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# A corpus-linguistic account of the history of the genitive alternation in Singapore English

Stefan Th. Gries<sup>1,2</sup>, Tobias Bernaisch<sup>2</sup> and Benedikt Heller<sup>2</sup>

<sup>1</sup>University of California at Santa Barbara / <sup>2</sup>Justus Liebig University Giessen

In this paper, we are exploring the history of the genitive alternation (*of*- vs. *s*-genitive) in Singapore English based on corpus data covering both British English (as the historical input variety) and Singapore English (as the target variety whose diachronic development we are interested in). Specifically, while earlier research has produced partly diachronic accounts of genitive variability, the diachronic development of the genitive has so far not been studied in ESL contexts, a gap which this study attempts to fill. Nearly 7000 instances of *of*- and *s*-genitives were annotated for a large number of predictors including phonetic variables (e.g. final sibilancy of possessor), semantic variables (e.g. animacy of possessor/possessum), syntactic variables (e.g. length of possessor/possessum), and pragmatic variables (e.g. discourse accessibility of possessor/possessum). We then applied the method of Multifactorial Prediction and Deviation Analysis with Regressions/Random Forests to the data to explore (i) how genitive choices in Singapore English differ from those in British English and, after a methodological interlude, (ii) how genitive choices changed over time in Singapore English. We conclude with some important recommendations regarding diachronic studies of structural nativization and their theoretical implications in models such as those of Moag (1982) or Schneider (2003, 2007).

**Keywords:** genitive alternation, Singapore English, diachrony, probabilistic grammar, MuPDAR

## 1. Introduction

The introductory sections offer theoretical as well as methodological perspectives on the study of diachronic developments in World Englishes. Section 1.1 focuses on relevant diachronic models – particularly Moag (1982, 1992) and Schneider (2003, 2007) – representing the evolution of (some native, but mainly) non-native

varieties of English world-wide, whereas Section 1.2 provides an overview of how this evolution has so far been tackled methodologically.

### 1.1 Theoretical considerations

Although Chinese, French, Spanish, Malay – among others – have diversified into additional national varieties outside the languages’ original homelands, the spread of English across national boundaries all around the globe and the resulting number of English speakers has up to this point not been matched by any other language. The process of transporting or transplanting English to a new territory is generally well-documented with historical evidence and only with a few exceptions as in the cases of Australia or what is the United States today, this re-rooting of English can be considered a linguistic by-product of an economically-driven quest for natural resources and trade monopoly of the British crown via the British East India Company. Despite the dearth of historical linguistic evidence for the respective diachronic diversification of English into national varieties, scholars in the World Englishes paradigm (e.g. Strevens’s (1980) world map of English, Kachru’s (1985) three-circle model, McArthur’s (1987) circle of World English) have repeatedly dedicated themselves to the static depiction of the outcomes of this diversification process, but Moag (1982, 1992) – inspired by Hall’s (1962) work on the cyclic evolution of pidgin languages – is the first explicitly dynamic model on New Englishes describing the “Life cycle of non-native Englishes” illustrated in Figure 1.

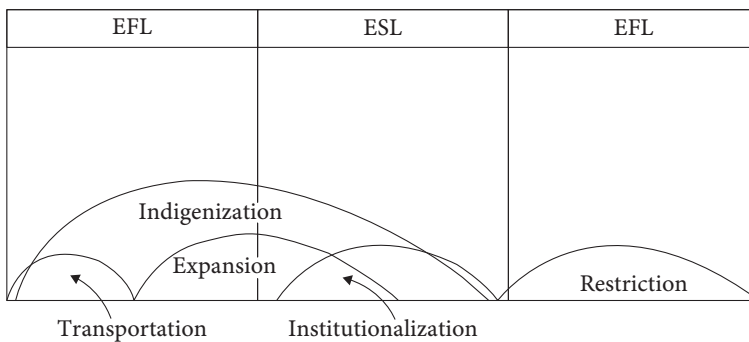


Figure 1. Moag’s (1982) life cycle of non-native Englishes

Five consecutively ordered, but generally overlapping processes constitute Moag’s (1982, 1992) life cycle: (a) transportation – English is brought “into a new environment for purposes of a more or less permanent nature” (Moag 1982: 271); (b) indigenization – the structurally layered and initially slow localization of the historical

input to create a distinct regional variety; (c) expansion in use and function – the spread of English to domains formerly reserved for local languages; (d) institutionalization – via the localization of English literature, English language teaching and the media and (e) restriction of use and function – the abandoning of the newly emerged English in favor of another legislated official language often as a symbol and result of political independence. This last process, however, is not applicable to all New Englishes, but, according to Moag's (1982: 283) judgment in the early 1980s, "may be in the cards for Malaysia, the Philippines, and perhaps even India". Moag's (1982: 271) cycle alludes to changing roles of "English-speaking aliens and some segment of the local population in the domains English occupies and in the norm orientation for the newly emerging variety. With a focus on linguistic structures and their developments, initial lexical borrowings and later grammatical innovations broadly characterize the succession through the life cycle, which is accompanied by a continuous spread of English usage from public to private social domains (cf. Moag 1982: 273). The life-cycle model is illustrated with cases in point from English in the Pacific region with a particular focus on Fiji. In a nutshell, Moag's (1982, 1992) life cycle suggests that emerging varieties of English develop from English-as-a-foreign-language (EFL) to English-as-a-second-language (ESL) varieties and then potentially return to EFL status facilitated by post-independence language planning promoting local national languages in official settings to the detriment of the status of English.

Schneider, the proponent of the probably most influential model in World Englishes so far, acknowledges and comments on the relationship between Moag's life cycle and his (2003, 2007) dynamic model of the evolution of postcolonial Englishes:

[f]or an earlier, comparable model, similar in some respects though different in others and considerably more constrained in its applicability, see Moag (1992) in relationship to the situation in Fiji. Moag distinguishes four overlapping phases, called 'transportation,' 'indigenization,' 'expansion in use and function,' and 'institutionalization,' sometimes followed by a fifth phase, 'restriction of use and function.' Perhaps the most important difference between Moag's idea and the present model is that he believes that in the end English typically tends to revert to a foreign-language status. (Schneider 2007: 319)

While it would be insightful to explore in which areas the scope of Moag's (1982, 1992) model is more restricted than that of Schneider's, Schneider's above statement must be considered too humble since it understates some central conceptual advances his evolutionary model presents (e.g. more rigorous focus on speech communities in a given territory, fully elaborated social as well as linguistic characteristics for each developmental stage, etc.). Still, the implication that noteworthy parallels across the two models exist is certainly correct. Schneider's (2003, 2007)

model also operates on five diachronic phases, i.e. (1) foundation – settlers bring English to a new territory; (2) exonormative stabilization – English conforms to (mostly British English) non-local norms, (3) nativization – English develops local characteristics, (4) endonormative stabilization – local characteristics of English become the norm and (5) differentiation – (regional) dialects of a given postcolonial English emerge, which – except for the last phase – successfully advance particular, roughly conceptualized facets from Moag (1982, 1992) and Hall (1962) using a distinct terminology. With regard to the succession of these phases, Schneider (2003, 2007) adds one source of universal appeal to his model (see Schneider 2014 for an overview of the reception of the model and its applications), which is his unique proposition that

the difference between phases 3 and 4 is commonly given symbolic expression by substituting a label of the ‘English in X’ type by a newly coined ‘X English.’ The former marks the dialect as just a variant without a discrete character of its own; while the latter credits it with the status of a distinct type, set apart from and essentially on equal terms with all others. (Schneider 2007: 50)

The ensuing checklist-like operationalization of independent variety status of any postcolonial English (cf. Schneider 2007: 56) was and certainly still is a welcome invitation to researchers to examine the evolutionary status of the variety they are concerned with. The evolutionary status so established is generally considered an indication with regard to which characteristics the variety scrutinized can be seen as a full-fledged variety of English on a par with other World Englishes. Further, the descriptive parameters for developmental stages, which are, however, only systematically applied and adapted to each stage by Schneider (cf. 2007: 56), generally conform with Moag (1982, 1992), but by no means completely coincide. To name just one of several examples, both models include perspectives on the indigenous and the settler communities in a given territory, but Schneider stresses the need to take the attitudes of the two strands of communicative perspective into account, while this is not taken into consideration by Moag (1982, 1992). The descriptive characteristics are presented as follows:

[a]t each of these stages, manifestations of four different parameters can be observed and will be pointed out, with a monodirectional causal relationship operating between them: (1) Extralinguistic factors, like historical events and the political situation, result in (2) characteristic identity constructions on the sides of the parties involved. These, in turn, manifest themselves in (3) sociolinguistic determinants of the contact setting (conditions of language contact, language use, and language attitudes), which, consequently, cause specific (4) structural effects to emerge in the form(s) of the language variety/-ies involved.

(Schneider 2007: 30–31)

The above statement presents additional conceptual progress in that Schneider (2003, 2007) is more explicitly a linguistic model than Moag (1982, 1992). Schneider (cf. 2007: 30–31) argues that the three mainly sociohistorical parameters, i.e. extralinguistic factors, identity constructions and sociolinguistic determinants, eventually find reflection in linguistic/structural effects. In essence, Schneider (2003, 2007) implies that linguistic structures are indicators of varietal progress in his evolutionary cycle.

Given this salience of structural investigations for the determination of evolutionary progress, it is unexpected that an operationalization of this determination does not figure more prominently in models in World Englishes. Moag (1982, 1992) – maybe not surprisingly – does not offer comments in this regard since structural effects do not take center stage in his developmental cycle, and corpus-linguistic data for World Englishes were by-and-large absent at the beginning of the 1980s. True, more recent models on Englishes world-wide such as Mair (2013) do in fact formulate empirically testable model assumptions. According to Mair (2013: 260), “the hub of the ‘World System of Englishes’ is Standard American English”, whose international leading role he (cf. 2013: 261–262) expects to be reflected in Americanisms being “a massive presence in practically all other varieties, including British English. Criticisms will be found in American usage, but to a far lesser extent.” In contrast, however, a similar or maybe even more rigorous empirical operationalization of how to determine evolutionary status via structural analyses is not available in Schneider (2003, 2007). In this light, Schneider (2004: 227) suggests that

[t]he most promising road to a possible detection of early traces of distinctive features is a principled comparison of performance data collected along similar lines, i.e. systematically elicited corpora. [...] [T]he International Corpus of English project (Greenbaum 1996) promises to provide a uniquely suitable database for such comparative investigations [...].

This proposition establishes an implicit link between the dynamic model, which – although the term has been used by others (cf. Kachru *passim*) – features structural nativization as the key notion in structural varietal developments, and corpus-linguistic investigations. While Schneider (2004) does not explicitly relate corpus-linguistic results to evolutionary stages in the dynamic model, the study nevertheless sets the methodological tone for future corpus-linguistic applications of his evolutionary model; in particular for the assumption that – in the absence of authentic historical corpus data – synchronic corpus-linguistic cross-varietal differences can be interpreted as structural representations of diachronic change in World Englishes. Corpus linguists have since related structural differences of postcolonial Englishes (often in comparison to their historical input varieties) to

evolutionary status in the dynamic model with the help of a number of different methodologies, which will be summarily presented in the next subsection.

## 1.2 Methodological considerations

Corpus linguists who were concerned with the structural pillar of Schneider's model have focused on two interrelated aspects in the modeling of the evolution of postcolonial Englishes: (i) how to study the diachronic evolution of varieties postulated in Schneider's model, and (ii) how to do this quantitatively.

As for the former, much work (e.g. Mukherjee 2008; Bernaisch 2015; Edwards 2016) has adopted the logic that we can make comparisons between data from a source variety (e.g. British English) and a target variety (e.g. Singaporean English) such that the amount and the nature of the differences found will allow us to determine the position of the target variety with regard to Schneider's five evolutionary stages, i.e. how (much) the target variety has emancipated itself from the source variety, or become nativized. For example, Mukherjee and Gries (2009) analyzed collostructional routines in Asian Englishes and established the lexicogrammatical distinctness of Indian and Singapore English when compared to British English, which is easily reconcilable with their relatively advanced evolutionary statuses. Still, it is important to point out that a number of studies as documented in Collins (ed., 2015) and Noël et al. (eds, 2014) have already engaged in truly diachronic corpus studies of World Englishes with a particular focus on lexicogrammatical features. A comparatively large number of these studies, however, relied analytically on frequency-based comparisons of surface structure choices (with or without statistical modelling), whose results and conclusions are unlikely to do full justice to the complexity of the data (see Gries & Deshors 2014: Section 3.1 for a discussion of the problems of such analyses). In contrast, the present paper adopts a multifactorial statistical research design to simultaneously control for various factors potentially influencing the structural choice concerned and thus enabling more detailed descriptions.

As for the latter, three different methodological levels can be distinguished in how the above logic has been applied: First, zero-/monofactorial frequency studies, in which the above kind of comparison is made on the basis of observed absolute or relative frequencies and cross-tabulation and tested via chi-squared or likelihood ratio tests (cf. e.g. Hoffmann, Hundt & Mukherjee 2011; Collins 2012; Huber 2012; Bernaisch 2015). Second, multifactorial classification/regression modeling where the dependent variable is, for instance, a constructional choice and where the independent variables are predictors known or hypothesized to affect, or at least be correlated with, the constructional choice as well as Variety, a variable that allows to

contrast the varieties represented in the data (e.g. the historical source variety/-ies as well as the target variety/-ies and maybe other varieties included for the sake of comparison; cf. e.g. Mukherjee & Gries 2009; Bernaisch, Gries & Mukherjee 2014; Biewer 2015; Deshors 2017); crucially, all predictors of the first kind need to be allowed to statistically interact with Variety so as to determine which predictors' effects differ between varieties.

Third, in recent years Gries and colleagues developed and then used an extension of the second approach called MuPDAR(F), short for *Multifactorial Prediction and Deviation Analysis with Regression/Random Forests* (see Gries & Adelman 2014; Gries & Deshors 2014, 2015; Wulff & Gries 2015; Deshors & Gries 2016; Gries & Bernaisch 2016; Heller, Bernaisch & Gries 2017; Wulff, Gries & Lester forthcoming). This method involves the following three steps:

- fitting a regression/random forest  $R(F)_1$  that predicts the choices that speakers of the source/reference level (typically, native speakers of the reference variety) make with regard to the phenomenon in question;
- applying the results of  $R(F)_1$  to the other/target speakers in the data (typically, learners or speakers of institutionalized second-language varieties) to predict for each of their data points what the native speaker of the source/reference variety would have done in their place;
- fitting a regression/random forest  $R(F)_2$  that explores how the other speakers' choices differ from those of the speakers of the source/reference variety: predictors that are significant in this regression are ones that help understand where the target variety speakers make choices that are not those of the source/reference variety.

In addition, the logic of this has also been used to explore similarities between indigenized varieties and to determine epicenter status in cases where multiple candidate varieties are available (see Gries & Bernaisch 2016; Heller, Bernaisch & Gries 2017).

In this paper, we are using the MuPDAR approach to explore Singaporean English and its emancipation/nativization from British English; as the vehicle of our analysis, we are using the genitive alternation exemplified in (1), i.e. a well-known, ubiquitous, and extensively researched alternation whose well-known characteristics at least in native English serve as a good benchmark:

- (1) a. the President's speech      *s*-genitive: possessor's possessum  
       b. the speech of the President    *of*-genitive: the possessum *of* possessor

The next section discusses the specifics of our *MuPDAR* analysis in detail.



## 2. A MuPDAR analysis of SinE 1990 with reference to BrE 1990

### 2.1 Methods

#### 2.1.1 *Generating and annotating the concordance data*

For the present case study, interchangeable genitives were extracted from two components of the International Corpus of English (ICE; Greenbaum 1991), ICE-SIN and ICE-GB, to represent genitive choices in Singapore English (SinE) and British English (BrE), respectively. Due to the high frequency of genitives, a sample of 10% of all text files was taken (i.e., file 1, file 10, ..., file 490, file 500). This sampling strategy both preserves the proportions of the corpus design and facilitates the annotation of previous choice (see below), which records the variant used in the preceding interchangeable genitive; extra corpus material as marked by either <X> ... </X> or marked by Xs in text unit markers was excluded from the analysis.

During the extraction, genitives were regarded as interchangeable if they could, in principle, be phrased in the respective other variant. The criteria that we applied are in accordance with previous variationist studies on the genitive alternation (most recently, Heller et al. 2017; also see Rosenbach 2014 for an exhaustive overview). In essence, this meant excluding all genitives that are either appositive (*the city of London*), partitive (*the high number of students*) classifying (*the old children's book*), double (*the painting of Pete's*), idiomatic/fixed (*Valentine's Day*) or that do not have a definite possessum (*a friend of my brother*).

In sum, 4178 interchangeable genitives were extracted from the two corpora, 3162 from ICE-GB and 1016 from ICE-SIN (Table 1). In both varieties, the *of*-genitive is the most frequent variant, accounting for 62.93% of interchangeable genitives in BrE, and 70.08% in SinE.

**Table 1.** Overview of our data

	<i>of</i> -genitive	<i>s</i> -genitive	Total
British English (BrE)	1990	1172	3162
Singaporean English (SinE)	712	304	1016
<b>Total</b>	<b>2702</b>	<b>1476</b>	<b>4178</b>

After the extraction, all instances were annotated for the following linguistic constraints that are well-known to govern the choice between the *s*-genitive and *of*-genitive: possessor animacy, possessor definiteness, final sibilancy of the possessor, possessor givenness, possessor thematicity, length difference of the possessor and possessum phrase, previous choice, and type-token ratio of the immediate context.

- Possessor animacy is widely considered to be the most important constraint of genitive choice and is reported to be highly significant in every study of which we know. The higher a possessor is on the animacy scale (e.g. *the mayor* < *the administration* < *the plan*), the more likely it is to be realized as an *s*-genitive (Rosenbach 2014: 232).
- Possessor definiteness, similarly, but less strongly so, increases the likelihood of an *s*-genitive realization (e.g. *the mayor* < *some teacher*).
- On the other hand, if a sibilant (one of [s], [z], [ʃ], [tʃ], [ʒ], and [dʒ]) is present at the end of the possessor phrase (as in *peaceful coexistence*, for example), an *s*-genitive realization is less likely due to the phonological conflict of the sibilant and the subsequent genitive marker's (Zwicky 1987).
- Possessor givenness distinguishes whether the current possessor has been mentioned in the previous context or not. Not all studies found givenness to make a significant difference (e.g. Hinrichs & Szmrecsanyi 2007), but if they did (e.g. Grafmiller 2014 in Model 2), *s*-genitives are usually more likely if the possessor has been mentioned before.
- In a similar fashion, high levels of possessor thematicity, the degree to which the possessor in question constitutes a major topic of the text measured here as the relative frequency of mentions of the possessor head lemma throughout the corpus text, also facilitate *s*-genitive use (Osselton 1988).
- Length difference, here defined as length of the possessor phrase minus the length of the possessum phrase in number of characters, allows us to measure the effect of end-weight (Behaghel 1909) in genitive choice. End-weight is usually the second most important constraint in the genitive alternation (see Rosenbach 2005 for an in-depth comparison of the effects of animacy and syntactic weight on the genitive alternation); it causes speakers to use the variant that places the longer constituent after the shorter one. We therefore expect to see more *of*-genitives with positive values (i.e. when the possessor is longer than the possessum) and more *s*-genitives with negative values.
- Previous choice enables us to measure the degree of persistence in genitive choice. Szmrecsanyi (2006) has compared two types of persistence, (i) the influence of a previous mention of the genitive marker *of*, and (ii) the influence of the choice made in the previous interchangeable case. He concluded that in the genitive alternation, the latter (i.e.  $\alpha$ -persistence) is “vastly more powerful” (Szmrecsanyi 2006: 107) than the former, which is why we focus on  $\alpha$ -persistence here.
- Finally, type-token ratio (TTR) of the immediate context (i.e.  $\pm 100$  words) is a measure of lexical density; it has been shown that the *s*-genitive is preferred in lexically dense environments (e.g. Hinrichs & Szmrecsanyi 2007).

A summary of the predictors and their corresponding levels (and, where useful, their frequencies) is provided in Table 2.

### 2.1.2 Statistical analysis

In order to prepare the above data for a MuPDAR analysis, we did some initial exploration of the data. This included tabulating and plotting the data to determine whether variables needed to be transformed or variable levels needed to be conflated, etc.

Table 2. Annotation scheme

Predictor	Levels	Example (where applicable)
Possessor animacy (Animacy)	<i>animate1</i> <i>animate2</i> (animals) <i>collective</i> <i>inanimate</i>	<i>her husband</i> <i>the reef fishes</i> <i>the society</i> <i>the agreement</i>
Possessor definiteness (Definiteness)	<i>definite</i> <i>indefinite</i>	<i>the president</i> <i>poverty or prosperity</i>
Final sibilancy of the possessor (FinSib)	<i>absent</i> <i>present</i>	<i>the government</i> <i>its dominance</i>
Possessor givenness (Givenness)	<i>given</i> <i>new</i>	– –
Possessor thematicity (Thematicity)	0 to 100	–
Length difference (LengthDiff)	–155 to 216	Positive: <i>the [absence] of [a viable alternative]</i> Negative: <i>[China]'s [long-term-prospects]</i>
TTR	0.471 to 0.980	Low TTR: <i>In the [course] of [our conversation] I told him that our Singapore company manufactured picture tubes in Singapore. I told him that the TV sets from Singapore would have picture tubes made in Singapore (ICE-SIN:S2A-061)</i> High TTR: <i>Though news of Windows 3.1's release may bring plenty of Windows enthusiasts together for some hearty discussion, but your ranking of this product over version 3.0 is really very much dependent upon [the individual]'s [requirements, needs and computing environment]. (ICE-SIN:W2B-031)</i>
Previous choice (PrevChoice)	<i>none vs. of vs. s</i>	–

As a result of this exploration,

- the variable Animacy was recoded to only three levels: *humanimate* (conflating *animate1* and *animate2*), *collective*, and *inanimate*;
- the variable LengthDiff was logged to the base of 2 such that positive values were just logged (i.e., a value of 16 became 4) whereas negative values were converted to positive ones, then logged, and then multiplied with  $-1$  (i.e., a value of  $-16$  became  $-4$ );
- the variable Thematicity was changed to Thematicity<sup>0.25</sup> (because of its extreme skew);

In addition, for  $R_1$  on the BrE90 data we decided to fit all numeric predictors as orthogonal polynomials to the second degree (to allow for the possibility that a numeric predictor's effect is not a straight, but a curved line); also, we added varying intercepts by file to the regression model – since this already led to occasional convergence problems, a more complex random-effects structure was not explored. The regression model we used therefore included all predictors but, for simplicity's sake, no interactions.

The results were quite encouraging: the model was highly significant ( $LR = 1422.2$ ,  $df = 46$ ,  $p < 0.001$ ), accounted for a fairly large proportion of the data ( $R_m^2 = 0.54$ ,  $R_c^2 = 0.59$ ), and came with a good classification accuracy (accuracy = 82.5%,  $C = 0.9$ ); we therefore proceeded with the analysis and applied the regression model to the SinE90 data (without random effects).

There, too, the model performance was good with a high accuracy (80.2%) and good classificatory power ( $C = 0.86$ ). Thus, in our final step, we created a variable BrElike which captured for every SinE90 choice whether it was what a BrE90 speaker (speaker of BrE in the 1990s) would have been predicted to use and used it as a dependent variable in  $R_2$ . To identify what might be the best model, we employed the following stepwise model-checking procedure:

- our first model involved all main and random effects from  $R_1$ ;
- we then checked (i) all predictors in the model for how much their deletion from the model would improve *AIC* (a widely used statistic to compare regression models) compared to the current model and (ii) all predictors not in the model as well as all their pairwise interactions for how much their addition to the model would improve *AIC* compared to the current model;
- we then deleted or added the predictor that would result in the best improvement of *AIC*, but only if this did not lead to too high degrees of overdispersion or multicollinearity (as operationalized by *VIFs*  $\geq 15$ ).

The final model we arrived at was again highly significant ( $LR = 240.01$ ,  $df = 38$ ,  $p < 0.001$ ), accounted for a fairly large proportion of the data ( $R^2_m = 0.55$ ,  $R^2_c = 0.56$ ), and came with a good classification accuracy (accuracy = 83.7%,  $C = 0.83$ ); incidentally and as is obvious from the above  $R^2$ -values, the varying intercepts contributed virtually nothing to the model: a model with them led to less than 0.5% changed predictions. In the following section, we will interpret selected results from this  $R_2$ .

As in many previous MuPDAR analyses, we are not discussing all significant interactions here to save space and for an important additional reason to be discussed below; the significant interactions we leave out are those we do not return to in Section 3: Animacy  $\times$  LengthDiff, Thematicity  $\times$  FinSib, Givenness  $\times$  Definiteness, Givenness  $\times$  PrevChoice, TTR  $\times$  Definiteness, and Thematicity  $\times$  LengthDiff; the visualizations we provide are plots of predicted probabilities of BrE-like choices (as lines for numeric predictors and as predicted means for categorical predictors on the  $x$ -axis, both with 95% confidence intervals).

## 2.2 Results of $R_2$

### 2.2.1 *FinSib* $\times$ *Animacy*

We begin by discussing the effect of *FinSib*  $\times$  *Animacy*, shown in Figure 2 with *FinSib* on the  $x$ -axis and the levels of *Animacy* represented in different colors of the lines and points. The results show that in the unmarked case of the possessor not ending in a sibilant (i.e. the left part of the plot), *Animacy* does not matter much and the SinE90 speakers behave like the BrE90 speakers most of the time. However, when the possessor does end in a sibilant (i.e. the right part of the plot), then the SinE90 speakers are very BrE90-like only with inanimate possessors, but deviate much more from BrE90 speakers with humanimate and collective possessors, i.e. possessors that are humans/animates or can be metaphorically seen as humans (i.e. the collectives). To fully appreciate these findings, it is instructive to explore  $R_1$  for guidance on what the choices of the BrE speakers are or, in an alternation as well studied as this one, to consider the large amount of previous work.  $R_1$  for BrE in the 1990s predicts *s*-genitive usage if the possessor is humanimate, both when a final sibilant is present or absent. Example (2), which contains a humanimate possessor that ends in a final sibilant, thus constitutes a representative example of 1990s BrE genitive genitive choice.

- (2) Brent councillor Bill Duffin, who followed the case closely, said that he was particularly delighted with the judge's decision. (ICE-GB, W2C-011)

Since Figure 2 shows that speakers of 1990s SinE are more likely than not to deviate from the BrE choice of an *s*-genitive with humanimate possessors with a final sibilant and opt for the *of*-genitive instead, i.e. *say/write he was particularly delighted with the decision of the judge*.

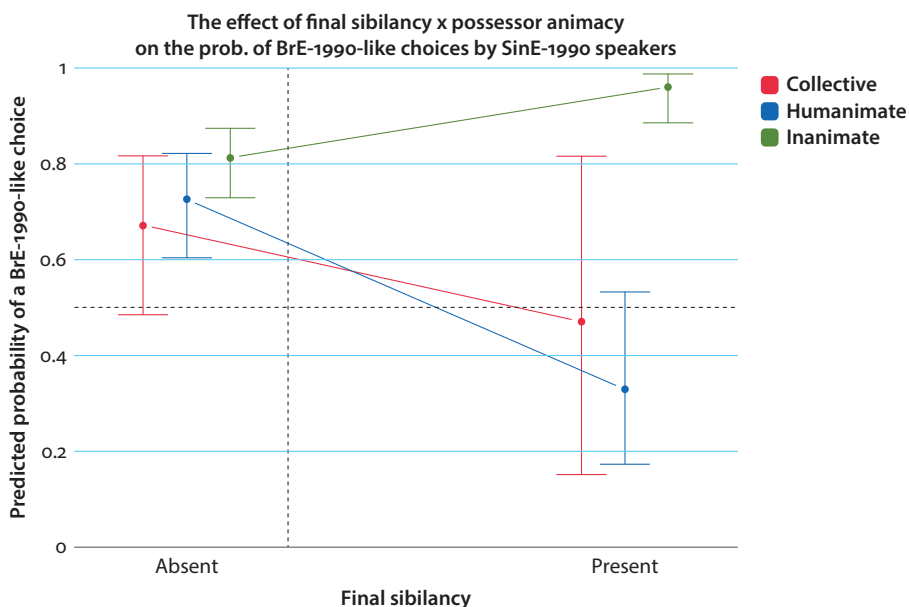


Figure 2. Predicted probabilities of BrE-like choices by SinE speakers: FinSib  $\times$  Animacy

### 2.2.2 *LengthDiff* $\times$ *FinSib*

The next significant interaction to be discussed is *LengthDiff*  $\times$  *FinSib*, which is represented in Figure 3. *LengthDiff* is shown on the *x*-axis (with a vertical dashed line representing its median; the predicted probability of SinE90 speakers making the BrE90-like choice is on the *y*-axis (with a horizontal dashed line at 0.5); the red and turquoise lines and confidence bands represent the predicted probabilities for the combinations of length differences and the pre-/absence of final sibilants; the red and turquoise points around  $y = 0$  and  $y = 1$  represent the non-BrE90-like and BrE90-like choices made by the SinE90 speakers respectively.

Figure 3 shows that, in the unmarked case – i.e. when the possessor does not end in a sibilant – then the SinE90 speakers make BrE90-like choices in particular when the possessor and the possessed differ in length, i.e. when *LengthDiff* gives a strong short-before-long cue, but when *LengthDiff* is around 0, then SinE90 speakers differ from the BrE90 speakers most. However, in the marked case of possessors with final sibilants, SinE90 speakers behave like BrE90 speakers only when the possessor is longer than the possessed (by using *of*-genitives) but they switch to *s*-genitives later than the BrE90 speakers, namely only when the possessum becomes much longer than the possessor. In other words, the presence of a sibilant seems to override the length-based recommendation unless the latter becomes really strong.

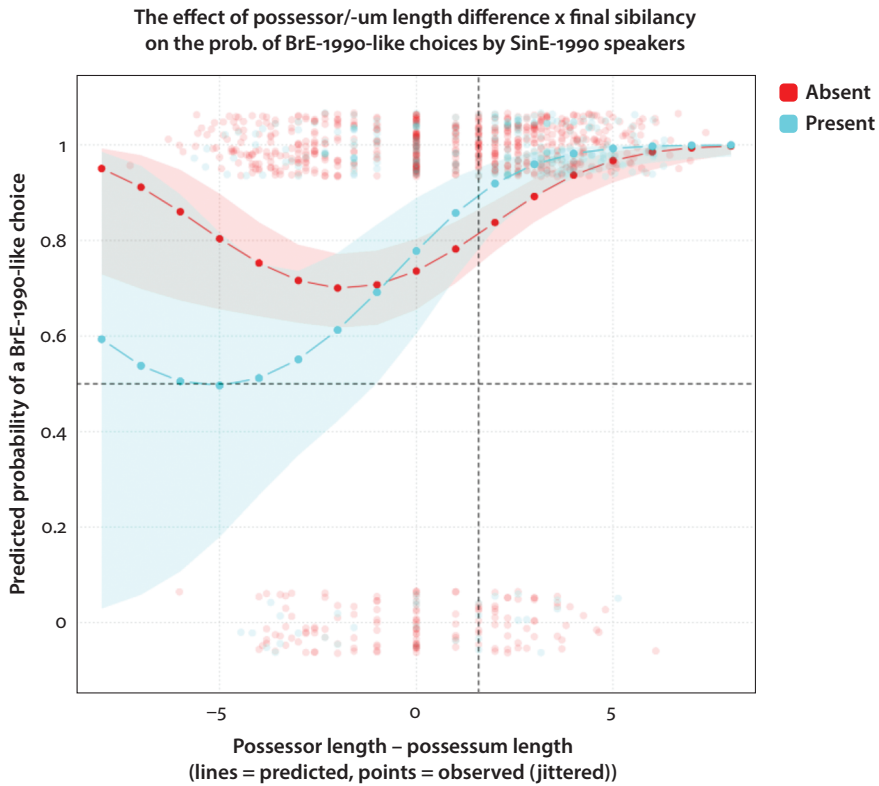


Figure 3. Predicted probabilities of BrE-like choices by SinE speakers:  
LengthDiff  $\times$  FinSib

### 2.2.3 LengthDiff $\times$ Definiteness

Figure 4 shows the corresponding (and incidentally extremely similar) results plot for LengthDiff  $\times$  Definiteness. When the possessor is definite, the SinE90 speakers make BrE90-like choices in particular when the possessor and the possessum differ in length, but not when they are about equally long. However, when the possessor is indefinite, SinE90 speakers again only behave like BrE90 speakers when the possessor is longer than the possessum. Put differently, only when the possessum is considerably longer than the possessor do the SinE speakers respond to short-before-long and switch to the overall less frequent *s*-genitive.

### 2.2.4 TTR $\times$ Animacy

The final effect to be discussed in this section is TTR  $\times$  Animacy as shown in Figure 5. Even disregarding for the moment the very wide confidence bands, this effect is hard to interpret. Essentially, it shows that SinE90 speakers use collective



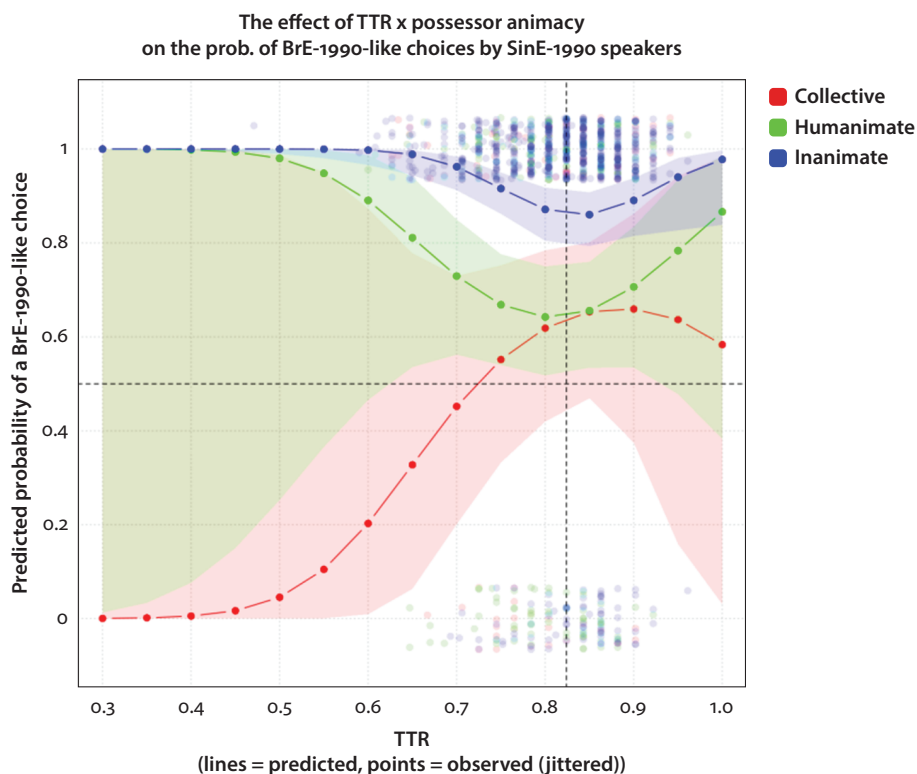
**Figure 4.** Predicted probabilities of BrE-like choices by SinE speakers:  
LengthDiff  $\times$  Definiteness

possessors most like BrE90 speakers in lexically complex texts whereas they use humanimate and inanimate possessors least like BrE90 speakers in texts of average lexical complexity; it is hard to make sense of how this might come about – however, as we will see below, one may not have to ...

### 2.3 Discussion

The analysis as discussed so far provides some clear evidence for how SinE90 speakers' genitive choices differ from those that BrE90 speakers would make. Maybe most notably, they point to different degrees of sensitivity of SinE90 speakers to the tendency of short-before-long, which seems to be stronger in BrE90 speakers but can be rendered less important to the SinE speakers when other factors – such as FinSib or Definiteness – are at their marked/less frequent levels (*present* and *indefinite* respectively). Also, we find that SinE90 speakers are most BrE90-like





**Figure 5.** Predicted probabilities of BrE-like choices by SinE speakers: TTR × Animacy

with inanimate possessors even though Animacy interacts with other predictors. In addition and on a slightly more abstract/methodological level, we find that, for this case at least, speaker-specific variability is surprisingly negligible and that it is necessary to abandon the assumption that numeric predictors' behavior is best modeled with a straight line, which is embedded in most regression analyses in the past but not supported here at all.

A 'normal' paper on structural nativization/indigenization would now probably launch a discussion of how these factors testify to SinE's emancipation from the historical source variety, given the significant differences in the genitive choices of BrE90 and SinE90 speakers. However, we will not pursue this route – rather, we believe it is incumbent upon us to call into question two related working assumptions that most studies of this type – and that includes our own, as we wish to highlight emphatically – have been making, which are conceptually quite similar to the sociolinguistic notion of 'apparent time'.

First, nearly all corpus-linguistic studies of structural nativization in general and of Moag's/Schneider's model in particular have assumed that the diachronic process

of nativization/emancipation of one variety (such as SinE) from another (such as BrE) can be studied or modeled on the basis of synchronic data. In sociolinguistics, the assumption is made that even if we sample language data synchronically, i.e. at one point in time, we can still study diachronic processes by sampling speakers from different age groups. In a similar vein, studies of structural nativization often rely on synchronic corpus data (e.g. from the International Corpus of English, where, however, information on speaker age is only rarely available) and claim to study the diachronic process of nativization because (i) BrE is the *historical* source variety of SinE (i.e. they are the analogue to older speakers in apparent-time sociolinguistic studies) and (ii) the varieties studied are from different stages of Schneider's evolutionary model (i.e. they are the analogue to differently younger speakers in apparent-time sociolinguistic studies).

Second, this first assumption implies the assumption that language patterns are relatively stable after adolescence, which is what allows the different age groups from a synchronic corpus to 'stand in' for real diachronic data. In synchronic structure-oriented studies of postcolonial Englishes, this stability is usually implicitly and generally for the lack of feasible empirical alternatives assigned to the historical input variety BrE since it is assumed that the historical source variety to which postcolonial Englishes are compared has not undergone (substantial/significant) changes during the time period in which the postcolonial English in question 'has been nativizing'. For instance, the historical input variety to what is current SinE is of course not current BrE but the BrE from the 19th century; that in turn means any comparison between current SinE and current BrE profiling structural differences as structural nativization in SinE kind of *has* to rely on the assumption that current BrE is not significantly/substantially different from BrE then.

As with the discussion surrounding apparent-time sociolinguistics and the widespreadness of these two assumptions, they are controversial, to put it mildly, and given the many studies that have shown differences between, say, Brown and Frown or LOB and FLOB, for many phenomena (e.g., Mair 1995, 2002; Hinrichs & Szmrecsanyi 2007), it does not even seem reasonable anymore to try and sell the above two assumptions as 'reasonable null hypotheses' – on the contrary, each and every study that documents reliable differences between, say, LOB and FLOB, adds more evidence against these two assumptions that are so fundamental to most corpus-based studies of structural nativization.

True, via the integration of contemporary BrE corpora as reference data, synchronic studies of structural nativization by design theoretically account for diachronic changes within BrE, but interpretations of findings generally do not consider diachronic variability of BrE a (noteworthy) factor. Synchronic structural differences between contemporary BrE and a given postcolonial English tend to be viewed as manifestations of structural nativization in this postcolonial English,

while the alternative interpretation – stability in a postcolonial English and development in BrE – is only rarely considered. Also with SinE – a postcolonial English in the phase of endonormative stabilization or beyond (see Schneider 2007: 155–261) with structural particularities on all linguistic levels – this interpretation of said synchronic structural differences as the result of nativization processes can be adequate for a number of products of structural nativization, i.e. first and foremost in cases where the assumption of BrE stability is valid. Based on e.g. the Singaporean and British components of the International Corpus of English, the *kena* passive (cf. Fong 2004: 98) instantiating a categorical difference in voice realizations between the historical input and its postcolonial English is undoubtedly a result of structural nativization because this option is not available in present-day BrE or, in other words, because the absence of the *kena*-passive is stable in BrE.

However, when the focus shifts from categorical choices to factor-driven quantitative preferences of structures (e.g. *of*- vs. *s*-genitive) available both in the historical input and postcolonial variety, what is sorely needed is the analog to real-time sociolinguistics, i.e. studies of structural nativization that are not based on ‘apparent/simulated’ diachronic data, but actual diachronic data. Two potential scenarios to trace structural nativization seem empirically desirable: (a) modeling the structural development of this feature over a certain period of time up to the present day via a diachronic corpus of the postcolonial English concerned and then identifying whether and which developments in the postcolonial English are or are not compatible with a present-day BrE model of said feature or (b) producing diachronic models for both the postcolonial English and BrE to detect at what points certain factors and resulting structural choices converged or diverged. The next section following approach (a) is devoted to be the first study to exemplify the protocol we submit is required to put structural nativization studies onto a (more) solid empirical footing.

### 3. A diachronic MuPDAR analysis of SinE

In this section, we discuss a truly diachronic analysis of how SinE90 has changed over the past and how those results relate to the results from the previous section on how SinE90 differs from BrE90. Specifically, we add to our above corpus data from additional data representing SinE from the (late) 1950s and the 1960s; these are then annotated in the same way as the SinE90 data and subjected to two analogous MuPDAR analyses, namely SinE50 → SinE60 and SinE60 → SinE90. The period thus covered captures – according to Schneider (2007: 155) – two evolutionary developments in SinE, i.e. the transition from the phase of exonormative stabilization to nativization (approximately 1945–1970s) and that from nativization towards

endonormative stabilization. A sociocultural perspective on the diachronic span of the data thus led us to assume that noteworthy structural changes – also with regard to the genitive alternation – reflecting said evolutionary progress should have occurred in the periods we chose to study. In the next section, we describe our methods, but we keep this part brief given how it overlaps with that of Section 2.1.

### 3.1 Methods

#### 3.1.1 *Generating and annotating the concordance data*

The genitives in question were extracted from a preview version of the *Historical Corpus of Singapore English*; this corpus of historical Singapore English (see Hoffmann et al. 2012, Hoffmann 2013) will eventually feature written texts representing Standard Singapore English (as opposed to Singlish) from 1951 to 2011 sampled in 10-year intervals. The dataset will be based on four major text categories – informative prose (general and academic), imaginative prose, newspapers and speeches – with potential additions from non-public material such as school essays, letters, computer-mediated communication, etc. Although there is evidence that certain constraints of genitive choice might weigh differently in certain sub-genres (Graffmiller 2014), there is no evidence for aggregate differences between spoken vs. written language in previous cross-varietal investigations of genitive choice (Szmrecsanyi et al. 2016; Heller et al. 2017). Therefore, we felt confident in assuming that differences in corpus compilation would not systematically affect our results in this case. Our searches and annotations were performed in the same way as above; the new data set's composition is shown in Table 3; to arrive at a reasonable sample size, all modes/register had to be included.

**Table 3.** Overview of our data, second case study

	<i>of</i> -genitive	<i>s</i> -genitive	Total
SinE 1950	354	120	474
SinE 1960	970	345	1315
SinE 1990	712	304	1016
<b>Total</b>	<b>2036</b>	<b>769</b>	<b>2805</b>

#### 3.1.2 *Statistical analysis*

On the whole, the statistical analyses were performed in the same way as above, the only difference being that now there were two MuPDARs: SinE50 → SinE60 and SinE60 → SinE90. We therefore do not reiterate the description of the variable transformations and the model-fitting parameters but turn to the overview results right away.

The first diachronic MuPDAR study, SinE50 → SinE60, yielded a highly significant model ( $LR = 285.95$ ,  $df = 46$ ,  $p < 0.001$ ), accounted for a very large proportion of the data ( $R^2_m = 0.88$ ,  $R^2_c = 0.91$ ), and came with a good classification accuracy (accuracy = 90.5%,  $C = 0.95$ ); we therefore proceeded with the analysis and applied the regression model to the SinE60 data (without random effects). There, too, the model performance was good with a high accuracy (83.3%) and good classificatory power ( $C = 0.86$ ). Thus, in our final step, we created a variable SinE50like which captured for every SinE60 choice whether it was what a SinE50 speaker would have been predicted to use and used it as a dependent variable in this MupDAR's  $R_2$ . That  $R_2$  model was arrived at in the same way as in Section 2.1.2 above and yielded a highly significant final model ( $LR = 302.36$ ,  $df = 36$ ,  $p < 0.001$ ) with solid  $R^2$ s ( $R^2_m = 0.55$ ,  $R^2_c = 0.57$ ) and accuracies (accuracy = 86.2%,  $C = 0.86$ ).

The second diachronic MuPDAR study, SinE60 → SinE90, yielded a highly significant model ( $LR = 685.58$ ,  $df = 46$ ,  $p < 0.001$ ), accounted for a large proportion of the data ( $R^2_m = 0.6$ ,  $R^2_c = 0.67$ ). This model, too, came with a good classification accuracy (accuracy = 88.2%,  $C = 0.93$ ) and we proceeded by applying this  $R_1$  to the SinE90 data. There, too, the model performance was good (accuracy = 80.5%) with good classificatory power ( $C = 0.86$ ). Thus, in our final step, we created a variable SinE60like which captured for every SinE90 choice whether it was what a SinE60 speaker would have been predicted to use and used it as a dependent variable in this MupDAR's  $R_2$ . The final model from that  $R_2$  then was highly significant ( $LR = 217.81$ ,  $df = 35$ ,  $p < 0.001$ ) and predicted the SinE90 choices well ( $R^2_m = 0.57$ ,  $R^2_c = 0.58$ , accuracy = 82.2%,  $C = 0.82$ ).

The above summaries of the two MuPDAR analyses show that there are significant effects but, as usual, the most relevant results are of course the significant effects that show how (i) SinE60 speakers' choices differ from SinE50 speakers' choices – the first (truly) diachronic comparison – and how (ii) SinE90 speakers' choices differ from SinE60 speakers' choices – the second diachronic comparison. In an attempt to highlight in particular how the real diachronic analysis differs from the apparent diachronic analysis, we found it useful to adopt the language of classification tasks, i.e. the notions of true/false positives and true/false negatives. Specifically, the possibilities are that

- BrE90 → SinE90 returns an effect which is also found in at least one of SinE50 → SinE60 or SinE60 → SinE90; this would be a true positive (*tp*); note that *true positive* may at this point be too flattering a label since an effect may be found as specified, but that does not imply, as we well see, that it is the same effect;
- BrE90 → SinE90 returns an effect which is found in neither SinE50 → SinE60 nor SinE60 → SinE90; this would be a false positive (*fp*);

- BrE90 → SinE90 returns no effect, but at least one of SinE50 → SinE60 or SinE60 → SinE90 finds it; this would be a false negative (*fn*);
- none of the three MuPDARs finds an effect, i.e. some effect never makes it through the model selection process; these would be true negatives.

We are not going to say much about true negatives but will of course discuss examples from each of the other three possible outcomes. Table 4 shows the effects we will discuss and in which MuPDAR they were found.

**Table 4.** Overview of effects to be discussed

Effect	SinE50 → SinE60	SinE60 → SinE90	BrE90 → SinE90	Type
3.1.3 LengthDiff × FinSib	X		X	<i>tp</i>
LengthDiff × Definiteness		X	X	<i>tp</i>
FinSib × Animacy	X	X	X	<i>tp</i>
TTR × Animacy			X	<i>fp</i>
Definiteness × Animacy	X	X		<i>fn</i>
LengthDiff × PrevChoice	X			<i>fn</i>
TTR × PrevChoice		X		<i>fn</i>

### 3.2 Results part 1: ‘Positives’

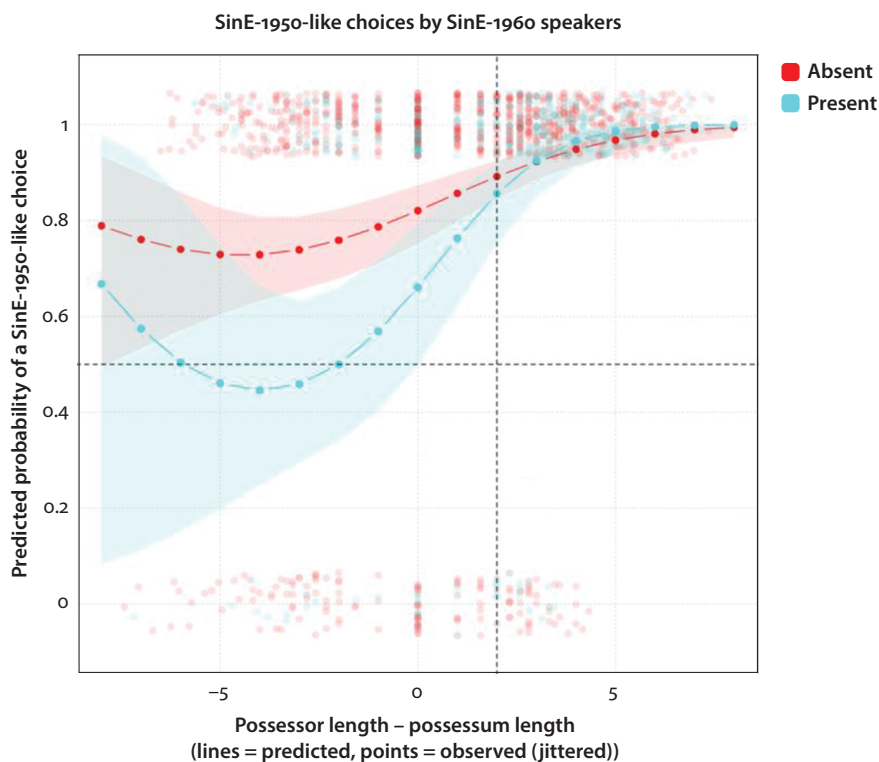
In this section, we revisit the first four results of Table 4.

#### 3.2.1 *LengthDiff* × *FinSib*

Figure 6 shows the result of *LengthDiff* × *FinSib* found in  $R_2$  of SinE50 → SinE60, which is indeed very similar to the same effect of BrE90 → SinE90 in Figure 1. However, even this is not necessarily good news for the apparent-time MuPDAR because it indicates that the BrE90 → SinE90 analysis lacks temporal resolution and it is the real-time MuPDAR that returns the more precise location (in time) of the effect. Put differently, the presence of this effect in the apparent-time MuPDAR does not permit one to assume when an effect hypothesized to be at work diachronically has taken place.

#### 3.2.2 *LengthDiff* × *Definiteness*

Figure 6 shows the result of *LengthDiff* × *Definiteness* found in  $R_2$  of SinE60 → SinE90; while the confidence bands are wide especially on the left, it is again clear to see that the overall trends are similar.

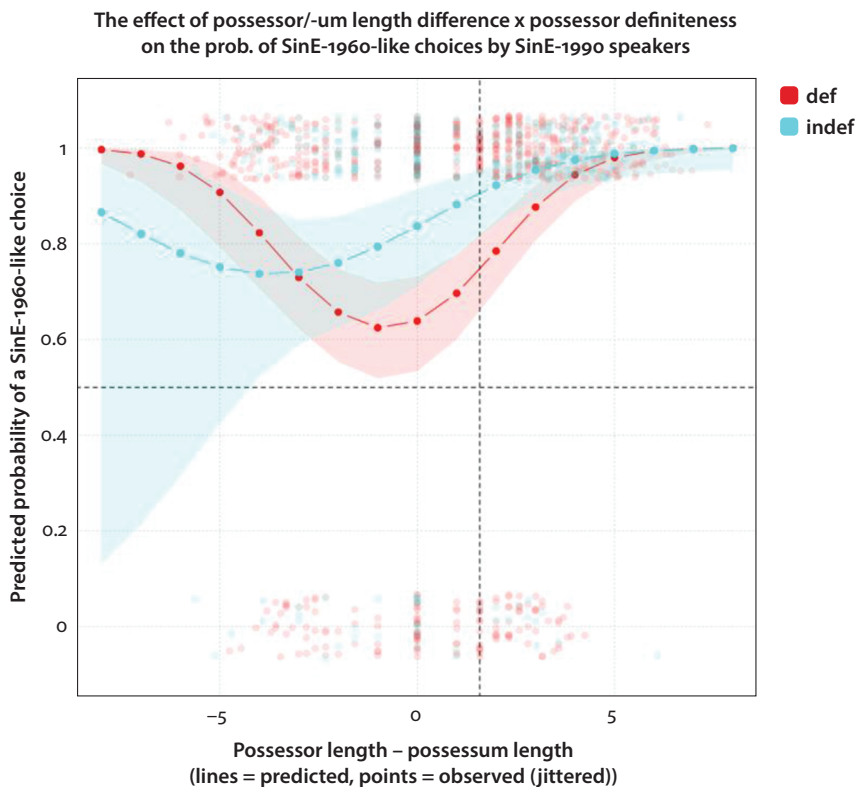


**Figure 6.** Predicted probabilities of SinE-1950-like choices by SinE-1960 speakers: The interaction of LengthDiff  $\times$  FinSib

As in the previous section, this suggests that much of what the BrE90  $\rightarrow$  SinE90 MuPDAR found for this effect is indeed only a development that the apparent-time MuPDAR could not pinpoint more precisely. Put differently, some, but not all, of how the SinE90 speakers differ from the BrE90 speakers in Figure 4 is actually how they differ from their own past, the SinE60 speakers; that also means that the discrepancy between Figure 4 and Figure 7 may well be due to how both SinE varieties involved here differ from BrE90 and/or how BrE has changed over time.

### 3.2.3 *FinSib* $\times$ *Animacy*

The above two effects have demonstrated that sometimes an apparent-time analysis can yield results that are similar to the real-time analysis, but show up in only a part of the time. Let us now turn to an effect where both diachronic time periods include the same interaction as the synchronic analysis; consider Figure 8 and Figure 9 for the different ways in which *FinSib*  $\times$  *Animacy* is manifested in the data.



**Figure 7.** Predicted probabilities of SinE-1960-like choices by SinE-1990 speakers: The interaction of LengthDiff  $\times$  Definiteness

In the SE50  $\rightarrow$  SE60 analysis in Figure 8, we find that SE60 speakers behave pretty much like SE50 speakers for inanimate possessors no matter whether the possessor ends in a sibilant or not; a similar irrelevance of FinSib is found for collective possessors although at a lower level of SE50-likeness. However, with humanimate possessors, SE60 speakers are very different from SE50 speakers when the possessor ends in a sibilant: revisiting the data we see that the SE50 speakers have a much higher proportion of *s*-genitives with humanimates ending in a sibilant (38.6%) than the SE60 speakers (25.8%); interestingly, this difference for humanimate possessors between SinE50 and SinE60 speakers, was also already reflected in the apparent-time MuPDAR in Figure 2.

In the SE60  $\rightarrow$  SE90 analysis in Figure 9, we find that SE90 speakers behave very much like SE60 speakers for inanimate possessors: compare the blue line to that of Figure 2. However, the other two kinds of possessors differ more from what we found in the apparent-time MuPDAR. Without discussing the results in



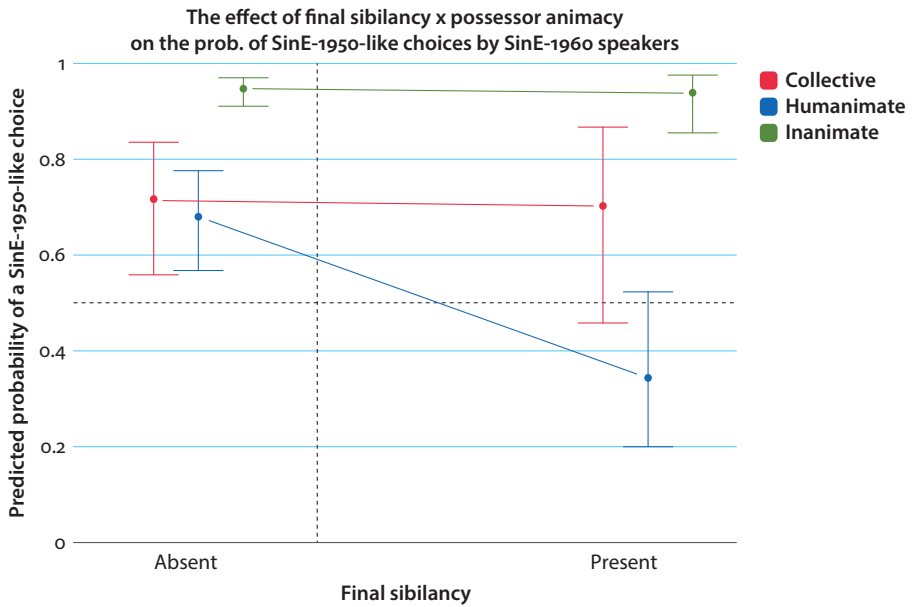


Figure 8. Predicted probabilities of SinE-1950-like choices by SinE-1960 speakers: The interaction of FinSib × Animacy

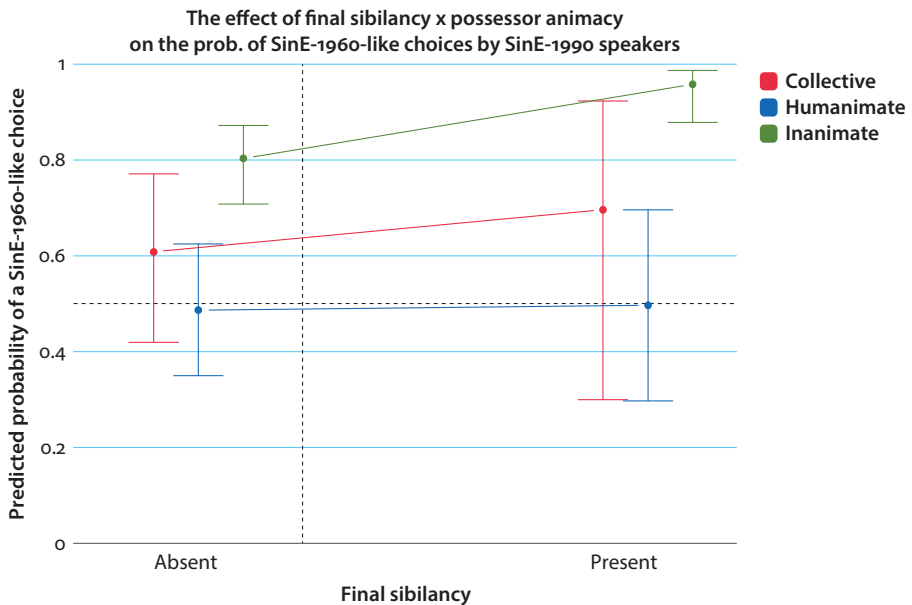


Figure 9. Predicted probabilities of SinE-1960-like choices by SinE-1990 speakers: The interaction of FinSib × Animacy

more detail, it does seem as if the apparent-time MuPDAR is a ‘hybrid’ of sorts of the earlier two ones: the apparent-time MuPDAR gets the collectives’ trend right, but it only happens in SinE from 1960–1990, and it gets the humanimates’ trend right, but that one only happens in SinE from 1950–1960. In sum, while the apparent-time MuPDAR was able to discover the same interactions as the two real-time MuPDARs – which is why we generously called these *true positives*, it is also clear that the real-time MuPDAR provides a more fine-grained resolution on what is happening and when.

#### 3.2.4 *TTR × Animacy*

The last effect is interesting because it is a false positive: it was found in the apparent-time analysis BrE90 → SinE90, but the real-time analyses SinE50 → SinE60 and SinE60 → SinE90 do not support it; while it is always hard to interpret the complete absence of an effect, it does suggest that whatever BrE90 → SinE90 picked up is a truly synchronic difference, but not one that is based on SinE changing over time in its evolutionary stages we analyzed – the exact nature of this would require analyses going beyond the scope of this already lengthy paper.

### 3.3 Results part 2: ‘Negatives’

Let us now turn to some diachronic changes that the apparent-time analysis did not detect, i.e. the false negatives.

#### 3.3.1 *Definiteness × Animacy*

Figure 10 and Figure 11 visualize the interaction Definiteness × Animacy, which was obtained in both real-time analyses.

Comparing the results, it is clear that some diachronic change is discernible: SinE50 and SinE60 speakers behave quite similarly with regard to inanimate possessors and do so regardless of definiteness, but SinE60 and SinE90 speakers are similar only with indefinite inanimate possessors, not with definite ones. Similarly and what is probably the most pronounced change, consider the changes in how humanimate possessors are used: SinE60 speakers use definite humanimate possessors fairly much as the SinE50 speakers do, but are considerably more different with indefinite humanimate possessors – however, SinE90 speakers use humanimate possessors at chance level compared to SinE60 speakers, but regardless of definiteness, which plays no role with them.

Revisiting the original data, we can see that all SinE speakers use *of*-genitives with indefinite humanimate possessors notably more often and particularly so in the SinE60 and SinE90 data, but much less so in the SinE50 data.

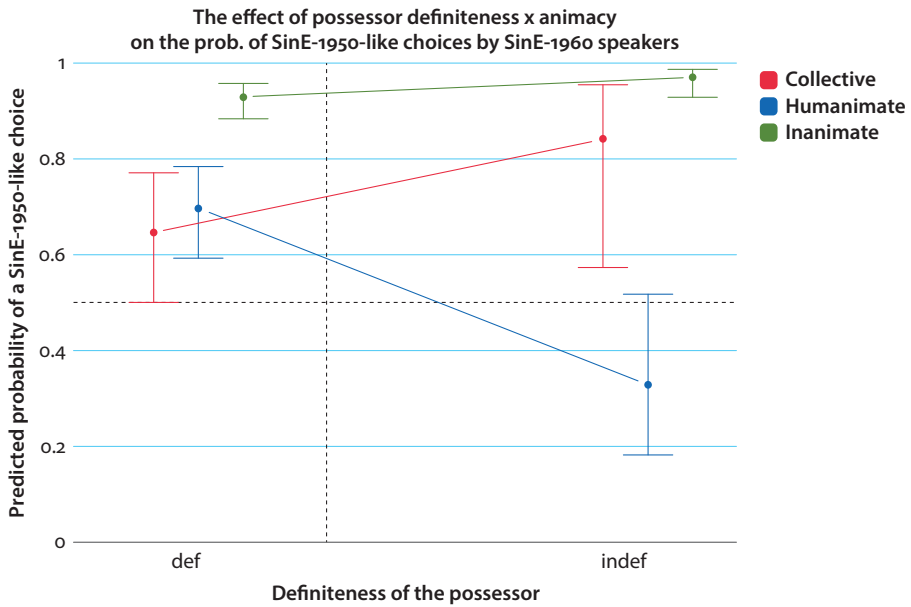


Figure 10. Predicted probabilities of SinE-1950-like choices by SinE-1960 speakers: The interaction of Definiteness × Animacy

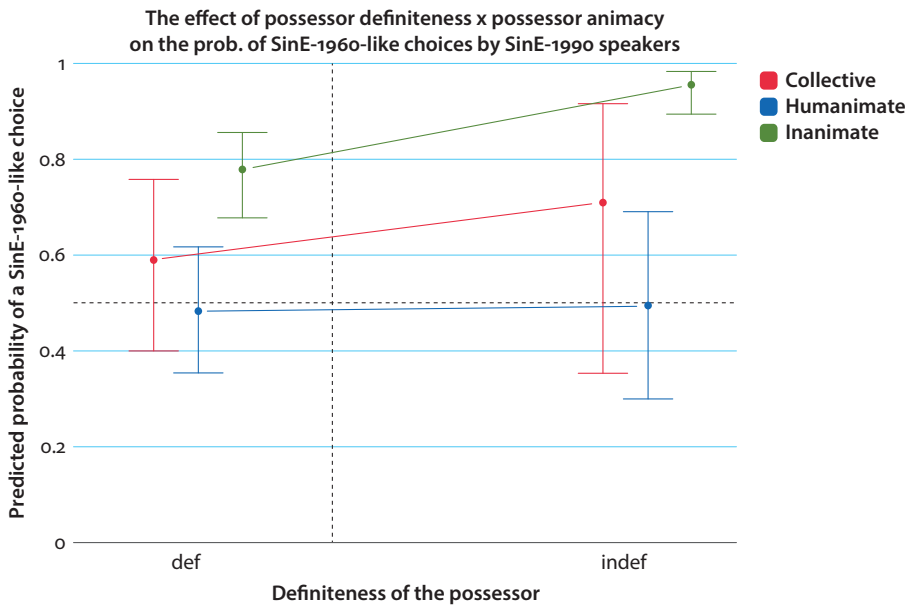
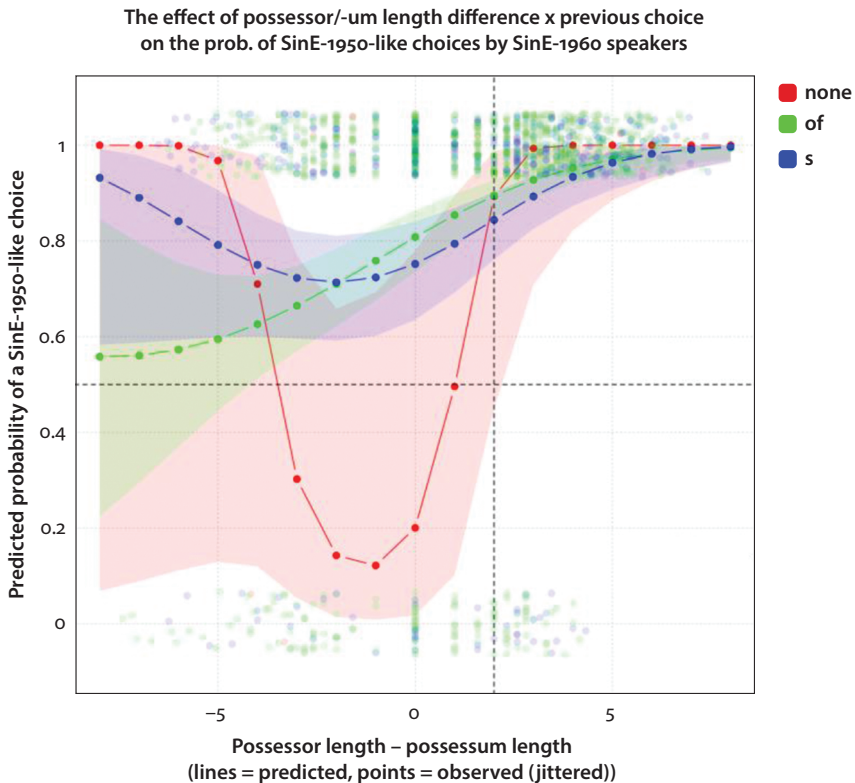


Figure 11. Predicted probabilities of SinE-1960-like choices by SinE-1990 speakers: The interaction of Definiteness × Animacy

While there is undoubtedly more to discuss here, the above does already highlight that the apparent-time analysis fails to uncover patterns in the data that the real-time analysis did see.

### 3.3.2 *LengthDiff* × *PrevChoice*

Figure 12 is yet another false negative, the interaction *LengthDiff* × *PrevChoice* obtained in the first real-time analysis but not in the apparent-time one. The results show that, in the absence of priming (in the rare cases when there is no previous choice), SinE60 speakers conform to short-before-long very much like the SinE50 speakers – it is only when *LengthDiff* makes no strong prediction that they differ considerably. A similar pattern emerges when the previous choice was an *s*-genitive although, there, SinE60 speakers are now much closer to the SinE50 speakers – no doubt in part due to the priming. However, when the previous choice was on *of*-genitive, things are different and SinE60 speakers behave less and less like SinE50 speakers the longer the possessum becomes relative to the possessor.



**Figure 12.** Predicted probabilities of SinE-1950-like choices by SinE-1960 speakers: The interaction of *LengthDiff* × *PrevChoice*

### 3.3.3 *TTR × PrevChoice*

The final effect to be discussed briefly is shown in Figure 13, the interaction *TTR × PrevChoice*, which was only obtained in SinE60 → SinE90. When there is some priming from a previous choice, SinE90 speakers behave a lot like SinE60 speakers but somewhat less so when texts are of average lexical complexity, but when there is no priming, SinE90 speakers behave differently from SinE60 speakers in the most lexically complex texts. (It is worth pointing out that this may be related to the fact that the TTR values in SinE90 are a bit higher on average than those in SinE60, but that difference is so small that it seems practically negligible: difference between means: 0.02, difference between medians: 0.015, both on the TTR scale from 0.39 to 1.

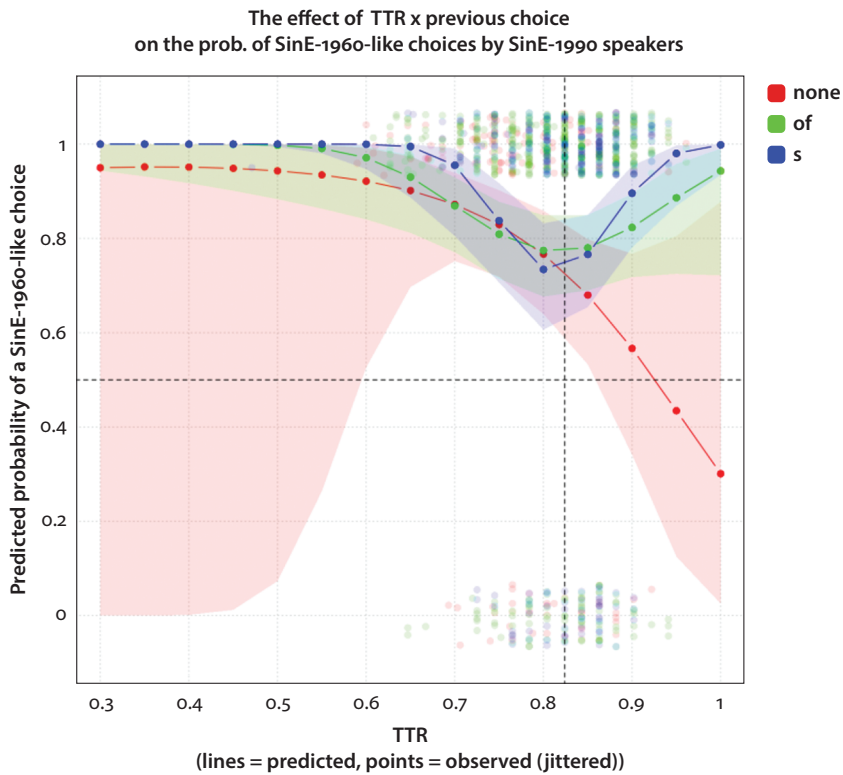


Figure 13. Predicted probabilities of SinE-1960-like choices by SinE-1990 speakers: The interaction of *TTR × PrevChoice*

#### 4. Concluding remarks

To recap, we have performed one MuPDAR analysis that is closely related in spirit and assumptions to how most of the field has been conducting its corpus-based analyses of structural nativization/emancipation of varieties from a historical source variety and we discovered a variety of differences between BrE90 and SinE90. However, we then proceeded to discuss more explicitly than is usually done two central assumptions that underlie virtually all those analyses and that prove to be highly problematic in indigenized-variety research, as they have in fact been in sociolinguistics where a similar problem/conflict – apparent-time vs. real-time research – has been discussed extensively. These assumptions are that (i) diachronic processes can be reasonably enough approximated by synchronic data with certain sampling characteristics and that (ii) the historical source variety changes so little in the time period under consideration that its changes relative to the target variety can be dismissed from consideration (despite much evidence testifying to how BrE has changed over time).

Based upon this logic, we then proceeded to do the indigenized-variety equivalent of real-time analyses and performed two MuPDAR analyses tracking changes within SinE over time and we have seen that the apparent-time analysis produces true positives (though without the added finer temporal resolution of the real-time analysis!), but also false positives (effects that the real-time analysis cannot confirm) and false negatives (effects that only the real-time analysis reveals). Our focus here was methodological so we did not discuss each of the obtained effects in great detail, but it seems clear to us that the results are ‘mixed’ enough to raise serious concerns regarding what seems to be the state of the art in corpus-based indigenized-variety research relating to evolutionary models of the Schneider type, but also more general. This has two central implications.

First, we do not mean to imply that Moag’s or Schneider’s model(s) are flawed. They are abstract sociolinguistic models with largely sociolinguistic classifications and – although they feature structural or lexicogrammatical indicators of evolutionary processes – they do not bear responsibility for how corpus linguists, with their structural or lexicogrammatical interests, decide to operationalize their claims and interpret corpus-based findings. That being said, it would certainly be useful if such models were formulated with a degree of precision that makes it (more) straightforward to arrive at falsifiable operationalizations to test their claims, not to mention predictions.

Second, we also do not mean to imply that all non-real-time analyses of structural nativization are on the wrong track, and we remind the reader that due to the general lack of diachronic data for World Englishes we ourselves have been involved in analyses of the type we warn of here. That being said, it is clear that the

assumptions underlying apparent-time analyses of the type that have been done so frequently are not obviously tenable and that, when tested, the results from such analyses do not obviously get confirmed – on the contrary. Thus, if the field wants to (begin to) make better-founded claims about whether, when, how, and why structural nativization happens, it needs to face the inconvenient facts that (i) the methodological shortcuts we all have been relying on so far are treacherous, to say the least, and that (ii) real diachronic data are required for analysis.

With regard to how to conduct real-time analyses of structural nativization, we also want to emphasize that we do not mean to imply the procedure(s) adopted are the only tenable ones or the obvious best ones – rather, the strongest claim we wish to make with regard to our specific methodological choices – two MuPDARs for three time periods – is that it yields results good enough to caution us. However, other approaches are conceivable and need to be explored. For instance, while we chose to do separate MuPDAR analyses for SinE50 → SinE60 and SinE60 → SinE90, this is not the only (and certainly not the simplest way to proceed). Immediately obvious alternatives would be the following two:

- one overall multifactorial regression on the whole SinE data set with Variant: *of vs. s* as the dependent variable and all independent variables as well as Time: 1950 vs. 1960 vs. 1990 and all their, say, pairwise interactions as predictors;
- a MuPDAR approach of the type {SinE50 & SinE60} → SinE90, i.e. one where R1 is fit on the combined 1950s and 1960s SinE data and R2 is fit with a predictor that separates SinE50 and SinE60.

In other words, we are trying to (i) raise a greater awareness of the fact that nearly all previous structural nativization research is based on the same two assumptions that make apparent-time studies in sociolinguistics risky and (ii) promote some kind of real-time analysis that avoids those problematic assumptions. Consequently, we hope our contribution is that of a – we believe, much needed – wake-up call, one that will inform a hopefully large set of more precise and rigorous contributions to indigenization.

All the above notwithstanding, we do also think that the approach outlined here has a lot of merit and potential. First, to the extent that the results are robust, the way in which the diachronic MuPDAR approach was able to pinpoint the time period at which differences between successive points of time of the same variety can be observed seems to be a promising additional tool to see when processes compatible with nativization take place (to use the most careful language possible). Second, more comprehensive comparisons – different varieties ‘crossed with’ different time periods – may help shed light on how both varieties in question, here BrE and SinE, change over time.

More diachronic studies in the field of World Englishes will also encourage detailed models of language change in postcolonial settings. Moag's (1982, 1992) and Schneider's (2003, 2007) models are invaluable points of departure for further advancing our understanding of the interplay of progressive and conservative forces in postcolonial Englishes. Still, when trying to relate the findings of the present paper to said models, it becomes all the more obvious that their nature is rather sociocultural than more strictly sociolinguistic. Both models assume that lexical innovations occur at earlier stages of varietal development than grammatical ones. More precisely, Schneider (cf. 2007: 56) reserves lexicogrammatical innovations for the phase of nativization, while novel lexical forms can already emerge in the phases of foundation or exonormative stabilization. In the light of the corpus-based evidence presented here, both models would suggest that SinE has already developed local structural flavors to a considerable degree and investigations of Singaporean history, speaker identities, codification processes, attitudes, etc. would show that SinE should (at least) be classified as an advanced endonormatively stabilized postcolonial English (cf. Schneider 2007: 155). More structurally inclined models of diachronic change in World Englishes would, however, seek to complement these sociocultural findings by addressing questions with regard to e.g. agents of language change, the speed of language change across modes and different genres or – as elaborated in the next paragraphs – the equation of evolutionary progress with structural divergence from a historical input variety.

With a view to future studies, it was argued in Section 1.1 that – in the dynamic model of postcolonial Englishes (Schneider 2003, 2007) – past evolutionary progress and current status is evident from the structural profile of a given postcolonial English. A continuation of this line of thought implies that the structural distinctiveness of a postcolonial English will increase as it progresses through Schneider's (2003, 2007) developmental cycle because sociohistorical and/or sociolinguistic advancement is assumed to be reflected in variety-specific/variety-preferential linguistic choices (cf. Schneider 2007: 30–31). In other words, the Dynamic Model rests on the assumption that more evolutionary progress means more structural difference from a historical input variety, which is British English in most cases.

With the availability of diachronic corpus data for postcolonial Englishes, this model assumption is (maybe finally) empirically testable. In this paper, we focused on the congruence (and its absence) of structural findings in real-time compared to apparent-time corpus studies in World Englishes using data from Singapore from the 1950s, 1960s and 1990s and from Great Britain from the 1990s. With complementary British English datasets from the 1950s and 1960s (e.g. via adapting the methodology put forward in Gries & Bernaisch 2016 or Heller, Bernaisch & Gries 2017 for synchronic regional varieties to diachronic scenarios), studies to come will



be in a position to show specifically for Singapore English whether its progress from phase 3 (nativization) to phase 4 (endonormative stabilization) in the 1970s (cf. Schneider 2007: 155) is indeed marked by an increase in structural distinctiveness and – more generally – whether postcolonial Englishes structurally converge with or diverge from their historical input variety as social and sociolinguistic configurations historically re-adjust.

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