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Passive Unaccusatives In L2 English

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PASSIVE UNACCUSATIVES IN L2 ENGLISH

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by

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ABSTRACT

Passive unaccusativity refers to a phenomenon whereby L2 English speakers produce unaccusative verbs in passive constructions. Since unaccusative verbs are a subset of intransitive verbs and thus generally do not passivize, the question of how learners recognize unaccusatives without any overt input distinguishing subsets of intransitives has piqued the interest of many researchers since the late 1970's. Oshita's (2000) claim that passive unaccusatives are NP-movement markers is now a widely accepted claim; however, studies of more general characteristics of intransitivity have revealed close parallels between passive unaccusatives and other well-documented phenomena. The aim of this paper is to show that passive unaccusativity patterns with these other more general phenomena. A corpus of essays written by L2 English speakers was used for this purpose, yielding mixed results. Oshita's claim was not supported while predictions given more general characteristics of intransitive verbs were only minimally supported.

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Chapter 1

INTRODUCTION

Passive unaccusativity (henceforth PA) is a notable feature of L2 English which is represented in the following sentences:

(1)   a. The person is arrived.

        b. Bad drivers are existed.

        c. This was happened to me before.

PAs have been found in studies by Hubbard (1985), Zobl (1989), Montrul (1998), Montrul (2005), Pae et al. (2015), and Oshita (2000), among many others. Note that English does not allow for the passivization of intransitive verbs such as 'arrive'. For example:

(2)   a. The mouse ate the cheese.

        b. The cheese was eaten.

        c. The ship arrived at port.

        d. *The ship was arrived at port.

The interesting thing however is that only a subset of intransitives are commonly passivized in L2 English: unaccusatives. Along with unergativity, these two sets of verbs are the objects of split intransitivity, a set of theories about the nature of intransitive verbs. (3a-c) and (3d-f) give examples of unaccusatives and unergatives, respectively:

(3)   a. The person went to the store.

        b. The bird descended to the grounded.

        c. The smoke rose over the city.

d. I worked today.

e. The bridge yielded under the weight of the car.

f. The ball rolled down the hill.

Since there is likely no comparable input, and L2 speakers whose L1s give no reason to suspect that transfer is an important factor (Korean, Japanese, etc) are known to produce sentences like (1), it appears highly likely to be the case that L2 speakers have implicit knowledge of lexical and syntactic factors and the interactions thereof.

Crosslinguistic research (Sorace 2001, Sorace 2004) has revealed a spectrum with verbs denoting externally caused, non-motional processes on one end and verbs denoting spatial or temporal boundedness (telicity) on the other, with many in between which are considered peripheral to one or the other category, whereby the former choose HAVE and the latter choose BE. This often is regarded as something having to do with the interface of syntax and lexical semantics, i.e. "auxiliary selection is semantically determined and syntactically encoded" (Leven and Rappaport Hovav, 1995), although others ground their explanation on either syntax or semantics. Additionally, a number of experimental studies have provided evidence for speaker knowledge of split intransitivity in the field of acquisition (L1 and L2), including L2 English (Montrul, 2005), and L2 Japanese (Sorace and Shomura, 2001).

In literature concerning PAs, many seem to agree with Oshita (2000), however, who claims that the passive morphology is a marker of NP-movement. While he reviews a number of explanations, he only seriously considers two: passive morphology as an NP-movement marker and passive morphology as a 'lack of a logical subject' marker, stating that the two possibilities are mutually exclusive. In conclusion, he says that:

"the cause of non-target marking of NP-movement can quite reasonably be attributed to a salient characteristic of the target English. Since conspicuous characteristics of a target language should be equally observable to learners, this can explain why 'passive' unaccusatives are produced by speakers with no L1 structure comparable to the be + en." (Oshita (2000), pg. 317)

The problem with the NP-movement marking analysis is that it is disjoint from a wealth of experimental and corpus evidence concerning the very nuanced issue which is split intransitivity; it appears to miss some key observations, covering over issues such as the division of labor between syntactic processes and semantic properties associated with unaccusativity. In the wider context around PAs (split intransitivity), studies of variability in unaccusativity and its counterpart, unergativity, have been conducted in other languages such as Italian (Sorace, 2000), Spanish (Montrul, 2005), and Dutch (van Hout, 2004), including research in adult L1 grammars as well as those being acquired.

In this paper, I wish to reframe the question of PAs in terms of the wider context of research in unaccusativity. First, section 2 will give an overview of the unaccusativity literature. I will then argue that Oshita's (2000) conclusion is not sufficiently grounded theoretically and make my own prediction about what to expect from a corpus of L2 English given the aforementioned body of literature, which is that, in general, telicity and PA are not independent, and specifically that telicity positively correlates with PA (more strongly telic predicates are more likely to passivize). In addition, I will test Oshita's (2000) hypothesis that 'there' is more likely not to occur with BE than otherwise. A review of the data and the procedure to be used shall be given and then analysis, followed by a discussion and conclusion.

Chapter 2

LITERATURE REVIEW

2.1   MAIN BODY OF STUDIES OF UNACCUSATIVITY

2.1.1   INTER- AND INTRA- LINGUISTIC VARIATION

Unaccusativity came into focus after Perlmutter's (1978) Unaccusative Hypothesis, which states that there are two classes of intransitive verbs, unergative and unaccusative. There is much controversy over the nature of split intransitivity with some linguists saying that the phenomenon is purely semantic, others saying that it is purely syntactic, and still others which allow for both, as is exemplified by Rappaport and Hovav's (1995) claim that "split intransitivity is semantically determined and syntactically encoded". Data covering split intransitivity includes a complex mixture of syntactic and semantic facts which generally point to two kinds of features, argument structure and semantic aspect. In regard to their syntactic properties, unaccusatives pertain to intransitive verbs whose sole argument has features very much like the direct object of transitive verbs, and thus is believed to be generated VP-internally. The subject of unergatives, on the other hand, behaves like the subject of an transitive verb and thus is believed to be generated VP-externally. The argument structure is often described as follows:

(4)   a. NP [$_{\text{VP}}$]

      b. NP$_i$ [$_{\text{VP}}$ t_i]

Semantically, unaccusatives denote telicity in a gradient fashion. In fact, intra- and inter-linguistic variation is attested more often at the periphery of unaccusatives, that is, the most atelic unaccusatives such as exist, seem, etc., than at with core unaccusatives like *arrive*,

go, and *come* (this is the case for Western European languages but not for Japanese; see Sorace and Shomura (2001)). From the other end of the spectrum, there are unergatives, which denote externally controlled, non-motional processes in their most core representatives with internally controlled, motional processes at the periphery. Sorace (2004) demonstrates a spectrum of verbs that can be found inter- and intra- linguistically, which tend to select BE or HAVE with variable strength based on how telic or externally controlled, respectively, the interpretation of the verb is. In regard to unaccusatives, different degrees of telicity define different sets of verbs which are variable in membership cross linguistically. Change of location verbs like *arrive*, *go*, etc., are said to be the most telic, nearly always selecting BE where there is the possibility of alternation, as follows (from Sorace (2000), pg. 863):

(5) a. Maria e venuta alla festa.

b. Maria is come to the party.

c. Maria came to the party.

(6) a. Marie est arrivee en retard.

b. Marie is arrived late.

c. Marie arrived late.

Verbs like *rise*, while considered telic, do not specify an achievement but only the pursuit of one. These tend to select BE but are more sensitive to atelic environments than change of location verbs (from Sorace (2000), pg. 865).

(7) a. La temperatura e salita/ ?*ha solito improvvisamente

b. The temperature is risen/ has risen suddenly.

c. The temperature suddenly rose.

(8) a. Die Gaste sind/ *haben am Tisch sitzen geblieben.

b. The guests are/ have at the table seated remained.

c. The guests remained seated at the table.

The most peripheral of unaccusatives are statives such as *exist*. These are quite variable cross-linguistically and are sensitive to atelic environments, i.e., they diverge from the typical syntactic behavior of unaccusatives when atelic adverbs such as during or prepositions such as towards (from Sorace (2000), pg. 867).

(9) a. Le livre est / a paru rcemment.

  b. The book is / has appeared recently.

  c. The book recently appeared.

From there, verbs have a more process-type interpretation and a stronger tendency to select HAVE as they approach the other end of the spectrum. They make up the class of unergative verbs.

Sorace and Shomura (2001) discuss a sign of split intransitivity in Japanese, namely the behavior of the word *takusan* ('a lot'). *Takusan* is a modifier which, while relatively free in its distribution, triggers certain interpretations and excludes others depending on whether it appears with an unaccusative or an unergative. Specifically, *takusan* is interpreted as an adjectival modifier to the subject in unaccusative predicates but as an adverbial modifier to the verb in unergative subjects. An example follows (from Sorace and Shomura (2001), pg. 253):

(10) a. Takusan tuita.

  b. A lot arrived.

  c. A lot of people arrived.

(11) a. Takusan oyoida.

  b. A lot swam.

  c. We (they, he, etc.) swam a lot . (not: *A lot of people swam.)

From a more syntax-centric view, an often cited hypothesis is Burzio's Generalization (Burzio, 1986; henceforth, BG), which states:

(12)   Verbs which do not have an external argument cannot assign accusative case.

Obviously, much of the work on the syntax of unaccusativity has a lot to do with this statement. External arguments are subjects, generated somewhere above the head of VP, so unaccusatives, whose subjects have a direct object-like interpretation are thought to acquire a subject through movement of the direct object into [Spec, XP] due to the EPP. The following observation has been made by van Hout (2004) and MacDonald (2008), offered as evidence that the direct object enters into an agreement relation with a functional head somewhere inside an expanded VP:

(13)   Direct objects in telic predicates cannot be bare plurals or mass nouns.

Only definite nouns or those whose quantity is specified lead to unproblematic sentences in English. For example:

(14)   a. The person drank a beer in one minute.

       b.   ? The person drank beers in one minute.

(12b) may be grammatical if it is interpreted as whenever the person drinks a beer, that beer was drunk in one minute. Furthermore, this Agreement Phrase (henceforth Agreement Object Phrase, or AgrOP, although this is not the notation used by MacDonald, who refers to Aspect Phrase) is a lower projection than that which checks nominative case. According to van Hout (2004), AgrOP checks a kind of object case known as strong Case. This has the effect of (10), thereby leading to the equally observable selectional difference from subject and indirect object positions. The counterpart of strong Case, weak Case, is checked in situ with indirect objects. In instances of unaccusative verbs, NP first moves into [Spec, AgrOP] to check strong Case, and then into [Spec, AgrSP] in order to satisfy the EPP.

A similarity between be and unaccusatives has been pointed out by Belletti (1988) and Lasnik (1999), namely the capacity to check partitive case. Partitive case is an inherent case, assumed by Belletti to be licensed in [VP, Comp] but which is later argued by Lasnik to be checked (the minimalist counterpart of licensing) in [Spec, AgrOP] with the partici-

ple adjoined to be in the head of AgreementObject Phrase (AgrOP). Lasnik assumes the standard small clause analysis of existentials:

(15) a. *e* to be [a person in here]

b. There is [a person in here]

c. A person is [*t* in here]

Examples (15b) and (15c) are assumed to be derived from (15a), whereby either (15b) expletive *there* is inserted into the subject position or (15c) a person moves into that position. A parallel analysis for unaccusatives would then be:

(16) a. *e* arrive [a package].

b. There arrived [a package].

c. A package arrived [*t*].

Passives can similarly be derived:

(17) a. *e* sink [a ship]

b. There was [a ship [sunk *t*]]

c. A ship was [*t* [sunk *t*]]

2.1.2 L2 ACQUISITION

Sorace and Shomura (2001) investigated learner knowledge of split intransitivity in Japanese. In Japanese, "syntactic optionality characterizes unaccusatives", and thus the input for learners is ambiguous, similarly with English. Since Japanese does not have verbal structures analogous to European languages, diagnostics besides auxiliary selection and cliticization had to be used. Two tests were proposed: quantifier floating and case dropping. If an NP is modified by a numeral quantifier, that NP (or its trace) and its quantifier must c-command each other. Consistent with split intransitivity, there can be intervening material between an NP and its quantifier in clauses with an unaccusative verb whereas such

intervening material would yield an ungrammatical sentence should the relevant clause have an unergative verb (examples from Sorace and Shomura (2001), pg. 255).

(18) a. *Kodomo-ga inu-to awatete san-nin hasitta.

      b. child-NOM dog-with hurriedly three-CL run

      c. Three children ran hurriedly with a dog.

(19) a. Kodomo-ga inu-to awatete san-nin kooen-made hasitta.

      b. child-NOM dog-with hurriedly three-CL park-as-far-as run

      c. Three children ran hurriedly to the park with a dog.

Case dropping is allowed for accusative morphology. With intransitive verbs, the subject is marked with a nominative marker, -ga, which can be dropped in sentences with unaccusative verbs, contrary to unergatives (examples from Sorace and Shomura (2001), pg. 254).

(20) a. Kanja-*(ga) abare-ta no shitte-imasu-ka.

      b. patient-NOM become-violent.PAST know-be-Q

      c. Do you know that the patient became violent?

(21) a. Kootuu-jiko-(ga) okoru no mi-ta koto aru.

      b. traffic accident-(NOM) happen NOML see-PAST thing not be

      c. Have you ever seen traffic accidents happen?

Participants consisted of three groups: one group of L2 Japanese speakers with no prior experience of Japanese outside of the classroom, another group of L2 Japanese speakers with nine months of experience in Japan, and a group of native Japanese speakers (both L2 groups' L1s were English). Both learner groups were subjected to a vocabulary test to assess familiarity with the test material and a cloze test to ensure that they were, in fact, at different levels of proficiency. Significant differences were found for the cloze test but not the vocabulary test, meaning that the participants were sufficiently different in general

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proficiency to be grouped as they were but not so different with respect to vocabulary as to bias their performance in split intransitivity judgments.

The native speaker group was not compared directly to the learners, but instead was used to filter the tests proposed above. Case dropping was thrown out due to the fact that native speakers nearly always rejected such sentences. Quantifier floating, however, was processed as expected, with native speakers rejecting sentences with an unergative verb and intervening material between the subject and its quantifier, while accepting sentences with an unaccusative and intervening material between the subject and its quantifier.

Participants saw 134 sentences of which there were thirty with unergative verbs, forty with unaccusatives, and sixty-four distractors (neither unergative nor unaccusative). Separate three-way ANOVAs were performed for unergative and unaccusative verbs considering the verb type (gradient-wise category), construction (intervening material between the subject and its quantifier), and proficiency group.

For unergative verbs, verb type, construction, an interaction of verb type and group, and an interaction of construction and group were all found to be significant. Within the inexperienced group, verb type and interaction of construction and verb type were significant. Within the experienced group, construction and an interaction of verb type and construction were significant. Only main effects were significant for the native group.

The results for unaccusative verbs ran against expectations. Significant effects were found only for the experienced learners and native speakers. What was unexpected was the fact that the most peripheral and most core verbs were rejected in [+QF] constructions, with the moderate verbs being less determinate.

Given their findings, the researchers suggest that agentivity is more important than telicity in Japanese. Furthermore, due to the fact that the experienced group seemed to straddle a state between the inexperienced group and the native group with respect to unaccusatives suggest that the syntactic optionality which characterizes Japanese unaccusatives makes them more difficult to acquire than their unergative counterparts.

Causativization has been proposed as a source of PA in L2 English. Kondo (2005) tested this claim in a replicated study of Ju (2000) whereby English learners were hypothesized to causativize unaccusatives, which would be reflected in higher rates of acceptance of PA with transitive alternates. Both studies prompted learners with two sentences whereby the first sentence describes an event involving an agent acting on a patient and the second has a passivized intransitive whose single argument is the patient in the preceding sentence.

Kondo noted a confound in Ju's experimental design whereby passivized sentences could be interpreted as having a *by*-phrase which has been dropped. In order to control for this, Kondo redesigned the experiment such that test sentences included a *by*-phrase with a reflexive, thereby precluding agentive components except by way of inference from the first sentence. An example of the test material, with her adjustment in brackets, is as follows (example from Kondo (2005), pg. 144):

(22)   a. I pushed the door open

      b. The door (closed/was closed) [by itself]

A marked difference between Spanish and Japanese learners of English was found which is likely to be explained by transfer. Spanish, unlike the other Romance languages discussed here, is more like English in that passives do not occur with unaccusatives, but, crucially, unaccusatives with transitive counterparts are produced with a reflexive particle. The following examples demonstrate this (from Kondo (2005), pg. 133):

(23)   a. El cocinero quemo el flan

      b. El flan se quemo

      c. * El flan quemo

She found this reflected in the results from her L1 Spanish subjects in contrast to those from her L1 Japanese subjects. Different effects appeared based on whether a given unaccusative has an alternate with respect to the leaners' L1s. While L1 Japanese speakers were no more prone to PA when the unaccusative in question has a counterpart, L1 Spanish speakers were.

Thus, Kondo reasoned,

"since unaccusative verbs with transitive counterparts take a reflexive morpheme se in Spanish, Spanish learners sought an equivalent and added a passive morpheme to unaccusative verbs with transitive counterparts, reflecting the movement of an argument from the object position to the subject position, as in passive constructions." (Kondo (2005), pg 155)

Kondo suggested that while PA is a universal tendency, interactions between one's L1 and L2 can add further variation to the phenomenon. L1 transfer, and not the influence of an inferable agent, is behind the variation found in her data. In addition to the hypothesis tested above, another more general hypothesis was tested, namely that learners are sensitive to split intransitivity. Both groups were found to passivize unaccusatives in stark contrast to unergatives.

Kondo's explanation of the nature of her alleged case of transfer is a little unclear. It suggests that L1 Spanish speakers transfer their reflexive pronoun into English as a semantically and syntactically unrelated construction which results from morphosyntactic operations, i.e. BE + *en*. The facts that alternating unaccusatives are marked in Spanish and that a difference along this dimension (alternating versus non-alternating) has been attested are non-trivial taken together and suggest that transfer has occurred, but its nature, as it has been explained, is murky at best.

Something however which is quite interesting about Kondo's study but was not mentioned is the fact that the L1 Japanese speakers were more susceptible to mistakes when an inferable agent was present. As it has been shown in Sorace and Shomura (2001), L1 Japanese speakers (speaking Japanese) are sensitive to agentivity but not telicity when making judgments involving intransitive verbs; L2 Japanese speakers show a development toward native-like decisions. The prediction that, when compared to L1 Spanish speakers, L1 Japanese speakers would be differently sensitive unaccusativity and unergativity, with a diminished sensitivity to former, seems reasonable but is not supported by the data. This

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makes the situation of transfer even less clear but offers support to the universality of split intransitivity.

Research in L2 acquisition of subject-verb order has revealed a tendency of L2 English speakers to produce *there*-VS constructions with unaccusatives. Lozano and Mendikoetxea (2010) looked at the interfaces between the lexicon and syntax, syntax and phonology, and syntax and discourse on the supposition that learners are likely to experience problems in these places. They reviewed reports of SV/VS alternations, studies which have largely coincided with research in PA, and showed that "previous L2 research consistently shows that the Unaccusative Hypothesis is a guiding principle in building learners' mental grammar (irrespective of L1-L2 pairing)" (Lonzano and Mendikoetxea (2010), pg. 482). Lonzano and Mendikoetxea pointed out that despite the fact that this research has tended to focus on the verbal property of unaccusativity (for some exceptions, see Pae et al. (2014), Ju (2000), and Kondo (2005)), "the results of these studies show consistently that learners experience problems at the interfaces" (Lonzano and Mendikoetxea (2010), pg. 481). They claimed that "unaccusativity is a necessary but not a sufficient condition for VS production" (Lonzano and Mendikoetxea (2010), pg. 481) and that "choice of VS is determined by interface conditions" (Lonzano and Mendikoetxea (2010), pg. 481).

In a corpus study comparing L1 English and L2 English speakers whose L1 is Spanish on the production of SV or VS, Lozano and Mendikoetxea found that with respect to intransitives, both L1 and L2 subjects used VS word order with unaccusatives exclusively; in fact, each variable under investigation, given some exception with respect to verbs, had similar effects in both groups. Other influential factors included the verb in question, subject heaviness (which accounts for effects at the interface of syntax and phonology), and whether or not the information presented by the subject was old or new (which accounts for effects at the interface of syntax and discourse). Given certain verbs, subjects which were heavy or new in the discourse strongly tended toward VS, particularly when heavy and new.

2.1.3 PROCESSING

Sorace (2004) investigated on-line processing of split intransitivity in order to shed light on the source of the distinction. In a first experiment, sixteen L1 Italian speakers were asked to read sentences with intransitives alternating between having a correct and incorrect auxiliary given the verb type. Using eye-tracking technology in a reading comprehension task, comparisons of participants' focus on different parts of stimulus sentences were made such that processing of verb matrices could be distinguished from that of the composed feature of aspect, thereby separating syntactic and semantic components. Participants were also subjected to a set of word reading and production tasks meant to distinguish between an account whereby the lexeme is accessed and one where the lemma is accessed. Sorace predicted that reaction times should be affected by auxiliary primes for both the past participle and infinitive form of a given verb in order to support the lexeme hypothesis, and that effects should be found for the infinitive but not the past participle if the lemma hypothesis is correct. Stimulus verbs, both unaccusative and unergative, were distinguished between core and peripheral representatives of their class.

Participants were found to not react differently to correct and incorrect auxiliary-main verb pairs until processing all parts of the sentence, suggesting that semantic composition is crucial to the selectional properties associated with split intransitivity. Reaction times for core unaccusatives with an incorrect auxiliary were significantly higher than core unaccusatives with the correct auxiliary. In contrast, peripheral verbs with and without the correct auxiliary were not significantly different. These results were in line with Montrul (2005). An ANCOVA was used in order to rule out a frequency-based account of auxiliary selection by lexical items; no significant effects of frequency were attested. Sorace concluded that processing associated with split intransitivity involves lemma access.

Thompson (2005) followed up a study by Kegl (2003) in which it was found that individuals diagnosed with agrammatic aphasia did not produce a single unaccusative verb. Agrammatic aphasia is the result of a stroke affecting Broca's area, the symptoms of which

are difficulty with various aspects of grammar. Evidence from many studies has shown that aphasics have more difficulty with production of verbs than of nouns, and that with respect to verbs alone, difficulty increases with the number of arguments specified by the verb's argument structure. Since Kegl did not set out to find effects of split intransitivity, Thompson conducted a study to probe the issue directly.

Eight individuals with agrammatic aphasia were compared to seven age-matched controls after narrative elicitation as well as production and comprehension tasks. All subjects were found to produce fewer unaccusatives than unergatives, but the aphasic group produced significantly fewer than the controls. While no significant effects were found for in the aphasic subjects in the comprehension tasks, they had significantly more trouble than the controls in production and unaccusatives were produced significantly less than unergatives.

Using L2 Spanish (L1 English) speakers, Montrul (2005) tested the Unaccusative Trap Hypothesis (Oshita, 2001) which has been proposed to explain the phenomenon whereby passive unaccusatives are produced at higher rates in intermediate stages of learning than either the beginning or advanced. Briefly, it suggests that learners initially have no idea that there is a distinction between subsets of intransitive verbs and so are no more prone to produce passive unaccusatives as they are passive unergatives. At an intermediate stage of acquisition, speakers learn the distinction but not the constraints on certain productions. Only at advanced stages will speakers become native-like. The auxiliary selection hypothesis proposed by Sorace (2000), described above, was also tested, only with reduced distinctions whereby unaccusatives and unergatives were each subdivided into core and peripheral verbs. She predicted that L2 speakers would more willingly accept ungrammatical stimuli with peripheral verbs than with core verbs.

Based on proficiency tests, seventy-one English speaking L2 Spanish speakers were divided into three groups of nearly equal size. Presented with 110 sentences, half of which were grammatical, participants were asked to judge the stimulus' grammaticality on a scale from one (ungrammatical) to five (grammatical). Nine unaccusatives, nine unergatives, and

ten transitives (as distractor items) were used. Both unaccusatives and unergatives appeared alternating between SV and VS in absolute constructions, as VS with a bare plural, and as a passive.

A three-way ANOVA was conducted finding significant effects for construction, verb, and group as well as interactions involving verb and group and verb, group, and construction. Post-hoc tests revealed that unaccusatives were more acceptable than unergatives as VS, in absolute constructions, passive constructions, and with a bare plural as a postverbal subject. Native and advanced speakers distinguished between unaccusatives and unergatives in all constructions and, crucially, ratings on core verbs were higher than those of peripheral verbs.

2.2 OSHITA (2000)

After a comparison of several explanations, including transfer, causativization, lack of a logical subject marking (henceforth LLS), and marking movement of NP out of [VP, Comp] (henceforth, NP-movement), Oshita (2000) emphasizes the latter two, but concludes based on his study that NP-movement is the best explanation. I will now review each one of the explanations he considers, with the exception of PA as adjectives hypothesis since there is little relevant literature which covers the subject (note however that in Dutch, verbs with particles imparting telic interpretations can form adjectives) and bring up relevant research not considered by Oshita (the paper of Oshita's which is focused on here was published in the same year as Sorace's Gradient Auxiliary Selection by Intransitive Verbs; it was only after this latter paper that any of the other cited sources were produced, with the exception of a couple of sources in the introduction).

2.2.1 TRANSFER

Transfer was one of the earliest explanations offered for PA. Since Italian and French both have structurally similar forms, it seemed clear that PA were a case of transfer. As Oshita has rightly pointed out however, speakers whose L1s have no relevant morphology

that the transfer of which would result in PA are known to produce PA (Pae et al. 2014, Oshita 2000, Oshita 2001, Kondo 2005). Thus he ruled out transfer as a major cause but allowed that it may still contribute to differences in relative usages among speakers grouped by L1.

From his results, he concluded that transfer is not even a minor cause due to the fact that there was a greater proportion of observations of PA in speakers whose L1 does would not support the transfer hypothesis than those of Italian and French. As discussed above however, support for transfer was found in Kondo (2005) in the form of a higher tendency for L1 Spanish subjects to passivize alternating unaccusatives, presumed to be triggered by the reflexive morpheme in Kondo's test material (alternating unaccusatives in Spanish take a reflexive morpheme).

2.2.2 CAUSATIVIZATION

Causativization, a phenomenon where an L2 speaker attributes transitivity to intransitive verbs, unaccusatives in this instance, was ruled out primarily due to the fact that such an account implies that passive unaccusatives are genuine passives, an assumption rejected by Oshita due to the redundancy of passive readings of unaccusatives. Oshita suggested that a significantly large proportion of clearly causative statements is needed in the distribution of options he considers to accept causativization as a major factor. Indeed, he did find examples, such as (from Oshita (2000), pg 313):

(24) "...concentrated population could occur these kinds of problem (L1 Japanese)"

He denied however that the proportion of causatives was large enough to accept causativization.

Indeed, evidence from Kondo (2005), described above, corroborated Oshita's findings. As stated, causativization should make predicates with inferable agents susceptible to behave as though they have a transitive verb even if they have an unaccusative. This was not the case for Kondo's subjects who did behave according to predictions about the gradient effects

of different intransitives, but who did not show any signs of sensitivity to the presence of an inferable agent.

2.2.3 LACK OF A LOGICAL SUBJECT AND NP-MOVEMENT MARKING

In Oshita's review of the LLS hypothesis, which he attributed to Zobl (1989), he correctly claims that there can be inserted into [Spec, AgrSP], allowing derivations of English sentences to not include movement of the object. He suggested however that it and pro, in addition to there, should be produced according to the LLS hypothesis because they, too, mark the lack of logical subjects cross-linguistically. For example, he proposes that LLS predicts the following sentences:

(25) a. There were arrived the packages.

b. It were arrived the packages.

c. *pro* were arrived the packages.

There is a problem with this suggestion in that *there* is produced when the predicate is constituted by a VP with an NP complement. Since *pro* is obviously ungrammatical anyway, given that all English sentences must have an overt subject in order to satisfy the EPP, it is hard to tell what it's production or lack thereof would signify; potential influences could include a host of factors which are practically irrelevant to the topic at hand, so it will not be addressed further. It, while grammatical when produced as an expletive subject, is markedly different from there, as demonstrated by the sentences below:

(26) a. There is a person on the beach.

b.   ? It is a person on the beach.

c.   * There is likely to hurt.

d. It is likely to hurt.

The marginality of (26b) and ungrammaticality of (26c) suggest that it, like *pro*, would be ungrammatical under circumstances independent of unaccusativity. This means that any

occurrence or lack of occurrences of it give no evidence in favor or against the potential of PA to be produced in *there*-constructions.

Oshita, however, emphasized the kind of evidence needed in order to place favor on either LLS or NP-movement, namely the occurrence of:

(27)   There was existed a restaurant.

This would be in favor of LLS and against NP-movement. Since, as Oshita pointed out, LLS presupposes a motivation for NP-movement, optionally deriving sentences like (1a-c), only in cases where NP-movement fails but the passive morphology is nevertheless present can distinguish the two accounts.

As mentioned above, he concluded that NP-movement is the best explanation, finding that sentences like (1a-c) occur more often than those like (27), and those like (27) occur exclusively with the Japanese contributors, despite expectations that the same tendency should be observed in L1 Italian and French speakers since such constructions are allowed. He suggested that Japanese, as a language which emphasizes topicalization, might set up Japanese learners of English to produce such constructions in order to avoid producing sentences with indefinite subjects.

2.2.4 AGAINST NP-MOVEMENT MARKING

The problem with Oshita's proposal is that it is quite divergent from the rest of the literature on unaccusativity. As described above, his conclusion about transfer now has evidence against it, and various sources have addressed the relationship between *there*-constructions and unaccusativity, finding a significant association. Taken together, these facts suggest that similar factors are at work in PA. Thus NP-movement marking, while not apparently impossible, is not an appealing explanation for PA since it is so different from quite a lot of work done on unaccusatives.

I predict that telicity will be found to be associated with the production of PA and specifically, that core unaccusatives will be most susceptible to being produced as PA. Addi-

tionally, I will take up Oshita's (2000) hypothesis which states that *there*-constructions are dissociated from PA. It should be noted that I am not testing Oshita's hypothesis expecting that it have to be rejected in favor of LLS. In fact, I think it should be rejected on similar grounds as the NP-movement marking analysis, namely its divergence from the rest of the literature on unaccusatives. Instead, I am testing it under the assumption that it will be rejected merely because the dissociation between *there*-constructions and PA does not exist.

Chapter 3

ANALYSIS

3.1 DATA AND PROCEDURE

The data for this study came from the final version of the Gachon Learner Corpus (henceforth, GLC). GLC consists of more than twenty-four thousand essays, each with 100 150 words, and accompanying demographic information. The demographic variables included were student ID and TOEFL score (most essays were thus thrown out on account of not including a TOEFL score). A verb list consisting of seventeen unaccusatives which were used as examples by Sorace (2000) was used as the basis for searching essays.

Data processing was performed with a combination of functions from the Python libraries NLTK (Natural Language Toolkit), re, and openpyxl. For each essay in the corpus, the text therein was automatically broken into sentences using sent_tokenize() from Natural Language Toolkit (nltk). Using two regular expressions, one for unaccusatives with auxiliary BE and one for those without, I pulled out every sequence of words wherein up to two words preceded the finite verb, whether it was BE (or another auxiliary) or the unaccusative, and up to six words followed the main verb, whether it was the unaccusative as a finite or nonfinite verb. No limit was placed the number of words intervening between the auxiliary and main verb in applicable cases. If a match was found, it was cleaned of irrelevant material (anything in the sentence which was not in the search expression) and output to a spreadsheet with the demographic information associated with the essay from which it came.

The matches were then processed with nltk.pos_tag() in order to tag for their constituents' parts of speech. The final step involved storing in their own row in a spreadsheet a set of true/false values concerning the occurrence of auxiliary BE and a lemma for the

Verb	Student	Proficiency	BE	notBE
go	201131439	690	0	2
seem	201131178	655	0	2
seem	201033552	450	0	1
fall	21031015	595	0	3
come	201133158	540	0	3
go	201233173	585	1	2
come	200734722	395	0	1
go	201131648	875	0	4
happen	201133755	490	0	1
go	201234379	500	0	1

Table 1. Example of input for statistical analysis

unaccusative verb at hand. Additional columns were thus added to the spreadsheet containing variables created from an analysis of the match-internal information. Some examples of cleaned and tagged matches are as follows:

(28)   a. test/NN is/VBZ become/VBN more/RBR difficult/JJ

        b. when/WRB I/PRP go/VBP to/TO the/DT hotel/NN

        c. of/IN inception/NNP will/MD come/VB real/JJ someday/NN

        d. home/NN is/VBZ exist/VBP a/DT front/NN of/IN traffic/NN accidents/NNS signboard/NN

The variables thus generated were a two-level categorical variable concerning whether be was or was not used and a seventeen-level categorical variable representing unaccusatives. Table 1 displays a sample of the data frame.

The data analysis was performed in R. Using the package MCMCglmm (Markov Chain Monte Carlo generalized mixed modeling), two separate bivariate Poisson regressions with mixed effects were fitted, each modeling one of the hypotheses made in this study. Poisson regression was chosen due to there being no upper limit of total unaccusatives expected and the fact the responses under consideration were represented as counts; the multivariate version allowed for a model whereby observational units are combinations of a given unaccusative verb and a given student. Initially, proficiency was going to be included

but upon inspection of figures 1 and 2 below, this variable was excluded in order to simplify the model, a practically desirable thing in terms of the time it takes to perform a productive analysis (the run that produced the results here took a day and a half).

The first model (chapter three, section two) tested the hypothesis that the more telic an unaccusative verb is, the more likely it is to be produced as a PA. A second model (chapter three, section three) was used to test Oshita's claim that passive unaccusativity does not arise out of LLS marking. Specifically it tests whether there is a significant difference between the counts for BE with and without *there*. Verb was entered as a fixed effect in the first model whereas the occurrence of *there* was entered as fixed effect in the second model.

In both models, identical informative prior distributions were used for both the group and residual covariances, with V equal to a 2 x 2 identity matrix (an identity matrix is a matrix such that variances, the diagonal elements, are assumed to be one, while covariances, the off-diagonal elements, are assumed to be zero) and nu, a degree of belief parameter, equal to 0.002. MCMCglmm allows for different degrees of parameterization: a fully parameterized model is employed here, whereby covariance components as well as coefficients are estimated, despite being given values a priori. (A less parameterized model would fix covariances, variances, or both, to certain, unchanging values; such decisions correspond to assumptions about the nature of relationships between pairs of variables, i.e. covariances of zero mean the covariates in question are independent of each other) Random intercepts were estimated for the measured variables, BE and not-BE, across both grouping factors (between and within students).

3.2   VERB MODEL

3.2.1   RESULTS OF VERB MODEL

All interactions of BE and a given verb were either not significantly different from zero or significantly less than zero. Non-significant interactions included BE with *decay* and *persist* as well as not-BE with *arrive, belong, decay, exist, fall, happen, occur, persist, remain,*

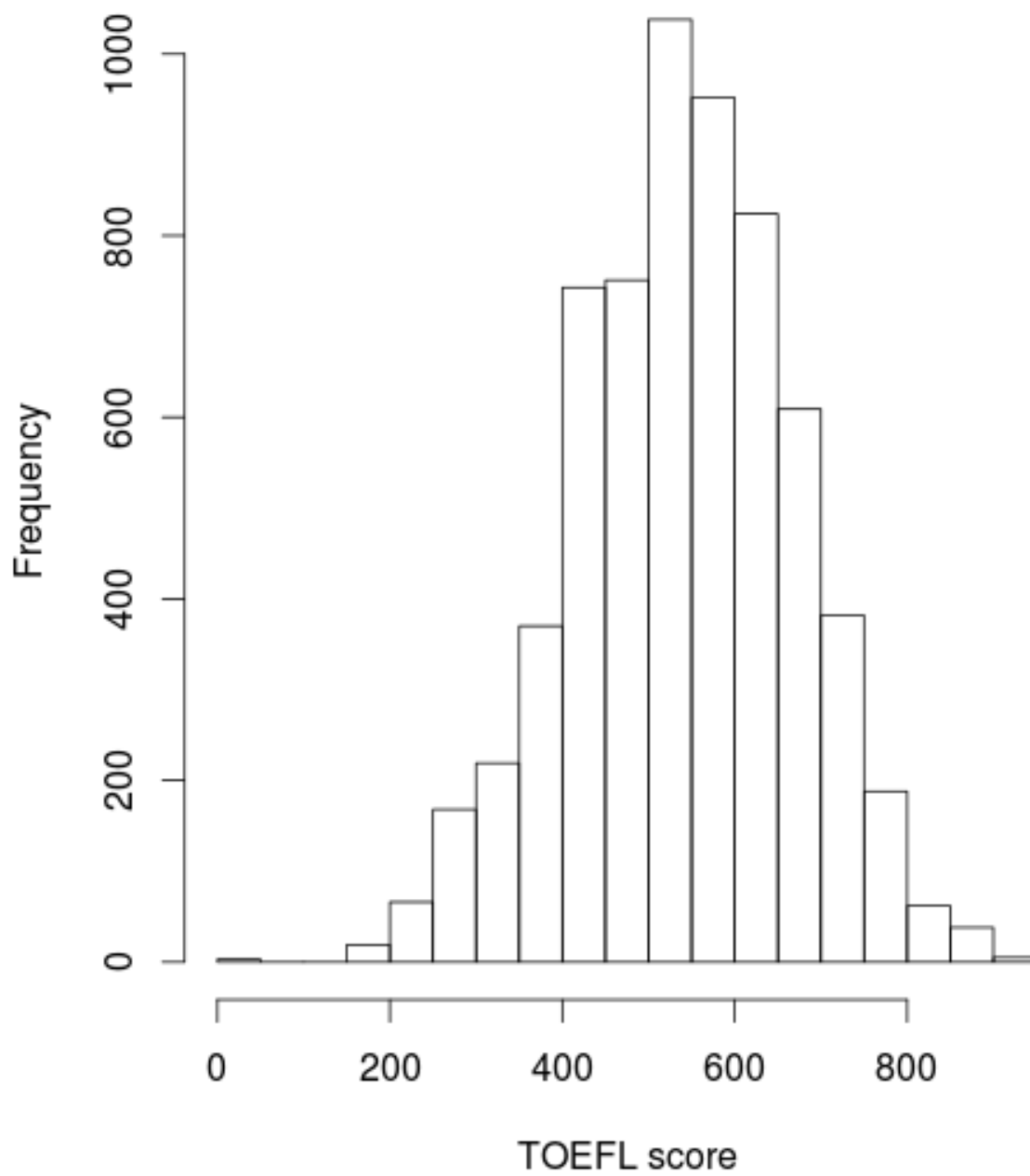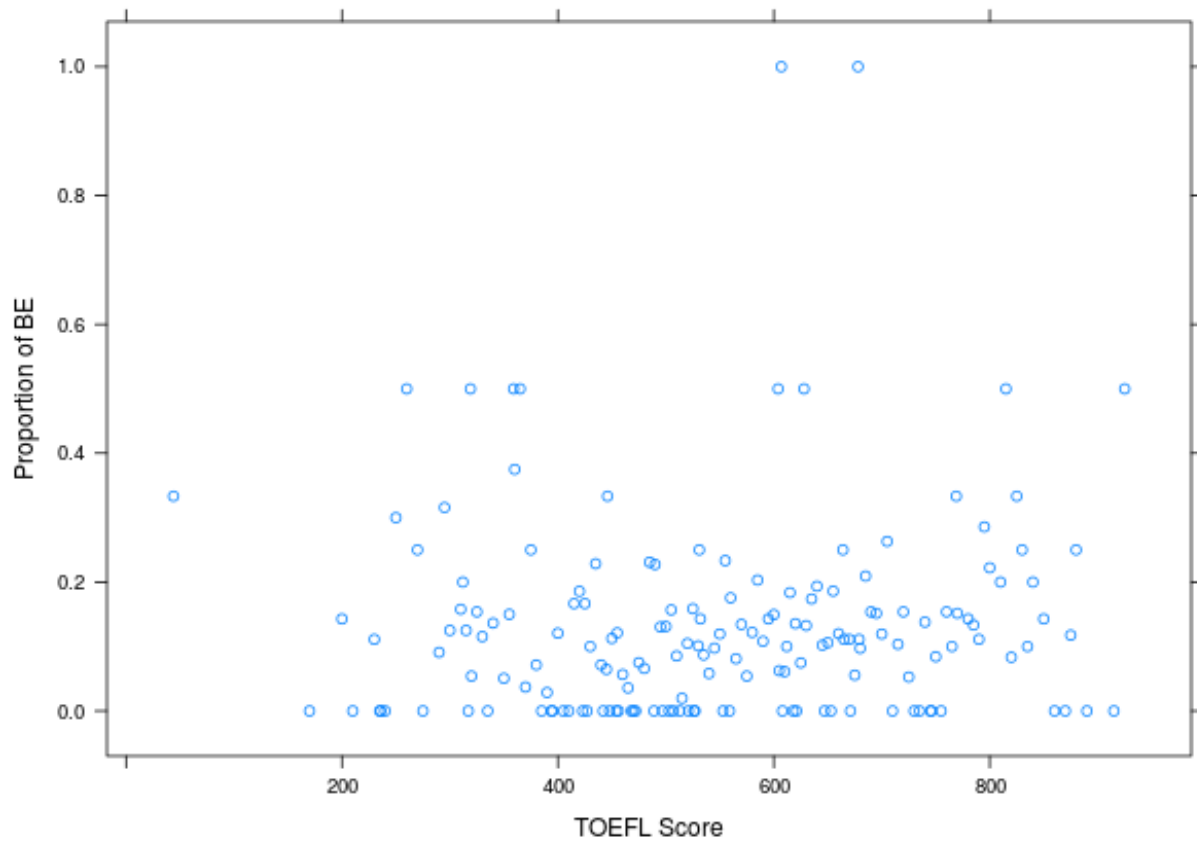Figure 1. Histogram of TOEFL scores

Figure 2. Randomly distributed frequencies of TOEFL scores

and *survive*. All other interactions were significantly below chance. The (co)variances were mostly low except in the case of the variance for BE which was larger than the variance for the not-BE count by a factor of 10^2. Tables 2, 3, and 4 display the results.

As figures 3 and 4 show, no interaction (with the exception of BE and descend) displayed any long-term trends in sampling; however, local trends were found throughout each plot, suggesting that estimates could be improved by a longer run of the MCMC (this may make some estimates non-significant but will not likely find new significant estimates nor radically different ones, such as an estimate which was positive becoming negative). The trace-plots for the interaction coefficients were better than those for the (co)variances, showing an apparently random distribution of errors.

Means for every BE:verb interaction were below their not-BE:verb counterparts. For the most part, confidence intervals for the interaction of a given verb and BE or not-BE were non-overlapping, except in the case of belong, persist, and rise. Exist and remain nearly overlap. The effective sampling rate was fairly high for all verbs (median = 195.7) with the exception of descend, which was sampled only twice.

3.2.2 DISCUSSION OF VERB MODEL

The results were a little mixed, although they suggest that the null hypothesis cannot be rejected. The fact that all of the interactions of a given verb and BE were below zero was expected since the base rate of not-BE was so high in comparison to that of BE; however while the distributions of some verbs' interactions with levels of BE were not significantly different, all of the most telic verbs were far from overlapping, meaning the likelihood of an L2 speaker producing passive morphology with these verbs is significantly less than that of the grammatical form. In addition, these differences were in contrast with some other verbs, such as persist (note, however that its effective sample is comparatively very low) and rise.

Another possibility which could have been predicted by the data reviewed above would be that learners passivize more with peripheral verbs, in accordance with greater

Table 2. Interaction coefficients of verb model

Interaction	Mean	Lower CI	Upper CI	Sample	pMCMC
BE:arrive	-2.621	-3.272	-1.962	309.737	0.001
BE:belong	-2.208	-3.172	-1.017	383.760	0.001
notBE:belong	-0.239	-0.608	0.200	201.426	0.288
BE:come	-2.017	-2.220	-1.821	174.796	0.001
notBE:come	0.544	0.493	0.593	235.463	0.001
BE:decay	-0.793	-2.505	0.882	1000.000	0.378
notBE:decay	-2.045	-5.441	0.308	23.745	0.108
BE:descend	-101.682	-186.071	-24.068	2.014	0.001
notBE:descend	-0.235	-1.577	0.977	116.527	0.798
BE:die	-1.195	-1.482	-0.915	461.120	0.001
notBE:die	-0.218	-0.399	-0.034	104.503	0.024
BE:exist	-1.157	-1.481	-0.835	479.681	0.001
notBE:exist	-0.179	-0.400	-0.008	146.220	0.064
BE:fall	-1.876	-2.219	-1.577	364.030	0.001
notBE:fall	-0.023	-0.159	0.102	165.526	0.758
BE:go	-1.883	-2.058	-1.708	107.651	0.001
notBE:go	0.718	0.672	0.764	236.152	0.001
BE:happen	-1.618	-1.896	-1.387	231.840	0.001
notBE:happen	0.077	-0.033	0.183	178.843	0.184
BE:occur	-1.635	-2.003	-1.315	411.360	0.001
notBE:occur	-0.001	-0.147	0.140	154.088	0.992
BE:persist	-1.679	-4.449	0.690	626.707	0.146
notBE:persist	-0.823	-2.483	0.707	59.982	0.278
BE:remain	-1.996	-2.719	-1.274	319.368	0.001
notBE:remain	-0.083	-0.384	0.203	152.877	0.552
BE:rise	-1.199	-1.709	-0.765	602.292	0.001
notBE:rise	-0.407	-0.718	-0.049	89.340	0.014
BE:seem	-2.573	-2.978	-2.136	124.687	0.001
notBE:seem	0.202	0.096	0.320	179.002	0.001
BE:stay	-1.967	-2.227	-1.721	278.768	0.001
notBE:stay	0.234	0.154	0.306	262.096	0.001
BE:survive	-0.979	-1.855	-0.142	717.447	0.024
notBE:survive	-0.108	-0.689	0.425	135.454	0.744

Table 3. Group (co)variance of verb model

(Co)variates	Mean	Lower CI	Upper CI	Sample
BE:BE	0.229	0.073	0.381	200.342
not-BE:BE	-0.035	-0.067	-0.008	239.097
BE:not-BE	-0.035	-0.067	-0.008	239.097
not-BE:not-BE	0.007	0.001	0.014	108.271

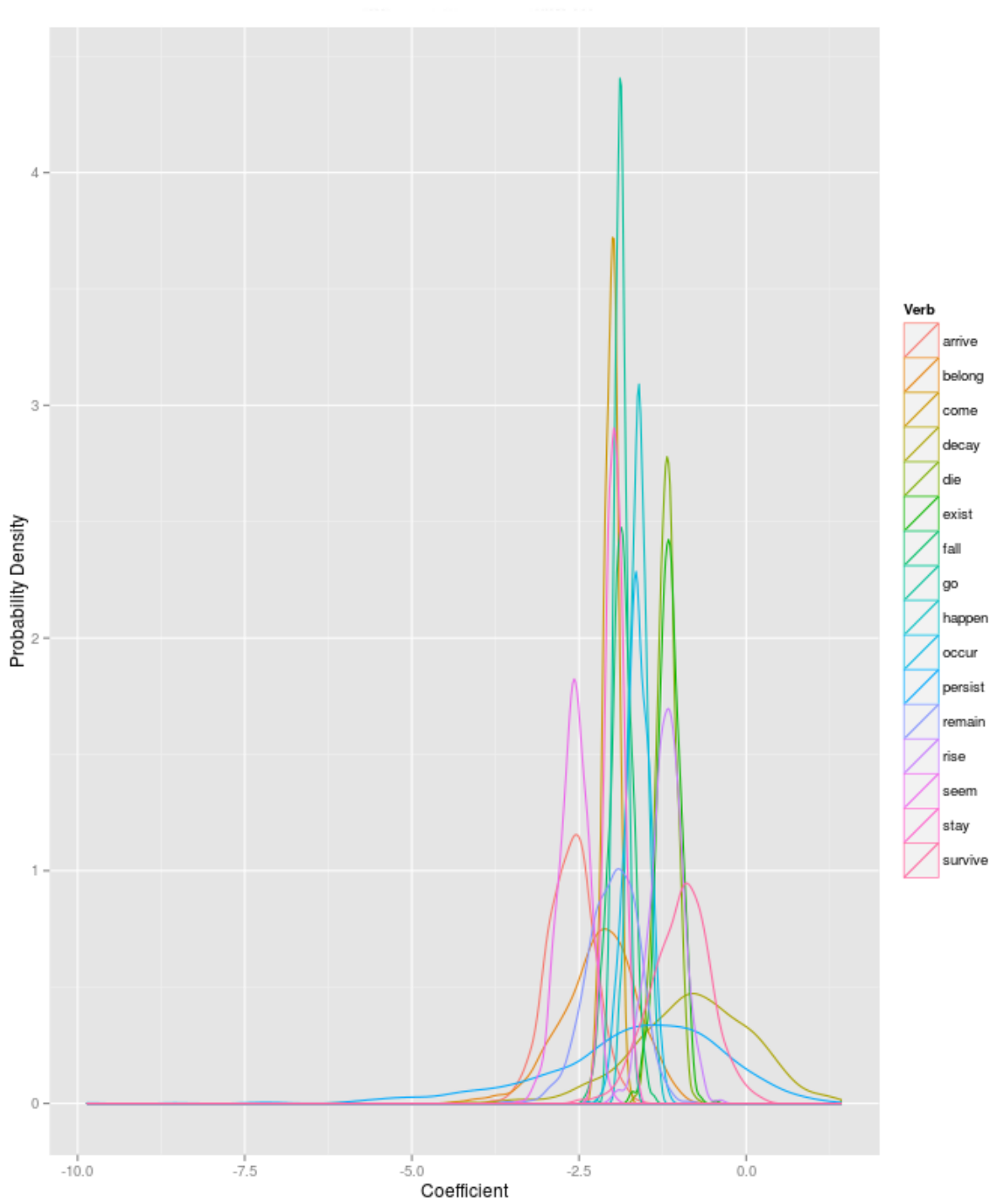Figure 3. Differences among BE-interaction coefficients, verb model

Figure 4. Differences between interaction coefficients of BE and not-BE, grouped by verb
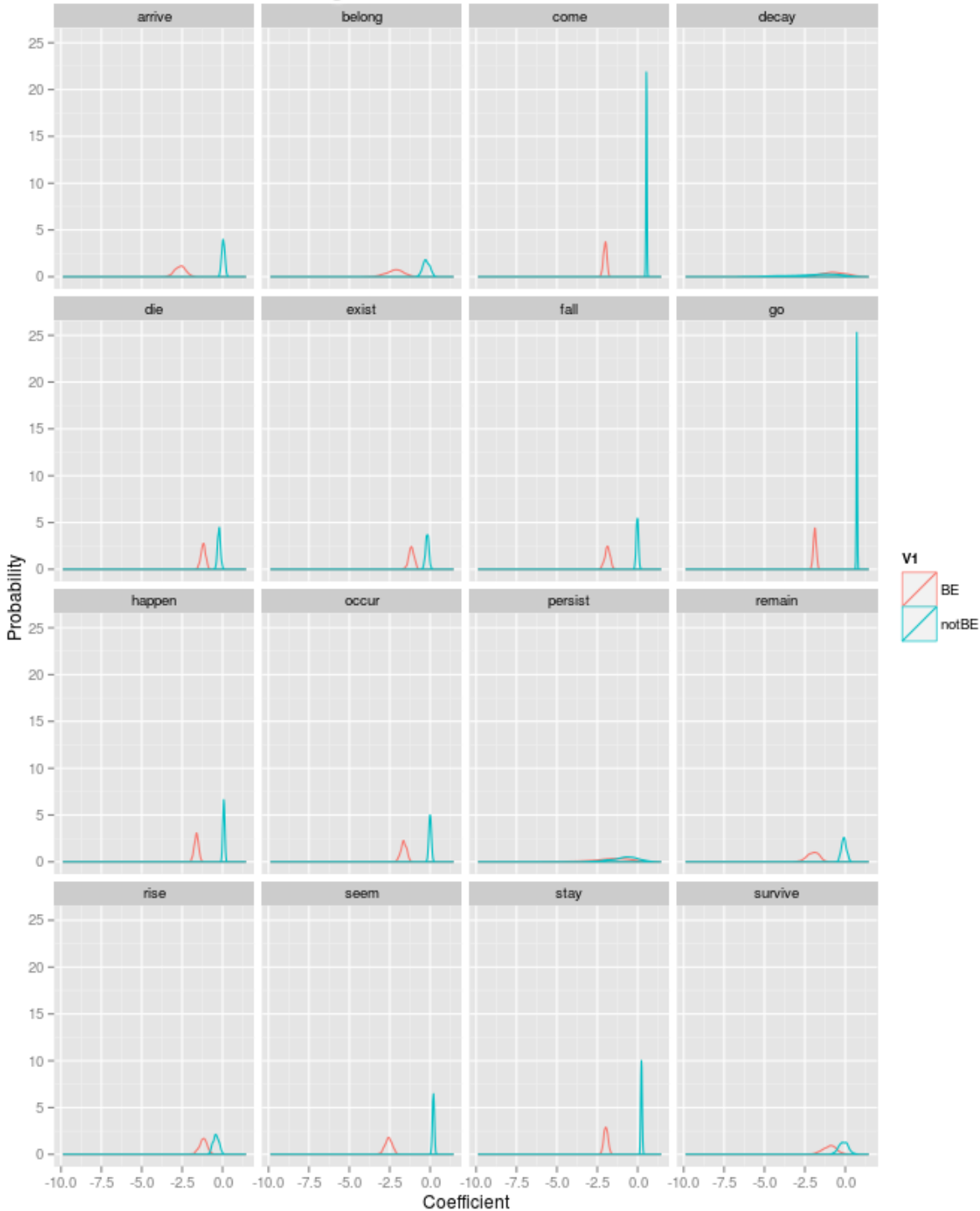
Figure 5. Trace plots of coefficients of interactions with not-BE, verb model
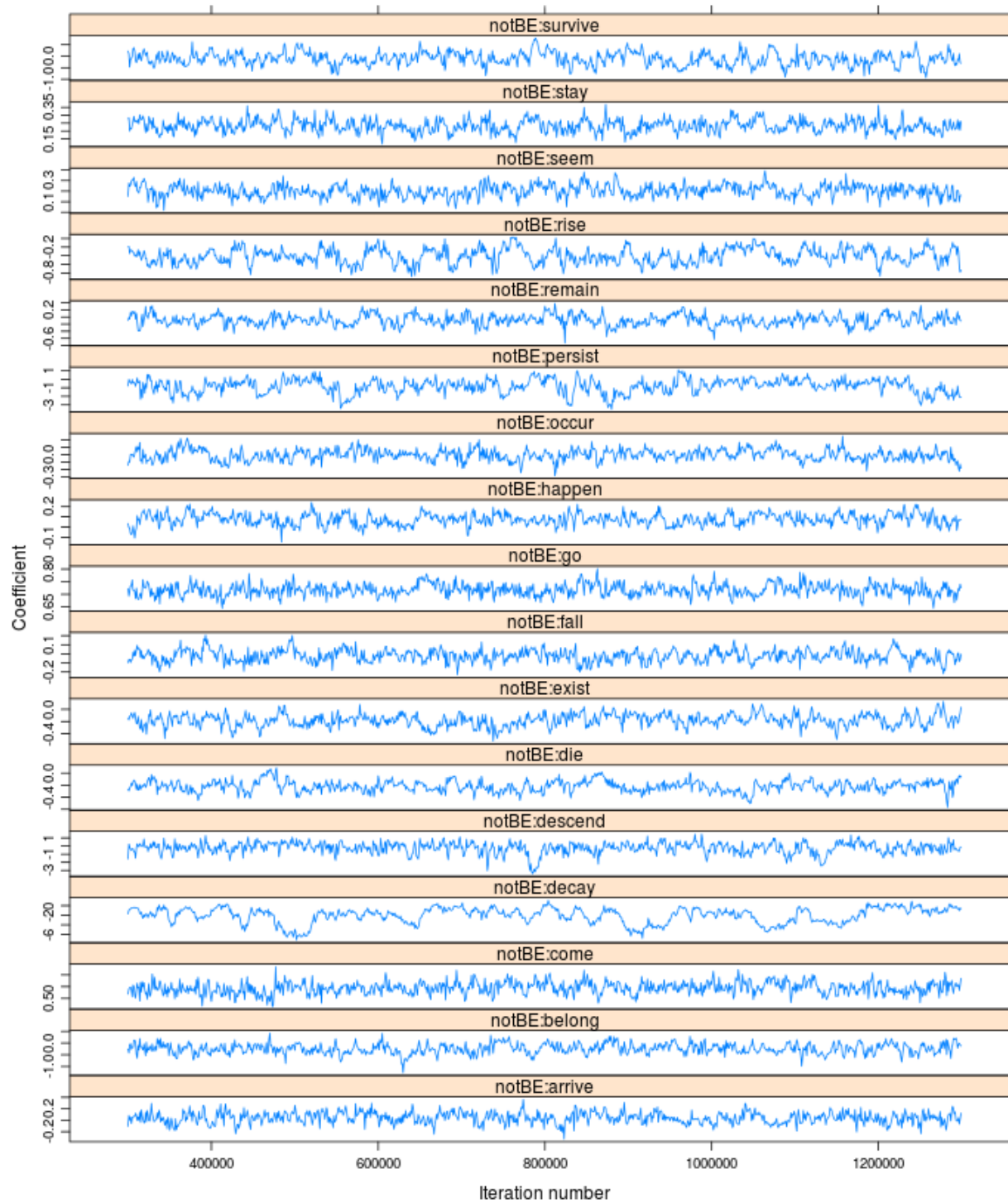
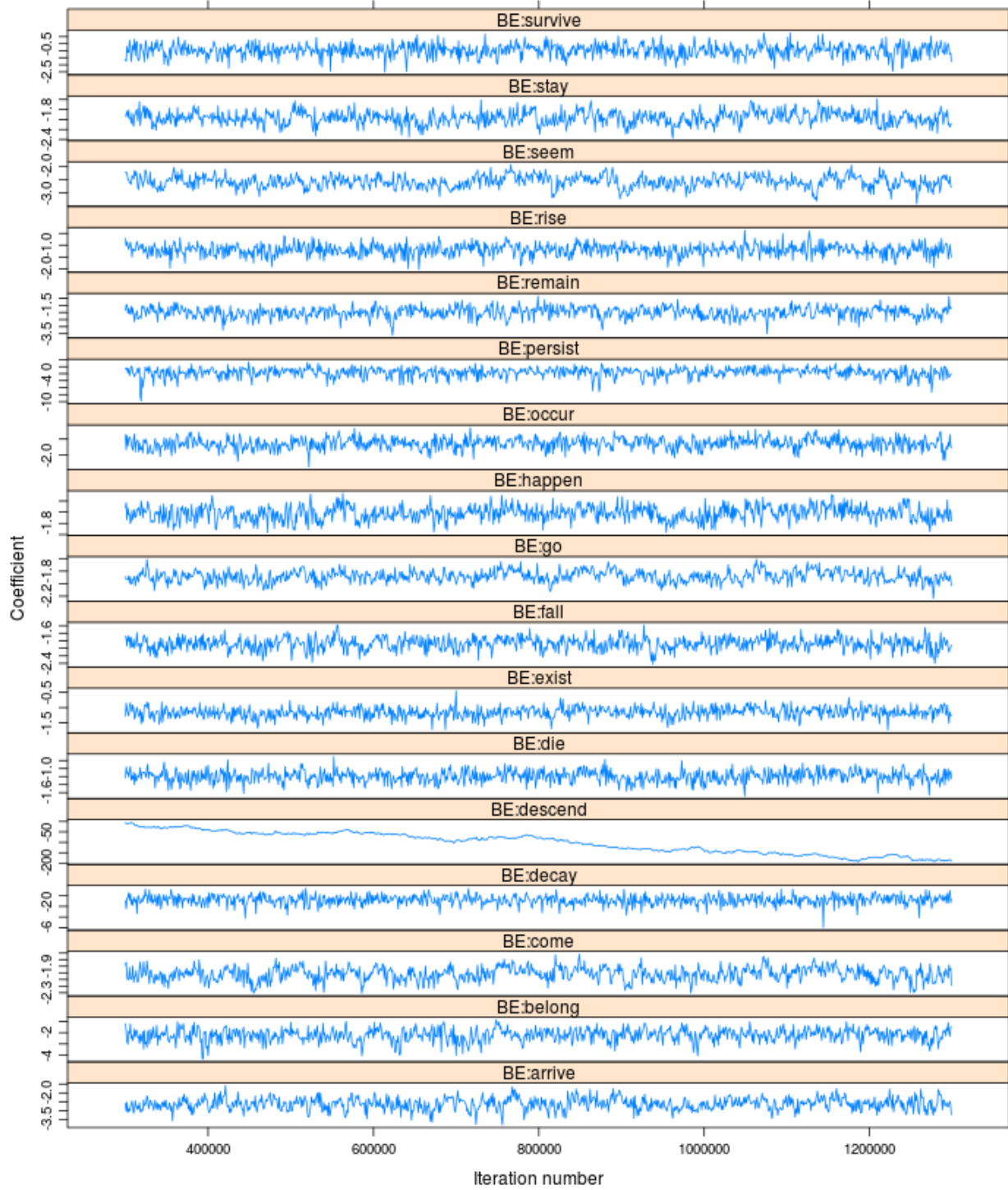Figure 6. Trace plots of coefficients of interactions with BE, verb model

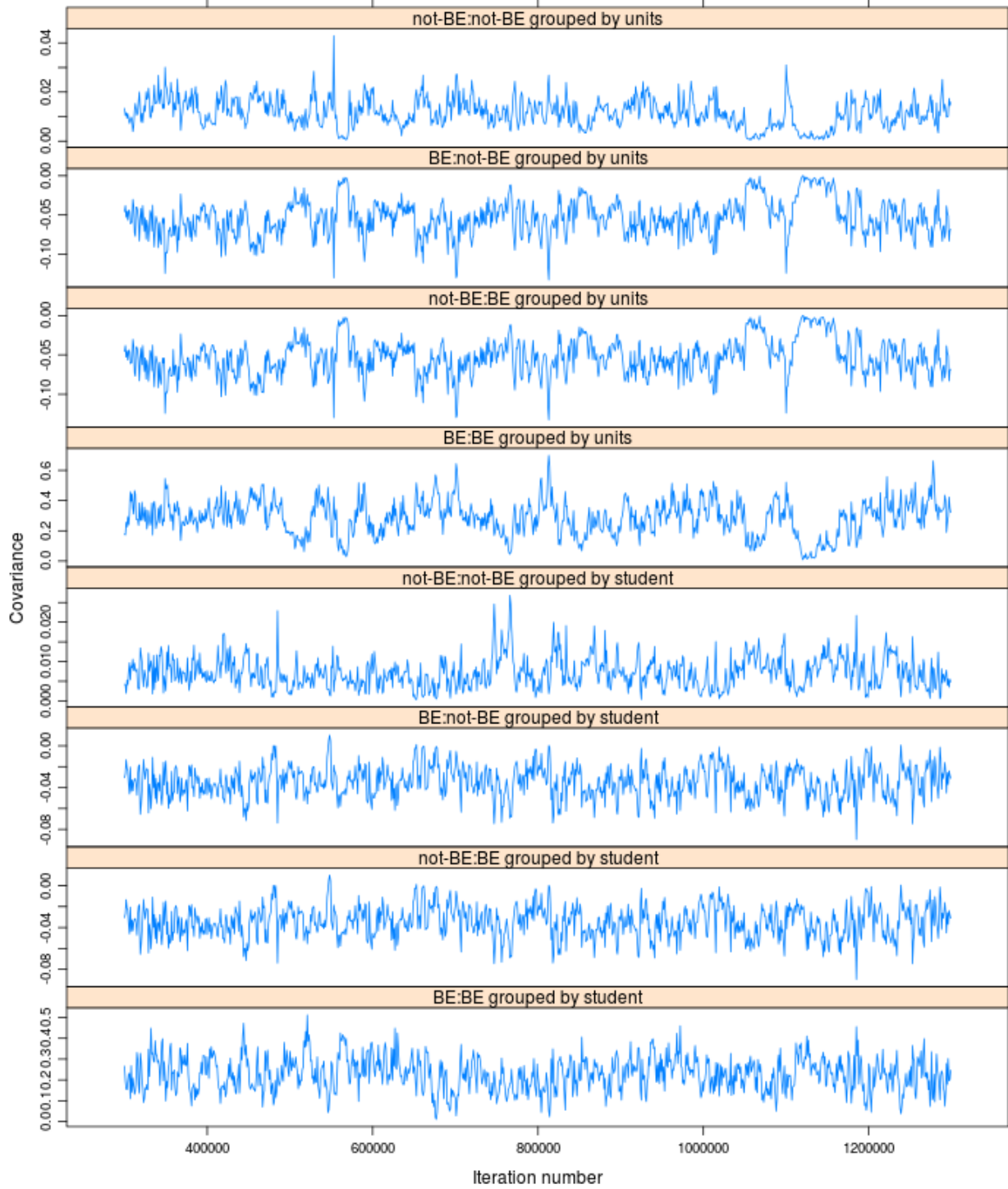Figure 7. Trace plots of (co)variance components, verb model

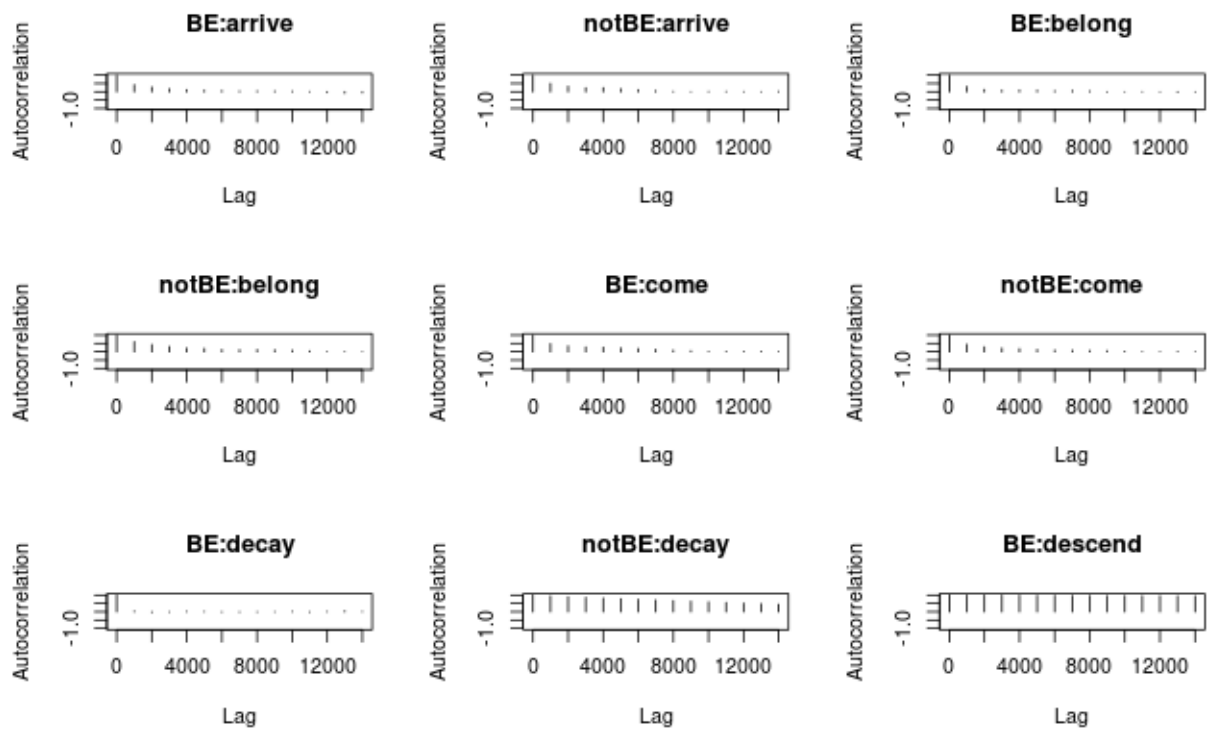Figure 8. Autocorrelation plots of coefficients, BE:arrive through BE:descend

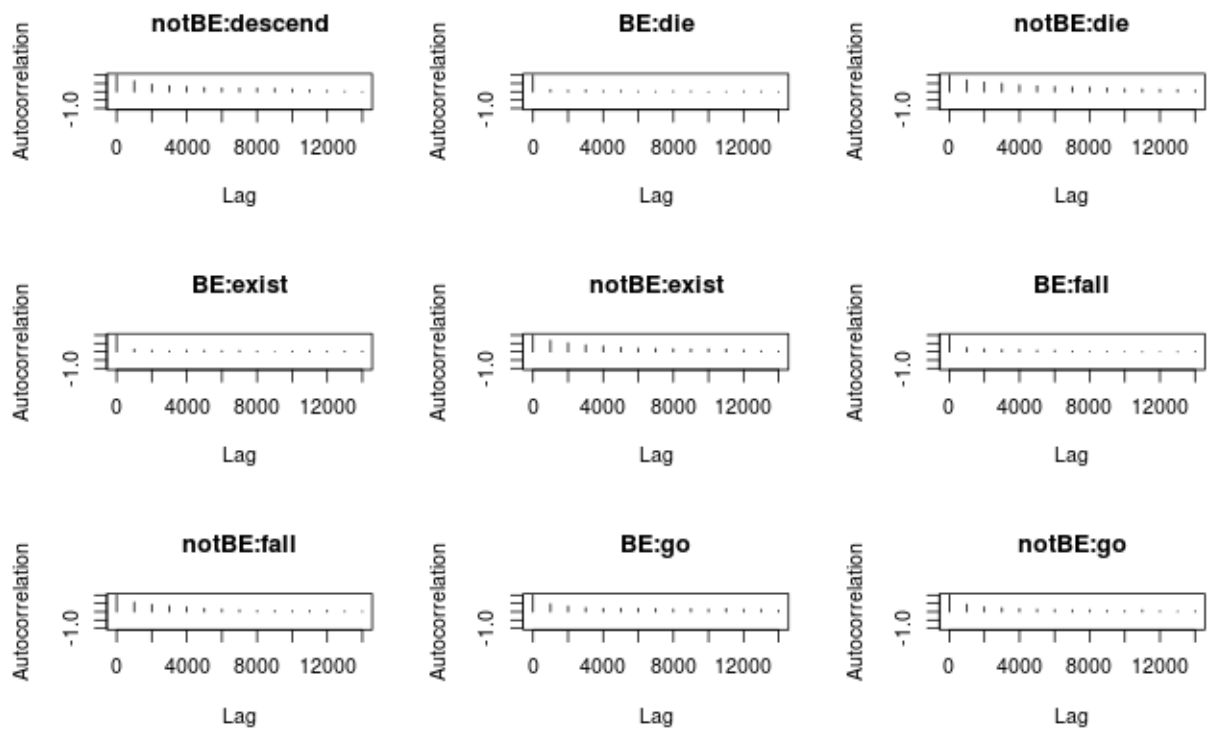Figure 9. Autocorrelation plots of coefficients, not-BE:descend through not-BE:go

Figure 10. Autocorrelation plots of coefficients, BE:happen through BE:rise
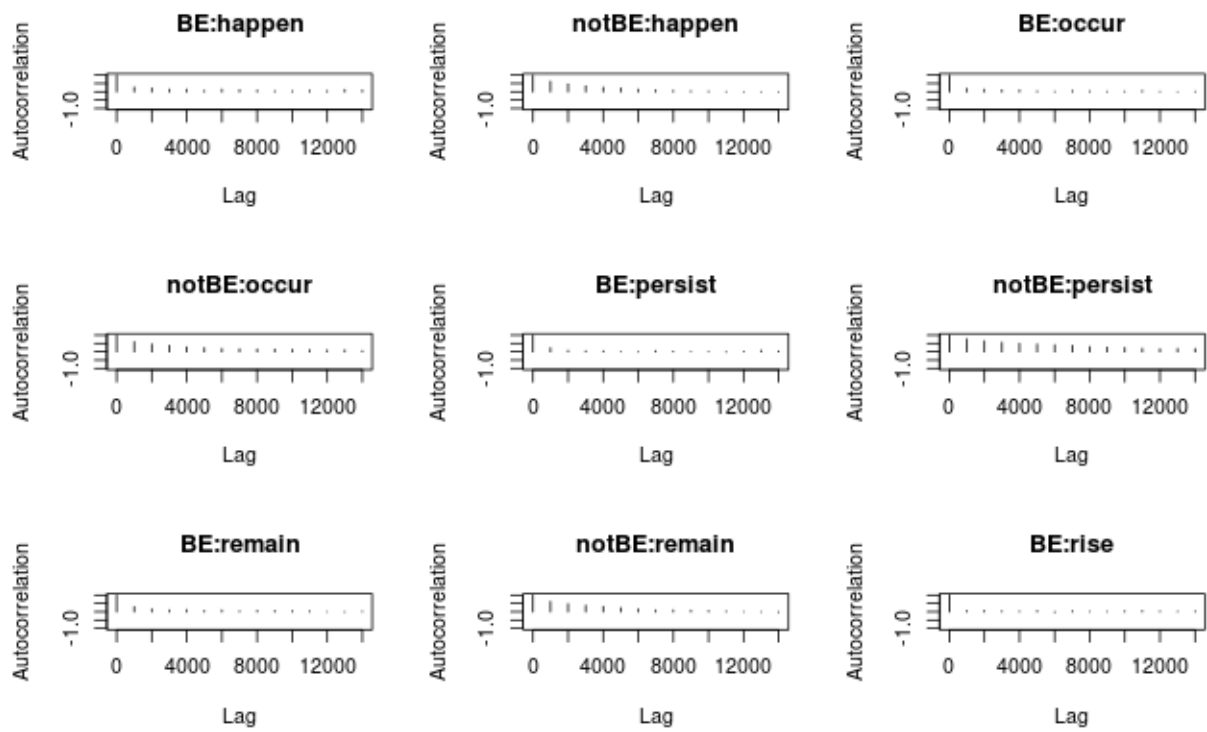
Figure 11. Autocorrelation plots of coefficients, not-BE:rise through not-BE:survive
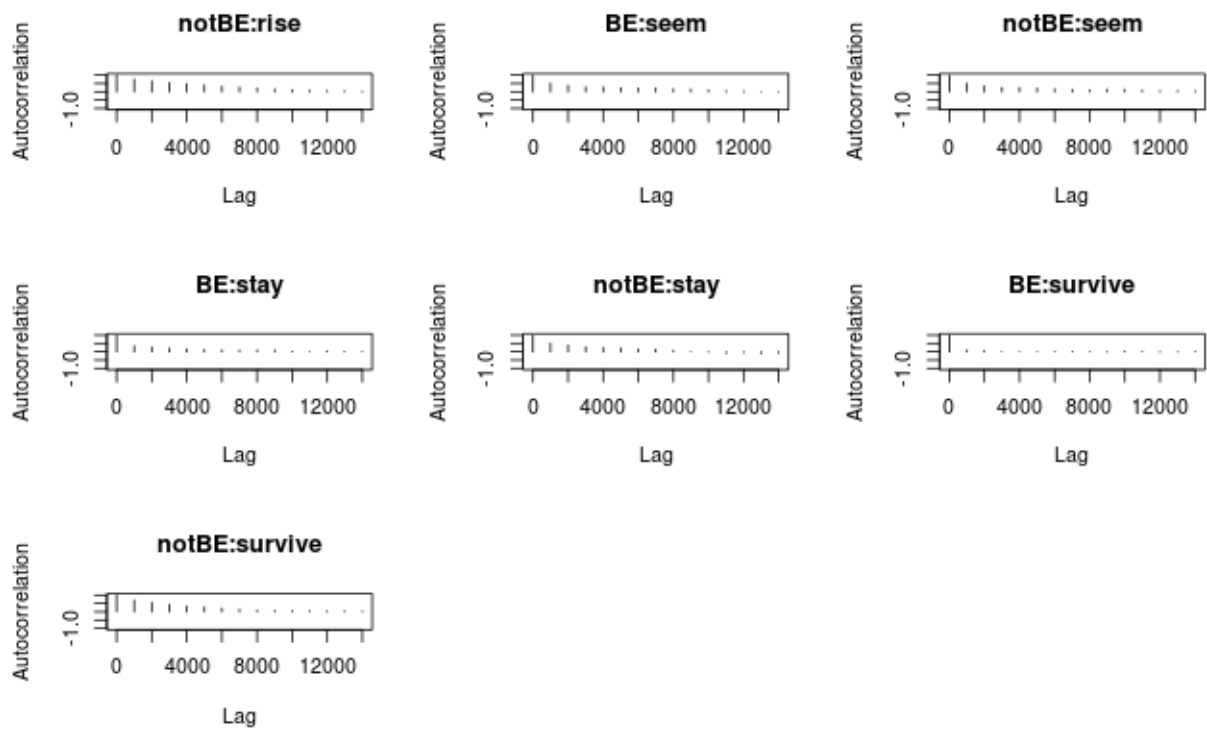
Table 4. Residual (co)variance of verb model

(Co)variates	Mean	Lower CI	Upper CI	Sample
BE:BE	0.286	0.062	0.509	77.172
not-BE:BE	-0.053	-0.091	-0.002	52.874
BE:not-BE	-0.053	-0.091	-0.002	52.874
not-BE:not-BE	0.012	0.001	0.021	64.761

amount of errors in grammaticality judgment tasks noted by Montrul (2005) and greater processing time found in Sorace (2004). Further investigation would certainly be needed given the results here with a few examples supporting such a hypothesis (persist and rise, whose interaction coefficients were not significantly different, or exist, which was close to having non-significantly different interactions) and few examples providing evidence against it.

3.3 *THERE* MODEL

3.3.1 RESULTS OF *THERE* MODEL

All interactions were significantly different from zero. The interaction of not-BE and not-there was significantly above zero while all others were significantly lower than zero. No coefficient below zero was significantly different from any other coefficient below zero. Tables 5, 6 and 7 give regression coefficients, (co)variance of BE and not-BE between groups (each student represents a group), and within groups (repeated measures on each group, namely the counts of BE and not-BE).

Table 5. Interaction coefficients of *there* model

Interaction	Mean	Lower CI	Upper CI	Sample	pMCMC
BE:not-there	-0.756	-0.840	-0.674	458.644	0.000
not-BE:not-there	1.393	1.362	1.425	3000.000	0.000
BE:there	-0.632	-1.034	-0.279	579.452	0.001
not-BE:there	-1.081	-1.504	-0.634	914.984	0.000

Table 6. Group (co)variance of *there* model

Covariates	Mean	Lower CI	Upper CI	Sample
BE:BE	0.392	0.011	0.612	95.634
not-BE:BE	0.091	-0.112	0.274	69.039
BE:not-BE	0.091	-0.112	0.274	69.039
not-BE:not-BE	0.102	0.000	0.273	91.435

Table 7. Residual (co)variance of *there* model

Covariates	Mean	Lower CI	Upper CI	Sample
BE:BE	0.157	0.000	0.486	86.074
not-BE:BE	0.080	-0.106	0.276	69.165
BE:not-BE	0.080	-0.106	0.276	69.165
not-BE:not-BE	0.186	0.007	0.298	103.355

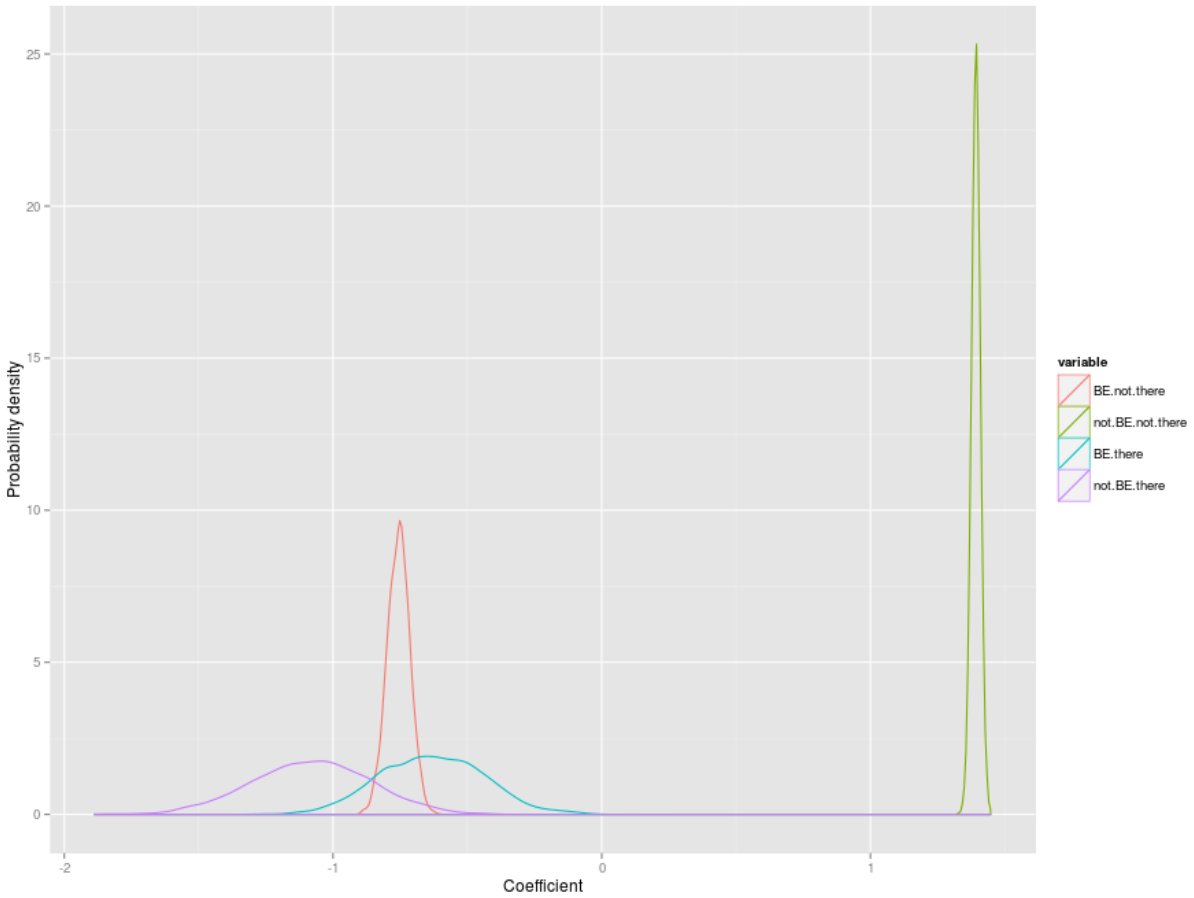Figure 12. Differences among interaction coefficients, *there* model

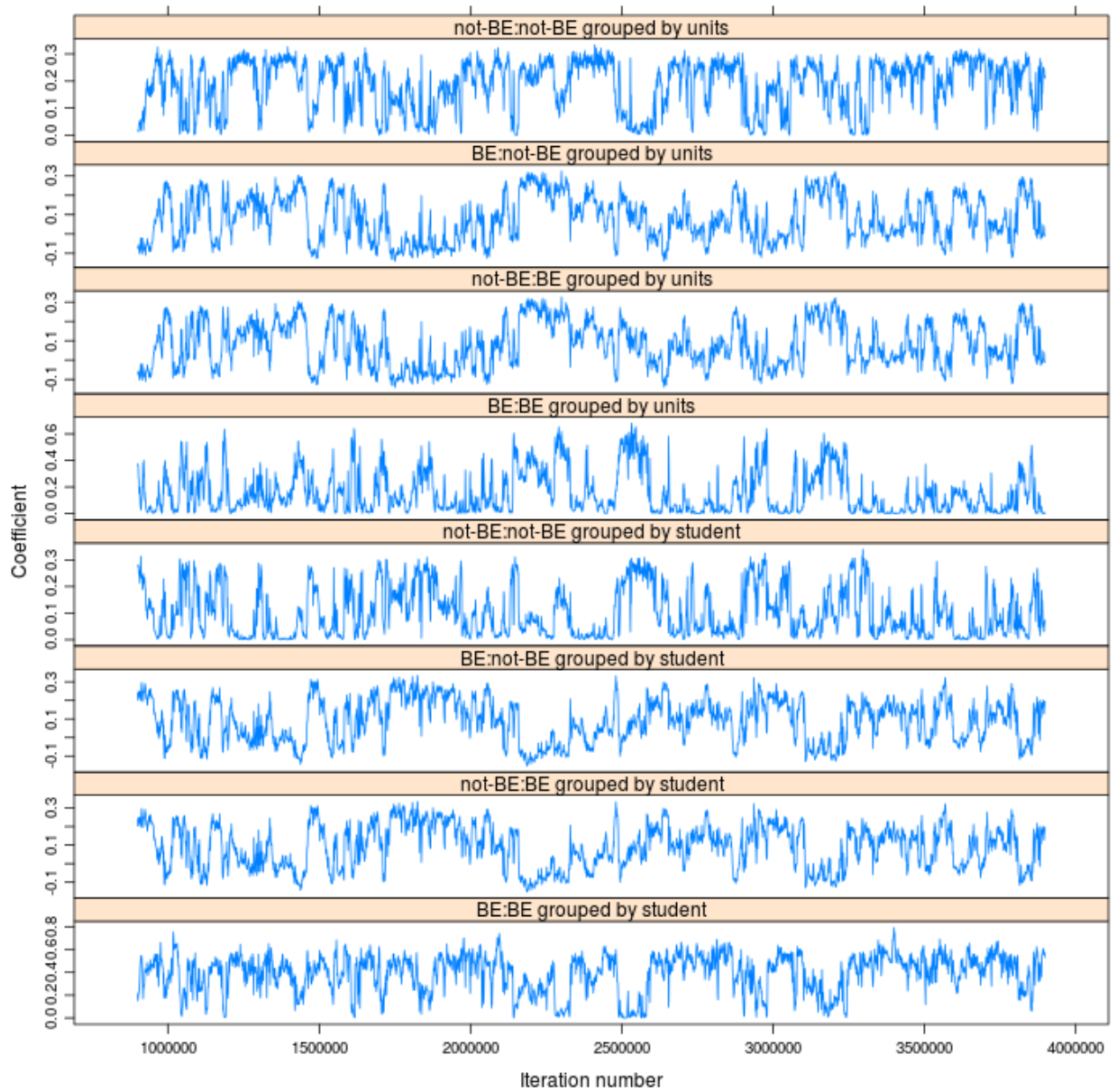Figure 13. Trace plots of interaction coefficients, *there* model

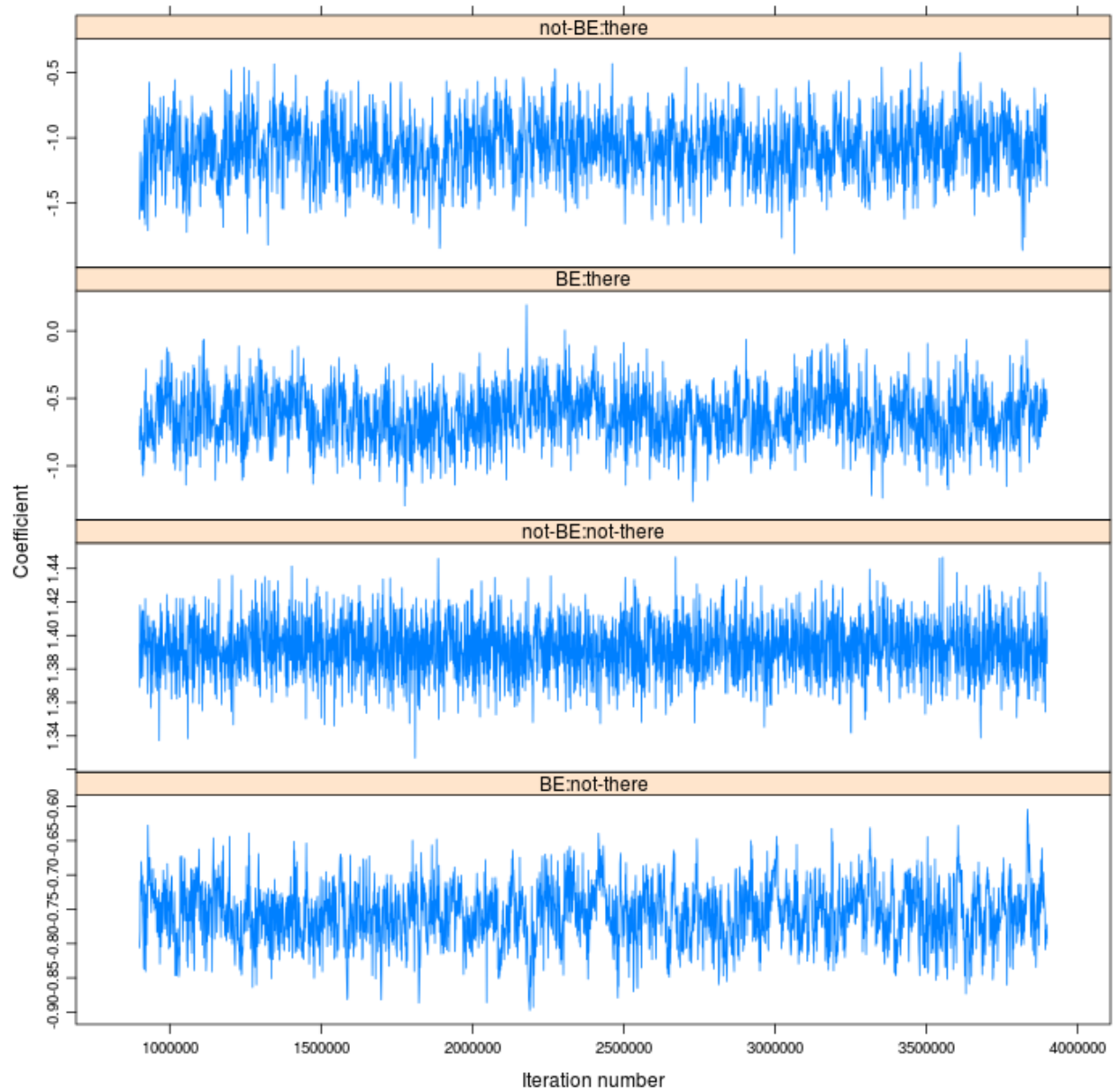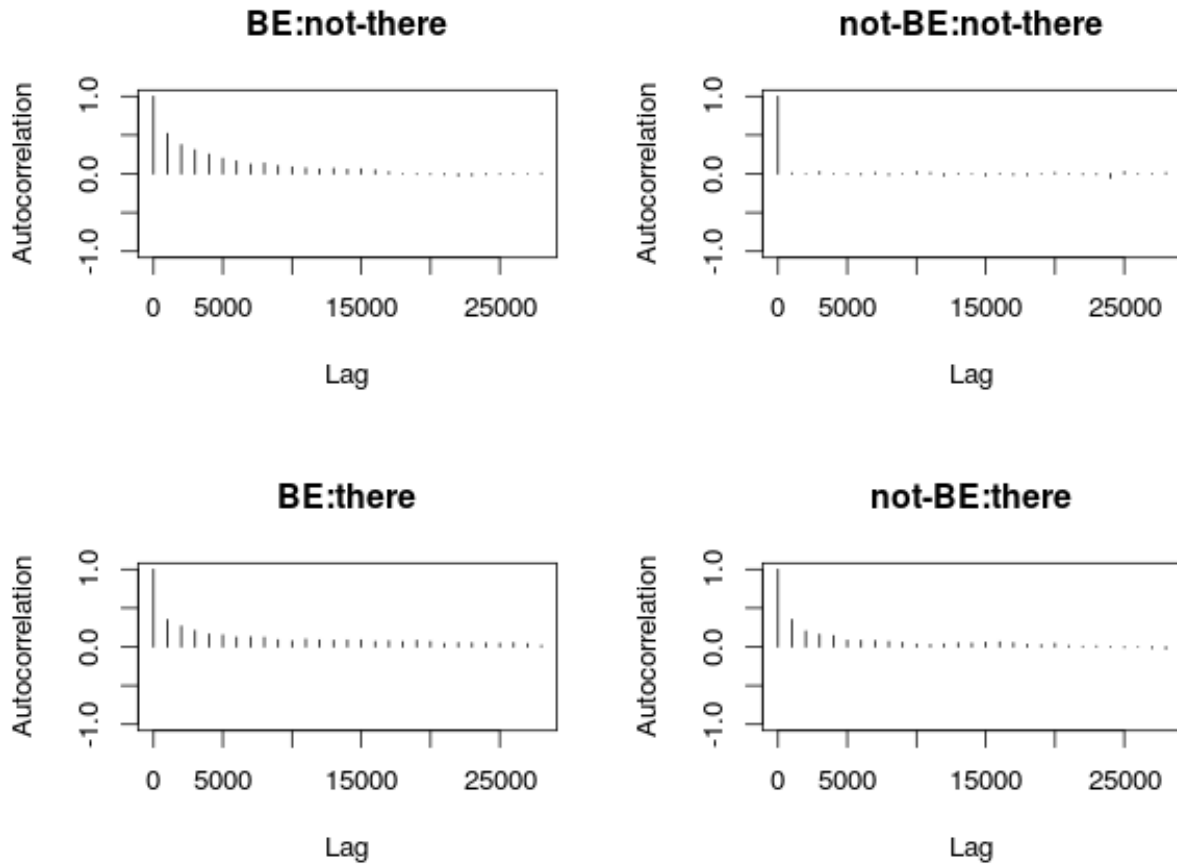Figure 14. Trace plots of (co)variance components, *there* model

Figure 15. Autocorrelation plots of coefficients, *there* model

3.3.2 DISCUSSION OF *THERE* MODEL

It appears that the null hypothesis cannot be rejected due to the fact that differences of estimates for the interactions of BE with *there* were not significant (with the exception of not-BE:not-*there*, as expected), as signified in figure 11 by overlapping distributions. It is worth noting in particular the fact that the distributions for BE:*there* and BE:not-*there* were not significantly different, meaning that learners were about as likely to produce PA in *there*-constructions as they were to produce PA in some other way. This means that *there*-constructions do not tend to dissociate from PA, contrary to Oshita (2000).

3.4 GENERAL DISCUSSION

The null hypothesis cannot be rejected for either of the alternative hypotheses, namely that more telic verbs are more likely to passivize and that the co-occurrence of PA and *there*-construction is less likely than possible co-occurrences excluding one or the other element. The fact that the difference between BE and not-BE interactions for core unaccusatives like go and arrive was relatively great compared to some of the other verbs' differences is consistent, however, with evidence from L2 acquisition studies showing greater divergence from native speakers in grammaticality judgments involving peripheral intransitives. That Oshita's prediction was also not born out by the data, coupled with the fact that *there*-constructions have been associated with unaccusative verbs independently of PA suggests that some of the first hypothesis may be salvaged by later experiments which investigate differences in tendencies of intransitive verbs.

The mixed results of the non-core verbs, however, remain problematic in that telicity appears to play little to no part in the differences of interaction coefficients. Research into whether split intransitivity is a universal phenomenon has provided evidence that it indeed is, but how it is manifested is quite variable. While the symptoms of split intransitivity, such as auxiliary selection and sensitivity to both agentivity and telicity, are quite predictable in West European languages, Sorace and Shomura (2001) have shown that L1 and L2 Japanese speakers display the gradient sensitivity typically found in split intransitivity only with respect to unergativity. The situation here may perhaps be similar in that only certain coherent subsets of the gradient are acknowledged while others are not.

Chapter 4

CONCLUSION

I have reviewed literature concerning split intransitivity, with a focus on passive unaccusativity, a well-attested L2 English phenomenon. A number of results from cross-linguistic studies as well as experimental research in L1 processing and L2 acquisition were discussed in order to build a case against Oshita's (2000) analysis of PA, namely that PA are markers of NP-movement. Using a corpus of essays written by L2 English speakers whose L1s included mostly Korean, two hypotheses were tested. The first hypothesis was that the more telic a given unaccusative is, the more likely a predicate in which it occurs is to passivize. The second was a version of Oshita's (2001) hypothesis, namely that PAs dissociate from *there*-constructions, revised in order to fit into the statistical model used here. No evidence was found for either model, leaving a mixed picture. Since, on the one hand, the hypothesis about the relationship between telicity and PA did not hold up, and on the other, Oshita's hypothesis also did not hold up, the nature of PA, as far as the evidence from this paper shows, is still unclear as there appears to be no straight-forwardly viable answer given the prior evidence reviewed.

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