Future-time reference in spoken EFL

More complex than in ENL?

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Previous research has given much attention to how native speakers of English and, to a lesser extent, speakers of World Englishes, choose between *will* and *be going to* to talk about the future. There is, however, a lack of research investigating how learners of English as a Foreign Language choose between these future markers at different proficiency levels. We collected 3,616 instances of *will* and *be going to* from the Trinity Lancaster Corpus, which consists of spoken language from low-intermediate to advanced learners of English from various mother tongue backgrounds. These future marker observations were annotated for constraints known to probabilistically influence the choice of variant and then analyzed using mixed-effects logistic regression. Results show that learners are sensitive to more constraints than native speakers, suggesting that the forms serve more distinct functions. As learners become more proficient, they consider fewer constraints and thereby better approximate native speakers.

Keywords: EFL, *will*, *be going to*, future marker alternation, proficiency, SLA

1. Introduction

In this study, we investigate how learners of English as a Foreign Language (EFL) choose between the competing future markers *will* (1) and *be going to* (2) at different proficiency levels in spoken language:

(1) I'll just ask you one more question (TLC:2_7_IN_1)

(2) I'm gonna ask you a real question (TLC:8_ME_12)

Prescriptivist accounts posit that there are subtle semantic differences between *will* and *be going to*. While *will* is the neutral future, *be going to* is supposedly more suitable when there are present indications that the event will happen in

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the future (Brisard, 2001; Gardner, 2017, p. 125), so if the sky is clouded, indicating that it might rain at any moment, a speaker would be more inclined to say *it's going to rain* than *it will rain*. In reality, empirical investigation into the use of *will* versus *be going to* has not found a lot of support for this claim. Rather, Fehringer and Corrigan (2015, p. 205) state that the alternation is an example of layering: *Be going to* gradually entered the language as a future marker through grammaticalization and came to co-exist and compete with the existing future markers including *will*, expressing the same function without clear-cut semantic distinction.

While the future markers are often interchangeable, the choice of variant is not random. Instead, many factors together determine which future marker is more acceptable in a given context, such as the type of the sentence, clause, verb and subject, and the temporal proximity of the future event. Many of these factors are claimed to derive from the grammaticalization history of the forms through the phenomenon of retention (Torres-Cacoullos & Walker, 2009, p. 321). For example, *be going to* was first used as a future marker in subordinate clauses, which explains why this form is still the preferred variant in subordinate clauses (Gardner, 2017, p. 143; Poplack & Tagliamonte, 2000, p. 334; Tagliamonte, Durham, & Smith, 2014, p. 91). Conversely, *will* was originally used to express volition, so it is more suitable for main clauses, which are more volitional than subordinate clauses (Poplack & Tagliamonte, 2000, p. 334). In addition to this interplay between layering and retention, the competing variants specialize in certain niches. Interrogative clauses for example favor *be going to* very strongly, and *will* is used almost categorically in apodoses (Denis & Tagliamonte, 2018, p. 405; Torres-Cacoullos & Walker, 2009, p. 348).

Rather than referring to the historical development of the future markers, other accounts posit that the choice of variant also depends on language processing. Since *be going to* is the longer variant, it buys the speaker more time to process the utterance, so speakers might prefer *be going to* over *will* when the processing demands of language production are high (see Rohdenburg, 1996, p. 151; Szmrecsanyi 2003). Such an account provides another explanation for why *be going to* is preferred in subordinate clauses, as they are syntactically more complex than main clauses.

The set of constraints and their origin has been studied extensively for native varieties of English (e.g., Denis & Tagliamonte, 2018; Fehringer & Corrigan, 2015; Gardner, 2017; Poplack & Tagliamonte, 2000; Tagliamonte et al., 2014). Since these studies tend to relate the set of constraints to the grammaticalization of the variants, they often involve an apparent time design to compare the influence of the factors on the choice of variants over time (e.g., Gardner, 2017). Alternatively, they compare the influence of the constraints in different dialects that vary with respect to how conservative they are (Tagliamonte et al., 2014). Typi-

cally, these studies find that younger speakers and speakers of less conservative dialects are sensitive to fewer constraints related to grammaticalization, implying ongoing semantic bleaching of the future variants. Specifically, the underlying assumption is that differences between *will* and *be going to* are gradually levelled through the ongoing grammaticalization of *be going to* since it is the more recent, incoming form historically. Recently, the future markers have also been found to vary in complex ways across registers differing in mode and formality (Engel & Szmrecsanyi, 2023).

The alternation has also received some attention in research on English as a Second Language. Using logistic regression, Schneider (2016) compares how the future markers are used in spoken and written Ghanaian English compared to British English. She finds that the distribution of the forms is less systematic in Ghanaian English, which is only conditioned by sentence type (Schneider 2016). Bohmann (2024) compares the forms in three Inner Circle varieties of English (Canada, New Zealand, and USA) with five Outer Circle varieties (Hong Kong, Singapore, Jamaica, India, Sri Lanka) and finds that there are differences in the overall frequencies of *will* and *be going to* across varieties although the constraints affect the choice of variant in the same way.

However, it is less clear how the different constraints simultaneously affect the choice between *will* and *be going to* for learners of English as a Foreign Language (EFL). Most previous studies that investigated alternation phenomena in EFL with a multifactorial analysis considered alternations that involve a change of word order, such as the particle placement alternation (Paquot, Grafmiller, & Szmrecsanyi, 2019) and the dative alternation (Jäschke & Plag, 2016), or alternations where a linguistic element can optionally be inserted, such as the complementizer *that* alternation (Wulff, 2016; Wulff, Gries, & Lester, 2018; Wulff, Lester, & Martinez-Garcia, 2014), rather than alternations where speakers choose between semantically equivalent words such as the future marker alternation. Overall, those studies found that EFL learners are sensitive to an interacting set of constraints like native speakers, but they consider fewer constraints and they are more sensitive to processing-related constraints. One exception is the study of Deshors and Gries' (2014) on the use of *can* and *may*, who found that learners favor the more frequent *can* in cognitively complex environments, in accordance with Rohdenburg's Complexity Principle (1996, p. 151). Our study aims to fill this gap by conducting a quantitative corpus-based study of how EFL learners choose between the future markers compared to native speakers in spoken language at different proficiency levels. Contrary to most previous studies on alternation phenomena in EFL, which have mostly focused on how learners' L1 influences their choice of variant, we include proficiency level to shed light on the acquisition and development of the constraints guiding the choice between alternating variants.

Investigating the influence of learners' foreign language proficiency on their use of the future markers also forms a desideratum within research on the acquisition of these forms (Bardovi-Harlig, 2000, pp. 411–412).

With such an approach, Dubois, Paquot and Szmrecsanyi (2023b) analyzed the genitive alternation, which involves a change of word order contrary to the future marker alternation. Their investigation showed that possessor animacy, otherwise the strongest constraint in the genitive alternation, is weaker for low-proficiency learners of English, which they argue is due to learners struggling with recognizing and fine-tuning the statistical association between possessor animacy and the distribution of the genitive variants in their linguistic input. Similarly, learners have to learn the constraints known to probabilistically influence the choice of future marker variant if they are to approximate the language use of native speakers. For example, learners need to learn that *be going to* is preferred to *will* in interrogative clauses rather than declarative clauses and with subclauses rather than main clauses etc.

The structure of the study is as follows. In the next section, we present our methodology, including the data collection and annotation process and the method of statistical analysis, namely mixed-effects logistic regression.[1] In Section 3, we analyze the results from the analysis, which we then discuss in Section 4. Finally, Section 5 concludes with some general remarks and limitations of the present study.

2. Data and methods

2.1 The corpus

The data stems from the Trinity Lancaster Corpus (TLC, Gablasova, Brezina & McEnery, 2019), a 3.4-million word corpus consisting of transcribed recordings from an official language exam, the Graded Examinations in Spoken English (GESE). During the language exam, an EFL learner from either China, India, Russia, Spain, Mexico or Italy interacts with an examiner, who is a native speaker of British English. The learners have one of 11 different L1 backgrounds, namely Chinese, Italian, Spanish, Russian, Hindi, Gujarati, Tamil, Malayalam, Marathi, Kannada and Telugu. The learners in the corpus are assigned a CEFR proficiency level (Council of Europe, 2001) from low-intermediate (B1) to advanced (C2) based on the level of the GESE exam they passed. During the exam, the candidate has to complete up to four different tasks assessing their ability in language com-

1. The dataset, analysis code and coding scheme for variable annotation are available at https://osf.io/9ew26/?view_only=c5a14b601e78484faa3d2ab8e2e948e7.

prehension and production, namely a listening task, a conversation task, an interactive task and a discussion about a topic of their choice. The learners with a C1 or C2 proficiency level also have to present a five-minute monologic presentation about their topic, which they could prepare in advance. An exam can take up to 25 minutes and contains on average 2,500 words, of which approximately 60% are produced by the learner (see Dubois et al., 2023b).

2.2 Data collection

The data was extracted from the TLC with an R script (version 4.2.2, R Core Team, 2022) with reference to the CLAWS6 part-of-speech tags in the corpus. Although futurity can be conveyed with other expressions beside *will* and *be going to* (Bergs, 2010), we limit ourselves to, on the one hand, *will* and its reduced form *'ll* and, on the other hand, *be going to* and *gonna*, because they account for most of the future time expressions (Denis & Tagliamonte, 2018, p. 405). For *be going to*, we looked for all instances of the tag VVGK. For *will*, we looked for the forms *will/'ll/wo* followed by the modal verb tag VM. Then, we removed the cases that were missing a subject, verb or auxiliary, as well as non-interchangeable cases according to Denis and Tagliamonte (2018) and Engel (2022). For *be going to*, we mainly removed future-in-the-past uses (*was/were going to*) since the preference for *be going to* in these contexts is almost categorical (Fehringer & Corrigan, 2015). Instances of *will* in tag questions were not included and so were instances of *will* with an elliptical subject or verb, as in (3). Also removed are instances of noun *will* and lexical uses of *go*, most of which were excluded automatically with the part-of-speech tags.

(3) in conclusion abortion is and will be erm really controversial topic always
(TLC:2_ME_8)

To keep the workload manageable, we only checked the interchangeability of a sample of the collected observations that would suffice for our method of statistical analysis, namely mixed-effects logistic regression, which is limited by the number of observations from the least frequent variant (Hosmer & Lemeshow, 2000, pp. 346–347), in this case *be going to*. Hence, we first manually determined the interchangeability of all 1,429 potential instances of *be going to* retrieved from the learner data, which yielded 1,266 interchangeable cases from 514 exams, and by extension, 514 learners. To reach a similar number of the more frequent *will* tokens, we manually checked the interchangeability in a random sample of 1,700 instances of *will* from the same learners. Collecting both future markers from the same learners ensures that they have acquired both forms. The 2,832 future markers in the learner data are distributed across the proficiency levels and the

L1 backgrounds as shown in Table 1. While our sampling method has altered the dataset's representation of variant distribution in the corpus, this is not a concern for the current study, as our primary focus is on the probabilistic conditioning of the variants rather than their distribution.

Table 1. Distribution of future markers across L1 backgrounds and proficiency levels

	B1	B2	C1	C2	Row total
Chinese	59	102	98	31	290
Gujarati	59	31	0	15	105
Hindi	50	145	0	30	225
Italian	49	94	96	7	262
Marathi	38	45	2	22	131
Russian	30	78	0	0	108
Spanish	192	429	571	138	1330
Tamil	31	130	0	22	183
Other	67	20	75	36	198
Column total	**575**	**1074**	**866**	**317**	**2832**

In the same 514 exams, we checked the interchangeability of 1,250 instances of *will* and 1,250 instances of *be going to* produced by the examiners in the corpus, who are all native speakers of British English. A large number of these future markers occur in instructions or prompts specific to a given exam task and therefore did not represent the authentic spoken language production of the examiners. If two such clauses have at least 70% of their words in common, they are considered scripted and their future markers were discarded from further analysis. In total, we retained 347 interchangeable, non-scripted instances of *be going to* and 442 cases of *will* from the native speakers. With the addition of the 2,832 learner observations, the dataset consists of 2,011 instances of *will* and 1,605 instances of *be going to* for a total of 3,616 observations.

2.3 Data annotation

The observations were annotated for the proficiency level of the speaker as well as the different probabilistic constraints affecting speakers' choice of variant, including negation, clause length, temporal proximity, structural persistence, subject person and animacy, the type of sentence, clause and verb, as well as the presence of temporal adverbs (Denis & Tagliamonte, 2018; Engel & Szmrecsanyi, 2023;

Torres-Cacoullos & Walker, 2009). Clause type, verb type, temporal proximity and subject animacy involve mostly manual coding, so we conducted an inter-rater reliability analysis. With the help of a coding scheme in the form of decision trees, 750 cases were double-coded by a second annotator for these variables. The agreement between both coders was estimated with Cohen's kappa, which calculates as .92 for clause type, .88 for verb type, .91 for temporal proximity and .94 for subject animacy, showing almost perfect agreement for all variables according to the benchmark of Landis and Koch (1977).

2.3.1 *Sentence type*

Previous research has found that interrogative clauses strongly prefer *be going to*, to the extent that the preference is almost categorical (Denis & Tagliamonte, 2018, p. 424; Szmrecsanyi, 2003; Tagliamonte et al., 2014). In our dataset, interrogative clauses are either introduced by *wh*-words, followed by tag questions, or feature subject-verb inversion. Although relative clauses, complement clauses and clausal objects cannot have subject-verb inversion, their matrix clause can feature inversion, so cases like (4) were also considered interrogatives.

(4) do you think the women will be very sensible very careful with their money
(TLC:2_6_IN_116)

The data shows that interrogative clauses account for 10% of the BGT tokens and 10% of the *will* tokens, indicating that interrogative clauses do not evince a strong preference for *be going to*.

2.3.2 *Negation*

Most previous research investigating the effect of negation on the choice of future marker find that negative contexts typically favor *be going to* (Nesselhauf, 2010, p. 173; Tagliamonte et al., 2014, pp. 98–99). To be considered negative, the clause containing the future marker had to feature negators or negative nouns like *never, nothing, none, not, no, neither, nor, nowhere, no place* or *nobody* (Huddleston & Pullum, 2002, p. 789). A first glance at the data reveals that *will* is more strongly associated with negation as 11% of the *will* tokens occur in negated clauses compared to 8% of BGT tokens.

2.3.3 *Clause type*

Be going to is systematically preferred in subordinate clauses and protases, whereas *will* is drawn to main clauses and apodoses (Denis & Tagliamonte, 2018; Fehringer & Corrigan, 2015, p. 216; Gardner, 2017, p. 153; Tagliamonte et al., 2014, p. 98). Apodoses are clauses that take a protasis introduced by *if* as a subordinate clause. Other subordinate clauses are introduced by *after, as, because, before, once,*

since, purposive *so, like* (except for direct speech), (optional) *that, (al)though, till, until, unless, provided, except, in case, as though, whereas, while, whether* and other *wh*-words (Quirk, Greenbaum, Leech, & Svartvik, 1985, pp. 998–1000). All other clauses are marked as main clauses. In our data, *be going to* and *will* are more or less distributed equally across main clauses and subclauses. As expected, *will* figures in most apodoses (75%) whereas protases mainly take *be going to* (66%).

2.3.4 *Persistence*

Using a construction increases its activation level, making it easier to produce again (N. C. Ellis, 2006, p. 102; N. C. Ellis & Wulff, 2019, p. 44). Therefore, speakers often tend to reuse previously produced constructions, a phenomenon known as persistence. For each observation, we checked whether the future marker was preceded by another future marker. If so, we distinguish between examiner *will*, candidate *will*, examiner *be going to* and candidate *be going to*. As expected, BGT tokens are more often preceded by a previous instance of BGT (51%) rather than *will* (42%). Likewise, 72% of *will* tokens follow a previous instance of *will* whereas only 26% are preceded by BGT.

2.3.5 *Temporal proximity*

Temporal proximity refers to how soon the future event is expected to occur. Since *be going to* is supposedly preferred when there are present indications for the future event, *be going to* should be preferred in nearby future events (Bergs, 2010, pp. 223–224; Brisard, 2001, p. 266; Huddleston & Pullum, 2002, p. 211). In the present study, future events that occur within the same day as speech time are considered proximate. All other future events are considered non-proximate (Engel & Szmrecsanyi, 2023; Torres-Cacoullos & Walker, 2009, p. 330). Our data suggests that proximate contexts indeed favor *be going to*, as more than a third of BGT tokens occur in proximate contexts, compared to only 13% of *will* tokens.

2.3.6 *Temporal adverb*

Torres-Cacoullos and Walker (2009) found that *be going to* is less frequent if its clause contains a temporal adverb. Similar to Engel and Szmrecsanyi (2023), we checked whether the clause with the future marker contains either a temporal adverb (e.g., *soon, sometimes, always, first*), or a non-finite adverbial (e.g., *in the summer, next week*) indicating event time, frequency, duration or time relationship (Quirk et al., 1985, pp. 481–482). A first look at the data does not suggest any association between the presence of temporal adverbs and the choice of variant, as adverbials are present in approximately 20% of both BGT and *will* tokens.

2.3.7 *Verb type*

Since *be going to* was originally used to indicate movement (Denis & Tagliamonte, 2018, p. 408; Fehringer & Corrigan, 2015, p. 208; Gardner, 2017, p. 142), previous research has posited that *be going to* tends to avoid motion verbs such as *go, return, leave* etc. In a similar vein, Poplack and Tagliamonte (2000, p. 335) have argued that dynamic verbs disfavor *be going to*, while other accounts claim the opposite: The origin of *be going to* attracts dynamic verbs and stative verbs preferably take *will* (Gardner, 2017, p. 142; Tagliamonte et al., 2014, p. 78, see also Gries & Stefanowitsch, 2004, p. 114). Using the list of motion verbs in Levin (1993, pp. 263–271; see also Engel & Szmrecsanyi 2023) as a starting point, we categorized verbs implying that the subject is moving as motion verbs. Similar to Engel and Szmrecsanyi (2023), verbs are considered stative if they refer to characteristics and qualities (*be*), mental states (e.g., *imagine, think*), attitudes (e.g., *like, hate*), relationships and measurements (e.g., *have, contain, cost*) (Quirk et al., 1985, pp. 200–208). All other verbs are considered dynamic. The data indicates that stative verbs prefer *will*, since they account for 30% *will* tokens compared to only 17% of BGT tokens. Motion verbs do not seem to have a preference for either variant.

2.3.8 *Person and animacy*

Will should be preferred with first-person subjects due to its volitional meaning (Denis & Tagliamonte, 2018, p. 423; Fehringer & Corrigan, 2015, p. 210; Gardner, 2017, p. 146; Tagliamonte et al., 2014, p. 78; Torres-Cacoullos & Walker, 2009, p. 339), whereas *be going to* is often found to prefer third and especially second person pronouns (Fehringer & Corrigan, 2015, p. 210; Gardner, 2017, p. 146). For third person referents, we further distinguish between animate and inanimate referents. Since only animate subjects can move, *be going to* might have retained a preference for animate subjects (Poplack & Tagliamonte, 2000, pp. 334–335; Tagliamonte et al., 2014, p. 78). Similar to Dubois et al. (2023b), the animate category covers human animates or entities represented as humans (e.g., *plumber, god*) and non-human animates (e.g., *mouse*) as well as collective nouns (e.g., *government, company*). Our data shows that BGT tokens take first-person subjects in half of the cases, whereas first-person subjects only occur in one third of the *will* tokens. Instead, *will* appears to take both animate (29%) and inanimate (25%) third-person subjects more often than BGT, where third-person subjects occur in approximately a third of the tokens. Second-person subjects seem to be equally distributed across both variants.

2.3.9 *Clause length*

Provided longer sentences are more difficult to process, speakers prefer the longer, more explicit *be going to* variant as it buys more time to process the utterance (Szmrecsanyi, 2003, pp. 314–315). Given that the TLC consists of spoken utterances without punctuation, we annotated the observations for the letter length of the clause. For the purposes of our study, a clause consists of a subject noun phrase and a verb phrase, which in turn consists of either *will* or *be going to*, the infinitive verb, any complements and optionally some adverbs. Other elements that are not necessary to constitute a full clause according to these criteria are not included in the count. In (5) for instance, the matrix clause *I think* is not included in the count as it not necessary for the remaining linguistic material to form a full-fledged clause.

(5) that won't be so good for your future I think (TLC:2_7_CH_15)

Clause length does not seem to affect the choice of variant in our data at first glance as the median length of the clauses with *be going to* ($M = 23$, $IQR = 19$) is very similar to those featuring *will* ($M = 24$, $IQR = 20$).

2.4 Data analysis

The annotated dataset was analyzed with mixed-effects logistic regression using the *lme4* package (Bates, Mächler, Bolker, & Walker, 2015) in R (version 4.2.2, R Core Team, 2022). The model predicts the choice of future marker given a set of predictors, i.e., the probabilistic constraints, which are allowed to interact with the proficiency level of the speaker, so that we can compare how the probabilistic constraints affect the choice of variant as a function of the different proficiency levels. To do so, we use treatment coding, which means that the model determines the effect of a given predictor on the response variable by comparing one specific level of a categorical predictor against the other levels of that predictor. Most importantly, we compare native speakers against each of the learner proficiency levels.

While exploring the dataset, we noticed that there were only 47 observations with protases and 156 observations without a previous future marker, which caused data sparsity issues during statistical modelling. Therefore, we conflated protases together with subclauses. Since observations without previous future marker are not particularly relevant theoretically for the persistence constraint, we decided to remove these observations. The only numeric predictor in our model, clause length, showed a right-skewed distribution, so it was log-transformed and standardized by subtracting the median clause length and dividing the result by two standard deviations (Gelman, 2008). To control for

dependent observations and irrelevant sources of variation (Gries, 2015, 2018, 2022), we added random intercept adjustments for the verb lemma (see Gries & Stefanowitsch, 2004, p. 114), the speaker, their L1 and country, the exam, the task within each exam and the task across exams. Following Zuur, Ieno, Walker, Saveliev, and Smith (2009), we then first removed random effects that did not contribute to the quality of the model according to likelihood ratio tests before turning to the fixed effects structure.

3. Results

The minimal adequate model retained random intercepts for speaker, country, and verb lemma, with the speaker explaining the most variance. The model is significantly better than the null model ($p < .001$) and predicts the right future marker in 80% of the cases, which is significantly better than the baseline of 57% ($p < .001$). The model's $R^2_{marginal}$ is .15 and $R^2_{conditional}$ is .4, the MCC is 0.6 and the concordance index calculates as .88, indicating an excellent fit (Baayen, 2008, p. 204). The condition index κ of 26.54 indicates that there is medium multicollinearity in the model, but this remains below the threshold of 30 for harmful collinearity (Baayen, 2008, p. 182). The VIF adjusted by degrees of freedom for each factor is below the threshold of 10 (Levshina, 2015, p. 273). The results from the model are presented in Table 2.

Table 2. Effects of individual predictors on the choice of future marker. Odds ratios above 1 indicate an increase in the likelihood of *be going to*. Significant *p*-values are written in bold.

Predictor	Odds ratio	Std. error	*p*-value
(Intercept)	0.514	0.395	0.092
Proficiency			
Native → B1	0.316	0.372	**0.002**
Native → B2	0.277	0.315	**< 0.001**
Native → C1	0.491	0.331	**0.031**
Native → C2	0.768	0.44	0.548
Negation			
Affirmative → negative	2.531	0.334	**0.005**
Clause type			
Main clause → subclause	1.389	0.108	**0.002**

Table 2. *(continued)*

Predictor	Odds ratio	Std. error	*p*-value
Main clause → apodosis	0.469	0.168	**<.001**
Persistence			
Candidate *will*→ candidate *bgt*	0.759	0.271	0.31
Candidate *will*→ examiner *bgt*	0.983	0.282	0.951
Candidate *will* → examiner *will*	0.552	0.246	**0.016**
Temporal proximity			
Non-proximate → proximate	1.075	0.24	0.762
Temporal adverb			
Absent → present	0.657	0.235	0.073
Verb type			
Dynamic → motion	1.174	0.397	0.687
Dynamic → stative	0.654	0.272	0.119
Person & animacy			
Third inanimate → third animate	1.007	0.148	0.962
Third inanimate → first person	1.165	0.15	0.307
Third inanimate → second person	1.617	0.172	**0.005**
Clause length			
0 → 1	0.928	0.206	0.716
Proficiency x negation			
B1 + negative	0.725	0.591	0.586
B2 + negative	0.296	0.452	**0.007**
C1 + negative	0.394	0.44	**0.034**
C2 + negative	0.469	0.585	0.196
Proficiency x persistence			
B1 + candidate *bgt*	2.516	0.435	**0.034**
B2 + candidate *bgt*	4.336	0.375	**<.001**
C1 + candidate *bgt*	2.413	0.387	**0.023**
C2 + candidate *bgt*	3.703	0.504	**0.009**
B1 + examiner *bgt*	4.241	0.432	**<.001**
B2 + examiner *bgt*	9.048	0.42	**<.001**
C1 + examiner *bgt*	2.037	0.421	0.091
C2 + examiner *bgt*	1.965	0.584	0.247

Table 2. *(continued)*

Predictor	Odds ratio	Std. error	*p*-value
B1 + examiner *will*	3.57	0.419	**0.002**
B2 + examiner *will*	3.012	0.347	**0.001**
C1 + examiner *will*	3.171	0.347	**<.001**
C2 + examiner *will*	3	0.452	**0.015**
Proficiency x temporal proximity			
B1 + proximate	1.437	0.48	0.45
B2 + proximate	4.098	0.366	**<.001**
C1 + proximate	2.136	0.331	**0.022**
C2 + proximate	1.43	0.45	0.427
Proficiency x temporal adverb			
B1 + present	3.244	0.398	**0.003**
B2 + present	2.151	0.341	**0.025**
C1 + present	1.6	0.332	0.157
C2 + present	1.887	0.459	0.166
Proficiency x verb type			
B1 + motion	2.188	0.478	0.102
B2 + motion	1.05	0.51	0.924
C1 + motion	0.601	0.562	0.365
C2 + motion	0.583	0.702	0.442
B1 + stative	0.676	0.372	0.292
B2 + stative	0.444	0.312	**0.009**
C1 + stative	0.683	0.313	0.223
C2 + stative	1.093	0.395	0.822
Proficiency x clause length			
B1 + clause length	0.756	0.324	0.388
B2 + clause length	1.06	0.277	0.832
C1 + clause length	0.575	0.275	**0.045**
C2 + clause length	0.57	0.35	0.108

Odds ratios represent the effect size and direction of the predictors. Since the model predicts the likelihood of *be going to*, odds ratios above 1 indicate that the corresponding change of predictor levels makes *be going to* more likely, whereas

odds ratios between 0 and 1 mean that *be going to* becomes less likely. The model features significant interactions between proficiency level and negation, persistence, temporal proximity, temporal adverb, verb type and clause length, meaning that one or more learner proficiency levels differ from native speakers with respect to these constraints. Hence, the only probabilistic constraints that affect native speakers and learners in the same way are the person and animacy of the subject as well as the type of clause. For example, the odds ratios indicate that *be going to* is 1.39 times more likely in subordinate clauses than main clauses. *Be going to* is also less likely in apodoses than main clauses, and it is more likely with second person subjects than with inanimate third person subjects. As there is almost no difference between inanimate and animate third person subjects, animacy does not seem to affect the choice of variant. The type of sentence does not figure in the model as it did not contribute to the quality of the model, suggesting that neither native speakers nor learners were sensitive to whether the sentence is declarative or interrogative. In what follows, we discuss each of the interaction effects relying on effects plots as a visual tool.

3.1 Negation

The interaction between proficiency level and negation is visualized in the partial effects plot in Figure 1. Partial effects plots summarize the information from the model by changing the value of the relevant predictor(s), in this case negation and proficiency, while holding the other predictors in the model at their typical values (Fox, 2003), which corresponds to the mean for numeric covariates (e.g., clause length) and the proportional distribution of the levels of categorical covariates (e.g., clause type) (see Gries, 2021, pp. 305–308). In this way, Figure 1 shows how a change in negation affects the likelihood of *be going to* for native speakers and learners across proficiency levels.

The main effect for negation in the model shows that native speakers are 2.53 times more likely to use *be going to* when the clause is negated, as expected (Tagliamonte et al., 2014, pp. 98–99). While there are not many negated sentences in the native speaker data ($N = 57$), this is the strongest effect for native speakers. The interaction effect in the model reveals that the effect of negation is significantly weaker for B2 and C1 learners.

3.2 Persistence

The interaction between proficiency level and persistence is visualized in Figure 2. The only persistence effect that influences native speakers is that they are less likely to use *be going to* when they previously used *will*. By contrast, learners are

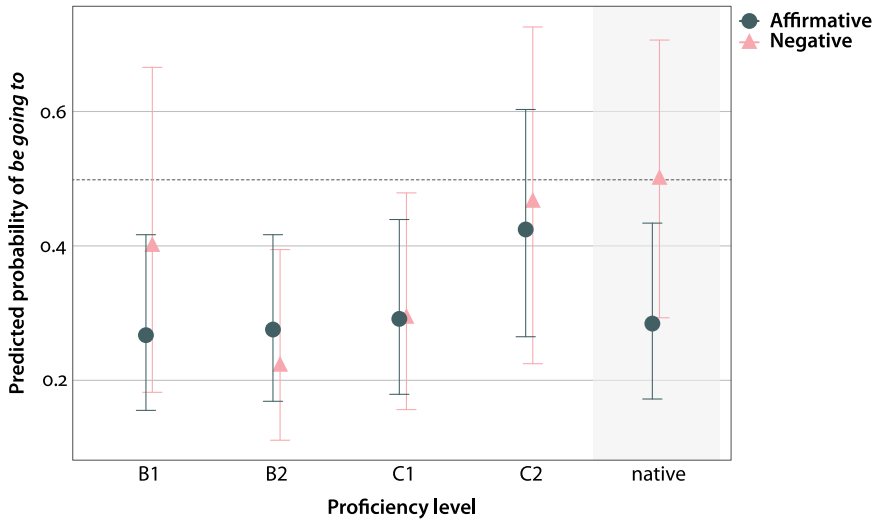

Figure 1. Partial effects plot of the interaction between proficiency level and negation

also more likely to use *be going to* if they produced *be going to* previously. Whereas C learners are not particularly sensitive to a previous instance of *be going to* when it is produced by an examiner, B1 and especially B2 level learners are highly likely to use *be going to* if an examiner produced *be going to* before. Finally, learners are more likely to use *be going to* if an examiner used *will* rather than if they produced *will* themselves. In other words, the tendency for learners to avoid *be going to* when the previous future marker was *will* is stronger when they produced *will* themselves rather than the examiner. In fact, Figure 2 shows that out of any possible previous future markers, the learners are least likely to use *be going to* when they previously produced *will*.

3.3 Temporal proximity

Figure 3 presents the effect of temporal proximity on the likelihood of *be going to*. The main effect for temporal proximity in Table 2 indicates that native speakers are not sensitive to temporal proximity. By contrast, B2 and C1 learners prefer to use *be going to* in proximate contexts, which ties in with *be going to* implying a more imminent future (Bergs, 2010, pp. 223–224; Brisard, 2001, p. 266; Huddleston & Pullum, 2002, p. 211).

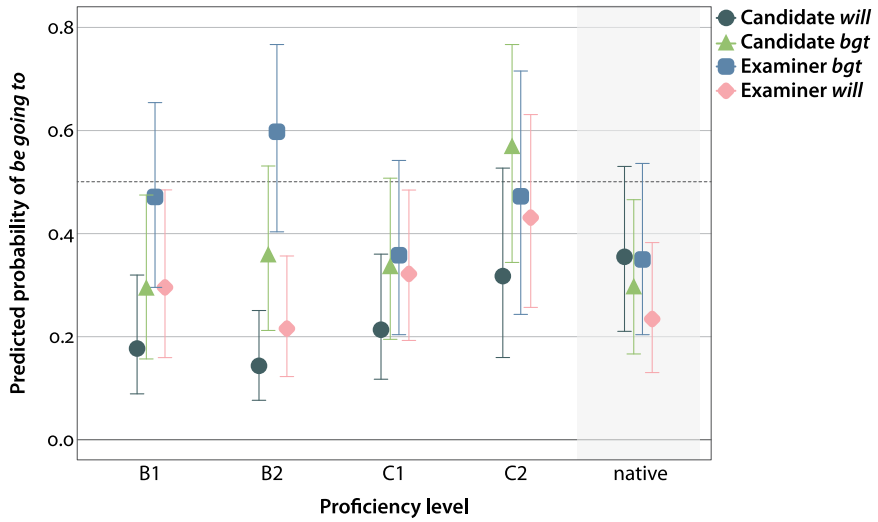

Figure 2. Partial effects plot of the interaction between proficiency level and persistence

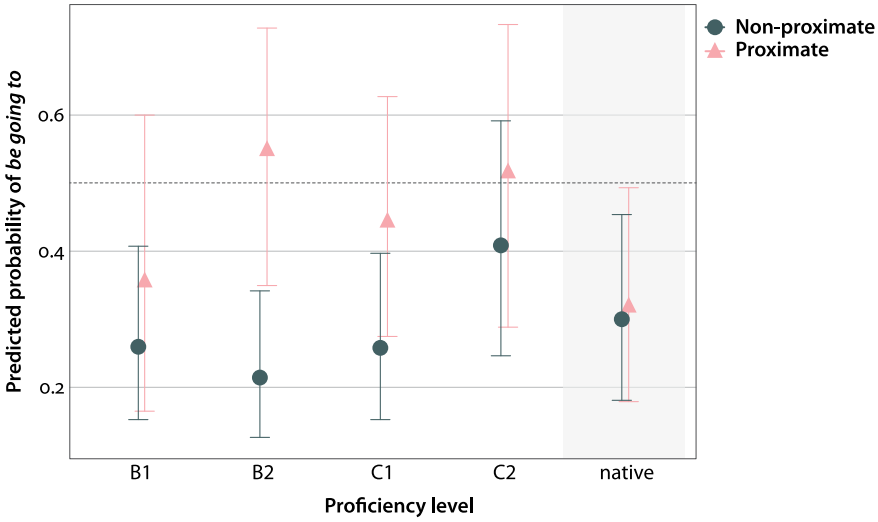

Figure 3. Partial effects plot of the interaction between proficiency level and temporal proximity

3.4 Temporal adverb

For native speakers, the presence of temporal adverbs in the future marker clause induces a marginally significant preference for *will*, reminiscent of the finding by Torres-Cacoullos and Walker (2009, p.340), whereas B1 and B2 learners are slightly more likely to use *be going to* (see Figure 4).

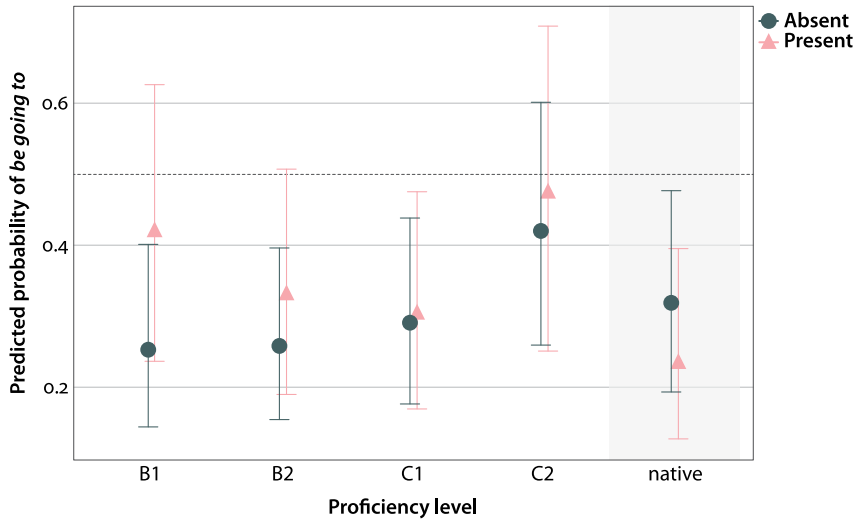

Figure 4. Partial effects plot of the interaction between proficiency level and temporal adverbs and adverbials

3.5 Verb type

The main effects in the model indicate that native speakers are 1.53 times less likely to use *be going to* when the verb is stative rather than dynamic, echoing the finding of Engel and Szmrecsanyi (2023) for spoken British English. This effect is significantly stronger for B2 learners, which seems to be due to a more pronounced preference for *will* with stative verbs in particular (see Figure 5).

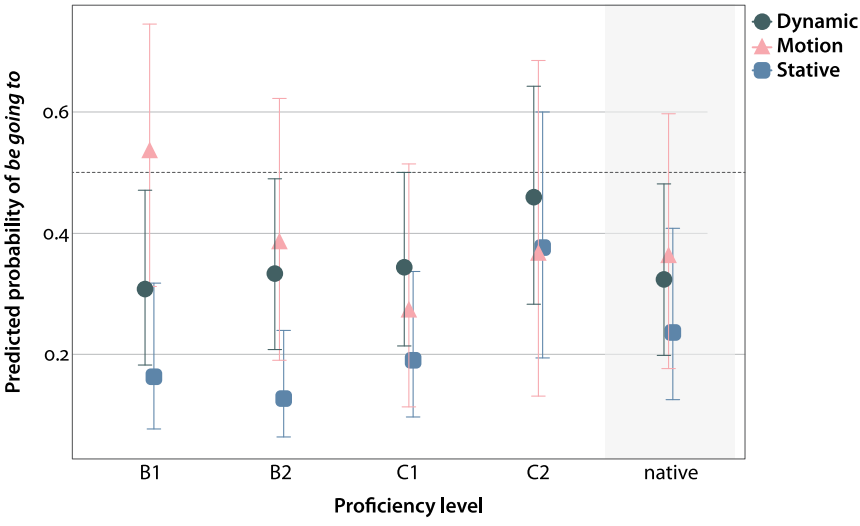

Figure 5. Partial effects plot of the interaction between proficiency level and verb type

3.6 Clause length

Native speakers are not sensitive to the length of the clause (see Table 2), whereas C1 learners have a tendency to use *will* when the clause becomes longer, as illustrated in Figure 6. Provided the constraint is primarily processing-related, our findings suggest that *will* is easier to process for C1 learners than *be going to* (cf. Szmrecsanyi, 2003), possibly because it does not require inflection of the *be* auxiliary (see Bardovi-Harlig, 2002). However, it is surprising that only C1 learners are sensitive to such a processing-related constraint and not the less proficient B learners, for whom speaking in a foreign language is arguably more cognitively demanding (Götz, Wolk, & Jäschke, 2022, p. 273). Therefore, an alternative explanation is that the effect of this constraint results from the five-minute monologic presentation only C1 and C2 learners have to give about a topic of their choice. This is the only task learners could practice in advance, resulting in significantly longer clauses in the presentation task ($M = 35$, $IQR = 29$) compared to clauses in the other tasks ($M = 24$, $IQR = 20.5$) according to a Wilcoxon test ($p < .001$). While preparing their presentation for the exam, learners might have opted for the more formal *will* variant, so that longer clauses associate with *will* rather than *be going to*. To explore this possibility, we ran the model again without the observations from the presentation task, which caused the interaction between proficiency level and clause type to disappear, suggesting that the presentation task indeed contributes to this interaction effect.

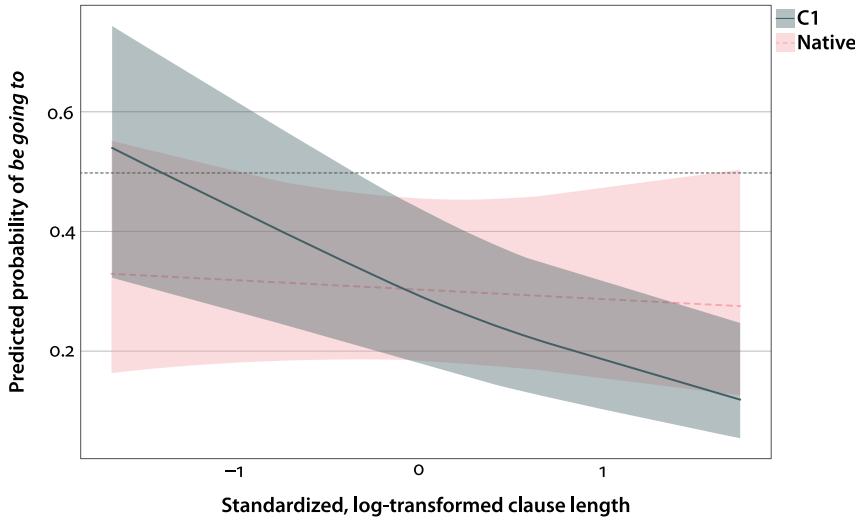

Figure 6. Partial effects plot of the interaction between proficiency level and clause length

4. Discussion

Most studies on alternations in EFL do not consider variation between semantically equivalent function words and they focus on the influence of learners' L1 while mostly ignoring their differences in foreign language proficiency (Dubois et al., 2023b). Therefore, we investigated how low-intermediate (B1) to advanced (C2) EFL learners from a wide variety of L1 backgrounds choose between the future markers *be going to/gonna* and *will/'ll* compared to native speakers of British English. To do so, we collected 1,605 instances of *be going to* and 2,011 instances of *will* from the TLC for a total of 3,616 interchangeable future markers, which we annotated for constraints known to influence the choice of variant, including structural persistence, the type of sentence, clause, verb and subject, the presence of temporal adverbs, the temporal proximity of the future event and the length of the clause (Denis & Tagliamonte, 2018; Engel & Szmrecsanyi, 2023; Torres-Cacoullos & Walker, 2009). The choice between *will* and *be going to* was then modelled using mixed-effects logistic regression, where the probabilistic constraints were allowed to interact with proficiency level to study their effect at different proficiency levels.

Although sentence type is considered one of the strongest constraints of the future marker alternation (Denis & Tagliamonte, 2018, p. 424; Torres-Cacoullos & Walker, 2009, p. 347), it does not affect the choice of variant in our data. Likewise, the animacy of the subject does not seem to play a role. Instead, results show that both native speakers and learners prefer *be going to* with second person subjects in subordinate clauses and *will* in apodosis clauses, in accordance with the literature (Denis & Tagliamonte, 2018; Fehringer & Corrigan, 2015; Gardner, 2017; Tagliamonte et al., 2014, p. 98). At certain proficiency levels, learners deviate from native speakers regarding the remaining constraints, namely negation, persistence, temporal proximity, temporal adverb, verb type and clause length, the latter of which might be due to the specificities of the exam data (see Section 3.6). Specifically, only native speakers prefer to use *be going to* when the clause is negated (see Nesselhauf, 2010, p. 173; Tagliamonte et al., 2014, pp. 98–99). The fact that learners are not particularly sensitive to processing-related constraints like negation and clause length (cf. Szmrecsanyi, 2003) differs from the findings of Wulff (2016), Wulff et al. (2018) and Wulff et al. (2014) regarding learners' use of the complementizer *that* and most importantly Deshors and Gries (2014), who investigated the choice between *can* and *may* and found that learners are more likely to use *can* in negated clauses. Regarding persistence, native speakers are only sensitive to their own previous production of *will*, in which case they tend to avoid *be going to*. By contrast, learners are also sensitive to structural persistence when the previous variant is *be going to*, and B1 and B2 learners in particular consider both their

own previous choice of variant as well as that of the examiner. When it comes to temporal proximity, only the B2 and C1 level learners prefer *be going to* when the future event is proximate. Likewise, B1 and B2 learners are more sensitive than native speakers to the presence of temporal adverbs modifying the future marker, in which case they prefer *be going to*. B2 learners are also more likely to use *will* with stative verbs than native speakers.

4.1 Why do learners deviate from native speakers regarding these probabilistic constraints?

According to usage-based approaches to SLA, language learning is primarily driven by exposure to the target language. Learners are exposed to English input, from which they are able to recognize patterns through general learning mechanisms that are also responsible for learning non-linguistic types of knowledge (N. C. Ellis & Wulff, 2019, p. 41). The mechanism most likely responsible for learning the association between the individual constraints and the choice of variant is associative statistical learning. Hence, learners may deviate from native speakers regarding the negation, verb type, temporal adverb and temporal proximity constraints because these are more challenging to learn compared to clause type and subject grammatical person. Following the literature on associative statistical learning, the learnability of statistical associations depends on the frequency, regularity, adjacency and reliability of the relevant linguistic elements. Hence, constraints involving frequent linguistic elements that are regular in form, adjacent to the future marker and reliably associated with it should be more learnable than constraints that are realized by infrequent, irregular, unreliable and non-adjacent linguistic elements (Dubois et al., 2023b; Gries & Ellis, 2015, p. 229; Misyak & Christiansen, 2012, p. 304; Romberg & Saffran, 2010, pp. 2–3).

From this perspective, the association between second-person subjects and future markers is easy to learn because it is realized by a single, invariable linguistic element, namely the second-person pronoun *you*, which is relatively frequent and adjacent to the future markers. By contrast, negation is expressed by several linguistic elements (e.g., *never, none, not, no, nothing, none*, etc.) and occurs in less than 10% of the observations (350 out of 3,616), which makes the constraint difficult to refine via associative statistical learning (see Wang & Xu, 2015, pp. 214–215). Verb type, temporal adverbs and temporal proximity are hard to master mainly because they involve a wide range of linguistic elements (see Dubois, Grafmiller, Paquot & Szmrecsanyi, 2023a). Verb type is realized by hundreds of verb lemmas with their own verb senses. Similarly, temporal adverbs and especially adverbials are expressed by many linguistic elements that are not always adjacent to the future marker. The temporal proximity constraint is even more complex, since it

can be encoded not only by temporal adverbs, but also through inference from the context and previous discourse (see Section 2.3.5). Admittedly, subordinate clauses are introduced by multiple elements as well (see Section 2.3.3), but they are more frequent considering that almost a third (29%) of all native speaker clauses in the data are subordinated (229 out of 784). Apodoses are also rather infrequent (46 out of 784 (6%)), but they are reliably associated with the choice of variant and they are easily identified through the invariant subordinator *if*. Importantly, C2 learners do not differ from native speakers regarding any of these constraints, indicating that learners better approximate the way in which native speakers choose between the future markers as they receive more exposure and become more proficient.

While the learnability of the constraints via associative statistical learning accounts for some results, it does not explain why learners deviate from native speakers regarding structural persistence. Given that the effect of persistence is arguably strictly related to language processing rather than a statistical association with previous future markers in the input (see Tamminga, MacKenzie, & Embick, 2016), this constraint is probably not acquired via associative statistical learning to begin with. Similarly, verb type, temporal proximity and temporal adverb are not part of the probabilistic grammar of native speakers, so learners cannot acquire them through inference from target language input via associative statistical learning. Instead, these constraints must have been acquired differently at first and were then gradually refined through associative statistical learning to approximate the probabilistic grammar of native speakers.

4.2 How and why do learners acquire constraints that are not part of native speakers' probabilistic grammar?

Provided language learning is rational, learners adapt their interlanguage to accommodate the patterns they recognize in their target language input (N.C. Ellis, 2006, pp.102–103). Applied to the acquisition of probabilistic grammars, learners should primarily consider the constraints they can infer from their input, namely those that influence native speakers, so it is surprising that B1, B2 and/or C1 learners are sensitive to the verb type, temporal adverb and temporal proximity constraints. Moreover, if constraints are learned gradually via associative statistical learning, learners at a given proficiency level might not yet have integrated all relevant patterns, so one would expect them to be sensitive to fewer constraints than native speakers, whereas our results suggest that B1, B2 and C1 learners are sensitive to more distinctions between the future marker variants. This suggests that learners make their own systematic distinctions between *will* and *be going to* that do not simply form a reduced, simplified version of the native speaker

grammar. For these learners to become similar to native speakers like the more proficient C2 learners, they need to weaken or remove constraints via associative statistical learning rather than adding new constraints.

To explain this finding, we argue that these constraints stem from B1, B2 and C1 learners restricting the use of *be going to* in particular. This derives from the fact that only a small minority of future marker clauses contain a temporal adverb or describe proximate events that favor *be going to* for B1, B2 and C1 learners, so they use *be going to* in fewer contexts. This cannot be confirmed from the data due to our sampling method, but this is very clear from the proportion of *be going to* across proficiency levels before removing non-interchangeable cases, shown in Table 3: While *be going to* accounts for slightly more than a third of the future markers in the data from native speakers and C2 learners, it represents only 13% and 16% of the future markers in the B1 and B2 levels respectively. This low frequency might also explain why low-proficiency learners are highly likely to use *be going to* after examiners. Hearing a native speaker of British English use *be going to* in contexts where the learner would prefer *will* could lead to more surprisal and a higher activation level for *be going to* (N. C. Ellis & Wulff, 2019, pp. 47–49), which induces structural persistence more than a previous instance of the more familiar *will* (Jackson, 2018, pp. 541–542). As a driver of implicit learning, these persistence effects could in the long run lead to changes in the interlanguage of learners regarding their use of *be going to* (Tooley & Bock, 2014, pp. 113–114)

Table 3. Distribution of potentially interchangeable future markers across proficiency levels. Column-wise proportions are given between brackets.

	B1	B2	C1	C2	Native
Will	1908 (87%)	2520 (84%)	1152 (71%)	338 (64%)	5501 (62%)
Be going to	281 (13%)	476 (16%)	478 (29%)	194 (36%)	3356 (38%)

The question remains as to why learners restrict the use of *be going to*, and how learners from such a wide variety of L1 backgrounds converged on the same distinctions. Regarding the first question, previous studies found that EFL learners acquire *will* before *be going to*, around the same time as lexical futures such as *hope to* (Bardovi-Harlig, 2005), so learners have to figure out when to use *be going to* while they already have at their availability the invariable form *will* to convey futurity. Hence, B1, B2 and C1 learners might have seen the introduction of *be going to* in their repertoire of future time expressions as an opportunity to formally demarcate a specific type of future event. For the second question, we argue that learners from different L1s can converge on the temporal adverb and temporal proximity constraints because they relate to inherent features of future

events that any speaker can recognize, namely their temporal proximity and their certainty, provided events that are more certain to happen and therefore easier to locate temporally in the future might attract (definite) adverbs.

4.3 Prescriptivism: An alternative explanation?

Another explanation for learners' sensitivity to these additional constraints is that they may be influenced by prescriptivist rules in EFL textbooks, which do not always adhere to recent findings from SLA (Mishan, 2022, p. 497) nor do they reflect authentic language use as represented in corpora (see e.g., Winter & Le Foll, 2022). Such textbooks are particularly relevant in the present context because they very often discuss the use of future markers (see Burton, 2023).

To test this claim, we looked through a number of highly popular global EFL textbooks, including the *Headway* series (Soars & Soars 2005; 2009a; 2009b; 2009c; 2019), *face2face* (Redstone & Cunningham 2005a; 2005b; 2005c; 2012) and *New English File* (Oxenden & Latham-Koenig, 2006). Additionally, we consulted the English reference grammars *Practical English Usage* (Swan, 2005) and *English Grammar in Use* (Murphy, 2019), as well as two series specifically aimed to help EFL learners pass the GESE exams, namely *Pass Trinity Now* (Clyde & Parker, 2015; Clyde & West, 2015; Cochrane, 2015; Hansen, 2015) and *Ready for Trinity* (Humphries 2017a; 2017b). Table 4 presents an overview of all uses associated with *will* and *be going to* in these textbooks.

Table 4. All possible uses of *will* and *be going to* according to one or more popular EFL textbooks (see also Burton, 2023, p. 126)

Will	*Be going to*
– Future decisions or intentions made at the moment of speech	– Future decisions, intentions or plans made before the moment of speech
– Predictions based on personal indications and with words like *probably* and after verbs indicating a decision or judgment (e.g., *think*)	– Predictions based on present indications
– For offers, requests, agreements, promises, orders, threats, announcements of decisions	– For commands and refusals
– Asking and giving information about the future	– Asking questions about planned future events
– Neutral future (facts in the future)	– Not used with motion verbs

The temporal proximity effect at the B2 and the C1 level could originate from the recommendation to use *be going to* for "predictions based on present indications" (see also Brisard, 2001, p. 266). Likewise, the rule stating that *will* is more suitable in offers, requests, agreements etc. and with "verbs indicating a decision

or judgment" could also explain why B2 learners are more likely to use *will* with stative verbs. As learners are exposed to more authentic English input, they gradually unlearn these textbook rules and the constraints they entail through associative statistical learning.

However, some rules do not appear to influence learners. For example, learners are not more prone to avoid *be going to* with motion verbs according to our results (see also Figure 5). More generally, all EFL textbooks explicitly introduce *be going to* before *will*, yet *will* is learned first regardless (Bardovi-Harlig, 2005), which calls into question the overall impact of these textbooks. In sum, the relation between learners' language use and EFL textbooks remains somewhat unclear and requires a more in-depth analysis, which is beyond the scope of this study.

An interplay between the influence of prescriptivism, learners' acquisition of constraints via associative statistical learning (Section 4.1) and their more pronounced functional differentiation of the forms (Section 4.2) can explain why for most constraints of the future marker alternation with the exception of the temporal adverb constraint, learners do not approximate the native speaker standard in a linear fashion as they become more proficient, as can be seen from the partial effects plots. Instead, the development of the negation (Figure 1), temporal proximity (Figure 3) and verb type (see stative verbs in particular in Figure 5) constraints appears to follow a U-shape, whereby B1 learners do not differ from native speakers, B2 learners deviate most strongly from native speakers before gradually approximating native speakers again at the C1 and C2 levels.

5. Conclusion

This study has provided an account of how EFL learners from a wide range of L1 backgrounds choose between the future markers *will* and *be going to* at different proficiency levels. While C2 learners use the future markers in largely the same way as native speakers, there are differences between native speakers and the B1, B2 and C1 levels regarding constraints that are more challenging to learn via associative statistical learning. Interestingly, we found that some of the constraints affecting learners do not play a role for native speakers, which suggests that learners did not acquire these constraints through inference from target language input. These additional constraints were argued to stem from either prescriptivist rules, or from learners functionally distinguishing between the future markers by restricting the use of *be going to* for future events occurring with some degree of certainty in the near future. Provided probabilistic grammars with more constraints are more complex (see Shin, 2014), this finding also challenges

the idea that learners' language use derives from a simpler interlanguage grammar that gradually reaches the complexity of native speaker grammar through language exposure. Instead, B1, B2 and C1 learners need to ignore certain constraints and thereby simplify their choice-making process in favor of freer variation between *will* and *be going to*.

Contrary to our findings, the studies of Jäschke and Plag (2016), Paquot et al. (2019) and Dubois et al. (2023b) found that learners tend to rely on fewer constraints than native speakers for the dative, particle placement and genitive alternation respectively. What these alternations have in common is that they involve a change of word order, which is closely tied to principles of language processing like Easy First (MacDonald, 2013). Therefore, an important function of the alternating variants is to accommodate language processing by offering multiple word orders. By contrast, speakers are not affected by such processing-related considerations to the same extent when choosing between the future markers, as implied by learners' insensitivity to negation and clause length (cf. Szmrecsanyi, 2003). Therefore, learners probably do not benefit as much from having multiple future markers except for expressive needs (R. Ellis, 1999, p. 470), which gives them more freedom to differentiate between the variants functionally.

One important limitation of our study is that it is unclear how the development of *will* and *be going to* interacts with other future time expressions, such as the simple present and the progressive, which are used for future events that are certain and often involve adverbs (Bergs, 2010, p. 218), similar to *be going to* in our learner data. Hence, learners might associate *be going to* with more certain future events partially because they do not yet master the use of the simple present and progressive for future events. To test this possibility, future research should investigate how the other future markers develop in relation to *will* and *be going to* as learners become more proficient.

Data availability statement

The dataset, analysis code and coding scheme for variable annotation are available at https://osf.io/9ew26/?view_only=c5a14b601e78484faa3d2ab8e2e948e7.

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