

The Implications of Choosing a Type of Quantitative Analysis in Interlanguage Research*

Junkyu Lee

(Hankuk University of Foreign Studies)

Lee, Junkyu. 2012. The Implications of Choosing a Type of Quantitative Analysis in Interlanguage Research. *Linguistic Research* 29(1), 157-172. Much interlanguage research has contributed to L1 and L2 theoretical literature through empirical testing and validating theoretical constructs. Quantitative methods have been widely employed as a useful apparatus for L2 empirical research. Yet, only a limited range of quantitative methods such as mean comparison methods have actually been applied, at least in the domain of formal approach to interlanguage. By testing the Unaccusative Hypothesis in relation to derivational morphology, this study investigates how exploratory statistical techniques would complement the mean comparison methods. Particularly, the knowledge of split intransitivity of native and non-native speakers was explored independently, without the predetermination of verb classes. This study illustrated that comparative quantitative analyses are inherently unable to (1) show how L1 and L2 data can be used to test linguistic hypotheses and to (2) explain precisely what interlanguage itself looks like. This paper emphasizes the incorporation of exploratory statistical analyses such as cluster analysis into interlanguage research, complementing the widely-used comparison analyses and therefore, contributing to the understanding of theoretical constructs and bringing a broader picture of the status of interlanguage. (HUFS)

Keywords Second language acquisition, Research method, Theory construction, Unaccusative Hypothesis, Split intransitivity, Morphology

1. Introduction

There are many approaches to interlanguage or second language (L2) research, including cognitive, socio-cultural, and formal approaches. The formal approach to

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L2, which stemmed from linguistics traditions, has been concerned with the systematicity of L2 knowledge base (Gass & Selinker, 2008). For example, the formal approach has addressed the issue of what early L2 grammar looks like.

Much L2 formal research has contributed to L1 and L2 theoretical literature through *empirical* testing and validating theoretical constructs. Quantitative methods have been widely employed as a useful apparatus for L2 empirical research. However, only a limited range of quantitative methods, particularly mean comparison methods such as the analysis of variance (ANOVA) have actually been applied (see Johnson 2008 for the diverse uses of quantitative methods in investigating linguistic inquiry).

There are some concerns about the dominant use of comparison statistical methods in L2 empirical research. First, the ANOVA-type methods require the predetermination of the classes of linguistic targets that researchers want to although ANOVA-type methods allow responses to highly specific research questions, there is a difficulty in delineating an overall picture of the target constructs that researchers are interested in. In other words, the near-complete reliance on ANOVA-type allows us to see the details, but not the whole picture.

Secondly, when using the ANOVA-type methods, researchers must predetermine what they want to measure. In many cases, that predetermination will be guided by theoretical literature. Yet, the predeterminations are not always straightforward, particularly when competing theoretical hypotheses exist. This is the very locus where empirical research can test and validate theoretical works, but ANOVA-type methods are not suited to such exploratory analyses. In a study involving types of intransitive verbs, for example, an ANOVA-type analysis forces the researcher to divide the verbs into two distinct classes, known as *unergative* and *unaccusative*. An exploratory quantitative analysis, however, gives the researcher the freedom to envision the various verbs as existing along a continuum. I will use the results of this study to show how the type of analysis can influence the results of second language research, and argue that ANOVA-type and exploratory analyses should be used to complement each other.

In terms of quantitative methodology, therefore, this study questions the exclusive use of mean comparison statistics (e.g., the analysis of variance). The study emphasizes the incorporation of exploratory statistical analyses such as cluster analysis into interlanguage research. Taking split intransitivity as an empirical

example, this study illustrates how an exploratory statistical analysis such as cluster analysis would contribute not only to the construction of linguistic theory in general but also the better understanding of L2 knowledge base by itself.

2. Literature Review

2.1 Split Intransitivity: Theoretical Divergence

Many L1 (first) and L2 (second) researchers has paid attention to knowledge of correspondence between lexical semantics and syntax or the knowledge of the syntax-semantic interface (e.g., argument alternations). Among other linguistic domains of the correspondence, the Unaccusative Hypothesis (Burzio, 1986; Perlmutter, 1978; Perlmutter & Postal, 1984) has been a long interest of the understanding of the knowledge of the syntax-semantics interface.

Originated from a syntactic framework (i.e., Relational Grammar), the Unaccusative Hypothesis claims that there are two classes of intransitive verbs, namely, unergative verbs such as *jump* and unaccusative verbs such as *arrive*. Specifically, Perlmutter (1978) originally claimed that while unergative verbs have a single underlying subject, unaccusative verbs have a single underlying object in its representational strata. Syntactically speaking, for instance, the single argument of an unaccusative verb (e.g., *The ice* in *The ice melts*) is an underlying object, which has the property of an object-like subject. In contrast, the single argument of an unergative verb (*Kim* in *Kim walks*) is assumed to be an underlying subject. This purely syntactic account of split intransitivity is fairly a strong position in the sense that there are only two classes of intransitive verbs, maintaining a dichotomous account of intransitivity.

In contrast, there exists another competing account of split intransitivity, which is based on semantics (Dowty, 1991; Van Valin, 1990) or mapping between syntax and semantics (Levin and Rappaport, 1995; Sorace, 1995). A major difference between the syntactic accounts and these competing explanations is that the competing accounts admit there could be more than two classes of intransitive verbs, which are derived from the interaction between syntax and semantics. Put differently, the competing accounts explain the Unaccusative Hypothesis in terms of a continuous

account of intransitivity.

2.2 Empirical Exploration of Split Intransitivity: A Methodological Issue

A striking similarity of syntactic asymmetries between two types of intransitive verbs has been evidenced across languages, indicating the presence of split intransitivity. While unaccusative verbs tend to be compatible with counterparts equivalent to *be* in English, unergative verbs are largely compatible with auxiliary verbs corresponding to *have* in English. The regularity of split intransitivity has been shown not only in many languages, including Dutch, German, Italian, and Spanish but also in diverse linguistic domains including syntax and morphology (see Levin and Rappaport, 1995 and Sorace, 1995 for more details).

Within the domain of interlanguage research, the Unaccusative Hypothesis has been the target of linguistic inquiry. In interlanguage research, many L2 researchers have empirically tested the split intransitivity by implementing experimental studies to human subjects. The empirical testing of the split intransitivity must be an important contribution to the field of linguistics, given that empirical research, as Juffs (2001, p. 311) noted, enables SLA researchers to contribute to L1 and L2 theoretical literature through testing and validating theoretical constructs. In short, a key function of empirical research is not only for theoretical linguistics in general but also for interlanguage research by itself.

Despite the important contributions of L2 researchers, there is a methodological concern, particularly in relation to quantitative methods. Examining the previous interlanguage literature on the split intransitivity revealed that a particular type of inferential statistics based on mean comparison (i.e., a repeated measure analysis of variance) was *uniformly* used as a main analysis in many published L2 empirical studies of unaccusativity including Hertel (2003), Hirakawa (2001), Ju (2000), Lee (2010b), Lozano (2006), Montrul (2005), Sorace (1993, 1995) and Sorace and Shomura (2001). Since many of these studies were experimental, the use of repeated measure ANOVAs seems plausible because at least two dependent variables (mean scores of unergative and unaccusative verbs) are bound to be involved, particularly when knowledge of the correspondence is estimated via the mean scores.

A concern, however, is that this complete reliance on the comparison statistical

methods may restrict the perspectives of SLA researchers. More specifically, the comparison statistical methods are highly likely to limit the interlanguage researchers in contributing to theoretical linguistics and to interlanguage research. There is a difficulty in delineating an overall picture of the target constructs that researchers are interested in, although comparative analyses allow responses to highly specific research questions. I do not mean that the implementation of comparative statistical analyses is problematic because comparative analyses allow responses to highly specific research questions. The difficulty in the mean-based comparative quantifications is delineating an overall picture of the target constructs that researchers are interested in. From the perspective of testing theoretical linguistics, the comparative statistical methods require the predetermination of the grouping of target items, which must be based on theoretical linguistics. However, it is equally empirically interesting to examine how linguistic items are group together. In the case of the split intransitivity, for example, it is interesting to explore which intransitive verbs behave similarly, without the predeterminations of verb classes.

From the perspective of interlanguage research, what is inherently difficult in the comparative statistical methods is to demonstrate what interlanguage itself looks like without referring to target languages, which is known as the comparative fallacy in SLA research (Bley-Vroman, 1983; Schwartz, 1997). Put another way, the entire dependence on the comparative analyses could result in the estimation of highly specific features of a target construct, without knowing the overall shapes of the construct.

In this respect, I propose that exploratory statistical techniques should be incorporated as a necessary complement to comparative statistical methods, which likely broaden the understanding of interlanguage. For example, exploratory statistical techniques such as correlation analysis, cluster analysis, multidimensional scaling, and exploratory factor analysis seem in a superior position to test theoretical linguistics as well as to delineate a broader picture of interlanguage by itself (see Lee 2010a). In light of interlanguage research, the exploratory analyses allow us to test and to examine whether non-native speakers judged items as being correlated in a predictable way, without resorting to native speakers. In this regard, exploratory analyses can complement comparison analyses, potentially minimizing the comparative fallacy in interlanguage research.

2.3 Research Questions and Hypotheses

Motivated by the gaps in the previous literature, the goal of this study is to illustrate how an exploratory statistical technique can be implemented not only for testing and validating theoretical linguistics but also for understanding the status of interlanguage better. The split intransitivity has been used as a linguistic target in order to achieve the goal of this study. Particularly, the split intransitivity is tested by virtue of derivational morphology. The two research questions guided this study:

- (1) How does a NS (native speaker) group classify verbs when evaluating words that consist of re- prefix and intransitive verbs?
- (2) How does a NNS (non-native speaker) group classify verbs when evaluating words that consist of re- prefix and intransitive verbs?

A Hypothesis:

If a strong syntactic position of the split intransitivity is tenable for both a NS group and a NNS group, then re-words containing unaccusative and transitive verbs (e.g., re-arrive and re-break) would be classified into the same category or cluster whereas re-words having unergative verbs (e.g., re-walk) would be grouped into a different category.

3. The Current Study

3.1 Method

3.1.1 Participant

70 participants were sampled from two populations, including (1) 38 ESL learners (NNS group) and (2) 32 native speakers (NS) of English (NS group). The ESL learners had diverse L1 backgrounds including Arabic, Chinese, Japanese, Korean, Turkish, and Vietnamese. All of the participants were studying at Michigan State University in the U.S. The ESL participants had met the English requirement

of their university and were full-time graduate students. The self-rating of English proficiency by the NNS group was 7.58 out of 10 and the average TOEFL scores provided by the NNS group was 263.5 out 300. The average age of the NNS group was 30.95 (SD = 4.67) while that of the NS group was 28.67 (SD = 6.12).

3.1.2 Instruments: The RE Test

A material for the RE test was designed to investigate the two groups' performance in the relationship between derivational morphology and split intransitivity. The prefix *re-* has been known to be compatible with transitive such as *re-paint* and unaccusative verbs such as *re-appear* but not with unergative verbs (e.g., **re-sneeze*) (Marchand, 1960). From a strong syntactic account, Horn (1980) claimed that the prefix *re-* in English appears to attach only to verbs having an internal argument such as transitive verbs and unaccusative verbs. Yet, it is an empirical question that whether the strong syntactic or dichotomous view can be tenable, which is the very position that this paper is intended to explore.

All the words in the RE test were presented in a combination of the RE- prefix and root verbs (e.g., *remelt*). The verb roots were selected from the appendix of Levin and Rappaport (1995). Three types of verbs (7 unergative, 7 unaccusative, and 7 transitive verbs) were used in the RE test. All the root verbs used in the RE test were provided in Table 1.

Table 1. The three types of root verbs used in the RE test

Intransitives		Transitives
Unergatives (n = 7)	Unaccusatives (n = 7)	(n = 7)
creep	arrive	bend
dance	bleed	break
hike	rise	clean
jog	sit	cut
laugh	stand	roll
shout	stay	spin
swim	wither	wash

3.1.3 Procedure

All the test words (e.g., rearrive) were presented without contextual information. The participants were asked to evaluate the acceptability of each target word on a 4-point scale (1 = definitely impossible, 2 = probably impossible, 3 = probably possible, 4 = definitely possible).

The tasks were performed either in a classroom. There was no time limitation to complete the task, but it took about 10 minutes to finish the task. The participants were not allowed to consult with a dictionary during the tasks. Not knowing the meanings of verb stems, the participants were asked to mark the root verbs without judging the test items. After completing the main task, the participants completed a language-related background questionnaire about age, native language, and English language background.

3.1.4 Data Analysis

Cluster analyses, exploratory statistical methods, were administered In order to address research questions. Specifically, hierarchical cluster analyses (HCA) were used, given that the HCA does not require the pre-specification of the number of clusters. As for the cluster extracting method, Ward's method was implemented; squared Euclidean distance estimations were adopted because the target items of this study were measured on interval scales.

As variables for each research question, the evaluation scores of each target words by the NS and the NNS groups were entered into the cluster analyses. The first research question (i.e., the classification of verbs by the NS group) was answered by looking at the 32 individuals' evaluations on the 21 target items. The second research question (i.e., the grouping of verbs by the NNS group) was addressed by examining the 38 NNS participants' judgments on each target word on the 4-point scale. Note that, in the cluster analysis, the unnecessary agglomeration of responses by the NS and the NNS groups were not used so that more statistical power can be achieved. Furthermore, by adopting the cluster analyses, the avoidance of predetermination of verb classes was expected to achieve while the groupings of verb classes were pursued to explore.

3.2 Result

The first research question was how a NS (non-native speaker) group classifies verbs when evaluating words that consist of re- prefix and intransitive verbs. Of particular interest is to examine whether re-words containing unaccusative and transitive roots behave differently from re-words containing unergative roots, as claimed by the strong syntactic account of the split intransitivity.

A hierarchical cluster analysis for the NS group was conducted with the evaluations of each participant as variables. The hierarchical cluster analysis revealed that the two cluster solution was the best in characterizing the evaluation patterns of the NS group. An agglomeration schedule, as restructured in Table 2, showed the changes in the coefficients as the number of clusters is added. It is from the 3 clusters that the additions of the cluster did not contribute to the discrimination between the cases, suggesting the two clusters would be the best in explaining the clustering of the NS group in evaluating the target items.

Table 2. Agglomeration table of the NS group

Number of clusters	Agglomeration last step	Coefficients this step	Change
2	688.21	338.20	350.01
3	338.20	276.51	61.69
4	276.51	239.64	36.87

A dendrogram also yielded support to the two cluster solution suggested in the agglomeration schedules. Figure 1 illustrates there are two big clusters and each cluster contains two small clusters, respectively. In the dendrogram, the first cluster includes all of the intransitive verbs that contain both unergative and unaccusative verbs while the second cluster contains the transitive verbs.

Between the two big clusters, the first research question can be addressed by examining which items are clustered together. As seen in Figure 1, the response patterns of the NS group illustrates that the NS group evaluated the re-words containing transitive roots (e.g., re-spin) similarly and the re-targets containing intransitive roots (e.g., re-creep) comparably. More importantly, the unaccusative-based re-words (e.g., re-arrive) did not pattern with the transitive-based

re-words (e.g., re-spin), although both unaccusative and transitive verbs are theoretically assumed to show a comparable pattern (e.g., Horn, 1980).

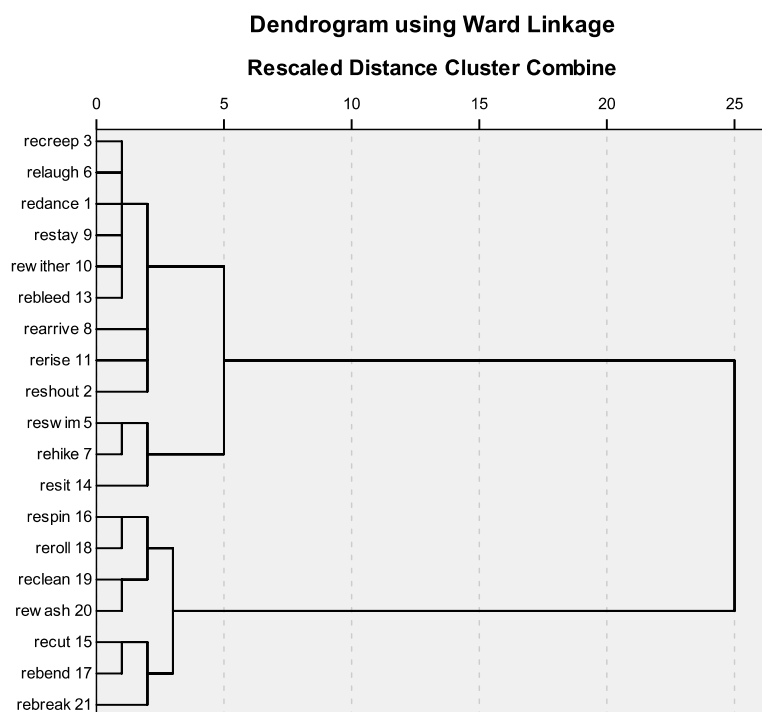


Figure 1. The dendrogram of the NS group

The second research question is related to the response clustering of the NNS group. That is, it is of interest to explore how the NNS group classifies the verbs. The classification patterns will be an important venue to examine the interlanguage by itself and to evaluate the potential contribution of interlanguage data to the construction of theoretical linguistics in general.

A comparable statistical procedure to the first research question was administered. A hierarchical cluster analysis indicated that the two cluster solution appeared the most appropriate in delineating the judgment patterns of the NNS group. An agglomeration schedule, as reorganized in Table 3, illustrated that from the three clusters, the changes in the coefficients were not significant as the number of clusters is increased. This pattern implicates that the two clusters would be the

best in accounting for the clustering of the NNS group in judging the target items.

Table 3. Agglomeration table of the NNS group

Number of clusters	Agglomeration last step	Coefficients this step	Change
2	422.15	331.43	90.72
3	331.429	283.119	48.31
4	283.119	251.619	31.50

A dendrogram in Figure 2 also gave support to the two cluster solution implicated in the agglomeration schedules. Figure 2 illustrates there are two big clusters and one cluster contains two small clusters.

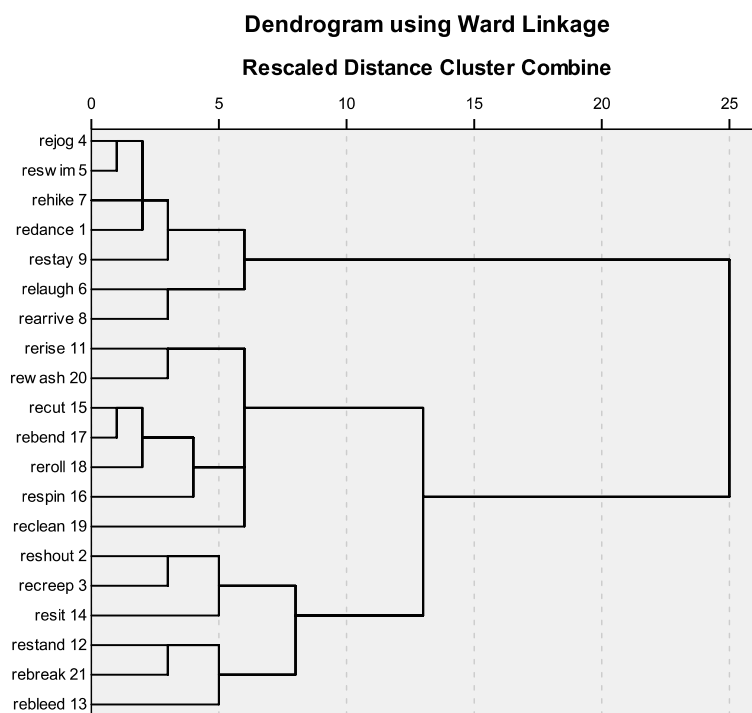


Figure 2. The dendrogram of the NNS group

In the dendrogram, however, the clustered items are not straightforward as the

case of the NS group in the sense that the clusterings of the NNS group's judgments are a mixture of intransitive and transitive verbs. The details will be discussed in below.

4. Discussion and Conclusion

This study was set out from a potential limitation of using entire mean comparison statistical method from the perspective of theoretical linguistics *per se* and interlanguage research. A general goal of this study is to explore how a NS group and a NNS group classify verb classes when the verbs are combined with a morpheme, without predetermining verb classes. Specifically, within the domain of the split intransitivity, this study investigated whether re-words containing unaccusative and transitive roots tend to be classified into the same cluster, which is based on the strong dichotomous view of the split intransitivity.

Table 4. The two clusters by the NS group

Cluster 1		Cluster 2	
Subcluster 1	Subcluster 2	Subcluster 3	Subcluster 4
re-creep	re-swim	re-spin	re-cut
re-laugh	re-hike	re-roll	re-bend
re-dance	re-sit	re-clean	re-break
re-stay		re-wash	
re-wither			
re-bleed			
re-arrive			
re-rise			
re-shout			

Note. *Re-jog* and *re-stand* were not classified by the hierarchical cluster analysis.

The first research question looked at the pattern of the NS group. Two clusters were identified the best in describing the response patterns of the NS group. Recall that both unaccusative and transitive verbs are theoretically assumed to show a comparable pattern, according to the strong syntactic position of the split

intransitivity. The clustering patterns of the NS group were summarized in Table 4, for the sake of ease of exposition.

A closer look at the members of the two clusters revealed that the unaccusative-based re-words (e.g., *re-arrive*) did not pattern with the transitive-based re-words (e.g., *re-spin*), contrary to the predictions of the strong syntactic position (e.g., Horn, 1980). Rather, the clustering patterns of the NS group indicated that transitive verb-based re-words behave differently from intransitive verb-based re-words, irrespective of whether intransitive verbs are either unergative or unaccusative verbs. Put differently, the re-words are not a good testing ground for revealing the presence of the split intransitivity in the sense that unaccusative and unergative verbs were not differentiated in evaluating the re-words.

The pattern of the NNS group was examined in the second research question. As the case with the NS group, the two clusters were found the best in explaining the evaluations of the NNS group. However, the members of the two clusters of the NNS group were different from those of the NS group. Table 5 shows the members of two clusters extracted from the judgments of the NNS group, which can be found in Figure 2.

Table 5. The two clusters by the NNS group

Cluster 1		Cluster 2	
Subcluster 1	Subcluster 2	Subcluster 3	
re-jog	re-rise	re-shout	
re-swim	re-wash	re-creep	
re-hike	re-cut	re-sit	
re-dance	re-bend	re-stand	
re-stay	re-roll	re-break	
re-laugh	re-spin	re-bleed	
re-arrive	re-clean		

Note. *Re-jog* was not classified by the hierarchical cluster analysis.

The NNS group showed an interesting pattern of clustering. The NNS group patterned with the NS group, although the exact members of each cluster differed from the NS group. In Table 5, Cluster 1 tends to contain many of unergative verbs, except for *re-stay* and *re-arrive*. Subcluster 2 in Cluster 2 has many of transitive verbs with an exception of *re-rise* while Subcluster 3 in Cluster 2 appear to have a

mixed member of verb classes. Importantly, the NNS group largely classified the unergative and the transitive verb-based re-words into the two different clusters, which seems to be consistent with the pattern of the NS group.

Admittedly, the NNS group seems to have less stable knowledge of unaccusative verbs or to be unsure of how unaccusative verbs interact with the *re-* prefix, given that Subcluster 3 is a mixture of intransitive and transitive verbs. Nonetheless, the NNS group also has some knowledge of split intransitivity, considering the fact that unergative and unaccusative verbs were not classified together in many instance. The Unaccusative Trap hypothesis (UTH) (Oshita, 2001) seems to be consistent with the findings of the NNS group in this study. The UTH states that L2 learners do not differentiate unergative and unaccusative verbs at the initial stage and have unergative representations as a default. Thus, as the UTH states, the pattern of the NNS group in this study seems to suggest that the NNS group have clear knowledge of unergative verbs (based on Subcluster 1) but less stable knowledge of unaccusative verbs (based on the fact that unaccusative verbs scatter across Subclusters). Put differently, the NNS group is likely to encode intransitive verbs into unergative verbs as a default, which seems to be consistent with the UTH.

Taken both the NS group and the NNS group together, the findings of this study indicates that the re-words can be a good testing basis of differentiating transitive verbs and unergative verbs. Both the NS group and the NNS group demonstrate that the split intransitivity appears not to be tested with the *re*-words. A future research area in this domain is to look at the split intransitivity by means of psycholinguistic techniques so as to gain the knowledge of how the L1 and the L2 speakers process the split intransitivity in real-time (e.g., Lee 2011; Oh, 2011)

To conclude, this study demonstrated that comparative quantitative analyses are inherently unable to (1) show how interlanguage data can be used to test linguistic hypotheses and to (2) explain precisely what interlanguage itself looks like. This paper emphasizes the incorporation of exploratory statistical analyses such as cluster analysis into interlanguage research, complementing the widely-used comparison analyses and therefore, contributing to the understanding of theoretical constructs and bringing a broader picture of the status of interlanguage.

References

- Bley-Vroman, R. 1983. The comparative fallacy in interlanguage studies: The case of systematicity. *Language Learning* 33: 1 - 17.
- Burzio, L. 1981. *Italian syntax: A government-binding approach*. Dordrecht: Reidel.
- Dowty, D. 1991. Thematic proto-roles and argument selection, *Language* 67: 547-619.
- Gass, S. and L. Selinker 2008. *Second language acquisition: An Introductory course*. New York: Routledge.
- Hertel, T. J. 2003. Lexical and discourse factors in the second language acquisition of Spanish word order. *Second Language Research* 19: 273-304.
- Hirakawa, M. 2001. L2 acquisition of Japanese unaccusative verbs. *Studies in Second Language Acquisition* 23: 221-245.
- Horn, L., R. 1980. Affixation and the unaccusative hypothesis. *Chicago Linguistics Society* 16: 134-146.
- Johnson, K. 2008. *Quantitative methods in linguistics*. New York: Wiley-Blackwell.
- Ju, M. K. 2000. Overpassivization errors by second language learners: The effect of conceptualizable agents in discourse. *Studies in Second Language Acquisition* 22: 85-111.
- Juffs, A. 2001. Verb classes, event structure, and second language learners' knowledge of semantics-syntax correspondences. *Studies in Second Language Acquisition* 23: 305-313.
- Lee, J. 2010a. Integrating second language empirical evidence in theory construction: Unaccusativity as a dichotomy versus a continuum. *Eoneohag* 56: 67-86.
- Lee, J. 2010b. Unaccusativity and derivational morphology in a second language. *Journal of The Applied Linguistics Association Of Korea* 26: 363-387.
- Lee, J. 2011. The activations of relational structures in processing second language noun-noun compound. *Linguistic Research* 28: 143-157.
- Levin, B. and M. Rappaport. 1995. *Unaccusativity: At the syntax-lexical semantics interface*. Cambridge, MA: MIT Press.
- Lozano, C. 2006. Focus and split-intransitivity: The acquisition of word order alternations in non-native Spanish. *Second Language Research* 22: 145-187.
- Marchand, H. 1960. *The categories and types of present-day English word formation*. München: Beck.
- Montrul, S. 2005. On knowledge and development of unaccusativity in Spanish L2 acquisition. *Linguistics* 43: 1153-1190.
- Oh, S. 2011. Semantic Anomalies in Second Language Processing: An Electrophysiological Study. *Linguistic Research* 28: 585-603.
- Oshita, H. 2001. The Unaccusative trap in second language acquisition. *Studies in Second Language Acquisition* 23: 279-304.
- Perlmutter, D. 1978. Impersonal passives and the unaccusative hypothesis. *Berkeley*

- Linguistics Society* 4: 157-189.
- Perlmutter, D. and P. M. Postal. 1984. The 1-advancement exclusiveness law. In D. M. Perlmutter and C. Rosen (eds.), *Studies in relational grammar* 2, Chicago, IL: University of Chicago Press, 81-125.
- Rosen, C. 1984. The interface between semantic roles and initial grammatical relations. In D. M. Perlmutter and C. Rosen (eds.), *Studies in relational grammar* 2, Chicago, IL: University of Chicago Press, 38-77.
- Schwartz, B. D. 1997. On the basis of the basic variety... . *Second Language Research* 13: 386-402.
- Sorace, A. 1995. Acquiring linking rules and argument structures in a second language: The unaccusative/unergative distinction. In L. Eubank, L. Selinker, and M. S. Sharwood, *The current state of interlanguage: Studies in honor of William E. Rutherford*, Amsterdam: John Benjamins, 153-175.
- Sorace, A. 1993. Incomplete vs. divergent representations of unaccusativity in non-native grammars of Italian. *Second Language Research* 9: 22-47.
- Sorace, A. and Y. Shomura. 2001. Lexical constraints on the acquisition of split intransitivity. *Studies in Second Language Acquisition* 23: 247-278.
- Van Valin, R. D. Jr. 1990. Semantic parameters of split intransitivity. *Language* 66: 221-260.

Junkyu Lee

Graduate School of Education (English Education)
Hankuk University of Foreign Studies
270 Imun-dong, Dongdaemun-gu
Seoul 131-792, Korea
E-mail: junkyu@hufs.ac.kr

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