks in Taiwan against the British National Corpus (BNC) for a lexical analysis found an inappropriate progression of lexical diversity.

Some studies, diverging from analyzing lexis in textbooks, adopted a lexicogrammatical approach to analyzing selected parts of lexicogrammatical input in textbooks. For instance, Kim and Oh (2020) demonstrated that collocations in EFL textbooks in Korea are insufficient in sustainably repeating or recycling selected collocations. Furthermore, they show that the association strength between collocations was low. Another similar study is Miao (2014). This study revealed an incoherent distribution of formulaic sequences across EFL textbooks and their accompanying listening tracks.

Though there are many other studies that analyze EFL textbooks from different perspectives (e.g., Cullen & Kuo, 2004; Römer, 2004, 2005; Schlüter, 2002; Vine, 2013), these studies point out differences –or at times similarities– between EFL materials and native-language corpora. What is lacking is a systematic analysis and discussion of entrenchment of certain constructions in a given textbook corpus based on the previous discussion of input optimization. It is, however, important to acknowledge and note that task/textbook design in which how the constructions are represented is quite important for mapping form to meaning. However, the current study does not analyze task/textbook design and assumes that the textbooks are designed to foster meaningful communicative situations based on the curriculum description (MoE, 2018).

Textbooks in Türkiye and Their Input

EFL textbooks in Türkiye are an interesting topic of research. Although various studies analyze EFL materials in Türkiye (Arıkan, 2005; Demir & Yavuz, 2017), these studies mainly scrutinize the sociocultural aspects of the materials. While EFL textbooks in Türkiye were not analyzed from corpus-based approaches, there exist recent studies that point at the nature of input in them (Gedik & Kolsal, 2022). The EFL textbooks in Türkiye are distributed freely across the country and are required to be used in classrooms.

For instance, Gedik and Kolsal (2022) found that the textbooks severely lacked lexical diversity, leading to a practical implication of students being exposed to 10 new words on average every year throughout high school. Furthermore, they show that lexical sophistication levels are also quite low for low-frequency lexis, suggesting that low-frequency lexemes severely lack in terms of representation. In a follow up study, Gedik (2022) expanded the analysis from 5th grade to 12th grade EFL textbooks in Türkiye and analyzed them from a construction grammar perspective. This analysis not only revealed a lack of lexicogrammatical diversity across grades, but also provided a finer insight into the findings of Gedik and Kolsal (2022). Gedik (2022) suggests that the textbooks misrepresent constructions in English and that learners may not be exposed to the conventional usage patterns and frequencies of VACs when compared against a reference corpus. These findings may have an influence on the learners' generalization process, their low-proficiency level in English, and poor idiomatic uses of the language.

Finally, while it may not seem fair to analyze and provide feedback to textbooks that do not claim to be designed based on a corpus, or usage-based approaches, the Ministry of Education (MoE, 2018) that the textbooks are designed in such a way that they would gradually develop learners' English proficiency. However, the term development raises questions as it hints at fostering learning. If the main textbook material used in the classrooms does not foster learning for selected constructions enough for learning to take place from a cognitive standpoint, is it possible to talk about 'development'?

Using both quantitative measures, it is possible to trace the development of input for selected constructions in a corpus of EFL textbooks. In return, this can provide a better understanding of how local textbook publishers can improve the input for the textbooks. This research hopes to inspire other researchers to pursue a similar method to understanding the input deficiencies in localized EFL textbooks, in other words textbooks produced by the Ministry of Education in Türkiye.

Constructional Knowledge in L2 Speakers

While questioning the ontological status of constructions for L2 learners may sound redundant for a constructionist linguist, as construction grammar assumes all languages are based on and learned as form-meaning pairings, various studies have proven that L2 learners do not differ in terms of their constructional knowledge (e.g., Römer et al., 2014) of constructions. As such, constructions have an ontological status for both L1 and L2 speakers and this indicates that grammar is just as meaningful as lexical items are. However, although there are many studies on analyzing the constructional knowledge of L1 speakers (Ambridge & Lieven, 2015; Behrens, 2009; Goldberg et al., 2004; Lieven et al. 1997), studies that analyze L2 constructional knowledge are fewer in comparison (Eskildsen, 2012, 2014; Roehr-Brackin, 2014; Römer & Yılmaz, 2019; Tode & Sakai, 2016). Especially, VACs being the "basic means of clausal expression in a language" (Goldberg, 1995, p. 3), such studies traced linguistic knowledge of L2 speakers of VACs. This difference, however, can be justified because of a lack of reliable L2 corpora until recently (see Meunier, 2015 on this).

Previous research demonstrates that L2 speakers of English have constructional knowledge, differ in their verb-VAC associations with regard to proficiency and L1 background, and there are systematic differences in their usage of certain constructions (Gries & Wulff, 2005; Römer et al., 2014; Römer et al., 2018). However, research on a general outlook without subscribing to a particular L1 background has been relatively scarce (see however Römer, 2019).

Scholars have demonstrated that L2 speakers start their language learning journey with a set of fixed and highly repetitive constructions just like L1 speakers, which then grow in complexity, productivity, and become less fixed (Eskildsen, 2009; Eskildsen, & Cadierno, 2007; Li et al., 2014). Studies also suggest that with increasing proficiency, the accuracy of constructional knowledge also increases (Bestgen & Granger, 2014; Crossley & Salsbury, 2011). In addition to this, there is evidence that L2 speakers' knowledge of constructions is also influenced by their L1 (Li et al., 2014; Goschler & Stefanowitsch, 2019; Gedik & Uslu, 2022; Römer & Yilmaz, 2019). There is strong evidence that advanced L2 speakers are also influenced by strongly entrenched verb-VAC combinations in their L1 (Gedik & Uslu, 2022; Goschler & Stefanowitsch, 2019).

Lee and Kim (2011) report on an experiment in which they tested Korean speakers' knowledge of the English intransitive construction among others, the ditransitive, and resultative constructions, developmentally. They explain that Korean speakers of English did not show a developmental understanding of the intransitives. Put simply, the speakers did not start from the bottom of a taxonomical constructional family and construct the superordinate intransitive construction. Their performance on the ditransitive and the resultatives also varied, with most participants finding them difficult. This arguably shows that both L1 and also other personal factors can contribute to these variations.

As seen in previous studies, the importance of the quality of the input becomes apparent in language teaching. The current research gap, especially for the Turkish EFL context, is a good candidate for the present research study to be conducted in. Such studies can shed light on the input quality of EFL materials in Türkiye.

Methodology

The current research utilizes a mixed-method research design. To do the quantitative part, Tool for the Automatic Syntactic Sophistication and Complexity (TAASC, Kyle, 2016) was used. The qualitative part was done manually by the author, in which the author counted the verb types and their frequencies in selected constructions. The textbook corpus was made available by Gedik and Kolsal (2022) for high school EFL materials in Türkiye. TAASSC (Kyle, 2016) is an automatic syntactic complexity analyzer that can put out constructions with their relevant frequency counts. Having been statistically scrutinized, the software tool proves to be robust for use in linguistic research (Kyle & Crossley, 2017). The selected constructions were manually extracted from the frequency list the software tool creates for each lemma-construction combination.

The high school textbooks selected were prepared and administered by the Ministry of Education in Türkiye. The corpus covered the textbooks, excluding workbooks and the listening transcripts. The reason for that was only the textbooks were publicly available at the time of conducting this research study. For more information on the selected corpus, I quote Gedik and Kolsal (2022, p. 166):

> ‘’The textbooks covered each grade in high schools (9th–12th grade) and were published by the following publishing houses; (MEB) *Relearn*, *Teenwise*, *Progress* for 9th; *Count Me In*, *Gizem* for 10th; *Sunshine*, *Silverlining* for 11th; and *Count Me In* for 12th grades with their accompanying workbooks. Regardless of the publishing house of the books, the respective CEFR level for grades were as follows: A1–A2 for 9th grade, A2+– B1 for 10th grade, B1+–B2 for 11th grade and B2+ for 12th grade’’

As such, the total token count for the corpus was 217.053. The constructions in Table 1 were selected as there is either a large number of studies that show correlation between learner proficiency and the constructional knowledge of the construction, or constructicographic analyses with the frequency profiles of such constructions (Herbst, 2020; Römer & Yılmaz, 2019). The four selected *V prep N* constructions were based on Römer and Yılmaz (2019) as they provide a detailed account for those given constructions in Turkish speakers of English. Furthermore, these VACs are easy to retrieve and distinguish unlike other argument structure constructions, thus they are less susceptible to being mistagged by a POS tagger. The type-token count for verbs in the selected constructions were retrieved from the COCA (Davies, 2008).

Table 1. *Selected Constructions*

Constructions	Examples
V prep N	I agree with the statement.
V with N	I talked about the bird
V about N	I asked for help
V for N	I live in New York
V in N	
V-iobj-directobj	I gave him a book.

**Note.* This table displays the selected constructions and their respective examples.

Determining the type-token ratio required for optimized input seems to be construction-dependent, as previously discussed. However, if we take Madlener (2016) as the basis for a hypothetical discussion of optimizing input in EFL textbooks, then the ratio of the number of occurrences of the construction is divided by the number of types. In this vein, Madlener's ratio (150 occurrences/25 types) will be the basis of the study. Therefore, we expect to see at least a 16.6% difference between the occurrence and the type count. While it is difficult to pinpoint a maximum number of occurrences, previous studies have shown that anything below or around 20 occurrences will not be helpful for learning (e.g., McDonough & Nekrasova-Becker, 2014; McDonough & Trofimovich, 2013). Finally, to call the input of a construction well-optimized, apart from this ratio, we expect to see 3 to 5 high-frequency types with tokens of 24 or higher, and 20 to 22 low-frequency types with 2 to 4 tokens each. High or low frequency is calculated based on per million words based on the COCA.

Results

Table 2 outlines the frequency data for the constructions per grade. The results will be presented based on the total number of the constructions.

Table 2. *Constructions and Item Frequency Data*

Constructions (type/token) (ratio) Verb (# of occurrence)	9th grade	10th grade	11th grade	12th grade	Total
V with N	2/4 (50%)	4/5 (80%)	4/6 (66%)	1/1 (100%)	11/16 (68.75%)
	Match (1), agree (1)	Match (1), discuss (2), share (1), cope (1)	Match (2), fill (1), share (2), complete (1)	Discuss (1)	Match (4), agree (1), discuss (3), share (3), cope (1), fill (1), complete (1)
V about N	2/3 (66%)	3/4 (75%)	1/1 (100%)	0	6/8 (75%)
	Talk (2), be (1)	Learn (1), talk (2), think (1)	Talk (1)		Talk (3), be (1), learn (1), think (1)

Table 2 continued

V for N	1/1 Be (1)	1/2 Ask (1)	0	0	2/3 (66%) Be (1), ask(1)
V in N	8/13 (61%) Do (2), get (1), be (1), live (2), take (2), have (2), fill (1), write(1)	8/8 (100%) Fill (1), be (1), live (1), have (1), pay (1), end (1), use (1), put (1)	5/6 (83.33%) Put (1), be (2), fill (1), live (1), take (1)	1/1 (100%) Be (1)	22/28 (88%) Do (2), get (1), be (5), live (4), take (1), have (3), fill (3), write (1), pay (1), end (1), use (1), put (2)
V-iobj-directobj	0	1/1 (100%) Give (1)	0	0	1/1 (100%) Give (1)

**Note*. This table displays the type-token frequency count per grade.

As seen in Table 2, the type diversity across grades and constructions are inconsistent. In some cases, the construction is not represented enough throughout the grades (see V-iobj-directobj). Such results have important implications which will be discussed later.

Table 3 gathers the per million frequency data from the Corpus of Contemporary American English (COCA) within its respective construction to understand the frequency of items in natural language. High frequency items are marked with ** and low frequency items are marked with ^.

Table 3. *Constructions and Exemplars*

V with N	V about N	V for N	V in N	V-iobj-directobj
^Match (0.26)	**Talk (107.78)	^Be (11.02)	^Do (18.15)	**Give (238.83)
**Agree (46.76)	^Be (10.33)	^Ask (20.18)	**Get (43.71)	
^Discuss (1.21)	^Learn (10.64)		**Be (94.13)	
^Share (6.08)	**Think (79.61)		**Live (58.16)	
^Cope (6.85)			^Take (5.92)	
^Fill (1.10)			^Have (18.92)	
^Complete (0.04)			^Write (3.05)	
			^Fill (4.87)	
			^Pay (1.32)	
			^End (2.60)	
			^Use (4.20)	
			^Put (27.52)	

**Note.* This table outlines the types found in the textbooks and their respective frequencies per million within its respective selected construction from the COCA.

Table 3 can provide a blueprint of what can be considered naturalistic input. With these numbers, one understands the lexicogrammatical nature of the selected constructions in the textbook. This makes it easier to compare the type-token frequencies of the constructions in the textbook and analyze them.

Although none of the constructions represent enough token count to probably trigger entrenchment following previous studies (e.g., McDonough & Nekrasova-Becker, 2014;

McDonough & Trofimovich, 2013), the discussion here will still follow as the textbooks provide one of the vital sources of exposure to L2 learners in classrooms.

V prep N Constructions

V with N

Comparing the results in table 2 and 3, this construction does not represent the high frequency exemplar already available in the corpus at the right skewed distribution level to optimize input. Using data from Römer and Yılmaz (2019, p. 119), the construction could have been skewed using verbs such as be, deal, and come as the high frequent exemplars, followed by the low frequency items that occur in table 3 and many other using the COCA or other native speaker corpora to optimize its input. The items that occur in the verbal slot seem to be balanced with 1 to 2 tokens for each item but there is no high frequency exemplar to act as a training wheel for the learning of the construction.

V about N

While the construction generally occurs very infrequently throughout the books, it seems to represent one of the correct high frequency exemplars, i.e., *talk*, albeit at a very low token count. Other items to skew the input with would have been *think* or *know* at high token counts, and *learn*, or *be* at low token counts (Römer & Yılmaz, 2019, p. 119). Finally, while there is *talk* is used 3 times out of the 8 instances across the corpus as a high frequency exemplar, this is probably not enough to trigger a highly abstract schema.

V for N

This construction, being the second lowest in type count after the ditransitive construction, will very likely not be entrenched because there is no repetition of it. The construction only occurs with two low-frequency types, *be* and *ask*. However, the diversity of the verbal slot is not represented in the textbooks. Therefore, even if the students would learn the previous constructions as item-specific instances, V for N is not likely to be remembered. However, if it occurs in ambient language via different means, then the likelihood of entrenchment will increase.

V in N

Having the highest type and token count across all the constructions in the textbook corpus, it also represents two high frequent exemplars, albeit with a low token count, i.e., *get*, *be*, and *live*. While it represents many types with low token counts, it may not be enough to trigger an abstract schema, as there may not be enough surface similarity to teach the form-meaning pairing with high frequency exemplars. However, this may need experimental data from the classroom as the optimal frequency data for learning to occur is construction-dependent. Nevertheless, the results of this construction align the closest with an ‘optimized-input’ understanding.

The Ditransitive Construction

This construction only represents one high-frequency exemplar in grade 10 and that appears to be the only occurrence of it in the main textbooks. While there is not much to discuss when there is no data on it, the construction with its 1 token displays the most prototypical (Herbst, 2020), high-frequency item, i.e., *give*. The ditransitive construction being one of the most universally available constructions as it encodes a very human-centric scene of giving/receiving (Goldberg, 1995), its underrepresentation is surprising.

Discussion

Following the findings of Gedik (2022) of how the textbooks in Türkiye lack a lexicogrammatical development, or diversity, this analysis further proves the point. While there is not much lexical diversity, i.e., types, to begin with for the selected constructions in this study, the textbooks do not seem to be doing a fair job of enough repetition for the constructions to be entrenched. Furthermore, the input available for these constructions seem to be non-optimally designed. If we acknowledge the fact that these textbooks are legally required by the government to be used or at least covered, and that textbooks make up the main source of input used in classrooms (Vellenga, 2004; Martínez-Flor & Usó-Juan, 2010), then the results presented here become vital from a learner's perspective.

VACs being the "basic means of clausal expression in a language" (Goldberg, 1995, p. 3) constitute an important level of linguistic knowledge both in L1 and L2 language acquisition (see Ellis et al., 2014), with higher proficiency level students performing more closely to native speaker experimental data in producing VACs, i.e., idiomatic language production. Returning to the results for the VACs presented here, two things are clear: (a) they either occur very infrequently that they do not lead to entrenchment unless they appear in other ambient language sources, and (b) the input provided for them likely leads to unproductive constructions with no overarching schemas, possibly resulting in a failure of pattern detection (Madlener, 2016). As a result, the students may fail to map the form to the meaning, assuming the constructions are represented in meaningful, communicative ways in the textbooks. Although there is a high probability that learners who use these textbooks are exposed to such VACs on the internet or via other means, considering one of the main objectives of these textbooks is to 'develop' learners'' English, it becomes important to address this mismatch between what is promised and is presented as linguistic knowledge.

One advantage of having low token counts for the types in these constructions might be that it might foster pattern detection if incidental learning is possible via input flooding and it may lead to lesser cognitive overload in learners who are learning other new form-meaning pairings at first contact, as Madlener (2016) points out, translating to year 9 or 10 books. However, from those years onward, for a highly abstract schema to occur and to foster productivity, i.e., extensibility, the lexicogrammatical input of all the selected constructions in this study will need to be enhanced. A skewed input of the constructions would have fostered the right amount of surface similarity with a few highly frequent types with high token counts, and many low frequency types with low token counts. Such skewing would also mean that this lexicogrammatical diversity within the given constructions appears in a variety of different communicative settings, which helps with entrenchment, mapping form to meaning, and leads learners to have item-based islands of the constructions, i.e., the *give*-ditransitive as a

prototypical instantiation of the overarching ditransitive construction. As such, these highly frequent types, acting as training wheels for the acquisition of the constructions, would help with learning and incorporating newer items into the construction, i.e., extending the construction, as there is evidence for high schematization to foster such extending effects (Ellis & O'Donnell, 2012).

In the case of the textbooks and the selected constructions, increased type frequency may lead to overgeneralization errors and uncertainty in using the construction, as there has probably not been a mapping of form to meaning yet, or an exemplar to represent the constructional form or meaning (Madlener, 2015). However, as it has been demonstrated many times, because language learning is subject to individual differences (Dabrowska, 2015), students who may have been previously exposed to such constructions would benefit from an increased type frequency condition, as they would experience more types, extending their lexicogrammatical knowledge. However, there is experimental evidence that such a condition does not help learners with learning and forming a schema at first contact. Thus, the textbooks in this study might benefit from a skewed input in year 9 or 10, followed by an increased type variability in later years. This is indicative of the fact that students in Türkiye. If they are only exposed to the textbooks, and if English is not used as a medium of instruction at Turkish high schools in English lessons anymore (see Selvi, 2014, p. 137), then the results here suggest the following: Turkish learners of English may not receive enough input to learn certain constructions optimally because selective attention or low-salience of such constructions may hinder the learning.

From a pedagogical perspective, this may lead to an unfair linguistic competition between students who have been financially more fortunate to receive sources through which they can be exposed to the target language and those whose only sources are the EFL textbooks used in the classroom. It is commonly assumed that there is a correlation between financial status and the education background of the parents. It is not difficult to imagine how one is connected to the other. More financial stability allows families to spend more on their children's English (or other subject matter) books. This stability can also provide students with a number of other sources of exposure to English, such as media streaming platforms, or video games. Furthermore, this discrepancy may be detrimental in being successful in the national English university entrance exams in Türkiye, as it was pointed out by Gedik and Kolsal (2022). This national exam is highly centralized and is based on the textbooks that are provided by the Ministry of Education.

While making the case against usage-based EFL materials is difficult, there is evidence that something like a 'textbook English' exists (Le Foll, 2018) and the input L1 and L2 speakers of a given language will differ structurally and frequency-wise. However, if we subscribe to experimental data that come out of usage-based linguistics and believe that L2 learners benefit from skewed input, or textbooks that reflect natural language in its frequency profile, i.e., corpus-based, then we might be able to give every student an equal chance to learn constructions. With this short analysis of 4 selected constructions, the results and interpretation are clear. The EFL textbooks used in Turkish high schools may not provide enough linguistic input to optimally form overarching generalizations, and at times enough for entrenchment to take place. Further research will show whether this is the case in textbook corpora across different nations.

Conclusions

In this study, four selected constructions were analyzed for their type-token frequency across high school English textbooks used in Türkiye. Following a usage-based approach to L2 learning and experimental data for a positive outcome of skewing input (e.g., Madlener, 2015), this study traced type-token counts and assumed that an optimal input would be having a couple of highly frequent, prototypical items with high token counts, and low-frequent types with low token counts. Based on this, none of the constructions demonstrate this optimized understanding input, and at times do not constitute enough repetition for entrenchment. As such, for learning, generalizations, productivity, and idiomaticity to occur, L2 instruction and materials should take into account a more natural language distribution of linguistic items.

Disclosure Statement

No potential conflict of interest was reported by the authors.

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