Negation as a predictor of clausal complement choice in World Englishes[1]

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ABSTRACT

Research on complementizer selection has shown that the presence of a negative particle in a subordinate complement clause influences complement choice towards a relatively higher proportion of finite complementation patterns by increasing the complexity of the syntactic environment. Studies have also shown that different types of negation, namely *not*- and *no*-negation, increase the tendency towards more explicit complementation options (Rohdenburg 2015). This study focuses on the effect of *not*- and *no*-negation on the complementation profile of the verb REGRET, which allows variation between finite *that*/zero-complement clauses and nonfinite -*ing* clauses. The GloWbE corpus was used to create a data set of more than 4,000 examples from 16 varieties of English. The results of the analysis support previous findings that the presence of a negative marker in the complement clause increases the preference for finite patterns, especially in L2 varieties of English. Contrary to the expectations of this study, however, *no*-negation was found to have a stronger effect on complement choice than *not*-negation.

1 INTRODUCTION

The subject of negation in English has attracted the attention of scholars from a number of different disciplines, ranging from linguistics to philosophy (Labov 1972; Horn 1978, 1989; Tottie 1983, 1991a, 1991b, 1994; Palacios Martínez 1995, 2003, 2010a, 2010b; Fischer 1999; Biber et al. 1999; Smith 2001; Moscati 2010; Xiao & McEnergy 2010, among others). Rohdenburg's (1995, 2006, 2015, 2018) work on negation examines its role in subordinate clauses. His research looks at the different structural features that appear to add complexity to a construction, such as negation, passive voice and presence of intervening material, illustrating how their presence in a sentence can influence the speaker's choice between competing patterns by triggering the use of the most explicit ones (Complexity Principle; Rohdenburg 1995, 2006). He also argues that *not*-negation and some types of *no*-negation (e.g. *never*) have a similar influence on this choice (Rohdenburg 2015: 103). Taking the example of the verb VOW, he finds that both *not*-negation and the negative marker *never* 'increase substantially the proportions of the finite option', but with different strengths, since *not*-negation has a stronger effect than *never* (Rohdenburg 2015: 104).

Studies on negation in English focus mainly on British and American English, thus excluding World Englishes (WEs), non-native L2 varieties. These varieties have been shown to exhibit a preference for finite patterns owing to their tendency to use more transparent and isomorphic structures (Schneider 2012; Steger & Schneider 2012; Romasanta 2017, 2019a). In a recent study on the verb REGRET, L2 varieties of English (in particular Hong Kong English and Nigerian English) were found to favor finite *that*/zero-complement clauses over nonfinite *-ing* clauses (Romasanta 2019a). In the same study's analysis of the possible semantic and syntactic reasons for this preference, the presence of a negative marker in the complement clause was shown to be a predictor for the use of finite patterns.

The aim of this article is to explore the influence of negation on the choice between the two possible, semantically synonymous complement clauses for the verb REGRET. The data includes tokens from L1 and L2 varieties and are taken from the *Corpus of Global Web-Based English* (GloWbE, Davies 2013). The reason for analyzing and comparing data

from both L1 and L2 varieties is the well-documented sensitivity of L2s to cognitive complexity, as varieties formed in situations of language contact and as a result of second-language acquisition processes (Thomason 2008; Steger & Schneider 2012; Schneider 2012, 2013, 2018).

Based on Rohdenburg's (2006, 2015) findings on the relationship between negation and complexity, the hypotheses to be tested in the present study are as follows:

i. The presence of a negative particle (either *not*-negation or *no*-negation) in the complement clause favors the use of more explicit options. In the case of the verb REGRET, the more explicit options are: a) finite complement clauses (over nonfinite ones, i.e. the use of *that*/zero-complement clauses over *-ing* clauses); and b) the use of the complementizer *that* over zero within finite clauses;
ii. This tendency will be stronger in L2 varieties of English, owing to their sensitivity to cognitive complexity;
iii. *Not*-negation and *no*-negation will have different effect strengths, with *not*-negation producing a stronger effect on the preference for more explicit options.

The paper is divided into five sections. The introduction in section 1 is followed by a brief account of other research on the verb REGRET and the subject of negation in section 2, and a description of the methodology used in section 3. The results presented in section 4 begin with an overview of the distribution of the different complement patterns, before examining the effect of negation as a general constraint (4.1) and the effect of *not*- and *no*-negation (4.2). Section 5 contains a summary of the main conclusions of the study.

2 REGRET, NEGATION, AND THE COMPLEXITY PRINCIPLE

2.1 *The verb REGRET*

Cuyckens, D'hoedt & Szmrecsanyi's (2014) study of complement distribution in relation to REGRET, REMEMBER and FORGET in Late Modern English shows that REGRET may be followed by finite or nonfinite complement clauses. Their analysis examines changes in complement choice over time and the possible factors responsible, including the type of

subject of the main clause, the type of subject of the complement clause, the voice of the complement clause, and the verbal meaning of the complement clause. The possible influence of negation on complement pattern choice is not considered, however.

Romasanta's (2019a) study of the complementation of the verb REGRET in four varieties of English (American English, British English, Hong Kong English, and Nigerian English) uses a binary logistic regression model of a series of semantic and syntactic predictors to show that the choice between *that*/zero-complement clauses and *-ing* clauses is influenced by the animacy of the subject in the complement clause, coreferentiality between the subjects of the main and complement clauses, the temporal relation between the two clauses, and the presence of a negative marker. Since negation turns out to be a significant factor in this alternation, the next section takes a closer look at the different types of negative marker with the aim of identifying potential differences between them as predictors of complement clause alternation across a wider range of varieties of English.

2.2 *Negation*

The majority of research on negation focuses on issues such as negative raising (as in *I don't think he's coming*; see for example Horn 1978, 1989; Fischer 1999; Moscati 2010), negative concord or multiple negation (as in *I haven't got no money*; Labov 1972; Weldon 1994; Smith 2001; Palacios Martínez 2003, 2010a), negative particle *ain't* (Anderwald 2002; Walker 2005; Palacios Martínez 2010b), and frequency in speech and writing (Biber 1988; Tottie 1991b; Palacios Martínez 1995; Biber et al. 1999; Xiao & McEnergy 2010). The evolution of the different negative markers in the history of English is also a fertile topic of research and is often viewed as an example of "Jespersen's Cycle" (as coined by Dahl 1979). According to this "cycle" pattern, first formulated by Otto Jespersen in his book *Negation in English and Other Languages* (1917: 4):

> the original negative adverb is first weakened, then found insufficient and therefore strengthened, generally through some additional word, and this in its turn may be felt

> as the negative proper and may then in course of time be subject to the same development as the original word.

Jespersen's description is clearly applicable to the evolution of the verbal negator *not* and its reduced form *n't*. During the Old English period, negation was expressed with the preverbal adverb *ne* preceding the finite verb, and later, in Middle English, the particle *nacht* was added to give more emphasis (*ne* verb *nacht*). Over time, the particle *nacht*/*not* lost its emphatic function and became fixed in this position as a regular negative. Phonologically weakened, the particle *ne* eventually disappeared altogether (verb + *not*). During the Early Modern period, the tendency to place the particle *not* before the verb was accelerated by the increasing use of periphrastic *do* (*do not* verb). In this position, *not* loses its phonological stress and is reduced to *n't* (*don't* verb; see Jespersen 1917: 9-11; Hogg 1992: 267-268; Blake 1992: 280-283; Lass 1999: 269-271).

Other negative particles, such as *neither*, *none*, *nor* and *never*, also emerged in Old English when the preverbal adverb *ne* combined with other words such as *æfre* (ever), *hwæþer* (either) and *an* (one). The particle *no* has its origin in two etymological combinations. On the one hand, Old English *ne ān* (as in *no man, nobody, nothing*) and on the other, Old English *ne* + *ā* (as in, *are you ill? No*; also in *nowhere*; Jespersen 1917: 12-13). Negation-marking prefixes in English also vary in etymological origin. The prefixes *un-* and *in-* have their origin in Arian *n-*; however, *un-* is a native English prefix while *in-* is a Latin form. The prefixes *dis-* and *non-* also come from Latin, while *an-* or *a-* are taken from Greek (Jespersen 1917: 139-147).

Tottie (1991b: 8) offers a useful classification of these different forms of negation, reproduced here in Table 1. Column I shows the free nonaffixal adverb *not* and its reduced form *-n't*, while column II contains bound nonaffixal negative items which are formed with the no longer productive element *n-* and constitute a closed class. Column III contains bound affixal morphemes, which are productive and form an open class. This article will focus on utterances containing nonaffixal negative forms, to compare examples of *not*-negation using the adverb *not* with examples of *no*-negation using element *n-* (e.g. *He does*

not have any money versus *He has no money*, and *He did not do anything* versus *He did nothing*).

Table 1. *Classification of intrasentential negative expressions in English (reproduced from Tottie 1991b: 8)*

I	II	III
Free	Bound	
Nonaffixal		Affixal
Not-negation	*No*-negation	
not, -n't	never	a-
	neither	dis-
	nobody	in-
	no	non-
	none	un-
	nor	
	nothing	-less
	nowhere	-out

Tottie has carried out numerous studies on variation between *not*-negation and *no*-negation (Tottie 1983, 1991a, 1991b, 1994), concluding that *not*-negation is especially present in speech, while *no*-negation is favored in writing. Rohdenburg (2015) is, to the best of my knowledge, the only study to focus exclusively on negation as a complexity factor in different types of subordinate clauses (e.g. finite and nonfinite clauses, marked and unmarked infinitives, marked infinitives and pseudo-coordinated structures involving the verb stem *try*, modal verb + infinitive versus subjunctive, marked infinitives and gerunds, and prepositional gerunds and directly linked gerunds). According to his findings, 'some forms of *no*-negation exhibit a similar influence on the choice of clausal variants to that of *not*-negation' (Rohdenburg 2015: 103). One example of this is the use of finite and nonfinite clauses with VOW, in which the presence of negation favors the use of finite

complements, regardless of the type of negative marker (though *not*-negation seems to have a stronger effect than *never*).

As already mentioned, the presence of a negative particle within a subordinate or complement clause makes it a "cognitively more complex environment" (Rohdenburg 1995, 2006, 2018). Rohdenburg's Complexity Principle states that:

> in the case of more or less explicit constructional options, the more explicit one(s) will tend to be preferred in cognitively more complex environments (Rohdenburg 1995, 2006: 147)

In the English clausal complementation system, a negative marker (which adds complexity to the structure) favors finite complement clauses when there is a choice between a finite and a nonfinite clause expressing the same meaning, as in example (1). On the other hand, within finite complement clauses, negative markers favor clauses with an explicit complementizer (example (2)):

(1) a. She advised **not to** do it in advance.
b. She advised **not doing** it in advance.
c. She advised **that** it (should) **not** be done in advance. (Rohdenburg 2006: 149)

(2) a. She advised **that** it should **not** be done in advance.
b. She advised **Ø** it should **not** be done in advance.

The Complexity Principle, which partly explains the preference for more explicit patterns, fits with the general tendency in World Englishes (WEs) towards transparency, also referred to as isomorphism or iconicity (Thomason 2008; Steger & Schneider 2012; Schneider 2012, 2013, 2018). Transparency is observed here in the preference for finite over nonfinite structures, since finite clauses are more explicit, in that they are marked for tense, agreement and modality (Givón 1985: 200; Steger & Schneider 2012: 165). Increased transparency in WEs is the result of a series of cognitive processes involved in the situations of language contact and Second Language Acquisition (SLA) in which these

varieties of English emerge and develop. It is to be expected, therefore, that the factors that make environments cognitively more complex (negation, passivization, relativization, extractions, and so on) should have a stronger effect in these varieties of English.

3 METHODOLOGY

The corpus used for this study is the GloWbE corpus of *Global Web-Based English* by Mark Davies (2013), which comprises 1.9 million words from the internet obtained between 2012-2013.[2] The corpus includes data from both web sites and blogs from 20 different countries (United States, Canada, Great Britain, Ireland, Australia, New Zealand, India, Sri Lanka, Pakistan, Bangladesh, Singapore, Malaysia, Philippines, Hong Kong, South Africa, Nigeria, Ghana, Kenya, Tanzania, and Jamaica).[3] The study examines the effect of negation in two L1 varieties (British English and American English), and all 14 L2 varieties sampled in GloWbE.

The verb REGRET was chosen because it exhibits free variation between finite *that*/zero forms and nonfinite -*ing* with anterior and simultaneous meanings. The search query used to find all examples of the verb REGRET was regret*_v*. This search retrieved a number of false positives and invalid examples, which were discarded (for more details, see Romasanta 2017). A precision and recall analysis was performed to test the accuracy of the data obtained, the results of which were very positive, with values of over 90% in almost all varieties, with the exception of BrE (89.2% recall; Romasanta 2019b).

To offset the excessively high number of items obtained for L1 varieties (British English and American English) after manual pruning of the examples, a random sample of 2,000 items was selected for each L1 variety. For L2 varieties, all items identified were included in the analysis.

The classification of the examples in terms of complementation type (*that*/zero and -*ing*), temporal relation (anterior or simultaneous) and variety yielded 4,037 examples of the verb REGRET, with apparently free alternation between *that*/zero-complement clauses and -*ing* complement clauses with no difference in meaning (see Table 2).

Table 2. *Number of examples showing alternation between -*ing *and* that*/zero-complement clauses with the same meaning in GloWbE*

			That/zero	*-ing*	TOTAL
L1		BrE	190	422	1,176
		USE	174	390	
L2	Asia	IndE	149	194	1,699
		LnkE	90	66	
		PakE	125	88	
		BanE	46	60	
		SgE	76	227	
		MalE	70	162	
		PhilE	60	136	
		HKE	65	85	
	Africa	SAfE	47	111	1,030
		NigE	161	188	
		GhE	92	124	
		KenE	72	99	
		TanE	65	71	
	Caribbean	JamE	50	82	132
TOTAL			1,532	2,505	4,037

The data was then manually coded for negation type as follows:

a) negation in the complement clause: positive or negative
b) type of negative marker: *not*, *n't*, *never*, *neither*, *nobody*, *no*, *none*, *nor*, *nothing*, *nowhere*
c) type of negation: *not*-negation or *no*-negation

4 RESULTS AND DISCUSSION

Initial analysis of the distribution of the complementation patterns that allow alternation with the verb REGRET (see Figure 1) reveals a preference for nonfinite *-ing* clauses in almost all varieties, the only exceptions being Sri Lanka (LnkE) and Pakistan (PakE). Singapore (SgE), Malaysia (MalE), Philippines (PhilE) and South Africa (SAfE) show a similar distribution to that of the L1s (USE and BrE), with around 69% nonfinite *-ing* clauses. SgE is the variety with the highest proportion of *-ing* clauses (74.9%), followed by SAfE (70.3%), MalE (69.8%), and PhilE (69.4%). All the other varieties show a stronger preference for finite clauses, namely IndE (43.4%), BanE (43.4%), HKE (43.3%), NigE (46.1%), GhE (42.6%), KenE (42.1%), TanzE (47.8%), and JamE (37.9%), as compared to the L1s (31%). These results are largely in line with Steger & Schneider's (2012) findings in relation to the preference of L2 varieties for finite patterns as compared to L1 varieties. In this study, this was found to be true for 10 out of the 14 L2 varieties, the exceptions being, as mentioned, the varieties spoken in Singapore, Malaysia, the Philippines, and South Africa.

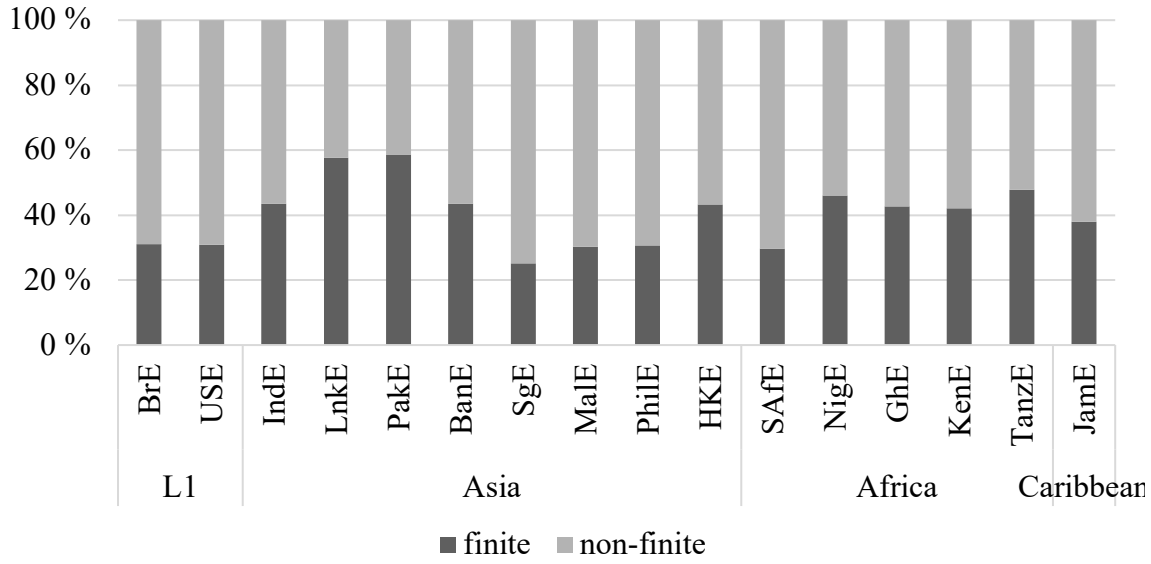


Figure 1. Distribution of complementation patterns across all varieties of English

Figure 2 illustrates the difference in distribution of complementation patterns between L1 and L2 varieties, revealing a much weaker tendency to use finite *that*/zero-complement clauses among L1 varieties (31%) than among L2 varieties (40.8%). The distribution of *that*/zero-complement clauses and *-ing* clauses shows a significant difference between L1 and L2 varieties ($p < .0001$, d.f. = 1, N = 4,037).

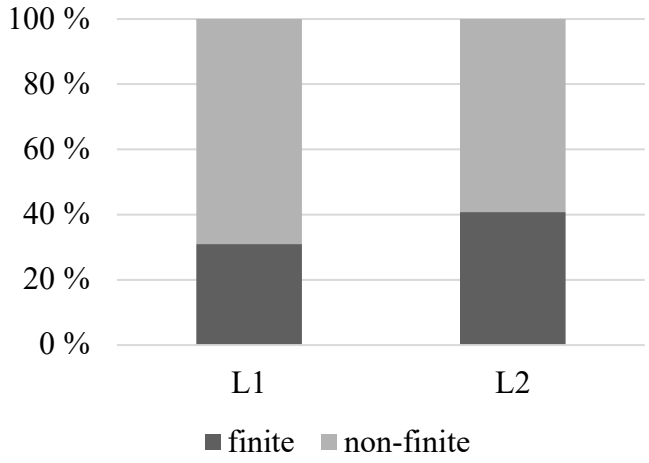


Figure 2. Distribution of complementation patterns in L1 and L2 varieties of English

The difference in distribution between L1 and L2 varieties of English has a number of possible explanations, including the cognitive processes involved in the language contact and second language acquisition situations in which these varieties develop (Steger & Schneider 2012), and the influence of substrate languages (Romasanta 2017). Other possible factors include the historical development of the complementation profile of the verb REGRET (Romasanta 2019a), or even 'colonial lag' (Marckwardt 1958), also known by the more neutral term, 'extraterritorial conservatism' (suggested by Hundt 2009). Distribution patterns in 18th- and 19th-century British English, the period in which the British colonies were established, show a clear preference for *that* complement clauses, and so it remains in present-day L2 varieties of English (see Table 3 below).

Table 3. *Evolution of the complementation profile of the verb* REGRET *in the history of English (adapted from Heyvaert & Cuyckens 2010: 141)*

		Regret	
		that	*-ing*
CEECS	RawF	0	0
	RelF	0%	0%
	NormF	0	0
CEMET	RawF	0	0
	RelF	0%	0%
	NormF	0	0
CLMET	RawF	126	38
(1710 – 1920)	RelF	76.8%	23.2%
	NormF	0.839	0.253
COBUILD	RawF	108	147
(1990s)	RelF	42.4%	57.6%
	NormF	0.192	0.262

The historical development of the verb REGRET does not account for the internal variation encountered between different L2s, however. The explanation may lie in the evolutionary perspective offered by Schneider's (2003, 2007) Dynamic Model of postcolonial Englishes. This evolution offers three possible interpretations: (i) the more advanced the variety is, the more endonormative and distinct it will be from the input variety (i.e. British English or American English); (ii) the less advanced the variety is, the more exonormative and similar it will be to the original variety; and (iii) the more advanced the variety is, the weaker its tendency towards transparency and isomorphism will be, which may in turn make it more similar to the input variety. Malaysian English, for example, which is said to be in an early stage of evolution (Phase 2 of Schneider's Dynamic Model: exonormative stabilization), has a similar distribution to that of the input L1s; that is, a very strong tendency for *-ing* clauses (interpretation (ii)). At the other end of the evolutionary scale, the distribution of finite and nonfinite patterns in South African

English (Phase 4: endonormative stabilization) is also similar to that of the L1 varieties (interpretation (iii)). Surprisingly, none of the more advanced varieties studied here match interpretation (i). The only two varieties that could be considered a partial match are Nigerian English and Ghanaian English, which are said to be between phases 3 (nativization) and 4 (endonormative stabilization). These are the only two varieties that are relatively advanced and yet distinct from the L1, in that they show a weaker tendency to use *-ing* clauses (53.9% and 57.4% respectively) compared to native varieties of English (approximately 69%).

Language variation and language change in WEs (as in other languages) are subject to a complex interplay of internal and external factors, the impact of which is varied and unpredictable across the different varieties. In the remainder of this paper, I will focus on the effect of one of these factors, negation, on complement choice.

4.1 *Positive vs. negative complement clauses*

This section focuses on the effect of negation as a predictor of complement choice based on the higher cognitive complexity of negative clauses. Section 4.1.1 examines the effect of negation on the choice between *-ing* and *that*/zero-complement clauses, while Section 4.1.2 deals with its role in the choice between finite *that-* and zero-complement clauses.

4.1.1 *Alternation between nonfinite* -ing *and finite* that*/zero-complement clauses*

Figure 3 below shows the distribution of nonfinite *-ing* clauses and finite *that*/zero-complement clauses in L1 and L2 varieties of English. The three columns on the left represent the use of complementation in L1 varieties and the three columns on the right represent the use of complementation in L2 varieties. The column in the middle in each case shows the average unfiltered distribution of *-ing* and *that*/zero-clauses to highlight the effect of negation.

The results indicate a slightly stronger tendency to use finite *that*/zero-clauses when the complement clause is negative, in both L1 and L2 varieties. By contrast, when the

complement clause is positive/affirmative, the use of finite *that*/zero patterns is relatively less frequent. The analysis also shows an average difference of 10% between L1 and L2 (L1 69%, L2 59%). In relation to negative complement clauses, the proportion of finite clauses is 59% in L1s and 48% in L2s.

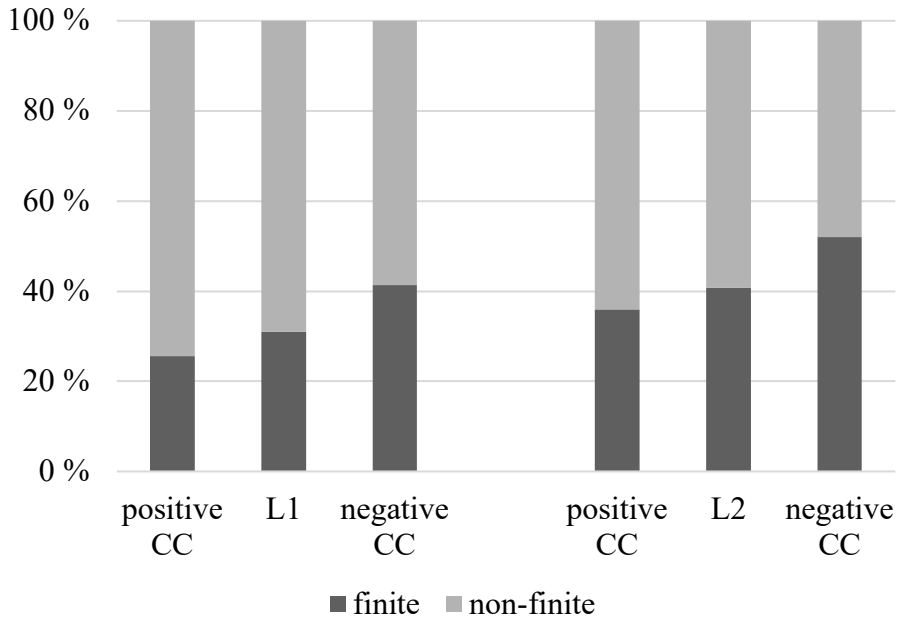


Figure 3. Distribution of nonfinite *-ing* clauses versus finite *that*/zero-complement clauses in positive and negative clauses in L1 and L2 varieties of English

Conditional inference trees were used to examine the effect of variety group and negation as predictors of complement choice.[4] The theory and mechanics of this explanatory technique are summarized in Bernaisch, Gries & Mukherjee (2014: 14) as follows:

> Conditional inference trees are a recursive partitioning approach towards classification and regression that attempt to classify/compute predicted outcomes/values on the basis of multiple binary splits of the data. Less technically, a data set is recursively inspected to determine according to which (categorical or numeric) independent variable the data should be split up into two groups to

> classify/predict best the known outcomes of the dependent variable [...] This process of splitting the data up is repeated until no further split that would still sufficiently increase the predictive accuracy can be made, and the final result is a flowchart-like decision tree.

A conditional inference tree was fitted using the function `ctree()` in the `party` package for each analysis (Hothorn, Hornik & Zeileis 2006). Of the two predictors tested (variety group and negation), negation was found to have a stronger effect on alternation (see Figure 4). When the complement clause is negative, the left of the tree shows a slightly stronger tendency to select finite *that*/zero-complement clauses. The influence of variety group is also significant, with L2 varieties displaying a stronger tendency to select finite *that*/zero-complement clauses than L1s (Node 3, approx. 50% vs. Node 4, approx. 40%). These findings support the first hypothesis and part of the second: that the presence of a negative marker in the complement clause favors the choice of finite complement clauses, and that this tendency is stronger in L2 varieties.

The right-hand side of the tree, which shows the data for positive complement clauses, reveals a stronger preference for finite complement clauses once again among L2 (L2 40%, L1 30%) and a significant difference between the two variety groups. This may indicate the influence of other syntactic and semantic factors (probably specific to L2) on variation.

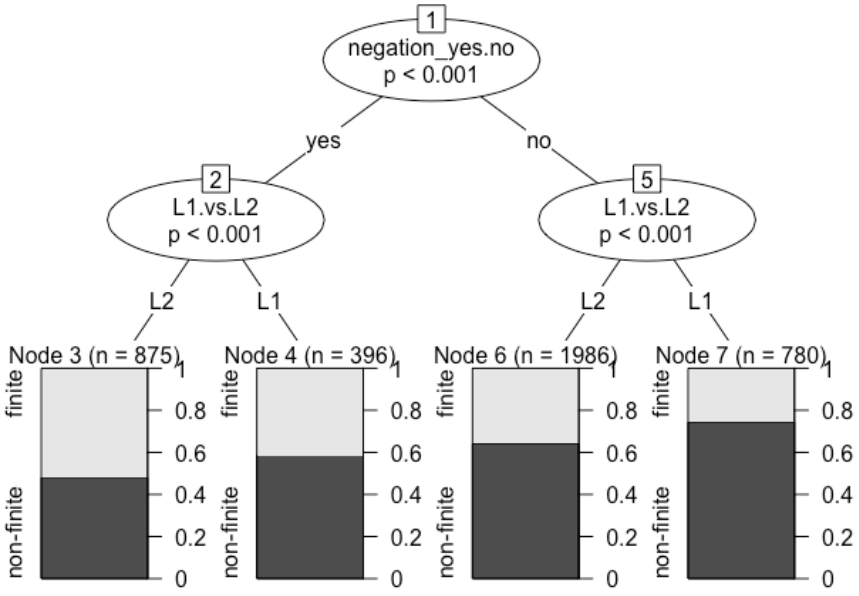


Figure 4. Conditional inference tree of nonfinite *-ing* clauses versus finite *that*/zero-complement clauses in positive and negative clauses in L1 and L2 varieties of English

As Gries (2019: 7) has warned, these tree-based models may 'fail to identify the correct predictors-response relation(s) in the data'; in other words, they do not always take into account interactions between predictors. In order to offset this limitation, binary logistic regression analyses were performed for each alternation using the `glm()` function in the `rms` package. The response variable is binary, distinguishing between nonfinite complementation (*-ing* clauses) and finite complementation (*that* and zero-complement clauses). Predicted estimates are for finite *that*/zero-complementation and the factors are coded so that positive estimates indicated an increase in the probability of producing a finite *that*/zero-complement clause. Since no interactions were found between variety group and negation (p=0.707; see Table 4 in the appendix), a new regression model was fitted for the two factors (see Table 5 below).

Table 5. *Binary logistic regression model of nonfinite* -ing *clauses versus finite* that*/zero-complement clauses in positive and negative clauses in L1 and L2 varieties of English*

	Estimate	Std. Error	z value	Pr(>|z|)	
(Intercept)	-1.04841	0.06935	-15.118	< 2e-16	***
L2	0.46344	0.07467	6.206	5.43e-10	***
Negative.CC	0.67616	0.06966	9.706	< 2e-16	***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

These new analyses confirm that the results of the regression are consistent with those of the conditional inference tree: that both variety group and the presence of a negative marker in the complement clause favor the use of finite *that*/zero-clauses.

4.1.2 Alternation between finite complement clauses with and without complementizer

The data for the alternation between *that*- and zero-complement clauses (see Figure 5) show that *that*-complement clauses are predominant in all environments and across both groups of varieties of English. In L1 varieties, there is a slightly higher tendency towards *that*-clauses when there is a negative marker in the complement clause, while in L2 varieties the preference is for zero-complement clauses.

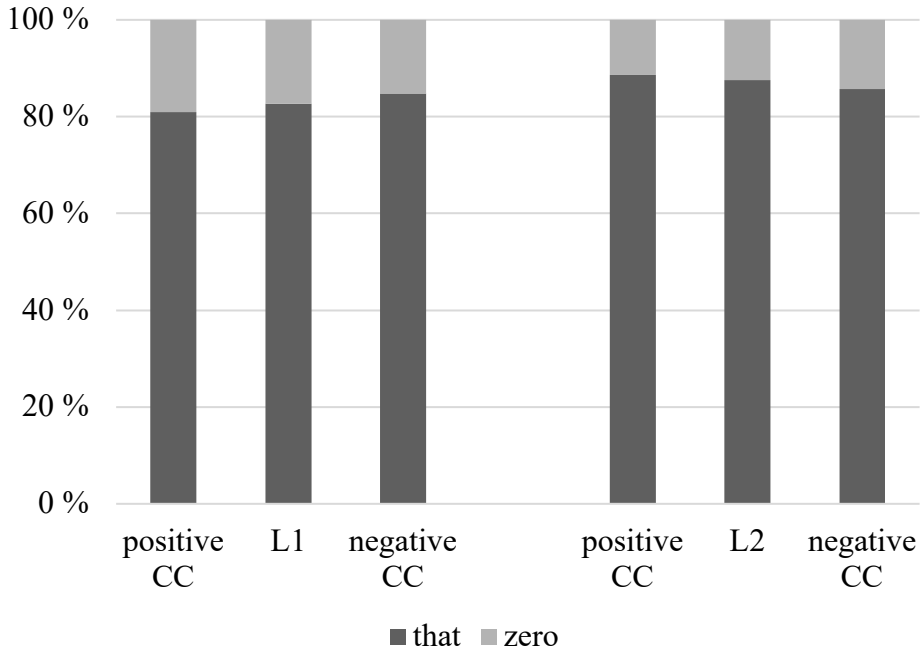


Figure 5. Distribution of finite complement clauses with and without complementizer in positive and negative clauses in L1 and L2 varieties of English

The conditional inference tree for the alternation between *that*- and zero-complement clauses with negation (see Figure 6) confirms that the effect of negation is not significant. In this variation, only the differences between native and non-native varieties of English are significant. L2 varieties of English show a stronger preference for the use of the complementizer *that* (approximately 10% difference) but negation is not an explanatory factor for this difference.

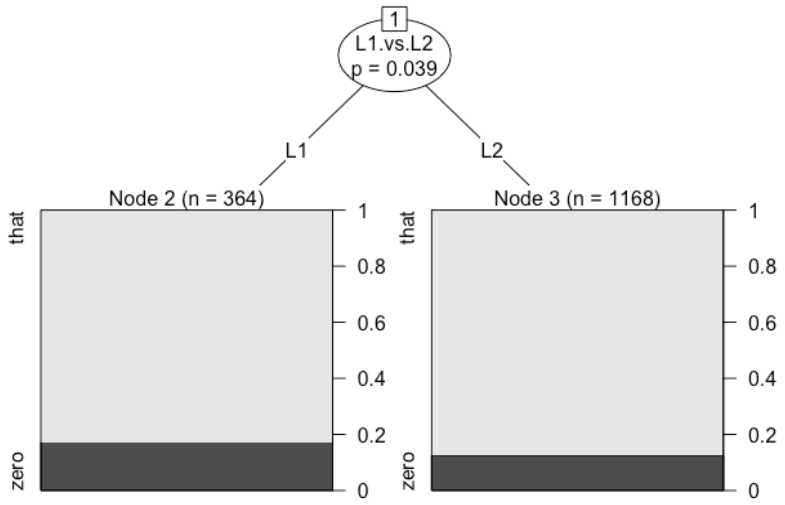


Figure 6. Conditional inference tree of finite complement clauses with and without complementizer in positive and negative clauses in L1 and L2 varieties of English

Interactions between variety group and presence of a negative marker were tested using a regression analysis. The response variable here is binary again, distinguishing between *that*- and zero-complement clauses. Predicted estimates in this case are for *that* complement clauses. No interactions are observed between the two factors ($p = 0.114$; see Table 5 in the appendix) and neither of the factors is shown to be an explanatory factor for this alternation. A new binary logistic regression model was fitted for just these two factors and the results are found to be in line with the inference tree (see Table 6). Of the two factors, only variety group (L1/L2) shows a significant effect on choice, with L2 varieties showing a preference for the use of the complementizer *that*.

Table 6. *Binary logistic regression model of finite complement clauses with and without complementizer in positive and negative clauses in L1 and L2 varieties of English with no interactions*

	Estimate	Std. Error	z value	Pr(>|z|)	
(Intercept)	-1.8806	0.1257	-14.96	<2e-16	***
L2	0.3754	0.1647	2.28	0.0226	*
Negative.CC	-0.1088	0.1510	-0.72	0.4713	

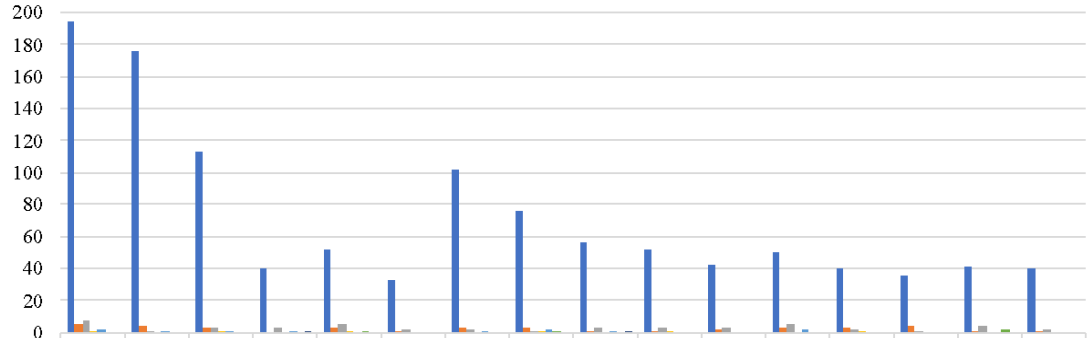
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

The analysis reported in this section confirms that the presence of a negative marker in the complement clause does affect the alternation between nonfinite *-ing* clauses and finite *that*/zero-complement clauses by increasing the probability of a finite *that*/zero-complement clause. This is in keeping with Rohdenburg's Complexity Principle (Rohdenburg 1995, 2006) that more explicit options tend to be preferred in cognitively complex environments. The analysis also shows that the effect of negation in this alternation is stronger in L2 varieties, in keeping with the tendency towards increased transparency and isomorphism in varieties that develop as second languages and in language contact situations (Thomason 2008; Steger & Schneider 2012; Schneider 2012, 2013, 2018). However, in the alternation between *that*- and zero-complement clauses, negation was not found to be a significant factor. The first and second hypotheses of the study are thus only partially confirmed. While the hypotheses are confirmed in relation to alternation between *that*/zero-complement clauses vs. *-ing* clauses, where negation increases the tendency for *that*/zero-clauses and more strongly in the L2 varieties, they are not confirmed for alternation between *that*- vs. zero-complement clauses, since negation does not play a role in the alternation between the two patterns.[5]

4.2 not-*negation vs.* no-*negation*

This section focuses on the effects of *not*- and *no*-negation on complement choice. Figures 7 and 8 below offer an initial overview of the use of *not*-negation and *no*-negation in the complement clause with the verb REGRET. Figure 7 shows the raw data for all of the negative markers found: *not/n't, never, nothing, no, nowhere, none,* and *neither/nor*. The preference for *not* and its reduced form *n't* across all varieties is conspicuous, while the use of the other forms of negation varies. The two most frequent negative markers after *not*/*n't* are *never* and *no*, which occur at least once in all of the varieties analyzed, in contrast to *none*, *nothing*, *neither*/*nor* and *nowhere*, which are rarely used.

Figure 8 groups the data from Figure 7 into two categories, *not*-negation and *no*-negation, together with their relative frequencies. The frequency of *not*-negation is more than 80% in all varieties, and is highest in the L1 varieties (USE 96.2%, BrE 92%). *No*-negation occurs most frequently in Pakistani English and Nigerian English, with 18.8% and 18% respectively.



	BrE	USE	IndE	LnkE	PakE	BanE	SgE	MalE	PhilE	HKE	SAfE	NigE	GhE	KenE	TanE	JamE
	L1		Asia								Africa				Caribbean	
not/n't	195	177	113	40	52	33	103	76	57	53	43	50	40	36	42	41
never	6	5	3	0	4	1	4	4	1	1	2	3	3	5	1	1
no	8	1	3	4	6	2	2	1	3	3	4	6	2	1	5	2
none	1	0	1	0	1	0	0	1	0	1	0	0	1	0	0	0
nothing	2	1	1	1	0	0	1	2	1	0	0	2	0	0	0	0
neither/nor	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0
nowhere	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0

Figure 7. Negative markers across different varieties of English

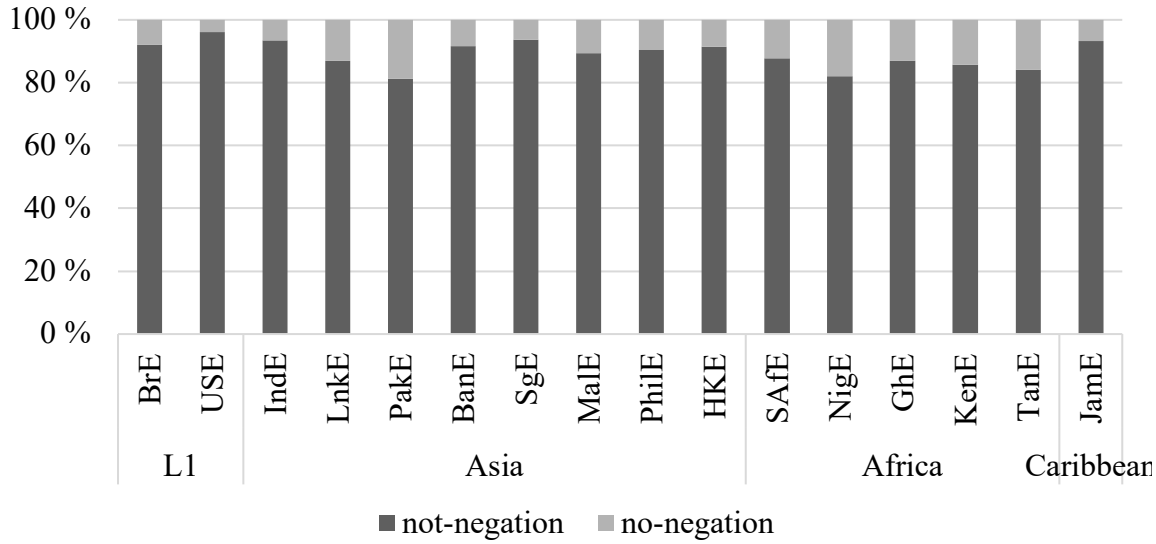


Figure 8. Variation between *not*-negation and *no*-negation across different varieties of English

The next part of the analysis examines the extent to which *not*- and *no*-negation affect the alternation between nonfinite -*ing* and finite *that*/zero-complement clauses (4.2.1), and the alternation between finite complement clauses with and without the complementizer *that* (4.2.2).

4.2.1 Alternation between nonfinite -ing *and finite* that*/zero-complement clauses*

Figure 9 below illustrates the distribution of nonfinite -*ing* clauses versus finite *that*/zero-complement clauses with *not*-negation and *no*-negation. Both types of negation exhibit a higher-than-average proportion of finite *that*/zero-clauses in all varieties and the effect of *no*-negation is stronger than *not*-negation. Looking at the effects of each type of negation in more detail, we find that the preference for finite *that*/zero-complement clauses with *no*-negation is conspicuous in both groups of varieties (83.3% in L1 varieties and 84.2% in L2 varieties) and stronger in L1 varieties, with a 52 percentage point difference relative to the average proportion, compared to a 43 percentage point difference in the case of L2s. With

not-negation, the difference in both variety groups is less than 8% (7.7% in L1s and 7.5% in L2s).

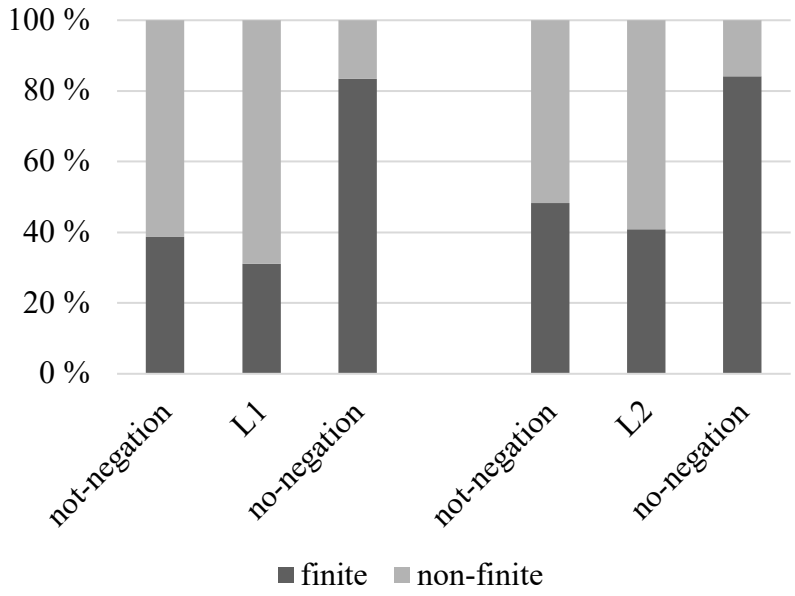


Figure 9. Distribution of nonfinite *-ing* clauses versus finite *that*/zero-complement clauses with *not*-negation and *no*-negation in L1 and L2 varieties of English

Figure 10 is the conditional inference tree for the alternation between nonfinite *-ing* clauses and finite *that*/zero-complement clauses, where the major predictor is negation. On the left-hand side of the figure, Node 2 shows a clear preference for finite complement clauses in 80% of occurrences of *no*-negation, and no significant difference between native and non-native varieties of English. On the other hand, Node 3 shows a significant difference between L1 and L2 varieties in relation to *not*-negation, with the use of finite *that*/zero-complement clauses in L2 significantly higher (10%) than in L1s. The results show that *no*-negation has a stronger effect on the choice of finite complement clauses than *not*-negation. This may be accounted for in terms of frequency, since highly frequent items or constructions are less cognitively complex and therefore require less processing capacity (Rohdenburg 2003: 220, 2016: 475). As observed in Section 4.2 regarding the distribution of the two types of negation (see Figures 7 and 8), *not*-negation is noticeably more frequent than *no*-negation. This high frequency of *not*-negation lowers its cognitive complexity,

which decreases the need for finite *that*/zero-complement clauses, i.e. the more explicit option. By contrast, *no*-negation is cognitively more complex owing to its lower frequency, which makes it necessary to use the more explicit option (i.e. *that*/zero-complement clauses).

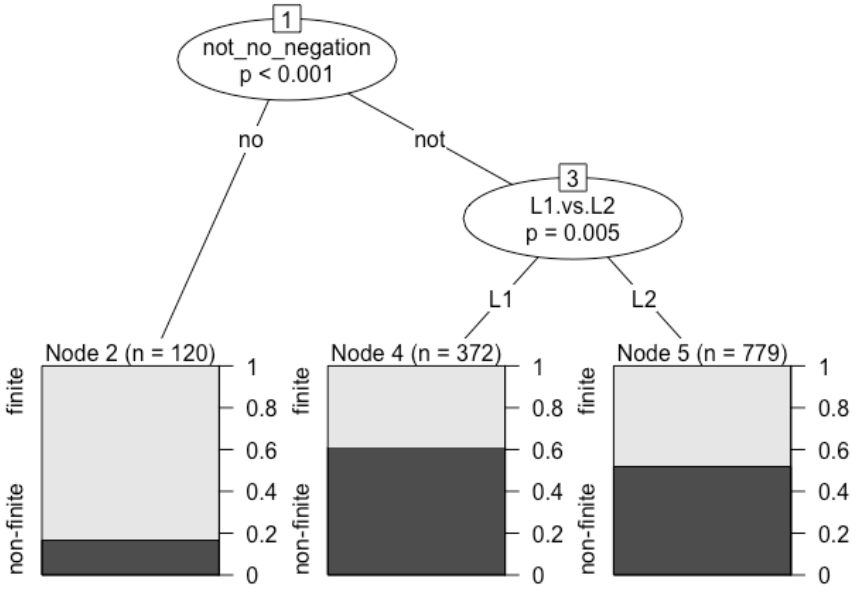


Figure 10. Conditional inference tree of nonfinite *-ing* clauses versus finite *that*/zero-complement clauses with *not*-negation and *no*-negation in L1 and L2 varieties of English

A binary logistic regression model was also used to check for interactions. The response variable is binary once again, distinguishing between nonfinite complementation (*-ing* clauses) and finite complementation (*that* and zero-complement clauses), and predicted estimates are for finite *that*/zero-complementation. There are no interactions between the two response factors, i.e. variety group and type of negation ($p = 0.538$; see Table 7 in the Appendix). Since no interactions were found, a new regression model was fitted with the two factors. The results are in line with the inference tree above (see Table 8), showing that both factors significantly affect the choice between *-ing* and *that*/zero-complement clauses. A stronger preference for the use of finite *that*/zero-clauses was observed in non-native L2 varieties of English and *no*-negation.

Table 8. *Binary logistic regression model of nonfinite* -ing *clauses versus finite* that*/zero-complement clauses with* not*-negation and* no*-negation in L1 and L2 varieties of English*

	Estimate	Std. Error	z value	Pr(>|z|)	
(Intercept)	-1.6903	0.2472	-6.838	8.05e-12	***
L2	0.3678	0.1252	2.939	0.0033	**
*no*_negation	1.7702	0.2526	7.007	1.44e-12	***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

4.2.2 Alternation between finite complement clauses with and without complementizer

In the alternation between finite complement clauses, the preference is always for the use of the complementizer *that*, for both types of negation and in both variety groups (see Figure 11 below). Upon closer analysis, minor differences are revealed between varieties and types of negation. Starting with the L1 varieties, the left-hand side of the figure shows a slightly stronger preference in *not*-negation for the use of the complementizer *that*, while with *no*-negation the tendency is towards zero-complement clauses. In L2 varieties, the reverse is true: *no*-negation favors *that*-clauses, while *not*-negation favors zero-complement clauses.

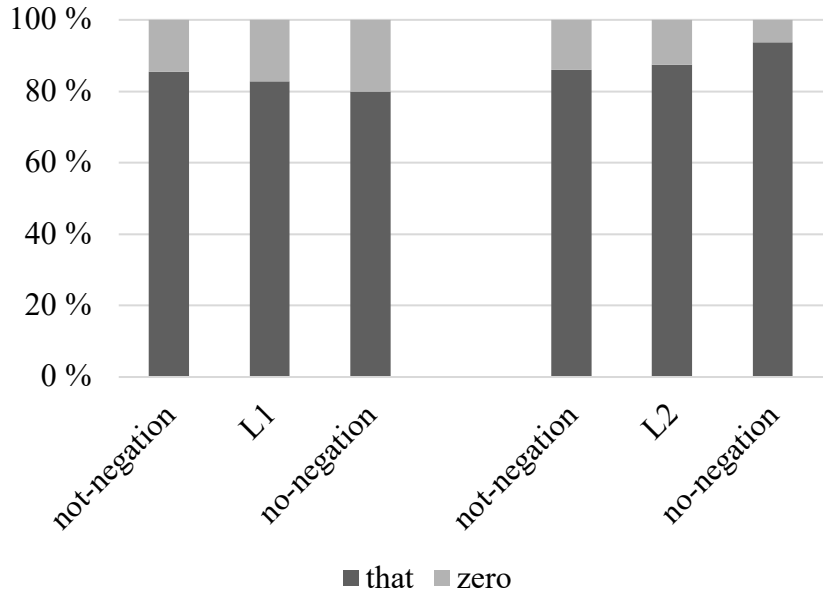


Figure 11. Distribution of finite complement clauses with and without complementizer with *not*-negation and *no*-negation in L1 and L2 varieties of English

Figure 12 below is the conditional inference tree for this alternation between *that*- and zero-complement clauses. The result is a bar plot containing the frequencies of *that*- and zero-complement clauses in which neither of the factors has a significant effect on choice. This graphic is a clear example of one of the situations warned of by Gries (2019:12) in which interactions between factors are not predicted accurately by the inference tree. To offset this risk of misprediction, the data set was checked for interactions using a binary logistic regression model, as in the previous alternations examined (see Table 9). The response variable is binary, distinguishing between *that*- and zero-complement clauses, and predicted estimates are for finite *that*-complement clauses. The interaction between the two factors, negation and variety group, has a minimal effect on choice, with $p < .1$. However, the results also show that when the interaction is included in the model, type of negation has a significant effect on the preference in *no*-negation for use of the complementizer *that*. Once again, this may be explained in terms of frequency. The high frequency of *not*-negation mentioned in Section 4.2 (see Figures 7 and 8) lowers its cognitive complexity, which in turn decreases the need for the more explicit

complementizer *that*. On the other hand, the low frequency of *no*-negation makes this construction cognitively more complex, thus triggering the need for the more explicit option.

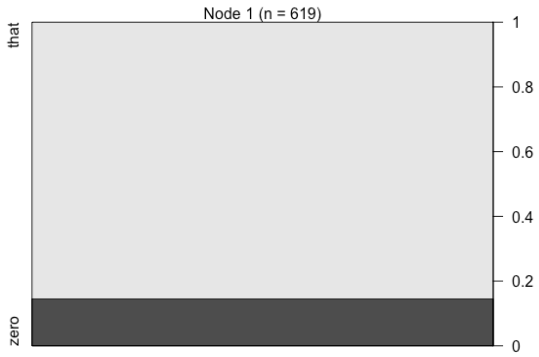


Figure 12. Conditional inference tree of finite complement clauses with and without complementizer with *not*-negation and *no*-negation in L1 and L2 varieties of English

Table 9. *Binary logistic regression model of finite complement clauses with and without complementizer with* not-*negation and* no-*negation in L1 and L2 varieties of English*

	Estimate	Std. Error	z value	Pr(>|z|)	
(Intercept)	-2.7081	0.4619	-5.863	4.54e-09	***
L2	1.3218	0.7251	1.823	0.0683	.
*no*_negation	1.0498	0.4829	2.174	0.0297	*
L2 : *no*_negation	-1.4312	0.7755	-1.845	0.0650	.

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

To sum up this section, the preferred type of negation across all varieties is *not*-negation (Figures 7 and 8). For *no*-negation, the use of the different markers varies, with *never* and *no* proving most popular. Regarding the choice between *that*/zero-complement clauses and -*ing* clauses, both types of negation show a greater tendency to use finite *that*/zero-clauses, and *no*-negation does so more strongly than *not*-negation. This finding contradicts the third hypothesis of the study, which predicted that *not*-negation would have

a stronger effect than *no*-negation. Moreover, while the differences between L1 and L2 varieties in relation to *no*-negation are not statistically significant, with *not*-negation, L2 varieties of English show a stronger tendency towards finite *that*/zero-complement clauses. Regarding the factors affecting alternation between *that*- and zero-complement clauses, only negation was found to be significant, with *no*-negation showing a stronger tendency in favor of the complementizer *that* (Table 9), again in contradiction of the third hypothesis.

5 Conclusion

This article has focused on the effect of negation on the complementation system of the verb REGRET in different L1 varieties of English (British and American English) and L2 varieties (India, Sri Lanka, Pakistan, Bangladesh, Singapore, Malaysia, the Philippines, Hong Kong, South Africa, Nigeria, Ghana, Kenia, Tanzania, and Jamaica) as represented in GloWbE. Complement clause variability with this verb is between finite *that*/zero-complement clauses and nonfinite *-ing* clauses, and internal preferences in finite complement clauses in favor of and against the complementizer *that*.

The first hypothesis, which predicted that the presence of a negative particle (*not*-negation or *no*-negation) in the complement clause would favor, firstly, the use of finite complement clauses over nonfinite complement clauses, and secondly, the use of *that* over zero in finite complement clauses, has been partially confirmed. The analysis in section 4.1.1 shows that the presence of a negative marker in the complement clause triggers the use of a finite *that*/zero-complement clause over *-ing* clauses. This is in accordance with the Rohdenburg's Complexity Principle (1995, 2006) that, when negation is present in the complement clause, it adds complexity to the sentence and consequently increases the tendency towards the more explicit option. Section 4.1.2, however, shows that the presence of a negative marker does not have a significant effect on the alternation between the use of *that* and zero-complement clauses, though use of the complementizer provides greater isomorphism in situations of cognitive complexity.

The second hypothesis, which posited that the preference for more explicit patterns would be stronger in L2s as a result of their tendency to use more transparent and

isomorphic structures (Thomason 2008; Steger & Schneider 2012; Schneider 2012, 2013, 2018) was also partially confirmed, insofar as L2 varieties of English show a stronger preference for finite *that*/zero- over nonfinite -*ing* complement clauses owing to the presence of a negative particle in the complement clause (Section 4.1.1). However, as regards alternation between finite patterns with and without a complementizer (Section 4.1.2), the presence of a negative particle in the complement clause was not found to be a determining factor in the stronger preference for the complementizer *that* in L2 varieties, indicating that variation may be due to alternative semantic or syntactic factors.

The third and final hypothesis, that *not*-negation would have a stronger effect than *no*-negation, was not confirmed. Both types of negation were found to favor finite patterns (see Section 4.2.1), with *no*-negation exhibiting a stronger tendency in this regard than *not*-negation. As regards alternation between *that*- and zero-complement clauses, *no*-negation was also shown to be more likely to trigger use of the complementizer *that* (Section 4.2.2). This may be attributable to the frequency of use of each type of negation, since highly frequent constructions are cognitively less complex, while less frequent constructions are cognitively more complex (Rohdenburg 2003: 220. 2016: 475). In the case of the verb REGRET, *no*-negation is less frequent, which makes it a more complex construction requiring the use of more explicit options. Within the alternation between finite and nonfinite -*ing* clauses, finite *that*/zero-complement clauses represent the more explicit option, while within the alternation between *that*- and zero-complement clauses, *that*-complement clauses are more specific than their zero-complement counterpart.

To conclude, the findings of this study confirm the role of negation as a predictor of complement clause choice after the verb REGRET, as has been demonstrated elsewhere for other complexity factors, such as passivization and extractions. The study also shows differences between the behavior of L1 and L2 varieties arising from L2 use of linguistic resources to increase isomorphism, transparency and explicitness in situations of complexity. Continued research into the effect of complexity factors on complementation will certainly find L2s a rich testing ground and source of data for new theories and methodologies in this area.

APPENDIX

Table 4. Binary logistic regression model of nonfinite -*ing* clauses versus finite *that*/zero-complement clauses in negative and positive clauses in L1 and L2 varieties of English with interactions

	Estimate	Std. Error	z value	Pr(>|z|)	
(Intercept)	-1.06471	0.08200	-12.984	< 2e-16	***
L2	0.48506	0.09440	5.138	2.78e-07	***
Negative.CC	0.71784	0.13089	5.484	4.15e-08	***
L2 : negative.CC	-0.05815	0.15459	-0.376	0.707	

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 5. Binary logistic regression model of *that* versus zero-complement clauses in negative and positive clauses in L1 and L2 varieties of English with interactions

	Estimate	Std. Error	z value	Pr(>|z|)	
(Intercept)	-1.79176	0.13397	-13.374	<2e-16	***
L2	0.07616	0.25523	0.298	0.765	
Negative.CC	-0.26268	0.17854	-1.471	0.141	
L2 : negative.CC	0.52827	0.33400	1.582	0.114	

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 7. Binary logistic regression model of nonfinite -*ing* clauses versus finite *that*/zero-complement clauses with *not*-negation and *no*-negation in L1 and L2 varieties of English with interactions

	Estimate	Std. Error	z value	Pr(>|z|)	
(Intercept)	-1.609e+00	2.739e-01	-5.877	4.18e-09	***

L2	-7.113e-14	6.124e-01	0.000	1.000	
*no*_negation	1.684e+00	2.831e-01	5.948	2.71e-09	***
L2 : *no*_negation	3.850e-01	6.257e-01	0.615	0.538	

Signif. codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘.’ 1

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FOOTNOTES

[1] I thank the Spanish Ministry of Science, Innovation and Universities (Grant FFI2017-82162-P) and the University of Vigo for financial support.

[2] Despite the potential problems with the GloWbE corpus reported by numerous authors (see, for example, Davies and Fuchs 2015; Mukherjee 2015; Hoffmann 2018), studies have also shown that results from GloWbE and the *International Corpus of English* (ICE, Greenbaum 1996) tend to be similar (Hommerberg and Tottie 2007; Collins 2012; Hundt et al. 2012; Heller and Röthlisberger 2015; Lindquist & Levin 2018; Horch 2019). Use of GloWbE for this study is necessary owing to its size: an exploratory search in the British component of ICE yielded only 14 examples, compared to 6,783 in GloWbE.

[3] I will use the following abbreviations to refer to the different varieties of English: British English (BrE), American English (USE), Indian English (IndE), Sri Lankan English (LnkE), Pakistani English (PakE), Bangladesh English (BanE), Singapore English (SgE), Malaysian English (MalE), Philippine English (PhilE), Hong Kong English (HKE), South African English (SAfE), Nigerian English (NigE), Ghana English (GhE), Kenyan English (KenE), Tanzanian English (TanE), Jamaican English (JamE).

[4] While complement alternation may also be affected by other syntactic and semantic factors (see Romasanta 2019a), conditional inference trees are used here to test the hypotheses of this study only, not to predict alternation more generally.

[5] The partial confirmation of the first two hypotheses indicates that additional syntactic and semantic factors should be considered as predictors of variation more generally; this, however, lies outside of the scope of the present analysis.