Editorial Team:
Elias Abdollahnejad
Duaa Abu Amsha
Kelly Burkinshaw
Adam D. Daniel
Brett C. Nelson

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The photo on the front cover is taken by Elias Abdollahnejad.
Foreword

The editors of this volume are pleased to present the thirtieth volume of the Calgary Working Papers in Linguistics (CWPL). The CWPL is a publication affiliated with the School of Languages, Linguistics, Literatures, and Cultures (SLLLC) at the University of Calgary, focusing on the most recent contributions in linguistics and related disciplines by researchers affiliated with the University of Calgary. All the previous volumes of the CWPL from Vol. 1 (published in 1975) are stored in PRISM: The University of Calgary Digital Repository and can be accessed at: http://dspace.ucalgary.ca/handle/1880/51236

Each paper submitted to Volume 30 has been reviewed and edited by two editors, all graduate students of linguistics at the University of Calgary. It should be noted that the papers published in the CWPL represent works in progress and should not be considered as final or definitive papers. Therefore, publication in the CWPL does not preclude further submission of further revisions of the same papers to another journal.

This volume contains five papers from five of the current graduate students at the SLLLC. The papers in this volume discuss a range of topics from the fields of L1 Acquisition, Morphology, L2 Acquisition, Phonology, and Language Change.

We wish to express our sincere gratitude to all the contributors for their help and support, especially the professors and graduate students at the Linguistics Division of SLLLC at the University of Calgary.

November 2018,

Editors of CWPL - Vol. 30,

Elias Abdollahnejad
Duaa Abu Amsha
Kelly Burkinshaw
Adam D. Daniel
Brett C. Nelson
Competing grammars in language acquisition: the case of resumption in Persian relative clauses

Elias Abdollahnejad
University of Calgary

Abstract

Roeper (1999), Yang (2002), and Amaral and Roeper (2014) propose that all learners develop competing, even incompatible analyses of input as they work towards the target grammar. Using the term universal bilingualism, Roeper (1999) posits the existence of such Multiple Grammars (MG) and explores their role in first language acquisition. This paper discusses this proposal in the context of Persian children’s acquisition of resumption. In Persian, resumption is obligatory in object-of-preposition and genitive relative clauses (RCs) (Taghvaipour, 2005) and can be used optionally in subject and object RCs (Windfuhr, 2010). This behaviour makes it an appropriate construction to study the MG approach. Data from three Persian children (ages 1;11 to 4;2) in the CHILDES database (MacWhinney, 2000) were investigated for the frequency of RCs to see if there is a preference for resumption or gap in RCs. Results show that, in spite of variation in the received input, children prefer not to use resumption in subject and object RCs. However, 100% use of resumption in object-of-preposition and genitive RCs in their production data was observed. Despite optionality as a property of the input, children’s grammars appear to be categorical. Thus, children do not seem to be sensitive to variation in the input, which does not completely support Yang’s (2002) claim about the role of frequency of different forms in their dominance. The results confirm the presence of competing sub-grammars (resumption & gap) in both input and output from the early levels of language exposure and production.

Key words: relative clause, resumption, multiple grammars, Variational Learning Model
1 Introduction

Roeper (1999), Yang (2002), and Amaral and Roeper (2014) propose that all learners develop competing, even contradictory analyses of input as they work towards the target grammar. The main idea of the Multiple Grammars (MG) theory (Roeper, 1999) is that the grammar of human language is composed of subsets of rules (sub-grammars). Using the term universal bilingualism, Roeper (1999) points to the co-existence of multiple incompatible rules (i.e. multiple grammars) in adults’ grammar and explores their role in first language (L1) acquisition. In the process of language acquisition the grammar which is more frequent in the input dominates the competing grammars and it is ultimately more successful in analyzing input (Amaral & Roeper, 2014). In this paper, this proposal is discussed in the context of Persian children’s acquisition of resumption.

Resumptive elements are pronominal elements which can occupy the gap positions left by syntactic movements in some structures. Whereas in some languages these resumptive elements and gaps alternate freely, in English, “their distribution is very limited and appears to be influenced by linear distance, depth, and extractability”, i.e. whether a trace is acceptable (McKee & McDaniel, 2001, p. 114). In other words, the larger the distance between the original position of the dislocated element and its surface location, the more likely a resumptive element would occupy the gap position. This can be related to the weakness of human short-term memory in sentence processing. For instance, sentence (1a) shows the possibility of resumptive pronouns in two-level embedded relative clauses (RCs) in English, which does not allow resumption in normal RCs (1b).

1) a. That’s the girl who everybody thinks that I don’t know that Bill likes ?-/?her.
   b. That’s the girl that Bill likes -/”her.

Persian is a null-subject language with SOV word order. Persian RCs are NP-initial and they are obligatorily preceded by the complementizer ke ‘that’ (Karimi, 2001; Mahootian & Gebhardt, 1997; among others). Despite the somewhat unstable behaviour of Persian towards the availability of resumption in the position of displaced elements in RCs, “a personal or clitic pronoun co-indexed with the head of the relative clause” as a resumptive element can occur in almost all RC types (Abdollahnejad & Marefat, 2018). In Persian, while resumption can freely occur optionally in subject (2) and object (3) RCs in the case of emphasis on the relativized element (Windfuhr, 2010), it is obligatory in object-of-preposition (4) and genitive (5) RCs (Taghvaipour, 2005).1 As the following example sentences show, resumption can appear as pronouns or as pronominal clitics in Persian RCs.

2) nevisande-i [ke -/un komita=ro motaajeb kard(-esh)].
   writer=DEM [COMP RP:3SG committee=OM surprised did-(RESclitic:3SG)
   (The writer who surprised the committee.)

1 Abbreviations used in this paper: COMP = “complementizer element ke preceding Persian RCs”, DEM = “demonstrative -i sometimes attached to head DPs of RCs”, DUR = “durative aspectual prefix mi- attached to verb”, EZ = “Ezafe particle -e/-ye connecting two nouns or a noun and an adjective”, OM = “specific object marker ra/ro/o”, PL = “plural”, RESclitic = “resumptive clitic”, RP= “resumptive pronoun”, SG = “singular”.

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3) nevisande-i [ke komite -/un=ro entexab(-esh) kard].
   writer-DEM [COMP committee RP:3SG=OM selection(-RESlctic:3SG) did
   (The writer who the committee selected.)
4) nevisande-i [ke komite az */un/ash taqdir kard].
   writer-DEM [COMP committee from RP:3SG/RESlctic:3SG appreciation did
   (The writer who the committee appreciated.)
5) nevisande-i [ke komite ketab-e */un/sh =ro entexab kard].
   writer-DEM [COMP committee book-EZ RP:3SG/RESlctic:3SG =OM selection did
   (The writer whose book the committee selected.)

Roeper (1999) claims that, while acquiring their L1, children acquire sub-grammars all of which are compatible with Universal Grammar (UG). These grammars are manifested overtly in other languages even if they are not presumed to be typical of the target L1 grammar. Thus, the principle idea is that the child may create a grammar which is not equivalent to the adult system, but it is always consistent with UG. According to the Minimalist Program (Chomsky 1995), optionality ought not to be a property of adult grammars. However, minimalistically speaking, “access to two sub-grammars within a grammar” would be less complex and more economical than “rules with subcategories and complex exceptions” (Amaral & Roeper, 2014, p. 5). Therefore, it seems that concepts such as transfer and optionality can be accounted for by MG.

The variable behaviour of Persian RCs in terms of the resumption rule makes it an appropriate construction to study the MG approach. In this paper, the proposals regarding the co-existence of multiple grammars in L1 acquisition will be discussed in the context of Persian children’s acquisition of resumption, starting with a discussion of the notion “language” itself in Section 2. Section 3 will move on to a discussion of the fact that children receive input which is not homogeneous with respect to some learning problems. The present study and its methodology will be explained in Section 4. Sections 5 and 6 will elaborate on the results of the study and some discussion of the results. Finally, Section 7 provides the concluding remarks.

2 Language acquisition: endowment and environment

Language as a species-specific phenomenon has been viewed from different perspectives. It has been looked at as a cultural/social construct and also as the outcome of an endowment that enables humans and only humans to acquire it. From a generativist point of view, language is a natural object biologically present in human beings’ minds. Arguments from the poverty of the stimulus (Chomsky, 1986) have been the major motivation and primary logic for postulating an innate linguistic knowledge. However, Chomsky (1981) in his Principles and Parameters Framework suggests that along with a small number of parametric choices causing morpho-syntactic variation among languages, there are a set of universal and tightly constrained principles shared by all languages. Taken together, principles and parameters can provide a deterministic account of language development,
where little might be left to environmental influence and children acquiring language in the sense of making use of associate-, distribution-, statistical- or rule-based-learning.

According to Yang (2002), despite the fact that children are endowed with innate linguistic knowledge, they still must acquire language through interaction with the environment (p. 4). In fact, this is the real reason why different languages are not uniform and there is variability in the acquisition of different languages and different aspects of a single language. From a biological point of view, as Yang (2002) points out, quite similar to any other organic system, language development must happen as a result of the interaction of the internal (i.e. the endowed knowledge of linguistic structures) and external factors (i.e. linguistic experiences received from the environment). Therefore, Yang tries to lay out a model of acquisition which provides an explicit description of the learning mechanisms with the relation between what is innate (UG), what is received from the environment (input), and what is acquired. Specifically, he embeds a theory of linguistic knowledge (UG) in a theory of learning from the environmental experience. Yang’s (2002) Variational Learning Model considers language acquisition by postulating the existence of a set of competing grammars to match the externally received linguistic experience. Thus, Yang (2002) uses the model in (6) to represent language acquisition. In this model, $S_0$ is the initial state of the language learner. After exposure to enough linguistic experience from the environment (E), and through the learning mechanism ($\lambda$), this initial state changes into the final state ($S_T$).

$$6) \lambda: (S_0, E) \rightarrow S_T$$

Yang (2002) criticizes domain-general Generalized Statistical Models of language acquisition for minimizing the role of the initial ($S_0$) state and putting more emphasis on statistical distribution mechanisms which analyze the received input (p. 14). Generativist approaches, on the other hand, focus more on the properties of UG and the natural endowment ($S_0$) aspect of the language acquisition process. However, from the Variational Learning Model perspective both initial level ($S_0$) and the learning process through the received input are prominent.

Yang (2002) states that a good model of language acquisition must be compatible with what happens in reality (p. 6). Despite the claims about the role of frequency in language acquisition, particularly in the context of instance-based learning and usage-based models of language (Bybee, 2007; Ellis, 2002), it seems that there is no direct relation between the frequency of a structure in the environment and its speed of acquisition. In this regard, Yang points to the acquisition of the verb-raising rule (placement of finite verbs before negation and adverbs) by French children and the constraint on obligatory subjects in English where, in each case, children appear to be insensitive to the frequency of patterns in parental speech. Although sentences like (7) are not so frequent in adult-child speech (7-8%, in Yang’s estimation based on the CHILDES database), French children, as Pierce (1989) points out, show signs of its acquisition from a very early age (18 months).

$$7) \text{Jean voit souvent/pas Marie.}$$

Jean sees often/not Marie

(John often sees/does not see Marie.)

(Yang, 2002, p.7)
On the other hand, the obligatory-subject rule is acquired very late by English- and German-learning children. Despite the robust frequency of overt subjects in adults' speech to children, sentences such as (8a) and (8b) are very common in children's language in the period between 2 and 3 years of age (Yang, 2002, p. 7). In fact, as pointed out by Valian (1991) and Wang et al. (1992), about 30% of the sentences at the age of 2 have dropped subjects and children do not completely acquire the adult constraint requiring overt subjects until the age of 3.

8) a. (I) help Daddy.
   b. (He) dropped the candy.  

According to Yang's Variational Learning Model, a child's grammar is composed of a collection of potential adult languages. Specifically, he claims that the difference between child and adult language is in their competence. This claim is quite in line with the Continuity Hypothesis (Macnamara, 1982; Pinker, 1984) which states that the cognitive system of children and adults are identical. Yang believes that the differences between child and adult languages are caused by “differences in the organization of a continuous grammatical system”, because they both are constrained by the same principles and rules (UG) and “every utterance in child language is potentially an utterance in adult language” (p. 12). Therefore, the finiteness of possible human grammars (Principles and Parameters Framework) and the accessibility of UG-defined grammars to the child from the first levels of acquisition (the Continuity Hypothesis) are the main assumptions of this grammar competition model to describe the “non-uniformity and the gradualness in child language” (Yang, 2002, p. 26).

According to Yang's model, the child begins with a grammar $G_i$ with the weight or value of $P_i$ and analyzes the input element with this grammar. If successful, $G_i$ will be rewarded by increasing $P_i$, and if not, $G_i$ will be punished by decreasing its weight. Based on the model, all the UG-defined grammars ($G_i$ to $G_n$) are in competition to gain more prominence. The reward and punishment of different grammars will continue until these P values for all options are stabilized and there is no change of values anymore. These P values can be anything from zero to one, in which zero means the grammar is totally absent in the input and one means that we have an idealized input situation that all the structures totally match the grammar option $G_i$. Additionally, there is the term “penalty probability ($c_i$)” in this model which points to the probability of failure of each grammar to analyze a structure presented by the input. Specifically, the penalty probability ($c_i$) is the percentage of the input sentences incompatible with $G_i$.

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3 Accordingly, differences in acquisitional or cognitive mechanisms cannot be the cause of possible language differences between the grammars of children and adults.

4 In his Variational Learning Model, Yang (2002) also proposes the concept of signature as the frequency of unambiguous evidence of a parameter in proportion to the input (p. 39). This means that the more frequent unambiguous tokens of a rule in the input will result in earlier acquisition. Through this construct, he justifies the late acquisition of the V2 rule by German children. Since the only unambiguous evidence for V2 in the input are the cases where the verb is followed (non-locally) by the object or some other VP-constituent and precedes (locally) the subject of the sentence and because such forms are not so frequent in the child directed speech (1.2%) its acquisition will be delayed.
3 Heterogeneity of input in L1 acquisition

In this section, the fact that children receive input which is non-homogeneous with respect to some learning problems will be discussed, raising questions such as: How do they identify relevant input? For instance, children acquiring English as their first language will likely hear lots of utterances without an overt subject, but they also hear utterances with subjects; and children acquiring Persian will encounter utterances with and without resumption. How does a child decide which utterances matter when determining whether subject or resumption is required? In other words, how is the relevant input set determined?

Recall that the MG theory proposes that the child builds multiple sets of rules (sub-grammars) during the process of language acquisition. Amaral and Roeper (2014) claim that the child facing “contradictory information” in the input cannot make “a uniform set of rules that captures all of the information” (p. 5). Therefore, the child must first notice the different possible options then decide which cluster of properties to select. Accordingly, children “keep track of multiple options” which means that they compute multiple analyses of a single input (Amaral & Roeper, 2014, p. 10).

Almost all languages contain some properties in their grammar which cannot be captured by a single set of non-contradictory rules. Roeper (1999) claims that the coexistence of such properties implies that development cannot be captured by a model in which one stage (one grammar) is replaced by a completely different grammar at a subsequent stage. Instead, learners retain memory for early stages as partial grammars. It is this presence of multiple systems which Roeper (1999) calls Theoretical Bilingualism. He points to the simultaneous use of incompatible features of grammar by children as evidence that there is no total substitution of different stages during the acquisition process. As he states, in the case of early levels of L1 acquisition, the child uses the Language Acquisition Device (LAD) to build the Initial Grammar. This simple and primary set of rules built by UG is called the Minimal Default Grammar. The structures produced by this grammar can be different from the adults’ language, but they are UG-constrained. With exposure to input, the child can modify this grammar to make it similar to adult language. According to MG, this modification does not mean that the previous forms are removed from memory, but instead may stay there indefinitely. Yang (2002) believes that among the infinite number of possible grammars, the child selects the grammar (complex or simple) that is most consistent with the available input (the most frequent and productive grammar). This means that different children could acquire unique grammars if their input is sufficiently different.5

The pro-drop parameter and the behaviour of L1 learners regarding this parameter have interesting implications for the possibility of multiple grammars in L1 acquisition. In the case of pro-drop languages (e.g. Spanish, Persian, etc.), it can be assumed that children starting with the assumption that an overt subject is mandatory will modify their hypothesis after encountering pro-dropped tokens in the input and will come to the conclusion that the overt subjects can be dropped in their language. In the case of non-pro-drop languages (e.g. English, German, etc.), since there are lots of token sentences without

5 This claim is similar to the Motherese Hypothesis (Snow & Ferguson, 1977) and in contrast to the idea that with UG, language acquisition is “deterministic” (see Grimshaw, 1981).
an overt subject (e.g. wanna go) in the input, children might also make the same modification. However, input sentences containing semantically vacuous expletives (e.g. there) in subject position cue to the child that the language is non-pro-drop. Additionally, since the pro-drop forms are not as common as the non-pro-drop structures in the input for a language like English, the child notices that the latter is more productive. Therefore, in both cases of pro-drop and non-pro-drop languages, children are exposed to both forms simultaneously. Regardless of whether pro-drop or non-pro-drop is the default grammar, it seems that the claims regarding the co-existence of multiple grammars can sufficiently explain the L1 acquisition process.

4 This study

This paper investigates the acquisition of resumption rules in RCs by Persian-speaking children. Unlike English, which generally does not allow resumption in single-clause RCs, Persian sometimes does and sometimes does not show resumption depending on the RC type. Resumption is optional in object RCs, and obligatory in object-of-preposition and genitive RCs (Taghvaipour, 2005). Although resumption is not so commonly used in subject RCs in Persian, it can be used in cases of emphasis on the relativized element (Windfuhr, 2010). Thus, both gap and resumption are acceptable in subject and object RCs in Persian, while only resumption (not gap) is grammatical in object-of-preposition and genitive RCs. It should be noted that resumption can appear as pronoun or pronominal clitic in Persian RCs.

According to the Noun Phrase Accessibility Hierarchy (NPAH) proposed by Keenan and Comrie (1977), subject and object RCs are more accessible and easier RC forms to be acquired by children. Since in Persian both of these structures can optionally have either resumption or gap (Windfuhr, 2010), investigation of the order in which children acquire these structures can help us to have a clearer view of the possibility of the presence of multiple grammars and their acquisition order. Considering that resumptive elements in Persian appear to be optional in some cases and obligatory in others, resumption is an appropriate construction for studying the MG approach which, recall, is trying to eliminate optionality as a property expressed in lexical entries. The goal is to see whether Persian L1 children begin with resumption or gaps in their RC structure production.

4.1 Methodology

Data from three Persian children (Family, 2009) in the CHILDES database (MacWhinney, 2000) were investigated for the frequency of RCs. Table 1 shows the information about the children: their sex, age at the beginning of the study and at the end, as well as the number of speech recordings the number of people speaking to the child or in the presence of the child.

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6 This is actually in line with the data of the three children discussed in this paper in which cases of subject RC with resumption were observed. Therefore, in this paper resumption in subject RCs is considered optional, quite like object RCs.
Table 1: The information of the children in the study

<table>
<thead>
<tr>
<th>Sex</th>
<th>Age (start)*</th>
<th>Age (end)*</th>
<th>No. of recordings</th>
<th>People talking to the child</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child 1</td>
<td>Female</td>
<td>1;11.21</td>
<td>2;10.21</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Parents and babysitter</td>
</tr>
<tr>
<td>Child 2</td>
<td>Male</td>
<td>5;7.29</td>
<td>6;6.17</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Parents</td>
</tr>
<tr>
<td>Child 3</td>
<td>Female</td>
<td>4;1.12</td>
<td>4;2.28</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Parents</td>
</tr>
</tbody>
</table>

*year; month, day

Four different types of RCs are focused on in this study, i.e. subject, object, object-of-preposition, and genitive RCs. All the transcripts of the child-parent speech were looked at for all forms of these four RC types. Among them, the tokens containing resumption (pronoun or clitic) were identified as the resumption cases and the rest as instances of gap. Since all Persian RCs begin with the complementizer *ke* 'that', the transcripts were searched for this element to spot the instances of RC. However, because RCs are not the only structure in Persian which contain the word *ke*, the researcher as a near native speaker of Persian scrutinized the texts carefully to determine the RC forms.

Child 1 was selected to see the status and frequency of resumption in the child directed speech at the early levels of speech production, although she could not make complex structures such as RCs, yet. Children 2 and 3 with the age span of 4 to 6 were selected to investigate the status of RCs at early levels of complex structure production. It should be noted that data from a child between the ages of 3 to 4 are not available in the corpus to compare with the performance of the selected children. Accordingly, no information on the earliest stages of RC use can be provided in this paper.

5 Results

The cases of all four RC types with and without resumption (pronoun and/or clitic) were observed in the dataset (input and/or output) of the three targeted children in this study. Example sentences (9) to (12) below are some of the RC tokens containing forms of resumption (i.e. resumptive clitics) from the observed data of the three children of interest in the CHILDES database. As mentioned before, in Persian, subject and object RCs can optionally have resumption (9 & 10, respectively) or gap, while object-of-preposition (11) and genitive (12) RCs require resumption. The resumptive element is bolded in each example sentence.

9)  
taromar-eshun kard afarad-esho [ke (ham-ashun) div budan].  
extermination-3pl did members-3sg that all-resclitic:3pl monster were  
(She/He exterminated all her/his team members who were monsters.)

10) un maqale [ke man tarjom(-ash) kard-am]  
that essay that I translation-resclitic:3sg did-1sg  
(That essay which I translated.)

It needs to be mentioned that any possible differences between the acquisition and availability of resumptive pronouns and resumptive clitics are not the focus of this study and both cases are counted as resumption tokens for the purposes of this study.
11) ahanroba faqat be chiz-a-i [ke tu-shun ahan dar-an mi-chasb-e].
magnet only to thing-PL-DEM that in-resclitic:3PL iron have-3PL DUR-stick-3SG
(A magnet only sticks to things which have iron in them.)

12) hamun film-e [ke xod-emun dastan-esh =o goft-im]
same movie-DEM that self-1PL story-resclitic:3SG =OM told-1PL
(The same movie that we told the story of)

All the RCs in the input or produced by these three children (output) were counted and the percentages of those containing resumption or gap were calculated (Table 2). Because Child 1 was very young and could not make complex sentences (e.g. RCs), there is no output data for her. Children 2 and 3 have both input and output data which are depicted separately in the table. As the table shows, subject and object RCs have the highest frequencies (140 & 96 tokens, respectively), a few of which contained resumption (2 & 3 tokens, respectively).

Table 2: Percentage (token count) of different RC types with gap or resumption in the input and output data

<table>
<thead>
<tr>
<th></th>
<th>All RCs</th>
<th>Subj RC</th>
<th>Obj RC</th>
<th>Obj-of-prep RC</th>
<th>Gen RC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input</td>
<td>Gap</td>
<td>92.78 (77)</td>
<td>100 (44)</td>
<td>97.06 (33)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Resump</td>
<td>7.22 (6)</td>
<td>0</td>
<td>2.94 (1)</td>
<td>100 (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100 (4)</td>
</tr>
<tr>
<td>Child 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input</td>
<td>Gap</td>
<td>97.73 (43)</td>
<td>100 (28)</td>
<td>93.75 (15)</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Resump</td>
<td>2.27 (1)</td>
<td>0</td>
<td>6.25 (1)</td>
<td>NA</td>
</tr>
<tr>
<td>Output</td>
<td>Gap</td>
<td>87.18 (34)</td>
<td>100 (16)</td>
<td>100 (18)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Resump</td>
<td>12.82 (5)</td>
<td>0</td>
<td>0</td>
<td>100 (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100 (4)</td>
</tr>
<tr>
<td>Child 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input</td>
<td>Gap</td>
<td>76.82 (53)</td>
<td>94.12 (32)</td>
<td>95.46 (21)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Resump</td>
<td>23.18 (16)</td>
<td>5.88 (2)</td>
<td>4.54 (1)</td>
<td>100 (7)</td>
</tr>
<tr>
<td>Output</td>
<td>Gap</td>
<td>72.73 (24)</td>
<td>100 (18)</td>
<td>100 (6)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Resump</td>
<td>27.27 (9)</td>
<td>0</td>
<td>0</td>
<td>100 (5)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100 (4)</td>
</tr>
<tr>
<td>Total</td>
<td>Gap</td>
<td>86.2 (231)</td>
<td>98.58 (138)</td>
<td>96.88 (93)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Resump</td>
<td>13.80 (37)</td>
<td>1.42 (2)</td>
<td>3.12 (3)</td>
<td>100 (14)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100 (18)</td>
</tr>
</tbody>
</table>

As the table shows, only 7.22% of the input RCs for child 1 contained resumption. It contains 2.94% of all the object RCs plus all the presented object-of-preposition and genitive RCs (not quite as frequent in the input, i.e. 1 and 4 tokens, respectively). None of the subject RCs spoken to Child 1 contained resumption which may indicate a penalty probability of 100 for resumption in subject RCs in the child’s grammar.

In the case of Child 2, the data show that 2.27% of the input contained resumption among all types of RCs. No evidence of object-of-preposition and genitive RCs were observed in the input and all the cases of resumption were only in object RCs (6.25%). This child used resumption in 12.82% of his RC production, all belonging to the RC types requiring resumption, i.e. object-of-preposition and genitive RCs. For Child 3, resumption was present in almost a quarter of all the RC tokens in the input. Again, all object-of-preposition and genitive RCs contained resumption and each of the subject and object RCs were used with resumption in almost 5% of the cases (5.88% & 4.54%, respectively). Child 3’s output, on the other hand, shows 27.27% of resumption in all RC types together. Quite
like Child 2, she also uses resumption in all her object-of-preposition and genitive RCs and no use of resumption was observed in her production of subject and object RCs.

Additionally, the total data show that subject and object RCs in the majority of the cases were used without resumption (98.58% & 96.88%, respectively) and no case of ungrammatical object-of-preposition and genitive RCs (i.e. without resumption) was observed, neither in the input nor in the output.

6 Discussion

In this paper, the acquisition of resumption in Persian RC structures is discussed in terms of data from three Persian children from the CHILDES database. In the input of the second child, only 2.27% of all the received RCs contain resumption. The third child has a more adult-like condition and has 23.18% probability of resumption among all forms of RC types in the input. This indicates the heterogeneity of the input and the presence of multiple (at least two) grammars. Although there were no object-of-preposition and genitive RC tokens in the recorded input of the second child, he used resumption in all his productions of these RC types. It shows the acquisition of the resumption rule. Since this study has considered the input only in a very limited time frame, no claims can be made about the previous input this child might have received. However, the important conclusion which can be made about the second and third children is that, regarding their production, it seems that despite the presence of both gaps and resumption in the input (i.e. heterogeneous input), they have both acquired the resumption rule and noticed the necessity of resumption in object-of-preposition and genitive RCs.

The results show that the frequencies of subject and object RCs were higher than for object-of-preposition and genitive RCs. Since the use of resumption in subject and object RCs is optional in Persian (i.e. it is used more to emphasize the subject or object, respectively), not many cases of resumption were observed in the whole data (13.80% total and only 4.52% in subject and object RCs together). For Child 1, only about 7% of all RCs in recorded input contain resumption. Therefore, it can be concluded that gaps in RCs are the dominant form with a penalty probability of only 7% in the case of this child. Now the question is whether this relatively small amount of resumption tokens is enough for the child to notice and acquire resumption in Persian RCs, especially for the RC types where resumption is required. Although all the tokens of object-of-preposition and genitive RCs in her input were grammatical (with resumption), the number was so small (only 5 tokens) that it does not seem to be enough to acquire this form. Considering her young age and that she could not produce RCs yet, no claims can be made about the acquisition of resumption by this child. However, the presence of both resumption and gap in the input confirms the claims of Multiple Grammars theory and Variational Learning Model regarding the coexistence of incompatible forms in the input.

Another important thing which must be noted here is the significant difference in the age of the children in this study. The first child who is almost three years old did not produce any RC types (at least in the limited time frame considered in this study), but Children 2 and 3, who were in the age frame of about 4 to 6, showed the ability to produce the difficult RC types of object-of-preposition and genitive with the accurate use of resumption. Thus, it seems that the Persian children start the production of different RC
types between the ages of 3 and 4. Despite only 2% of resumption in the input, Child 2 uses resumption in about 13% of his RC productions. He may have already received more evidence of resumption helping him to notice that the possibility of resumption is more than just 2%. In the case of Child 3, the percentages of resumption in input and output are very similar, 23.18% and 27.27%, respectively. This can be used to confirm Yang's ideas about the \( P \) value or weight of each grammar which is determined by the received input. Here again, the dominant form is using gaps instead of resumption, but in about one fourth of the cases the child uses resumption which is quite in line with the percentage of resumptions they receive in the input.

According to the Noun Phrase Accessibility Hierarchy (NPAH) proposed by Keenan and Comrie (1977), there is an accessibility order of RCs based on their relativized position, i.e. grammatical function of the relative pronoun in the RC. (13) depicts the order of RC accessibility based on NPAH. Based on NPAH, if in a language a noun phrase can be relativized in a given grammatical position in the hierarchy, then the noun phrases in any position higher in the hierarchy can also be relativized (Hyltenstam, 1990). Regarding NPAH and its predictions on the acquisition of RCs, Gass and Selinker (2008) argue that “considering the Accessibility Hierarchy (AH) from the point of view of learnability, if difficulty is at the base of this universal, we would expect learners to learn to relativize according to the ordering of the AH positions” (p. 377). Based on their empirical studies, Gass (1982) and Eckman et. al. (1988) point out that because the knowledge of more difficult structures must involve the knowledge of easier ones, if a learner acquires a specific type of RC, they would also acquire the higher RCs in the hierarchy (i.e. the easier RCs). In other words, generalizations occur from the more marked (i.e. more difficult, less accessible) to the less marked (i.e. less difficult, more accessible) RCs (Croteau, 1995, as cited in Gass & Selinker, 2008). Therefore, according to the NPAH and considering 100% accuracy in the performance of Children 2 and 3 on object-of-preposition and genitive RCs, it would be concluded that they have already acquired subject and object RCs and the optionality of resumption in these forms, because the latter are higher in the hierarchy proposed by NPAH.

13) Order of relative cause accessibility in the NPAH:

Subject RC > Direct Object RC > Indirect Object RC > Object of Preposition RC > Genitive RC > Object of Comparison RC

(> means more accessible than)

In spite of the optionality of resumption or gap in Persian subject and object RCs, generally the preference is not to use resumption in these forms, especially in one-level embedded RCs. Both input and output data of our participants clearly show this point. The frequency of resumption in these two RC types is between 2 to 6 percent in the input for the children. Despite few samples of resumption in these RC structures, no evidence of resumption in subject and object RCs were observed in the output of Children 2 and 3. It seems that children prefer not to use resumption when they think it is not required despite its presence in the received input. This implies that despite optionality being a property of adult input to children, their grammars appear to be more categorical. Once the sentences are broken into sub-categories (i.e. subject & object RCs vs. object-of-preposition & genitive RCs), categorical analysis is suggested and the children are treating the variation within the first category as noise. Specifically, regardless of the variation within subject and object RCs
in the input (gap vs. resumption), children do not categorize this variation and always use gap in them. Thus, children do not seem to be sensitive to this variation in the input which does not support Yang’s (2002) claim on the role of frequency of different forms in their dominance. All in all, the results of this study confirm the presence of competing sub-grammars (resumption and gap) in both input and output from the early levels of language exposure and production.

7 Conclusion

In this paper, two acquisition models (i.e. Theoretical Bilingualism/Multiple Grammars, and the Variational Learning Model) which propose the co-existence of multiple sub sets of grammars instead of one complex grammar with several options were discussed. The acquisition of resumption as a case of optionality by Persian children was investigated and discussed through the MG and Variational Learning Model models. Results show that, despite the presence of resumption in the received input, the children notice its optionality in normal cases of subject and object RCs lacking emphasis on the relativized element and prefer not to use resumption in such cases. However, 100% use of resumption in object-of-preposition and genitive RCs in the child production data was observed, which points to the presence of both resumption and gaps in the grammar of the Persian children and is in line with MG. Despite optionality as a property of adult input to children, their grammars appear to be categorical. Once the sentences are broken into sub-categories, categorical analysis is suggested and the children are treating the variation within the category (including subject and object RCs) as noise, i.e. linguistic information that is not vital to their interpretation of the input. Yang’s (2002) frequency claims are not entirely supported however, as children are not shown to be sensitive to the variation in the input. All in all, the results of this study confirm the presence of competing sub-grammars (resumption and gap) in both input and output from the early levels of language exposure and production.

References


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Contact Information

Elias Abdollahnejad
elias <dot> abdollahnejad <at> ucalgary<dot>ca
School of Languages, Linguistics, Literatures, and Cultures, University of Calgary
CHC 211, 2500 University Drive NW
Calgary, Alberta, T2N 1N4
Canada
Grammaticality in Japanese clipping
Adam D. Daniel
University of Calgary

Abstract

This paper analyzes the role of morphology in the clipping process of the Japanese language. Contrary to views that clipping is either not a morphological or should not be accounted for in the grammar (cf. e.g. Scalise, 1984, p. 94; Spencer, 1991, p. 461; Mel’čuk, 2006, p. 311), Japanese clipping appears to be morphologically motivated and is a productive process in the language. A review of the relevant literature on clipping shows that the process is vaguely defined and often considered arbitrary in how its outputs are formed. I propose a unified definition of clipping on the basis of which I analyze examples from a database of over 600 Japanese clipped outputs. My own model of how clipping might fit into the grammar is based on the application of the Process-and-Paradigm Morphology framework (Pounder, 2000) and expansions upon that framework by Winters (2017). In this model, I create representations of word-formation operations which are able to account for many of the forms found in Japanese clipping while also giving an account of when clipping happens in word-formation. The retention of class-specific affixes and morphemes in Japanese clipped outputs provides evidence for patternability in clipping and an awareness of morphological structures by speakers, which demonstrates that clipping exhibits grammaticality and belongs within morphological theory.

Key words: morphology, semantics, phonology, clipping, word-formation processes, Japanese, Process-and-Paradigm Morphology
1 Introduction

In this paper, I discuss the morphological aspects of clipped forms in Japanese. While English has been the main focus of most of the research on clipping, Japanese provides insight into the process as clipping is rather productive in the language. Unlike Japanese, English often disregards morphemic boundaries in its clipping processes while Japanese adheres to these boundaries in most cases. In addition to this, expressions in Japanese are more morphologically transparent than English as the Japanese language uses class-specific affixes which remain in clipped outputs; moreover, the morphemes which comprise compounds are easily identifiable by speakers. For example, an English clipping example (1a) is compared to a Japanese one (1b) whereby morphemic boundaries are respected as well as able to be parsed.

1) Whole Form Clipped Output Gloss
   a. appli-cat-ion → app (application)
   b. ri-reki-sho → reki (curriculum vitae)
   perform-history-document

In English, application has the morphemes of the base apply, the verbal affix -cate, and the noun affix -tion, yet its clipped output app disregards the morphemic boundary of apply. In the Japanese clipping of rirekisyo, however, the morpheme reki which refers to ‘history’ has been retained and the morpheme is unbroken.

By applying morphological operations and approaches from Process-and-Paradigm Morphology (Pounder, 2000; Winters, 2017) to the well-researched phonological approaches which have already been done on Japanese clipping (see Poser, 1990; Itô, 1990; Nishihara, van de Weijer, & Nanjo, 2001; Irwin, 2011), this paper aims to show that the morphology of Japanese works in conjunction with its phonological rules in order to create clipped outputs, but ultimately it is the morphology which must direct the phonology. This paper shows that clipping is a process which is pattern-based and follows certain rules which therefore indicate it should be considered as part of a language’s grammar.

Section 2 provides a background to clipping which details the issues which arise from considering it an arbitrary and non-grammatical process. It also gives a brief overview of the literature on clipping and provide descriptions and definitions of the clipping process. Section 3 provides a brief methodology for the compilation of the database of Japanese clippings underlying this research, and the analysis of the database follows in Section 4. Section 5 proposes a model of the clipping process and draws on principles from Process-and-Paradigm Morphology to highlight the patternability and grammaticality of clipping, and Section 6 concludes.

2 Background

Clipping is a process which creates new lexemes by shortening expressions. Even though this process alters the form of an expression, its status as a morphological process is controversial. Some linguists claim that is not a morphological process and should not be incorporated into morphological theory (cf. e.g. Scalise, 1984, p. 94; Spencer, 1991, p. 461;
Mel'čuk, 2006, p. 311). The proposed justification for this position is that morphology as a grammatical component is predictable and contributes to changes in meaning. Clipped forms, on the other hand, are considered phonologically unpredictable, violating morphological boundaries and offering no change to semantic content. This paper investigates the Japanese language, as it exhibits a large number of clipped words and phrases which appear to be morphologically motivated in their construction.

2.1 Issues

Clipped forms in Japanese are prevalent in various contexts across the language, all of which provide evidence of the highly productive nature of the Japanese clipping process. A non-exhaustive example of clippings in each of these contexts of single words, compound words, and hypocoristic pet names is shown in (2a-c).

<table>
<thead>
<tr>
<th>Whole Form</th>
<th>Clipped Output</th>
<th>Gloss</th>
<th>Source Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. natukashi-i</td>
<td>natsu-i</td>
<td>(nostalgic)</td>
<td>single word</td>
</tr>
<tr>
<td>b. gaikoku shihon</td>
<td>gai-shi</td>
<td>(foreign capital)</td>
<td>compound</td>
</tr>
<tr>
<td>c. Nobuo-chan</td>
<td>Noo-chan</td>
<td>(little Nobuo)</td>
<td>hypocoristic</td>
</tr>
</tbody>
</table>

The clipped forms in (2a), (2b), and (2c) exemplify why examining Japanese is important for considering the morphological status of clipping. In (2a), the single-word adjective natukashi-i retains the adjective-specific suffix -i in its clipped form, while in (2b) the integrity of morphemic boundaries is once again shown to be an important factor in clipping, and finally in (1c) the diminutive naming suffix -chan also appears to be retained during the clipping process. All of these facts show that morphology is part of the clipping process in Japanese and is considered when clipping expressions.

Evidence for morphological involvement in the Japanese clipping process can be seen by applying Itô's (1990) prosodic minimalit constraint. Itô (1990, p. 221) states that in Japanese, a minimal word derived by deletion processes such as clipping must be more than one syllable and must contain at least two morae distributed across its syllables. In (2c) if the suffix -chan is not considered in the clipping process, the expected clipped output would be *Noo. However, *Noo only consists of one long syllable; thus, it violates Itô's prosodic minimalit constraint. Additionally, while *Nobu could be created as a clipped output and would satisfy the minimalit constraint, Noo-chan is what is produced. The form Noo-chan satisfies the minimalit constraint through the attachment of the suffix; therefore, the -chan suffix seems to be crucial in satisfying the minimalit requirement of the clipped form. Although -chan can be argued as just another syllable being selected to satisfy the minimalit constraint without regard to its morphology, the fact that -chan is key in hypocoristic formation seems to suggest that its morphological status is what speakers are considering in the clipping process as opposed to its syllabic structure. This suggests that speakers are exhibiting an awareness of the morphological structure of an expression when engaging in the clipping process.

Another issue regarding the investigations of clipping in general thus far is that the majority of analyses are phonological. This is also the case with analyses of Japanese clipping (see Poser, 1990; Itô, 1990; Nishihara, van de Weijer, & Nanjo, 2001). However,
such analyses have limitations when considering other aspects of linguistic expressions such as semantics and morphology. Inasmuch as a phonological account can explain the sound profile of a clipped output and the constraints used by speakers to produce it, it is not able to explain the influence of materials like -i in (2a), -chan in (2c), or other affixes in the creation of a clipped output.

Although some accounts have focused on hypocoristics, also known as diminutive personal names (see Poser, 1990, Itō, 1990), they do not analyze the presence of the -chan suffix in the clipped output. This is a missed opportunity for a morphological investigation of clipping as others who have researched hypocoristic formation such as Roca and Felíu (2003) or Lappe (2003) who have investigated Spanish and German hypocoristic clipping respectively have found that in using a morphological approach, they can account for linguistic material which the phonology cannot predict. For example, the Spanish hypocoristic clipping Agustín → Tino (Roca & Felíu, 2003, p. 200) uses the suffix -o which indicates masculine gender and therefore exhibits morphological agreement. In this case, grammatical gender agreement is something which the morphology of a language must direct the phonology to convey and cannot be derived from phonology alone. This finding is similar to the appearance of the -i suffix in a Japanese adjective clipping, e.g. hazukashi-i → hazu-i ‘embarrassing’ which is not accountable by phonology alone. Therefore, the works of Lappe (2003), and Roca and Felíu (2003) indicate that morphological accounts of clipping are able to provide information beyond those of phonological accounts. This strongly suggests that the clipping data for Japanese needs research beyond just the phonological, something which a morphological account may explain.

2.2 Exploring definitions and descriptions of clipping

In order to properly analyze clipping, it is imperative that a general definition of the process be established. Definitions of clipping available in the literature are often general, omitting specifics of how clipping is actually accomplished. In his description of clipping in English, Marchand (1969, p. 441) defines the clipping process simply as reducing a word to just one part of its whole form, like mag for magazine. He also claims that a clipped form is not a morpheme, but an arbitrary part of the source word; however, this does not mean the remnants of a clipping can never be morphemic. Counterevidence is seen in Japanese clippings, e.g. daigaku-in-sei ‘graduate student’ → in-sei, as both remnants of the clipped form are morphemes as well as syllables.

Additionally, Adams (1973, p. 135) defines clipping as a process which usually occurs primarily on nouns whereby two or more syllables are removed from the word and no meaning change occurs. Bauer (1983, p. 233) shares some ideas with Adams by defining clipping as “the process of shortening a lexeme without changing its meaning or part of speech”. Bauer also states that which parts or syllables of a word and how much of it will be clipped are unpredictable, again framing clipping as targeting material arbitrarily.

Even though Adams (1973, p.135) and Bauer (1983, p. 233) state that clipping is unpredictable, López-Rúa (2002, p. 43), Plag (2003, pp. 148-152), Fandrych (2004, p. 30), and Mattiello (2013, pp. 72-79) identify patterns in clipping. Of these patterns, there are many subtypes: back-clipping – the deletion of the end of a word; fore-clipping – the deletion of the beginning of a word; mid-clipping – the deletion of the middle of a word;
edge-clipping – the deletion of the beginning and end of a word; and, clipped compounds – the deletion of a compound to one or two of its parts. Each of these subtypes can be found in Japanese and is shown in (3a-e).

<table>
<thead>
<tr>
<th>Source Form</th>
<th>Clipped Form</th>
<th>Gloss</th>
<th>Clipping Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. gooru-kiipaa</td>
<td>kiipaa</td>
<td>(goal keeper)</td>
<td>fore</td>
</tr>
<tr>
<td>b. mini-sukaato</td>
<td>mini</td>
<td>(mini skirt)</td>
<td>back</td>
</tr>
<tr>
<td>c. toukyou daigaku</td>
<td>tou-dai</td>
<td>(Tokyo University)</td>
<td>compound</td>
</tr>
<tr>
<td>d. rireki-sho</td>
<td>reki</td>
<td>(curriculum vitae)</td>
<td>edge</td>
</tr>
<tr>
<td>e. kyabinetto-ban</td>
<td>kyabine-ban</td>
<td>(cabinet-size photo)</td>
<td>mid</td>
</tr>
</tbody>
</table>

The patterns seen in (3a-e) support the evidence that clipping is a patternable process which indicates that clipping is not wholly arbitrary. Furthermore, Bauer, Lieber, and Plag (2013, p. 403) claim that there are two types of clippings styles – phonological clippings and morpheme clippings. A phonological clipping targets sound sequences with no focus on meaning, whereas a morphemic clipping is one which targets morphemic constituents for retention. This corresponds to compound noun clippings in Japanese, for example gaikoku shihon → gai-shi ‘foreign capital’, as both gai ‘outside’ and shi ‘resource’ are morphemes. Therefore, it appears that clipping is a process which takes an expression, selects a sequence of material to retain as opposed to delete since the phenomenon of morphemic clipping implies that a morpheme’s meaning is essential to the interpretation of the clipping, and deletes the rest of the unselected material.

Thus far, many definitions, descriptions, and views of clipping have been reviewed which describe clipped outputs, but either do not define the clipping process itself or do so vaguely. Therefore, I suggest a working definition of clipping combines properties and patterns outlined by Marchand (1969), Nishihara, van de Weijer, and Nanjo (2001), López-Rúa (2002), and Bauer, Lieber, and Plag (2013) with some modifications.

**Clipping:** the word-formation process which creates a shorter form of a whole expression without a change in meaning or lexico-syntactic class.

**Truncatum:** the phonologically or morphologically defined material remaining after the clipping of an expression.

**Truncandum:** the phonologically or morphologically defined material deleted during the clipping of an expression.

The working definitions of clipping, truncatum, and truncandum that I have established may be revised later if evidence shows that they are insufficient.

To discuss clipping theoretically, I have adopted Pounder’s (2000) theory of Process-and-Paradigm Morphology framework which claims that word-formation is paradigmatic. A short explanation of the word-formation operations used in this framework and specifically for this paper are shown in (4).

\[ X + -ku \]
\[ \text{ADV ('X')} \]
\[ \Sigma_{\text{Adj}} \rightarrow \Sigma_{\text{Adv}}; \text{Slot I} \]
\[ (\text{SAMUKU-}) \]

Form rule: signifies changes in form
Semantic rule: signifies changes in meaning
Syntactic rule: signifies changes lexico-syntactic class
Derived Form as a result of the operation

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In (4), the word-formation operation is applied to the base Japanese lexeme SAMU 'cold'. The form rule shows that affixing -ku maps onto a meaning of ‘coldly’ and transforms the adjective into an adverb. Moreover, the clipped forms produced by the operations in Winters (2017) are not standalone words, nor do they act as independent word-forms; but rather, they are combined with other clipped forms to create blends. Therefore, the contributions of the current paper apply the word-formation operations found in the Process-and-Paradigm framework to create standalone clipped forms. Furthermore, in this framework, all operations applying to a given base type are organized in a dynamic network or paradigm array in the morphological component, which is mirrored at the lexical level by the paradigmatic organization of lexemes related through word-formation. Ultimately however, the paradigmatic side of clipping will not be discussed in this paper, but see Daniel (2018).

The exploration of definitions and descriptions of clipping and establishment of a unified definition in this chapter serve to create a foundation for my analysis of Japanese clipping data in Section 4 and its discussion in Section 5. The clipping types attested for in Japanese (see Nishihara, van de Weijer, & Nanjo, 2001; Irwin, 2011) and the application of Itō’s (1990) minimality constraint supplement the identification of the roles of morphology, phonology, and semantics in the Japanese clipping process which occurs in Sections 4 and 5. Lastly, the brief overview of word-formation operations in Process-and-Paradigm Morphology as outlined in this chapter provide for a fuller, more in-depth discussion of clipping in Japanese in Section 5.

3 Methodology

This section discusses the methodologies for the database underlying this research. This database of clipped forms was compiled from sources such as Prem (1993), Jisho Online Dictionary (n.d.), Zokugo Dictionary Online (n.d.), and from various newspaper articles compiled from Asahi Newspaper (2011) which appeared in a compilation book of that year. In compiling this database, I specifically sought out native Japanese expressions and Sino-Japanese expressions. Loanwords were omitted in general as most of the research on Japanese clipping (see Itō, 1990; Nishihara, van de Weijer, & Nanjo, 2001; Irwin, 2011; Petrulyté, 2015) has been conducted using them, and they do not show the complex morphological structure as seen in native expressions. However, some loanwords appear in the database since they were compounded with a native Japanese or Sino-Japanese word.

Overall, 609 items were collected for the database. However, out of these 609 items, a few are counted two or three times as they contain multiple affixes and each affix was analyzed separately. The database compilation contains various organizational categories such as source form, expression type (e.g. a single word, compound, or phrase), syntactic class (e.g. noun, verb, adjective), phonological clipping type (e.g. fore-clipping, back-clipping), morphological formation type (e.g. derivational, inflectional), affix retention status, and affix type which corresponds to the affixes found in the clipping and their meaning. These organizational parameters were established to aid in analyzing the data which is discussed in Section 4.
4 Morphological structures in clipping

This section analyzes the material in the database described in this paper. This section contains a short discussion of the theoretical implications of the database items while a broader and in-depth discussion will be found in Section 5.

In this section, an analysis of the database of compiled Japanese clippings shows that predictability can be found in clipping beyond just the phonological patterns attested (see Subsection 2.2). Evidence for this is shown in (5-7) where in each expression, the lexical morpheme gen ‘prime’ is always retained. The retention of this morpheme indicates a level of predictability for clipped outputs involving atom-related topics in Japanese which may be able to be extrapolated to other clipped outputs.

5) gen-shi-ryoku hatsu-den-sho → gen-patsu (atomic power plant)
   prime-particle-power emit-electric-placeAFF
   (atomic)-power (generation)-place

6) gen-shi-ryoku nen-ryou → gen-nen (atomic fuel)
   prime-particle-power burn-material
   (atomic)-power (fuel)

7) ni-hon gen-shi-ryoku san-gyou → gen-san (Japan atomic industry)
   sun-origin prime-particle-power produce-craft
   (Japan) (atomic) (industry)

At first, the process of producing a clipped output may seem to be unpredictable in what components will be retained or deleted. For example, unlike in (5) and (6), the output in (7) does not appear as *ni-gen which would be the expected output of a compound clipping. However, as shown in these examples, predictability can indeed be found beyond a surface phonological view as in all of these examples, the focus of retention is the morpheme gen ‘prime’ and not just a phonological sequence. This implies that anytime ‘atomic’ is part of the source, the gen morpheme is retained. Furthermore, this implies patternability in Japanese clipping on a semantic level. In this section, analyses of the morphology of clippings will ultimately show that there are distinguishable morphological patterns in clipped outputs which are not deducible from a phonological analysis alone.

As evidenced from examples (5-7), phonology alone does not seem to account for why certain phonological sequences of a source word which happen to be morphemes are retained during clipping. This suggests that the phonology in a speaker’s grammar is being directed by another component of the grammar so as to select what materials and sequences should be retained for a clipped output. A view suggested in Section 1 of this paper is that the morphological component of the grammar is ultimately responsible for driving the clipping process and directing the phonological component in how to carry out instructions for creating a clipped output. In the database compiled for this paper there are two components of expressions which seem to affect the truncata of a clipped output: root morphemes and affixes.

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1 The change of /h/ to /p/ is a process of despirantization in Japanese which occurs on an initial consonant when a word, or in this case a truncatum, becomes the second element of a compound (Hinds, 1986, p. 421).
Nishihara, van de Weijer, and Nanjo (2001, p. 300) and Ishiwata (1993, p. 99) state that morphemes are an essential component in clipping Sino-Japanese compound expressions which originate from Chinese. This statement appears to be true as morphemes often contain more than one mora which would mean that the phonological minimal constraints of two morae and two syllables (Itō, 1990) for a clipped output would often be satisfied by just the first morpheme alone in a compound clipping. Yet as predicted by Nishihara, van de Weijer, and Nanjo (2001), and Ishiwata (1993), a two-word compound as in (8) retains its first morpheme of its first word in the compound as well as the first moreme in the second word of the compound. Thereby, these outputs which contain four morae in (8) and six morae in (9) as indicated by the period notation in the examples, have exceeded two and three times that of the prosodic minimum.

By having more than the minimally required number of morae, the truncata in (8) and (9) imply that these clippings as well as many others like them do not have their elements selected for retention solely on the basis of meeting phonological constraints. When analyzed further, the morphemes wari and kan in (8) contain the semantic meanings of ‘split’ and ‘cheque’ respectively. In (9) tei, ki, and ke mean ‘determine’, ‘period’, and ‘ticket’. Regarding the semantics of morphemes, examples such as (8) and (9) show logical ties with the composite meaning of their respective compounds. For example, a ‘split-cheque’ relates easily to the idea of a Dutch-style date where each person pays their own way; just as a ‘determine(d)-period-ticket’ relates easily enough to the intended meaning of a season pass since a season is a fixed or determined period of time for which the ticket or pass is valid. Examples (8) and (9) show that when analyzing the truncata which form Japanese clipped outputs, the semantics of morpheme elements appear to be important in the formation of clippings. More research is needed for this topic as the focus of this paper is not morpheme semantics, but this is only addressed to clarify that the semantics seem to play a role in determining what truncata will result from a clipping.

Other elements which are retained in Japanese clippings as seen in (5) and (9) are elements which appear to be affixes. This classification is suggested by the fact that these elements are attached onto words yet are not words in and of themselves. For example, -sho ‘place’ is attached onto nouns to indicate some type of location, while if one wanted to refer to the word for ‘place’ alone, then one would use the noun basho. A similar phenomenon happens in English where the word like is a standalone word in many contexts, for example he has reflexes like a cat. However, English speakers are able to affix -like onto a noun, e.g. he has cat-like reflexes. Marchand (1969, p. 356) calls these “semi-affixes” which are morphemic elements midway between a standalone word and a suffix.

Aside from semi-affixes, truncata which are unambiguously affixes are also important in influencing what elements of a source word will remain in its clipped output. In Japanese, verbs and adjectives have obligatory, lexico-syntactic class-specific marking
for tense. From the database entries gathered, there is a noticeable retention of these adjective and verb markers. Examples are given in (10) of an adjective clipping and in (11) of a verb clipping, both of which show that the morphological value of these class-specific tense markers affect the clipping process as they must appear affixed to a clipped output.

10) **uttoush-i** → **utto-i** (gloomy)
   gloom-ADJ

11) **koku-haku su-ru** → **koku-ru** (confess)
   reveal-white do-NON-PAST

Overall, the presence of an affix or semi-affix appears to contribute to a morphological pattern in the clipping process. For example, affixes like -i and -ru for adjectives and verbs, and semi-affixes like kei- ‘light’, juu- ‘heavy’, and -hou ‘law’ show consistent retention in the database, while other semi-affixes like -ryoku ‘powered’, -sei ‘type’, and -tou ‘et cetera’ show consistent deletion. Moreover, semi-affixes like zen- ‘all’, sou- ‘general’, and -kai ‘association’ show variable rates of deletion and retention. Out of the 609 entries in the database with affixes or semi-affixes in their source forms, 195 items showed affix/semi-affix retention which is roughly 35%. The deletion and retention as mentioned previously seem dependent on the semi-affix.

Of the (semi-)affixes in the database, the positioning of the (semi-)affix appears to show some pattern in its retention or deletion. The semi-affix -in ‘member’ in (12) for example, shows retention when it is the final element in an expression; however, when -in is not the final element of a word as in (13), it is deleted.

12) **gin-kou-in** → **kou-in** (bank teller)
   silver-conduct-memberAFF
   (bank)-member

13) **kok-ka kou-mu-in-hou** → **kok-kou-hou** (national civil service law)
   nation-house public-task-memberAFF-lawAFF
   (state) (official)-member-law

The implication that arises from (12) and (13) is that some (semi-)affixes are dependent on the headedness of a compound or phrasal expression. This is not a topic covered in this paper and is reserved for future research; however, the results of the morphological analysis in this section suggest that the morphological component of the grammar plays a significant role in the clipping process. This is attested by the morpheme retention shown in the examples of this section and strongly indicates that the morphological structure of an expression seems to be analyzed to a great extent during the clipping process.

5 Discussion

This section addresses the analyses from the compiled database of Japanese clippings in order to discuss how a morphological approach to clipping relates to the grammar. The primary question of this discussion is: when does the clipping process take place in the grammar? To be able to answer this question, a conceptual model of the grammar needs to
be developed. Of the scholars discussed in this paper so far, none have addressed when clipping takes place in the grammar. Adapting a model from Beard (1995, p. 45), Table 1 shows a hypothetical model of how the clipping process in Japanese may correspond to the grammar.

Table 1: A conceptual model of the clipping process

<table>
<thead>
<tr>
<th>Grammar</th>
<th>Clipping Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lexicon</td>
<td></td>
</tr>
<tr>
<td>Lexical Organization</td>
<td>Early-phase clipping: analysis of syntactic class, origin of expression, and morpho-semantics</td>
</tr>
<tr>
<td>Word-Formation and</td>
<td>-if noun: select morphemes to retain</td>
</tr>
<tr>
<td>Grammar Rules</td>
<td>-if adjective, verb: select first two morae</td>
</tr>
<tr>
<td>Inflection</td>
<td>Late-phase clipping: analysis of inflection and phonological structure</td>
</tr>
<tr>
<td>Phonology</td>
<td>-select necessary inflectional material, check prosodic requirements</td>
</tr>
<tr>
<td>Spellout</td>
<td>Clipped Output</td>
</tr>
</tbody>
</table>

The model in Table 1 shows that there are two phases of clipping. The first phase of clipping, named “early-phase clipping”, corresponds to the lexical organization, word-formation, and rule-based components of the grammar. The second phase of clipping, or “late-phase clipping”, corresponds to the inflectional and phonological components of the grammar. Finally, the clipped output occurs at “spellout”. I will argue for this model and these phases in the following sections using evidence from the database analysis.

Subsections 5.1 and 5.2 are dedicated to discussing two phases of the clipping process which lead up to creating a clipped output in Japanese. To elaborate, Subsection 5.1 explores early-phase clipping - the phase in which certain expression information such as syntactic class and origin of the expression are analyzed in preparation for clipping. Subsection 5.2 explores late-phase clipping - the phase in which clipping operations occur and the output is near to being finalized before spellout. Subsection 5.2 also discusses the end of the clipping process before all expressions are clipped for spellout.

5.1 Early-phase clipping

As discussed in Section 4, a number of factors appear to influence the creation of a clipped output in Japanese - lexi-co-syntactic class, morphological structure, phonological structure, and even language origin. I argue that each of these factors is essential to creating a clipped form and have a correspondent phase of the grammar in which they are assessed in the clipping process.

The early phase of clipping happens right after word-formation operations have been applied. In this phase, an expression’s syntactic class, language origin, and morpho-semantics are assessed. Syntactic class is important in this assessment as expressions which are adjectives or verbs have obligatory class marking, whereas nouns do not have this requirement for form. For example, in the adjective *kara-i* ‘spicy’, *-i* is suffixed to an
adjective’s base to mark tense, in this case, the non-past form. As the -i suffix is class-specific to adjectives however, it also indirectly marks the lexico-syntactic class\(^2\).

Language origin is important for the system to discern the degree to which the morpho-semantics play a role in the expression’s interpretation and is crucial in the analysis of nouns. For example, a loanword such as merodii ‘melody’ is clipped to its first two morae: mero, while a Sino-Japanese word such as ri-reki-sho ‘curriculum vitae’ is clipped to one of its morphemes reki instead of its first two morae *ri-re, which would break a morpheme boundary. According to a survey of vocabulary conducted by Kokuritsu Kokugo Kenkyuujo (1964), the national language institute in Japan, Iwasaki (2002, p. 29) reports that words of Sino-Japanese origin (47%) outnumber words of native Japanese origin (36%) and loanwords (17%) when compared to these categories separately. A source expression’s language of origin is oftentimes apparent to Japanese speakers, as Sino-Japanese expressions have certain phonological structures which set them apart from most native Japanese expressions, while loanwords, most of which come from English, are also rather phonologically transparent as foreign in origin. Shibatani (1990, p. 147) further elaborates that the meanings and origins of Sino-Japanese words are transparent to Japanese speakers, much like how Latinate words are sometimes transparent in English. Furthermore, Itō and Mester (1999, pp. 62-63) also attest this phenomenon which they label “phonological stratification”. Therefore, language origin in regards to clipping and morphemic analysis refers to the notion that a loanword has little or no morphemic analysis to offer, while a Sino-Japanese word is comprised of multiple morphemes transparent to the speaker. Examples of loanword structure and Sino-Japanese structure are shown in (14a and b).

14) a. ma.ne.ri.zu.mu (stereotype)  
   b. a.sa i.chi-ba.n (first thing in the morning)

morning one-number

In (14a), mannerism has morphological structure in English with the base lexeme MANNER and the derivational affix -ism. In Japanese, however, the corresponding word consists of nothing more than a base. The breakdown of an expression into its morphemes as in (14b), seems to be the reason why clipping targets specific moraic sequences rather than one mora alone. For example, (14b) can be clipped to asa-ichi which shows that when morphological boundaries are transparent, violation of them seems to be avoided as forms like *asa-i, *sa-ichi, and *ichi-ba are not produced. In cases of Sino-Japanese expressions, it is a lexical morpheme, not a phonological sequence, that is retained and/or clipped and therefore may exceed the two-mora minimum established by Itō (1990, p. 233). In (15), ko.ku ‘nation’ and re.n ‘connect’ consist of multi-moraic sequences which correspond to single morphemes in the compound koku-sai ren-gou ‘United Nations’. Breaking these morpheme boundaries is not permissible in the clipping process and thus explains why clipping results in the complex structure koku-ren rather than the simpler *ko-re which would satisfy Itō’s (1990) prosodic minimality requirement.

\(^2\) The status of the -i suffix as a non-past inflection marker is debated by Iwasaki (2013, p. 109) who claims it is a derivational stem-formation suffix, but for the purposes of this paper the -i suffix is an inflectional marker.
Example (15) of a Sino-Japanese compound noun illustrates that noun clippings as well as clippings of Sino-Japanese origin have much more analyzable material in their structures which necessitates thorough morphological analysis in the early phase of the clipping process.

When an expression’s syntactic class is assessed, adjectives and verbs are coded to clip to the first two morae and pass through the early phase without a need for in-depth morpheme analysis due to their class-specific obligatory marking. Nouns, however, require an assessment of language origin in order to discern how thorough of a morpho-semantic analysis is needed. This analysis determines which morphemic components, if any, are to be selected for retention and therefore language origin seems to offer an important contribution to Japanese clipping. As an example, a loanword noun will be recognized in origin as a loan and selected to clip to a minimum number of morae plus any derivational affixes it has which are key to its interpretation. In the case of having a key derivational affix, the loan will then most likely distribute its required morae across the clipped base and the affix, seen in (16) and (17), where the base has been clipped to just one mora and the affix completes the overall mora requirement.

(16) is an expression gathered from the database wherein it is evident that the suffix, which is Sino-Japanese in origin, has been retained. When compared to a wholly Sino-Japanese expressions with the same -go ‘language’ affix attached as in (17), the number of morae differs to the loanword clipping containing the same Sino-Japanese affix. This two-mora base in Sino-Japanese clippings corresponds to morphemes whereas the one-mora base in the loanwords has no morphological structure to analyze.

Thus, an expression of native Japanese or Sino-Japanese origin requires more processing due to its morphological structure as opposed to loanwords. After an analysis of syntactic class and language origin occur, the morpho-semantics determine which components of the expression exhibit the best saliency for interpretation in a shorter form. Using the example of the -go ‘language’ affix in (16) and (17), it is evident that this affix provides crucial information for these expressions and is therefore carried through to its clipped forms.

In compound expressions, as discussed in Section 4, the most frequent type of clipping retains the first morpheme of each word in a two-word compound. However, there are numerous compounds where the first morphemes are not always the ones which appear in clipped outputs. Furthermore, in compounds containing many words, many morphemes are usually retained. The example given in (18) shows a clipped output where
multiple morphemes are being retained beyond the expected one morpheme per word in the compound.

18) ji-do.u     ha.n-ba.i-ki → ji-ha.n-ki (vending machine)
    self-move    market-sell-machine \text{AFF}

(automation) (vending) (machine)

In (18), it seems that morpheme retention is dependent on the semantics of the morphemes, rather than the sequence in which the morphemes occur. Therefore, (18) shows further evidence that the morphological analysis of an expression is vital to the clipping process in Japanese. After the syntactic class, language of origin, and morpho-semantics are analyzed in the early stage of clipping if applicable, then expressions proceed to the late phase of clipping.

5.2 Late-phase clipping

In the late phase of clipping, inflection and phonology are carried out. Inflectional affixes such as -i for adjectives, -ru for verbs, and case affixes are attached to the clipped forms created in the early phase of clipping. For nouns, the late-phase is only used for case marking as inflection occurs after derivational affixes had been attached. Adjectives and verbs, on the other hand, pass through the early phase typically without undergoing any derivation; thus, they are simply clipped to a first two-mora template, then sent off to the late phase for their inflection. Evidence for this can be seen in examples like the compound adjective ki-shoku waru-i 'sickening, creepy' and daben-o rou su-ru ‘to chitchat’ shown in (19) and (20) wherein the morpheme boundaries of shoku and ben are both violated to create their clipped outputs.

19) ki-sho.ku wa.ru-i → ki-sho-i (sickening, creepy)
    spirit-colour bad-NON-PAST

20) do-be.n-o ro.u su-ru → da.be-ru (to jabber, chitchat)
    trivial-speech-ACC trifle do-NON-PAST

In (19), the morpheme boundary of shoku is violated as only the first mora sho is retained, while in (20) the morpheme boundary of ben has been reduced to just its first mora be. The breaking of morpheme boundaries is the opposite of what would be expected in a noun clipping where the integrity of the mora sequencing which corresponds to a morpheme would be maintained. What this seems to imply is that for adjectives and verbs, because there is obligatory tense marking which is class-specific, the clipping process uses class-specificity to allow for morpheme boundary violation. Because the clipping of adjectives and verbs show a predictable pattern, I have illustrated two inflectional operations for adjectives in (21) and verbs in (22) with corresponding examples in (23-24).
21) Inflection Operations: Adjectives

\[
\begin{align*}
\text{\text{Inflection Operation: Adjectives}} \end{align*}
\]

<table>
<thead>
<tr>
<th>Inflection</th>
<th>Base</th>
<th>Clipped Base</th>
<th>Inflection</th>
<th>Clipped Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>x- + -i</td>
<td>tsuyo- + -i</td>
<td>tsuyo- + -katta</td>
<td>tsuyoi</td>
<td>(strong, NON-PAST)</td>
</tr>
<tr>
<td>x- + -katta</td>
<td>tsuyo- + -katta</td>
<td>tsuyo- + -katta</td>
<td>tsuyokatta</td>
<td>(strong, PAST)</td>
</tr>
</tbody>
</table>

22) Inflection Operations: Verbs

\[
\begin{align*}
\text{\text{Inflection Operation: Verbs}} \end{align*}
\]

<table>
<thead>
<tr>
<th>Inflection</th>
<th>Base</th>
<th>Clipped Base</th>
<th>Inflection</th>
<th>Clipped Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>x- + -(r)u</td>
<td>kanga- + -ru</td>
<td>kanga- + -ta</td>
<td>kanga-</td>
<td>(think, PAST)</td>
</tr>
</tbody>
</table>

23) TSUYOI (strong)

\[
\begin{align*}
tsuyo- + -i & \rightarrow tsuyoi \quad \text{(strong, NON-PAST)} \\
tsuyo- + -katta & \rightarrow tsuyokatta \quad \text{(strong, PAST)} \\
\end{align*}
\]

24) KANGAERU (think)

\[
\begin{align*}
kanga- + -ru & \rightarrow kanga- + -ta \quad \text{(think, PAST)} \\
\end{align*}
\]

Given the patternability seen in adjective and verb clippings, I have created a clipping operation for adjectives and verbs, which is shown in (25) with corresponding examples in (26-27).

25) Clipping Rule for adjectives and verbs

\[
\begin{align*}
\text{Clipping Rule for adjectives and verbs} \\
\mu_1 \mu_2 \mu_3 \ldots \rightarrow \mu_1 \mu_2 & \quad \text{Form rule: source form clips to its first two morae} \\
Z (X') & \quad \text{Semantic rule: clipped form undergoes no meaning change} \\
\Sigma_{\text{Adj, V}} \rightarrow \Sigma_{\text{Adj, V}} & \quad \text{Syntactic rule: clipped form undergoes no syntactic change} \\
\end{align*}
\]

26) UZATTAI (annoying)

\[
\begin{align*}
u.zat.ta- & \rightarrow u.za- \rightarrow u.za- + -i \rightarrow uza-i \\
\text{Base} & \quad \text{Clipped Base} & \quad \text{Inflection} & \quad \text{Clipped Output} \\
\end{align*}
\]

27) SHASHARIDERU (to partycrash)

\[
\begin{align*}
sha.sha.ride- & \rightarrow sha.sha- \rightarrow sha.sha- + -ru \rightarrow shasha-ru \\
\text{Base} & \quad \text{Clipped Base} & \quad \text{Inflection} & \quad \text{Clipped Output} \\
\end{align*}
\]

The clipping rule which applies to adjectives or verbs results in the lexeme base being reduced to just two morae before inflectional operations. In these types of clippings, the affix appears in the clipped output, which suggests that these expressions’ inflectional material has been added after the clipping process.

The end of the late phase of clipping consists of the phonological analysis wherein prosodic minimality constraints are assessed and then spellout. By this point, an expression should meet the two-mora, two-syllable minimum in either its base or through a combination of a base truncatum and a derivational or inflectional affix, or in rare cases, affixes or semi-affixes alone. For example, ki.za.wa.ri → ki.za ‘disagreeability’ meets the moraic and syllabic minimum by forming its truncatum in the base alone, po.ru.to.ga.ru-go → po-go ‘Portuguese language’ meets the minimum by combining a base truncatum and an affix, and da.i.ga.ku- in-se-i → in-se-i ‘graduate student’ meets the minimum through retaining two semi-affixes. Naturally, only a well-formed clipping will proceed to spellout and be used. There are, however, a few examples which seem to involve breaking the order of the clipping process or the expected output for a clipping such as hypocoristic formation involving moraic lengthening as well as clippings which have two outputs of which both are
used by speakers. For example, *ji-dou han-bai-ki* ‘vending machine’ is clipped to both *ji-han-ki* and *han-bai-ki*, when what would be expected is just one form: *ji-han**. Additionally, the hypocoristic *Ami-chan* ‘little Ami’ clips to *Aa-chan*, where the *mi* mora is dropped and the *a* mora is lengthened, when what would be expected is *A-chan**. However, these are topics I will leave for future research.

The positions argued for in this section have shown evidence based on the database corpus conducted for this research, and that a clipping model which consists of early and late phases for clipping provides more predictability in how Japanese clipped outputs are formed using a combination of morphological structure, semantics, and phonology. How these clippings relate to the source form is best accounted for using the Process-and-Paradigm Morphology approach designed by Pounder (2000) and expanded upon by Kunduracı (2013) and Winters (2017), as this framework corresponds to the paradigmaticity of bases to derived word-forms and word-formation morphology; however, the application of this framework to the lexical aspects of clipped forms and their storage is not a topic covered in this paper (see Daniel, 2018).

6 Concluding remarks

This paper has argued with evidence from Japanese that morphology plays a substantial role in the clipping process. Japanese was chosen as the focus for this research as it is a rather morphologically transparent language, and the clipping process is shown to be productive. By analyzing Japanese clipping from a morphological perspective, it is evident that there is predictability in the clipping process which can be accounted for by not only the morphology, but also the semantics and phonology of a clipped form.

The database of clippings which I compiled to investigate the Japanese clipping process is analyzed in this paper, and through this analysis numerous patterns of clipping are identified. The noted patternability of clipping allows for word-formation operations to be applied to the language via the Process-and-Paradigm Morphology framework. Moreover, the application of this framework and the phase model of clipping that I argue for in this paper are valid for the analysis of clipping in Japanese; however, these concepts may also be applicable to other languages. In English, there are suffix clippings much like in Japanese which appear to retain inflectional morphology in their clipped forms.

For example, *spectacles* referring to ‘glasses’ is frequently clipped to *specs*, a form which has the plural *-s* suffix in the output. This clipped form and forms similar to this may relate to the early and late-phase model of clipping wherein the source *spectacles* is the base lexeme which is modified by the clipping process shortening the lexeme then in the late-phase attaching the plural suffix *-s* to produce *specs*.

Future research that would supplement the evidence for morphology in clipping are topics such as the investigation of hypocoristic clippings mentioned in Subsection 5.2, in-depth analyses of the semantics of morphemes mentioned in Section 4, and lastly, historical accounts of clipping.

In detail, hypocoristic clippings behave differently to word clippings, as they are the only clippings which undergo compensatory lengthening on the vowel of the base when the base is reduced to one mora, for example *Nobu-chan* being clipped to *Noo-chan*, instead of *No-chan**. The fact of this vowel lengthening indicates the possibility that the phonology...
interacts with the morphology throughout the clipping process as opposed to separately after the morphological analysis has been achieved. Likewise, a deeper analysis of the morphemes involved in Sino-Japanese clippings may provide further insight on how semantics plays a role in which truncata will be selected for retention in the clipping process. This paper so far offers a rather cursory look into the involvement of semantics in clipping; thus, it would benefit the research of Japanese clippings were for semantic analyses to be done. Additionally, investigating the history of clipping in Japanese can illuminate how the process has changed over time.

In conclusion, while this paper offers insight and evidence for the role of morphology in clipping, it is not an exhaustive account of clipping in Japanese or of the process in its entirety. As discussed prior, many directions of future research that lie in other spheres of linguistics would supplement the findings in this paper.

References


Contact Information

Adam Daniel
adam <dot> daniel <at> ucalgary<dot>ca
School of Languages, Linguistics, Literatures, and Cultures
University of Calgary
2500 University Drive NW
Craigie Hall C 211
Calgary, AB, T2N 1N4
Canada
Conversational code-switching among intermediate learners of French at Alliance Française de Kampala, Uganda

Harriet K. Haggerty
University of Calgary

Abstract

Using a framework based on conversation analysis (Auer 1984, 1995), this paper presents an analysis of second / foreign language (L2) learner code-switching between English (L1) and French (L2) in an intermediate foreign language classroom. The study aimed at finding out why, how and when intermediate learners of French at Alliance Française de Kampala employ code-switching in the learning of L2. This paper presents a description, categorization and analysis of the processes of code-switching among intermediate learners of French at Alliance Française de Kampala. It was found that learners code switch when not only their knowledge in the L2 fails them, i.e. for participant-related functions, but also discourse-related functions that contextualize the interactional meaning of their utterances. It was also found that the intermediate learners of French at Alliance Française de Kampala use code-switching as a learning strategy specifically during small group activities. Learners would switch when clarifying or giving the meaning of new vocabulary or lexical items they came across when reading or discussing texts.

Key words: Code-switching, foreign language learning, learning strategy, participant and discourse-related switching
1 Introduction

Code-switching is one of the most striking features of various conversational exchanges in bilingual or multilingual communities. However, its definition remains complex as Gardner-Chloros (2009) noted that it is problematic to define code-switching. She remarks that code-switching can have different meanings and refer to whatever we want it to mean. Winford (2003) defines code-switching as a cover term for a variety of bilingual and bidialectal language mixing, which results from different social circumstances and motivations. According to Gardner-Chloros (1997), code-switching is the use of two languages in the same conversation or utterance whereas Schendl and Wright (2011) define code-switching as the ability to alternate between languages in an unchanged setting, often within the same utterance. In brief, code-switching refers to cases where bilingual speakers alternate between codes/languages within the same speech event or within a single turn (a speaker’s contribution in a conversational exchange), or mix elements from two codes within the same utterance or sentence.

Gumperz’s (1982) pioneering work on bilingual discourse strategies showed that language alternation, far from constituting a language or communicative deficit, provided an additional resource which bilinguals systematically exploited to express a range of social and rhetorical meanings. From this perspective, code-switching is an element in a socially agreed upon matrix of contextualization cues and conventions used by speakers to signal the addressee’s context of conversation (Gumperz, 1982).

On the other hand, Auer (1995) represents a very different development of Gumperz’s conversational paradigm. Auer argues that Gumperz’s list of established functions, such as addressee selection to mark emphasis or interjections, was not only theoretically problematic and unmotivated, but it could also in principle never be complete. Developing Gumperz’s idea of code-switching as a contextualization cue, he suggests that the problems posed by an analysis in terms of functions could be solved by adopting the sequential framework of conversational analysis. Auer’s suggestion was that code-switching worked like other prosodic or gestural contextualization cues, the chief function of which is to signal participants’ orientation to each other. Auer also argues that since the contrast set up by code-switching is particularly visible, switching serves as a particular salient contextualization cue in bilingual communities.

Auer draws a distinction between participant-related code-switching, which is motivated by the language preferences or competence of the participants, and discourse-related code-switching, which is employed by the participants to set up a contrast that structures some part of the discourse, for instance, reiteration of an utterance of emphasis in a different language. Participant-related switching may be seen as either preference-related or competence-related. According to Auer (1995), participant-related switching involves negotiation of language for the interaction, participants switch from one code to another until when consensus is reached on the medium of exchange. On the other hand, discourse-related switching is associated with the organization of the ongoing interaction, such as change of topic and change of addressee, as will be discussed in the findings of the study.

In Auer’s view, the conversational analysis approach has at least two advantages: first, it gives priority to the sequential implicativeness of language choice in the
conversational code-switching. This sequential implicativeness means that the choice of language, which a particular participant makes for the organization of his or her turn or for an utterance, exerts an influence on subsequent choices of the same or other speakers. Second, it limits the external analysts' interpretational leeway because it relates his or her interpretations back to the members' mutual understanding of their utterances as manifest in their behavior (Auer, 1984). It should be noted that Auer's sequential approach to conversational analysis gives priority to dialogical meaning, i.e. meaning in any interaction is negotiated by the participants in the conversational exchange. Auer (1984) posits that what is of primary interest is the visible-observable strategies, signals or cues by which participants make themselves understood, display their understanding of co-participants' utterances, or negotiate the language of conversation. He adds that in order to able to interpret code-switching, the participants and analysts alike depend on the small details of verbal interaction, such as pauses, hesitations, overlaps, gestures, eye contact, gaze among other cues. It is this kind of sequential approach that the analysis of data is based on in this study.

1.1 Conversational functions of code-switching

Studies have shown that code-switching is used as a communicative device depending on the switcher's communicative intents (Tay, 1989; Myers-Scotton, 1995, Adendorff, 1996). It should be noted that speakers use switching strategies to organize, enhance and enrich their speech in order to achieve their communicative objectives.

According to Trudgill (2000), speakers code switch to manipulate, influence, or define the situation as they wish, and to convey nuances of meaning and personal intentions. In this respect, code-switching may be used for self-expression and as a way of modifying language for the sake of personal intentions.

Speakers may code-switch for discourse-enhancing functions or sociolinguistic benefits, that is, to express solidarity and affiliation with a particular social group (Gal, 1979; Milroy, 1987). That is to say that code-switching can be used to build intimate interpersonal relationships among members of a speech community. It is a tool used to create linguistic solidarity, especially between individuals who share the same ethnocultural identity. In fact, Wardhaugh (2006) posits that various factors determine the choice of codes in any given situation. According to him, factors such as solidarity, accommodation to listeners, choice of topic and perceived social and cultural distance may exercise an influence on the choice of a particular code.

Furthermore, code-switching is used to fill a linguistic or conceptual gap for a speaker (Gysels, 1992). Code-switching is seen as a communicative strategy; it provides continuity in speech to compensate for the inability of expression. Skiba (1997) suggests that in the circumstances where code-switching is used due to an inability of expression, it serves for continuity in speech instead of presenting interference in language. In this respect, code-switching stands to be a supporting element in communication of information and in social interaction; therefore it serves communicative purposes as it is used to transfer meaning.

Studies have also reported that speakers code-switch to reiterate or emphasize a point (Gal, 1979; Malik, 1994). By repeating the same point in another language, the
Code-switching provides an opportunity for language development and creates a supportive language environment in the classroom. The listener is able to provide a translation into the second or foreign language, thus providing a learning and developing activity. This in turn will allow for a reduced amount of switching and less subsequent interference as time progresses. Cook (1991) asserts that code-switching may be integrated into activities used for the teaching of a second language, because it is used to get information and clarify meaning, and widens the learner's vocabulary base in the target language. Code-switching modifies input in such a way that it facilitates target language acquisition (Rolin-Ianziti & Siobhan, 2002) and enhances the quality of input and thus, promotes intake (Van Lier, 1995).

Eldridge (1996) identifies four functions of students' code-switching: equivalence, reiteration, conflict control, and floor-holding. During a conversation in L2, learners fill a linguistic gap with L1 use. In other words, learners' code-switching is a mechanism used to avoid gaps in communication. This may be due to lack of fluency in L2, or due to the fact that the learners cannot recall the appropriate L2 structure or lexicon.

Eldridge (1996) also points out that messages can be reinforced, emphasized or clarified where the message has already been transmitted in one code but not understood, i.e. for purposes of reiteration. The message in L2 is repeated by the learner in L1 through which s/he tries to give the meaning by making use of repetition technique. The reason for this specific language alternation has two implications; first, the learner may not have transferred the meaning exactly in L2. Second, the learner may think it is more appropriate to employ code-switching to indicate that the meaning or the content has been well understood. In the same vein, Gumperz (1982) states that when functioning as reiteration or repeating the message in another code, code-switching may be performed literally or in a modified form and it serves to clarify, to emphasize, and to promote understanding.

In a like manner, the learner may use code-switching to avoid a misunderstanding or as a means of conflict control, i.e. it is used as a strategy to transfer the intended meaning, but this may vary according to the learner's needs, intentions or purposes. In addition, the lack of culturally equivalent lexis among learners, which may lead to violation of the transference of the intended meaning, may result in code-switching to avoid possible misunderstandings or conflicts due to L2 shortcomings (Simon, 2001).

There are many reasons behind the phenomenon of code-switching. In this study, we attempted to examine how intermediate French language learners at Alliance Française de Kampala use code-switching to organize their conversation as well as to accomplish a given group task. We based our analysis on Auer's distinction between participant-related and discourse-related code-switching.
2 The present study

Code-switching is a widely observed phenomenon in bilingual, multilingual or multicultural communities. In Uganda, a multilingual and multicultural country, code-switching is very common in second or foreign language (L2) learners' speech. Studies have shown that code-switching occurs in both formal and informal contexts of communication and is used by anyone who is in contact with more than one language or dialect, regardless of the extent of contact (Gardner-Chloros, 2009). It should also be noted that conversational code-switching tends to occur subconsciously as speakers are motivated by factors within the conversation itself when it takes place (Gumperz, 1982). The present paper explores the reasons behind code-switching and aims to find out how and when code-switching takes place in the L2 classroom. Focus is put on the intermediate learners of French at Alliance Française de Kampala.

2.1 A brief background of Alliance Française de Kampala

The Alliance Française de Kampala was created in 1954. It is a non-profit, apolitical, laic and undiscriminatory association recognized by the Ugandan private law. It offers language and translation services and organizes different cultural events such as concerts, expositions, Francophone Day activities, among others. About 1500 students per year enroll in French as a foreign language, French for specific objectives, Luganda, Swahili and English classes. It offers French language courses from A1 to B2 levels and is in charge of conducting DELF (Diploma in French language Studies) and DALF\(^1\) (Diploma in advanced French). It is linked to the Alliance Française de Paris. Its purpose is to promote French/francophone and Ugandan cultures, and to foster cultural exchanges between Uganda and France. In conjunction with the Association of Teachers of French in Uganda, Alliance Française de Kampala organizes training for the teachers of French in the different regions of the country.

2.2 Methodology

The data used in this study is from two French classes and consists of four hours of videotaped discussions in small groups. They were B1 classes (Intermediate level) composed of six adult learners each. In one class, there were four females and two males, and in the other, there were three females and three males. The participants were from different socio-cultural and professional backgrounds, and were learning French for various personal reasons. The participants were aged between twenty and forty years and spoke different first languages, but spoke English as a common language. Permission to record the two classes was granted by the director of studies. Teachers and learners were also asked for their consent to be recorded and were informed that the data recorded was to be kept confidential.

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\(^1\) DELF and DALF are diplomas awarded by the French Ministry of Education to certify the French language skills/proficiency of non-French candidates.
The learners were videotaped as they were trying to accomplish small group tasks, because it is more likely to yield both participant-related and discourse-related switches. Markee (2005) also states that “in small group work, rules of classroom talk are somewhat suspended or are at least loosened up and talk resembles more that of mundane conversation where the status of each participant is somewhat equivalent as opposed to the hierarchical relations in teacher-fronted class time”. This means that language learners feel more at ease and less pressured to use the target language in small group activities as was evident in this study.

The recorded speech was transcribed using Jefferson’s transcript notation as described in Atkinson & Heritage (1984). Jefferson’s transcript notation is a set of symbols used to transcribe and describe speech in conversational analysis. The symbols used in this study are explained in the appendix. The utterances that contain code-switching were identified, categorized and analyzed based on Auer’s distinction between participant-related (preference-related or competence-related switching) and discourse-related code-switching. In order not to expose the participants’ identity, pseudonyms are used.

3 Findings and Discussion

The data presents a description of learners’ use of code switching as a language of preference and as a learning strategy. The data also shows how learners employ code switching to get information, clarify or give the meaning of new vocabulary. The data further shows how learners use code-switching as a result of language deficiency as illustrated by the excerpts below:

3.1 Excerpt 1

This conversation is between Ben and Lenny in their small group discussion. They were asked to read a text on doping. Their major task was to find out the definition of the term doping and below is the dialogue.

1) Ben: Le dopage est dangereux dans la mesure où les produits ((silence))
   ‘Doping is dangerous in the sense that products’
2) What is this? Pour Lutter contre ce fléau ? (gazes at Lenny)
   ‘To fight against this scourge?’
3) Lenny: ((checks in the dictionary)) to struggle
4) Ben: To struggle↑
5) Lenny: to fight (.) To fight against
6) Ben: To fight against this (    )
7) The teacher asks a question: C’est difficile?
   ‘Is it difficult?’
8) Ben: Non, non, c’est facile
   ‘No, No, it is easy’
9) Lenny: Il y a quelques mots, quelques phrases difficiles
   ‘There are some difficult words, some difficult sentences’
10) Ben: Oui, mais beaucoup de mots sont comme en anglais
In line 2, Ben switches to English when he came across a new lexical item in French (what is this?). He, in fact, gazes at Lenny, which can be interpreted as asking for help and telling him to look it up in the dictionary. In other words, he employs code-switching to find out the meaning of the new word (lutter contre). We also see that in line 11, Lenny switches to English when he cannot find the equivalent of the word “flow” in French due to limited vocabulary. He uses what Eldridge (1996) calls equivalence. In this case, the student makes use of the L1 equivalent of a certain lexical item in the target language and therefore code switches to his/her L1. He adds that this switching may be correlated with the deficiency in linguistic competence of the target language, which makes the student use the L1 lexical item when s/he does not have the competence in the target language to explain a particular lexical item. He posits that equivalence functions as a defensive mechanism for students as it gives them the opportunity to continue the communication by bridging the gaps resulting from foreign language incompetence. It may be argued that Lenny uses English in this situation as a floor-holding technique; he fills the stopgap with an English lexical item “flow” in order to avoid breakage or gap in communication as Eldridge (1996) notes. In other words, he uses code-switching to maintain the interaction with the teacher.

It may well be argued that, in this excerpt, code-switching is used as a way of asking and clarifying the meaning of the new French lexical item, i.e. code-switching is used to fill the linguistic or conceptual gap of a speaker as Gysels (1992) notes. In fact, Jingxia (2009) claims that sometimes a lexical gap resulting from a lack of semantic congruence between vocabulary in L2 and its putative equivalence in the speaker’s L1 leads to instances of code-switching. Similarly, Leibscher & Dailey-O’Cain (2005) claim that foreign language learners switch back to their native language or L1 when they meet obstacles in the target language.
conversation. It can therefore be argued that the use of code-switching in lines 2 and 11 is triggered purely by linguistic reasons and therefore is competence related as remarked by Auer (1995). According to him, competence related code-switching is made by bilingual speakers to adjust their languages depending on the participant's language ability.

Additionally, code-switching in this excerpt is as a result of the dictionary used by the learners. The learners were using a bilingual dictionary (English-French), which, on the one hand, did not leave them any other option but to say the word as presented in the dictionary. On the other hand, code-switching in this situation could also be analyzed as lack of interpretation skills on the part of the learners, which may also be attributed to lack of language competence due to limited vocabulary. If Ben and Lenny were competent or proficient enough in the French language, they would have been able to use synonyms or have paraphrased to clarify the meaning of the new words in the target language.

In lines 15-18, Lenny and Ben switch to English as they continue to read the text in French. In this context, English is their language of preference. In fact, Auer (1984) states that preference-related switching allows the speaker to ascribe to other participants' individualistic preferences for one language or the other. It should be noted that Lenny's switching to English (to fight against this fléau) triggered Ben to respond to him in English (how is it spelt?), i.e. he ascribed to Lenny's preference for English.

3.2 Excerpt 2

This is a conversation between Lorie, John and Mary after they had finished the group task that was assigned to them. It was an argumentative task in which learners had to defend their points of view and after the teacher had gone out of the classroom. The question of the small group discussion was “Are you for or against minimum service?”

1) Lorie: *A l’université, ce n’est pas de question de vie ou mourir, mais à l’hôpital, c’est la question de vie* ((laughter)) (5.0)
‘At the university, it is not a question of life or death, but in hospitals, it is a question of life’
2) At what time did he say he is coming back?
3) John: *trois minutes* 
‘Three minutes’
4) Mary: *Non, vingt minutes (. ) Il a dit vingt minutes* 
‘No, twenty minutes. He said twenty minutes’
5) John: *Mais, maintenant c’est trois minutes qui restent* 
‘But, we are remaining with three minutes now’ (After the 3 minutes)
6) Teacher: *C’est ok?* 
‘Is it okay?’
7) Lorie: *Oui* 
‘Yes’

Lorie’s switch from French to English (line 2) can be analyzed as exemplifying discourse-related code-switching. Lorie code switches immediately after the teacher had gone out of
the classroom, which contextualizes a shift in footing (which Goffman (1981) defines as a change in the alignment we take up to ourselves and the others present as expressed in the way we manage the production and reception of an utterance). When we talk with others, we make language choices based on our relationship with them. In this excerpt, Lorie switches to English based on the relationship she has with John and Mary (her fellow classmates). Her code-switching also marks contrastively the beginning of an exchange that does not constitute part of the classroom task. Additionally, it shows her language of preference (English), because, according to her, it seems that French is only used during classroom interactions and classroom tasks. Her switch to English also implies that French is only spoken in the presence of the teacher. It can be argued that a language classroom is considered as a social group or setting, where members of the social group feel free to use any language of their choice. Therefore, a phenomenon, like code-switching, which usually occurs in daily discourse/interaction of any social group, has the potential to be practiced in any language classroom (Sert, 2005).

It is also important to note that, in this excerpt, Lorie’s switching to the language of her preference did not prompt John and Mary to switch to English because individual language preference of a participant does not necessary mean a change of language as noted by Auer (1984). Auer claims that individual preference may not bear on the participants’ code-switching behavior. It could be said that, for John and Mary, French is not only the language of communication in the presence of the teacher, but also in his absence.

3.3 Excerpt 3

This was a discussion between two learners, Martin and Grace. They were assigned the task of discussing how doping could be controlled or fought. They begin by reading the text silently until when Grace spoke out. This is where the excerpt begins. Below is the dialogue as they read the text in French.

1) Grace: (   ) The Olympic Games (   ) what is this word?
2) Martin: prepare
3) Grace: To prepare↑ Ya, that’s it, (   )
4) Grace: which tense is this? Which tense? (points at the word and gazes at Martin)
5) Martin: Permettent is présent (1.0) C’est le présent
   ‘Permit is present (1.0). It is the present tense’
6) Grace: Not imparfait?
   ‘Not imperfect’
7) Martin: perme.... (4.0) permettre
   Perm...... (4.0) permit
8) Grace: Permettre↑
   ‘Permit or allow’
9) Martin: Um, oui pluriel
   ‘Um, yes plural’
10) Grace: So, they permit....
   (Grace and Martin continue with reading but silently)
11) Grace: *permettent de saisir un bon nombre de dopeurs*
   ‘Permit to get a good number of dopeurs’
   ((pause))
12) Martin: *saisir, saisir (2.0) c’est quoi?* (checks in the dictionary)
    ‘To get, to get (2.0) what is it?’ (5.0)
13) Martin: *Obtenir* (smiles and gazes at Grace)
    ‘To get /obtain’
14) Grace: *comme um (   ) it is like in Olympic games* (gazes at Martin)
    ‘Like/as um(   )’
15) Martin: *de découvrir les sportifs dopeurs*
    ‘to discover /identify dopeurs’
16) Martin (checks in the dictionary) *Les sportifs suivent um (   )*
    ‘The sports persons follow um’
17) Grace: *Le cadre, (gazes at Martin), c’est a frame, a frame* (gazes at Martin again)
    ‘The frame(work) (gazes at Martin, it is a frame, a frame’
18) Martin: A frame?
19) Grace: *d’interpellation, interpeller* (checks in the dictionary) to fall out or question
    ‘Of interpellation/ questioning’
20) Grace: the frame of questioning or a control policy *depuis mille neuf cent dix neuf (   )*
    ‘since 1919’

21) cases of dopeurs
22) Martin: *(   ) auraient été annoncés*
    ‘would have been announced’
23) Grace: are announced (gazes at Martin)
24) Martin: Yes! (nods and gazes at Grace)
25) Grace: *Il existe un autre moyen suffisant* (silence) (   )
    ‘There is another effective way’

In this excerpt, we see that the learners use a lot of code-switching. This could be partly because they are using it as a fallback when their knowledge of French fails them and as preference-related switching. In this dialogue, there were also long pauses, “ums” and many gestures, which are indicative of lack of competence to express oneself in French. On the other hand, we can argue that they use code-switching as a way of interpretation of the text. One learner reads the text in French then translates it into English to the other for better understanding of the topic or text. In other words, they are using code-switching as a learning strategy, that is, the ultimate reason for code-switching to L1 (English) was to facilitate the learning process and understanding of the meaning of the text. This is in line with Anton and DiCamilla (2012) who argue that language learners use their L1 as a tool to understand the L2 better, i.e. to support each other’s learning, and with Vygotsky (1986) who posits that L1 is used as a “scaffold” to help students to jointly construct the meaning.

4 Conclusion

The learners’ switch to English may not necessarily have emerged entirely from lack of proficiency in French, because the same learners who code switched during the small
group discussions were able to express themselves in the target language quite well with the teacher. Despite some grammatical errors, the learners used well-constructed sentences or utterances when reporting what they had discussed in the small groups, were participating actively and responded intelligibly to the teacher’s questions in the target language. From the data presented, it can be concluded that code-switching was used more as a learning strategy in the process of interpretation and comprehension of the meaning of new vocabulary than a deficiency in French language skills. The use of code-switching somehow builds a bridge from known to unknown and may be considered as an important element in language teaching/learning when used efficiently as Sert (2005) notes. This is in line with Qing (2010) who suggests that code-switching in a language classroom is not always a blockage or deficiency in learning a language, but may be considered as a strategy in classroom interaction, if the aim is to make meaning clear and to transfer knowledge in an efficient way.

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Appendix: Characteristics of speech delivery according to Jefferson’s transcription notation

↑ represents marked rising shift in intonation
(  ) no hearing could be achieved for the string of talk or item in question
(2.0) timed pause in seconds
((pause)) unlimited interval heard between utterances
(.) a stopping fall in tone
Contact Information

Harriet K. Haggerty
harriet <dot> namukwaya <at> ucalgary<dot>ca
School of Languages, Linguistics, Literatures and Cultures
University of Calgary
2500 University Drive NW
Calgary, Alberta
T2N 1N4
Canada
The relationship between synchronic and diachronic linguistic processes: A discussion of language acquisition and language contact

Lindsay Hracs
University of Calgary

Abstract

The present study investigates the relationship between synchronic processes in Second Language Acquisition and diachronic processes in Language Contact. The focus is on examining laryngeal contrasts in the L2 acquisition of English stops by native speakers of Dutch, and the hypothesized Romance/Germanic contact situation which is argued to have resulted in the Dutch laryngeal system. Using van Coetsem's (1988) framework, the investigation reveals that there are indeed similarities. Furthermore, a re-examination of the acquisition data (originally presented in Simon, 2009, 2011) shows that a more detailed account must be made to claim that there is a relationship between synchronic and diachronic processes. Moreover, I argue that for the Uniformitarian Principle to hold true, theories must make the same predictions regarding both language acquisition and language contact data.

Key words: language contact, second language acquisition, laryngeal contrasts, voicing, Uniformitarian Principle, Dutch, English
1 Introduction

Investigating the similarities between Second Language Acquisition (SLA) and Language Contact (LC) can help shed light on the similarities between synchronic and diachronic processes. This is the main claim of the Uniformitarian Principle (Christy, 1983). The assumption under the Uniformitarian Principle is that observing present-day linguistic processes can shed light on linguistic processes of the past. In other words, the influences that we observe in language acquisition are the same influences that played a role in historical language change. This paper examines the linguistic forces that are in effect when two laryngeal stop systems come into contact in SLA and in LC situations.

Laryngeal contrasts have been examined from the perspective of both phonological theory and historical linguistics (Eckman & Iverson, 2015). Claims from phonological theory suggest that different laryngeal systems make use of different contrastive features. Historical approaches on the other hand, examine when and how the variations in the laryngeal systems of the languages emerged. Eckman & Iverson (2015) state that recently, more and more research has focused on the SLA of laryngeal contrasts. They suggest that research in SLA can provide insight into historical contact situations. This paper examines the relationship between a hypothesized contact situation involving a Romance voicing language and a Germanic aspirating language (which is said to have resulted in the laryngeal stop system of Dutch) and the acquisition of the English laryngeal stop system by native speakers of Dutch. I examine data presented in Simon (2009, 2011) and argue that a more detailed explanation of the data using van Coetsem’s (1988) framework is needed in order to make explicit claims about the relationship between SLA and LC. Finally, I discuss the data from the perspective of both traditional generative theories and Exemplar Theory, and argue that if the Uniformitarian Principle is to hold for the correspondence between SLA and LC, a theory should be expected to make the same predictions for each situation.

2 The phonology of Dutch and English laryngeal systems

2.1 Voicing vs. aspirating languages

Previous studies on the L2 acquisition of laryngeal systems have made use of the contrasts originally proposed in Lisker & Abramson (1964). In their study, Lisker & Abramson set out to determine whether Voice Onset Time (VOT) is sufficient in characterizing the distinctions in the stop categories of multiple languages that differ in both the number of stop categories present and the phonetic characteristics exhibited in the stop categories. They suggest that features such as voicing and aspiration are predictable consequences of differences in timing during articulation, and that cross-linguistic variation in VOT is far from random. In concordance with these findings, Simon (2010) points out that stop consonants can be classified on the basis of three different voicing conditions: prevoicing (negative VOT), short voicing lag (short VOT), and long voicing lag (long VOT).

This paper focuses on voicing languages and aspirating languages. Voicing languages show a two-way contrast between prevoiced and short-lag stops. Specifically, these languages exhibit stop consonants that have a negative VOT (i.e. voicing happens before the release) and stop consonants with a relatively low VOT (i.e. voicing occurs only a short time
after the release) (Docherty, 1992, as cited in Simon, 2011). Aspirating languages on the other hand show a two-way contrast between short-lag and long-lag stops. In these languages, voicing occurs after the initial release of the stop consonants, but the contrast exists in a difference in VOT (Jansen, 2004, as cited in Simon, 2011).

2.2 Dutch and English

A brief discussion of the English laryngeal stop system is necessary to examine the acquisition data that is presented in section 4. Dutch and English both exhibit a two-way laryngeal contrast (Simon, 2009). The stop system in Dutch is an example of a typical voicing language.\(^1\) Simon (2011) states that Dutch voiceless stops are realized with a short VOT (VOT between 0 and 20 ms) and Dutch voiced stops are prevoiced (VOT is approximately -90 ms). The stop system in English, on the other hand, is that of a typical aspirating language. In word-initial position, voiceless stops are usually produced with aspiration in the long-lag region (VOTs between 60 and 90 ms), and voiced stops are produced in the short-lag region (Simon, 2011). Table 1 summarizes these two systems:

<table>
<thead>
<tr>
<th></th>
<th>Dutch</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voiced stops /b, d, g/</td>
<td>-90 ms (prevoiced)</td>
<td>0-20 ms (short-lag)</td>
</tr>
<tr>
<td>Voiceless stops /p, t, k/</td>
<td>0-20 ms (short-lag)</td>
<td>60-90 ms (long-lag)</td>
</tr>
</tbody>
</table>

Crucially, Dutch voiceless stops and English voiced stops are articulated with the same VOT.

3 Language contact

In any situation where LC exists, it is pertinent to discuss a Source Language (SL) and a Recipient Language (RL) (van Coetsem, 1988). Essentially, a phonological loan of any sort implies a transfer of material from one language to another. Consider the diagram in (1).

1) \[ \text{SL} \Rightarrow \text{RL} \]

\[ \text{source language} \Rightarrow \text{recipient language} \] (van Coetsem, 1988, p. 7)

The source language transfers a certain phonological property to the recipient language. Thus, in van Coetsem’s (1988) framework, a phonological loan is considered to be an imitation, replication, or reproduction of SL pronunciation in the RL.

In order to fully understand how loan phonology works in van Coetsem’s (1988) framework, it is necessary to discuss speaker agentivity. The agent is roughly considered to be the one who transfers phonological elements from the SL to the RL. The following section provides a discussion of the differences between RL agentivity and SL agentivity.

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\(^1\) It is generally argued (Iverson & Salmons, 2003, 2008; Simon, 2009, 2011; among others) that the Dutch fricative system is not as straightforward as the stop system; arguments primarily from historical contact data suggest that fricatives exhibit typical Germanic aspirating properties, whereas stops exhibit the properties of a voicing language.
3.1 RL speaker agentivity

RL speaker agentivity occurs when the speaker of a RL imitates the SL while speaking their native language (see (2)).

2) The SL is imitated by the RL speaker (agent) in the RL. (van Coetsem, 1988, p. 9)

For example, when a native speaker of English, the RL, produces the [y] in *deja vu* [de.ʒa.vy], the speaker is imitating the French vowel, which is not part of their native system (van Coetsem, 1988). In this case, the speaker of the RL is actively imitating part of the SL phonology. Van Coetsem (1988) argues that in such a case, the RL speaker is the agent, and transfer of phonological material into the RL is taking place. Importantly, this type of imitation by the RL agent yields a *borrowing*.

Adaptation may occur after the borrowing takes place; this occurs when the RL agent adds an SL pronunciation into the native system (van Coetsem, 1988). However, adaptation is a separate mechanism, and thus does not necessarily follow from imitation/borrowing. Consider the diagram in (3).

3) RL agentivity

   (RL speaker = agent, RL = recipient of the action)

   step 1: imitation
   ↓
   borrowing

   step 2: adaptation

(van Coetsem, 1988, p. 10)

The diagram in (3) illustrates an example of RL dominance. In (3), the RL speaker is considered to be the RL dominant (i.e. linguistically dominant) bilingual, who initiates a borrowing from the SL, but whose strength (i.e. knowledge/ability) is greater in the RL than in the SL (van Coetsem, 1988). Van Coetsem argues that in cases of RL agentivity, the RL is linguistically dominant.

3.2 SL speaker agentivity

SL speaker agentivity occurs when the speaker of the SL applies articulatory habits to the RL. Consider the definition in (4).

4) The SL speaker (agent) adapts the RL to the SL. (van Coetsem, 1988, p. 11)

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2 Simon (2011) provides the following quote from Winford (2000, p. 6) on linguistic dominance: “In borrowing, materials from a non-dominant SL are imported into an RL via the agency of speakers for whom the latter is the dominant or primary language, i.e., RL agentivity...In imposition, the SL is the dominant (usually the first or primary) language of the speaker, from which materials are transferred into an RL in which the speaker is less proficient, i.e. SL agentivity.” Thus, linguistic dominance is a psycholinguistic notion; a linguistically dominant language is the language in which the speaker has a greater proficiency. Simon (2011) indicates that linguistic dominance as used by van Coetsem differs from social dominance. Social dominance refers to the social status of the RL when compared to the SL, but is equally important to consider when examining historical contact situations (van Coetsem, 1988).
Van Coetsem uses another example from English and French to illustrate (4). When a native speaker of French, the SL, is using English, the RL, and pronounces a word like pit as [pit] instead of [pʰɪt], the speaker applying SL articulatory habits to the RL (van Coetsem 1988). In this case, the French speaker is using the native [p] and [i] instead of the English [pʰ] and [ɪ], thus, these forms are included in the RL by the SL agent. Van Coetsem (1988) argues that in cases in which he SL speaker applies the articulatory habits of the native language to the RL, the SL speaker is actively the agent and the RL is the recipient of the action. This type of phonological process is referred to as imposition, which is an adaptation under SL agentivity (van Coetsem, 1988).

In contrast to RL agentivity, in contact situations in which the SL speaker is the agent, imitation can appear as an independent mechanism if the SL speaker learns to imitate the RL pronunciation (van Coetsem, 1988). This can be seen in the diagram in (5).

5)  
| SL agentivity  
| (SL speaker = agent, RL = recipient of the action)  
| step 1: adaptation  
| phonological imposition  
| step 2: imitation  

The diagram in (5) illustrates SL dominance. The SL agent is a SL dominant bilingual with a functional knowledge of the RL (van Coetsem, 1988). In cases such as these, the SL agent is stronger in the SL than the RL.

3.3 West Germanic stop systems

West Germanic stop systems (Dutch in particular) have been examined in detail throughout the literature, more recently by Iverson & Salmons (2003, 2008) and Simon (2009, 2010, 2011). As Simon (2011) remarks, a LC account for the laryngeal system of Dutch has been proposed by Iverson & Salmons (2003, 2008) and Kloeke (1954). The prevoiced unaspirated stop system of Dutch is thought to be a result of a contact situation between speakers of a Germanic aspirating system and speakers of a Romance voicing system (Simon, 2011). Based on van Coetsem’s (1988) framework, Simon (2011) proposes two different hypotheses to account for the Dutch stop system. These hypotheses can be seen in (6).

6)  
a. Hypothesis 1: The Imposition Hypothesis  
Speakers of the Romance SL are the agents who impose the stop system of their linguistically dominant language onto the Germanic RL in which they become bilingual. The Romance speakers retain their stop systems (prevoiced and voiceless unaspirated stops), and do not adopt the aspirating system of the Germanic language (non-prevoiced and voiceless aspirated stops).

b. Hypothesis 2: The Borrowing Hypothesis  
Speakers of the Germanic RL become bilingual with the Romance language, and have borrowed the voice system of the Romance language when speaking their
Germanic language. Essentially, the Germanic speakers abandon their aspirating stop system (non-prevoiced and voiceless aspirated stops) in favour of the Romance stop system (prevoiced and voiceless unaspirated stops).
(adapted from Simon, 2011, p. 234)

Importantly, in both the Imposition Hypothesis and the Borrowing Hypothesis the SL is a Romance language and the RL is a Germanic language; the difference between the two hypotheses exists in speaker agentivity (Simon, 2011).

3.4 Van Coetsem (1988) on language acquisition

As discussed above, van Coetsem's framework refers to SL bilinguals (SL/RL) and RL bilinguals (RL/SL). The difference between these two types of bilinguals depends on the type of linguistic transfer (imposition vs. borrowing) and the linguistic dominance of the speaker (van Coetsem, 1988). Thus, a shift in the speaker's first language is a change from one type of bilingual to another. If the change happens over time, the RL bilingual is said to change into a SL bilingual, and if the dominant language use is situation dependent, the speaker is said to be partly a RL bilingual and partly a SL bilingual (van Coetsem, 1988). Importantly, van Coetsem states that a shift in linguistic dominance can affect a group of individuals or a speech community. This is an important notion to keep in mind, as it is relevant for how LC and SLA play a role in language change.

In situations of RL agentivity, imitation signifies the acquisition of certain phonological properties of the SL by the RL speaker, specifically in terms of supplementing the RL by borrowing (van Coetsem, 1988). However, in situations of SL agentivity, imitation is said to be true acquisition, specifically realized as SLA (van Coetsem, 1988). Van Coetsem (1988) asserts the importance of remembering that imitation is a secondary mechanism in SL agentivity situations (see the diagram in (5)), and since imitation is not a necessary part of SL agentivity, neither is acquisition. Consider the diagram in (7).

Crucially, there is a change in process between adaptation and imitation as shown in (7). In particular, there is a shift from a strictly transfer procedure (SL to RL), to a process of language acquisition, with the RL as the target language and the SL as the learner's native language (van Coetsem, 1988).

Arguably, adaptation in SL agentivity happens in compensation for incomplete language acquisition (van Coetsem, 1988). In other words, the speaker uses properties of their native language to fill in gaps during acquisition. In particular, imposition affects the RL in the speech of the SL, but the degree of imposition decreases as the acquisition

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process progresses (van Coetsem, 1988). Specifically, the more aspects of the RL grammar that the SL agent acquires, the less the SL agent will have to impose portions of the SL grammar onto the RL in order to fill in informational gaps in the RL. This claim illustrates the amount of psycholinguistic effects present in a LC situation. Consider Figure 1.

As time increases, acquisition begins to reach a maximum and imposition begins to reach to a minimum. It is important to remember that with SLA in particular, the grammar may fossilize before acquisition reaches a true maximum and imposition reaches a true minimum. That is, aspects of the target language may never fully be acquired, and as such, it is expected to see continued imposition on the part of the SL to fill in for incomplete acquisition.

4 Second language acquisition data

When drawing connections between language acquisition language contact it is important to examine data from both subfields. This section reviews a production study that was discussed in detail by Simon (2009 & 2011). Simon (2009) completed a study which investigated the acquisition of a laryngeal *aspirating system* (English) by speakers of a *voicing system* (Dutch). In this study, data from VOTs in learners’ productions provide information on how well learners have acquired the target language stop system, i.e. target-like VOTs in English.

As discussed in section 2.2, Dutch and English stop consonants can be distinguished on the basis of VOT; the Dutch stop system is typical of a voicing language and the English stop system in English is of a typical aspirating language. Essentially, the production study was designed to examine the extent to which advanced learners of English who speak Dutch as a native language can shift the boundary between the categories of stops from their native language to the target second language (Simon, 2011).
4.1 Simon’s production study

Participants were asked to complete a word-reading task in both Dutch and English that contained stop-initial words which were read from a computer screen; word-initial forms were elicited because the contrast between the two stop categories is maintained in both voicing and aspirating languages in word-initial position, but variations in voicing exist in stop consonants produced in word-medial and word-final positions (Simon, 2011). A control group of native speakers of British English completed the same reading task.

Table 2 shows the mean VOTs produced for each voiceless stop. Data from the native speaker control group is in the L1 English column.

Table 2: Mean VOT in word-initial /p, t, k/ in isolated words (in milliseconds)

<table>
<thead>
<tr>
<th></th>
<th>L1 Dutch</th>
<th>L1 English</th>
<th>L2 English</th>
</tr>
</thead>
<tbody>
<tr>
<td>/p/</td>
<td>12</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>/t/</td>
<td>23</td>
<td>73</td>
<td>64</td>
</tr>
<tr>
<td>/k/</td>
<td>29</td>
<td>76</td>
<td>86</td>
</tr>
<tr>
<td>mean</td>
<td>21</td>
<td>76</td>
<td>77</td>
</tr>
</tbody>
</table>

(Simon, 2011, p. 238)

Close to all L1 Dutch subjects produced longer VOTs in English than in Dutch, which suggests that they have target-like productions of the voiceless stops.

Table 3 shows the number of tokens produced with prevoicing. As Simon (2011) suggests, it is the presence or absence of prevoicing that cues the contrast in Dutch, rather than prevoicing duration (see van Alphen, 2004 for a discussion). The Dutch participants' data is seen in the L1 Dutch and L2 English columns, and data from the native speaker control group is in the L1 English column. Simon (2011) points out that the production of the voiced velar stop /g/ generally does not exist in Dutch, so the production of /g/ was not examined.

Table 3: Production of prevoicing in word-initial /b, d/ in isolated words

<table>
<thead>
<tr>
<th></th>
<th>L1 Dutch</th>
<th>L1 English</th>
<th>L2 English</th>
</tr>
</thead>
<tbody>
<tr>
<td>/b/</td>
<td>95/100 (-130 ms)</td>
<td>29/100 (-82 ms)</td>
<td>95/100 (-113 ms)</td>
</tr>
<tr>
<td>/d/</td>
<td>91/100 (-117 ms)</td>
<td>26/100 (-79 ms)</td>
<td>90/100 (-105 ms)</td>
</tr>
<tr>
<td>mean</td>
<td>186/200 (-124 ms) (93%)</td>
<td>55/200 (-81 ms) (28%)</td>
<td>185/200 (-109 ms) (93%)</td>
</tr>
</tbody>
</table>

(Simon, 2011, p. 239)

Ultimately, the Dutch learners of English produced target-like aspiration, but did not learn to produce target-like short-lag stops. Simon (2011) argues this is likely a case of transfer of Dutch prevoiced stops into English, i.e. learners displayed a mixed system at the time of testing.

In the next section, I provide a more detailed account of the production data using van Coetsem’s (1988) framework. Simon (2011) briefly discusses the idea that the mixed system shown in her production data could be transitional. Although her Imposition Hypothesis as seen in (6a) can account for the L2 acquisition data, she does not provide a detailed account of the data using van Coetsem’s claims regarding imposition and
acquisition. I argue that while SLA data can act in an informative capacity when describing historical contact situations, a detailed description of the acquisition data in a LC framework is needed.

4.2 Second language acquisition of English stops in van Coetsem’s framework

The production data discussed above are an example of imposition as defined by van Coetsem (1988) and spelled out by Simon’s (2011) Imposition Hypothesis.

Regarding the data presented in section 4, Dutch is the SL, and English is the RL in which the learners will eventually become bilingual. However, as shown in section 3, it is not as simple as saying that the Dutch speakers retain their stop system, since the data show that they have at least acquired the VOT for English voiceless stops. Unfortunately, Simon (2011) does not go into detail regarding the similarities between the acquisition data and the contact situation. Moreover, Simon (2011) suggests that the mixed laryngeal systems are common throughout the world’s languages and that the learner’s interlanguage grammars exhibited in her earlier work (Simon, 2009) can be considered natural grammars. However, she does not discuss the possibility that their grammars will change as acquisition progresses and as van Coetsem’s framework predicts. I argue that the data can be more accurately accounted for with a more in depth analysis using van Coetsem’s framework.

Consider the diagram in (8), which illustrates the similarities between the hypothesis for the Dutch voicing system and the acquisition data from Simon (2009 & 2011).

8) Dutch voicing contact hypothesis:

SL agentivity (imposition)

SL Romance (linguistically dominant) ⇒ RL Germanic

Romance prevoiced stops ⇒ Germanic prevoiced stops

\[
\begin{align*}
\text{SL agentivity} & \\
\text{(SL/Romance speaker = agent, RL/Germanic = recipient)} \\
\text{step 1: adaptation} & \quad \text{step 2: imitation} \\
\downarrow & \quad \downarrow \\
\text{phonological imposition} & \quad \text{SLA}
\end{align*}
\]

In (8), the Romance SL speaker is imposing the voicing system onto the Germanic aspirating language. If the difference in voicing and aspirating languages is due to phonetic implementation of the feature [voice], then the Romance SL is imposing its implementation of [voice] onto the Germanic system, resulting in voicing beginning earlier in prevoiced stops than short-lag stops, (compared to voicing beginning earlier in short-lag stops than long-lag stops in Germanic). However, if the difference in voicing and aspirating languages is due to a difference in phonological features, then the Romance SL is imposing its contrastive [voice] feature on the aspirating Germanic RL which employs [spread glottis] as the contrastive phonological feature in its stop system. As Simon (2011) states, this is an
attractive analysis given the complexity of the nature of the laryngeal system in Dutch; Dutch has Romance-like stops and Germanic-like fricatives (see Iverson & Salmons, 2003 for a detailed discussion). A diagram of outlining the process of acquiring the L2 English stop system by L1 Dutch speakers can be seen in (9).

9) L1 Dutch acquiring L2 English stop system:
   SL agentivity (imposition)
   SL Dutch (linguistically dominant) ⇒ RL English
   Dutch prevoiced stops ⇒ English produced with prevoicing

(SL/Dutch speaker = agent, RL/English = recipient)

step 1: adaptation
↓ phonological imposition

step 2: imitation
↓ SLA

As previously mentioned, van Coetsem (1988) argues that there is a change in process between step 1 and step 2. Specifically, there is a shift from a strictly transfer procedure (SL to RL), to a process of language acquisition with the RL as the target language and the SL as the learner’s native language. Recall that the data presented in section 4 show that the speakers of Dutch learn the VOT distinction for English word-initial voiceless stops, but they have not learned to suppress prevoicing in English word-initial voiced stops. This suggests that while the process has shifted from strictly a process of imposition to a process of acquisition, the acquisition of the English stop system is not complete as the Dutch speakers are still imposing the prevoicing of voiced stops. Consider Figure 2.

Figure 2 is meant to illustrate the stage of acquisition of the English stop system by speakers of Dutch, and the stage of imposition of the native Dutch stop systems on the RL English, respectively. Importantly, acquisition has not reached a maximum and imposition has not reached a minimum. Thus, the data in section 4.1 match what we would expect to see at this point in the process, namely that part of the English stop system has been
acquired, but imposition of part of the Dutch system on the target language is still occurring.

5 Traditional generative approaches

5.1 An overview of the generative approach to acquisition and language change

One fundamental generative notion is that language change can affect synchronic grammars, and synchronic grammars can affect language change (Dresher, 2015). In fact, Dresher claims that diachronic processes cannot be fully understood without an analysis of synchronic processes. As Dresher (2015) points out, language acquisition occurs on the basis of evidence available to learners in their environments. Although different cognitive processes must be defined to explain how language acquisition takes place, it can be said that language learners are the locus of language change.

Under this approach, we would fully expect children’s grammars to be the same as their parents’ grammars if what they heard was exactly what their parents heard as children (Dresher, 2015). If this were indeed the case, language change would not occur. However, it is indeed not the case that children hear the same language their parents heard as children. Dresher (2015) states that language is always changing in minor ways, and that in some cases, minor changes will not be enough to affect change in a learner’s grammar but in other cases, these minor changes may be enough for a child to converge on a grammar that is different than the grammar of their parents, causing changes in the grammar that may trigger future changes. Dresher (2015) suggests that even if one assumes that not all language change is a result of language acquisition, it is clear that at least some language change is a direct result of acquisition processes.

Importantly, the generative notion of grammar must be defined to provide a clear account of the relationship between synchronic and diachronic processes. As stated by Dresher (2015), sounds have two representations: (i) a phonetic representation that approximates its pronunciation, and (ii) a phonemic representation that represents its contrastive value within the phonological system. Generative theories state that phonemic representations are underlying, i.e. in a learner’s mental grammar. Essentially, for generativists, grammars are just a set of ordered rules. Both synchronic and diachronic changes are expressed in terms of these rules, allowing one to explain the relationship between the two processes (Dresher, 2015). Specifically, rules that are based on diachronic events enter the synchronic grammars of language users, but it is not the case that language users merely mimic rules that exist diachronically (Dresher, 2015). Chomsky and Halle (1968) suggest that the grammars contain rules which reflect historical changes, but a change persists only if future generations continue to acquire a grammar containing those rules (see Dresher, 2015). Thus, it is clear that generative theories of language attempt to connect synchronic and diachronic linguistic processes. The following section discusses the data presented earlier in this paper from the traditional generative approach.
5.2 Laryngeal stop systems from a generative approach

A grammar, in the generative sense, is a set of ordered rules. The following examples illustrate possible rules for VOT from both a phonetic perspective, in which [voice] is a contrastive feature that is implemented in different ways (i.e. the Single Feature Hypothesis), and a phonological perspective, in which voicing and aspirating languages differ in the contrastive feature used (i.e. Multiple Feature Hypothesis). Note that the rules can apply in both a Romance/Germanic contact situation, or a L1 Dutch/L2 English acquisition situation.

The examples in (10) show what the underlying laryngeal stop systems look like under a Single Feature Hypothesis.

10) Single Feature Hypothesis
a. word-initial voiced stops in voicing languages and aspirating languages
   /b/ = [-cor, +ant, -cont] -> [+voice] / #_
   /d/ = [+cor, -ant, -cont] -> [+voice] / #_
   /g/ = [-cor, -ant, -cont] -> [+voice] / #_

b. word-initial voiceless stops in voicing languages and aspirating languages
   /p/ = [-cor, +ant, -cont] -> [-voice] / #_
   /t/ = [+cor, -ant, -cont] -> [-voice] / #_
   /k/ = [-cor, -ant, -cont] -> [-voice] / #_

Under the Single Feature Hypothesis, voicing languages and aspirating languages make use of the same contrastive features, and the differences in VOT between prevoiced, short-lag, and long-lag stops are articulatory in nature. In other words, word initial-voiced stops in both voicing and aspirating languages have the same underlying representation, and the same phonological rules apply to the phonemes. The same story can be told for word-initial voiceless stops in these languages. Regarding language acquisition and historical contact, there is no change to a speaker’s underlying system (i.e. competence). Instead, learner’s must shift articulatory processes to produce stops in the target-like range (i.e. performance).

Next, the examples in (11) show the underlying laryngeal stop systems with respect to the Multiple Feature Hypothesis.

11) Multiple Feature Hypothesis
a. word-initial stops in voicing languages
   /p/ = [-cor, +ant, -cont] -> [-voice] / #_
   /t/ = [+cor, -ant, -cont] -> [-voice] / #_
   /k/ = [-cor, -ant, -cont] -> [-voice] / #_
   /b/ = [-cor, +ant, -cont] -> [+voice] / #_
   /d/ = [+cor, -ant, -cont] -> [+voice] / #_
   /g/ = [-cor, -ant, -cont] -> [+voice] / #_

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Under the Multiple Feature Hypothesis, voicing languages and aspirating languages make use of different contrastive features, and differences in VOT between prevoiced, short-lag, and long-lag stops are a result of underlying specifications. In other words, word initial voiced stops in voicing and aspirating languages have different underlying representations, and thus different phonological rules apply to the phonemes. The same story can be told for word initial voiceless stops in these languages. In terms of SLA and LC, learners must replace the contrastive feature of their L1 with the contrastive feature of the L2. Another possibility is language learners would be able to acquire a new L2 phonological feature without losing the feature of the L1, however, this solution to the acquisition problem results in the learner's phonological system being 'overmarked', where voiced and voiceless stops would be distinguished by both [spread glottis] and [voice]. Further investigation is needed to sort out the differences between the two paths of acquisition. Crucially, however, both processes of acquisition result in changes in the learner's underlying systems (competence). The proposed overmarked system can be seen in (12).

12) Overmarked laryngeal stop system of L2 learners
   a. word-initial voiceless stops
      /p/ = [-cor, +ant, -cont] -> [+voice, +spread glottis] / #_
      /t/ = [+cor, -ant, -cont] -> [+voice, +spread glottis] / #_
      /k/ = [-cor, -ant, -cont] -> [+voice, +spread glottis] / #_
   b. word-initial voiced stops
      /b/ = [-cor, +ant, -cont] -> [+voice, -spread glottis] / #_
      /d/ = [+cor, -ant, -cont] -> [+voice, -spread glottis] / #_
      /g/ = [-cor, -ant, -cont] -> [+voice, -spread glottis] / #_

Van Coetsem (1988) uses the terms code vs. message to describe the competence vs. performance distinction. In reference to the hypothesized Romance/Germanic contact situation, the Romance SL which is linguistically dominant, imposes its system onto the Germanic system. Specifically, the Romance SL code (i.e. competence) becomes part of the Germanic RL message (i.e. performance). Imposition fully shifts to acquisition when the SL code becomes the RL code, in this case, the laryngeal stop system of the Romance language becomes part the competence in the Germanic aspirating system. Regarding the L1 Dutch/L2 English acquisition environment, the Dutch SL which is linguistically dominant, imposes its system onto the English system. Specifically, the Dutch SL code (i.e. competence) becomes part of the English RL message (i.e. performance). In the case of the acquisition data presented in section 4.1, learners have not fully acquired the L2 English aspirating system, and thus are still imposing a portion of the SL competence on the RL system.
Ultimately, in order to link synchronic acquisition findings with diachronic data, a theory must be able to make the same predictions regarding both environments. The brief discussion here shows that traditional generative theories can provide rule-based accounts for both synchronic acquisition data and diachronic contact data, though not without the problem of having to sort out an overmarked system.

6 Exemplar Theory

6.1 An overview of Exemplar Theory

The goal of phonological theory as conceived by generativists (see section 5) is to describe: (i) relations between physically distinct sounds that are taken to be 'the same' in some sense, i.e. allophonic relations; (ii) associations between morpheme variants that exist in a variety of contexts; (iii) phonological units such as features, segments, syllables, feet, etc.; and (iv) universal and language specific properties of phonology (Bybee, 2001). Exemplar Theory (ET) does not make the same assumptions as generative approaches, but arguably accomplishes the same goals while also accounting for facts that generative approaches cannot.

As seen in section 5, traditional structuralist or generativist models suggest that material derived solely by rules does not also appear in the lexicon; ET rejects this notion (Bybee, 2001). Furthermore, generative approaches argue that complexity in language is reduced by extracting regularities and proposing rules, and only idiosyncratic information is stored in the lexicon (Bybee, 2001). Thus, as Bybee (2001) remarks, the goal of linguistic analysis in generative approaches is to determine what material is idiosyncratic and what is predictable by rule. These claims contrast with those of ET which suggest that there is full lexical storage of all phonological material, and phonological forms are not in fact derived by rules.

Humans process linguistic stimuli in the same way we process other external stimuli, and even predictable information is perceived and stored by our brains (Bybee, 2001). In particular, our reactions to predictable features differ from our reactions to unpredictable features; Bybee (2001) also states that predictable properties are mapped onto previously existing similar or identical experiences, and unpredictable properties result in the creation of new representations. Consequently, mental representations are shaped by how frequently words and phrases are used, and how frequently words and phrases are repeated (Bybee, 2001). Since repetition affects cognitive representations, it can be argued that language use changes the grammar (Bybee, 2001). As soon as a language user experiences a phonetically distinct token, it is registered in the exemplar cloud; the first instance of language experience carries with it the potential to change mental grammar, in effect, instituting a language-wide sound change (Bybee, 2001).

Storage in the lexicon is structured and based on regularities and similarities in stored linguistic forms; when a word is activated, phonetically similar words are activated as well (Bybee, 2001). Bybee (1985) proposes a two-dimensional visual representation which illustrates relations between forms as connecting lines, where activation of one item spreads to other items that are connected by the lines. This model can be seen in (13).
The relationship between synchronic and diachronic linguistic processes

13) [ɛnd] is a possible syllable rhyme: [$_\text{ɛ\text{n}\text{d}}$]

(adapted from Bybee, 2001, p. 22)

The structure in (13) can be thought of as an associative network where storage is redundant; words are stored even if they are predictable from morpheme combinations, storage is context dependent with words stored multiple times if they are used in different contexts, and similarities in meaning and form are associated with one another across items (Bybee, 2001). Essentially, lexical storage entails a network of connections between related items making storage more efficient (Bybee, 2001).

ET is subject to frequency effects given that lexical storage is based on usage. That is, how often a linguistic form is used can affect how the item is stored in the lexicon. As previously discussed, subsequent tokens of use map onto existing forms. This means that high-frequency items have stronger connections and become easier to access, and less frequently used items may fade in strength and thus become more difficult to access (Bybee, 2001). Bybee (2001) suggests a result of these claims is that high frequency forms are not prone to regularization because regularization only occurs when forms are difficult to access.

A usage-based model such as ET makes different predictions in terms of language change and language acquisition than a traditional rule-based generative approach. The following section discusses the data presented in this paper from the approach of ET.

6.2 Laryngeal stop systems from an Exemplar Theory approach

Unlike generative approaches, stored representations in ET are not written out in phonemes, but instead contain predictable features (Bybee, 2001). In the previous section, it was noted that in an ET approach, all phonetically distinct items are stored in mental representations. Bybee (2001) points out that discussions of categorical perception are relevant when discussing how items are perceived and stored. Given that items which are phonetically similar are stored together, we would expect short-lag stops to be stored in close proximity to other short-lag stops for instance. This would also be the case for prevoiced stops and long-lag stops. In an ET approach, rather than storing phonemic
representations that are subjected to rules before production, fully specified lexical entries are stored.

In terms of language acquisition and transfer in historical contact situations, more exposure to exemplars of the system which is being acquired will create stronger associations in the lexicon. The acquisition of the English aspirating system by native speakers of Dutch appears to be a gradual process. These data are in concordance with Bybee’s (2001) claim that phonetic change can be gradual and produce variation. The results show that Dutch learners of English have attained target-like production of voiceless stops. This suggests that the lexical representations of such exemplars have strengthened in such a way that the Dutch speakers have overwritten their L1 voicing tendencies, that is, they are no longer imposing their SL voicing system on long-lag stops in the RL. This is not the case for the Dutch productions of short-lag stops in their L2. In particular, they are imposing the prevocal qualities on the English RL. One possible prediction is that through enough exposure to target-like forms, the representations of the English short-lag stops will strengthen in such a way that learners will produce target-like short-lag stops.3

More data are needed to make claims regarding the speed of change in the hypothesized Romance/Germanic contact situation. However, given that the Romance SL has imposed the voicing system onto the stops of the Germanic RL, we could say that through continued usage, connections in the Romance stop system strengthened and became easier to access, with the opposite process occurring in the Germanic stop system. More investigation needs to be completed in terms of frequency of exposure and speed of change in order to make strong claims regarding the processes involved in the hypothesized Romance/Germanic contact situation.

Importantly, we are not left with the same problem of an overmarked system given that phonemes and voicing rules are not stored in the lexicon. Since all new tokens are stored, and connections relating to recurring tokens are strengthened through usage, there is no need to posit a system that stores phonemes and phonological rules, which means overmarked lexical items simply do not exist. Ultimately, the ET approach seems to be able to make the same predictions regarding synchronic and diachronic processes. Moreover, while more data are needed to make claims about frequency and rate of change, an ET approach appears to resolve the problem of acquisition and LC resulting in overmarked representational systems.

7 Conclusion

The Uniformitarian Principle suggests that the influences we observe today are the same influences that played a role in historical language change. This paper examined the linguistic forces which are taking place when two laryngeal stop systems come into contact in SLA and in LC. The current discussion shows that the SLA data presented in Simon (2009 & 2011) can be better explained by a more detailed account using van Coetsem’s (1988) framework. In particular, simply stating that the acquisition properties are an example of imposition is not enough to connect the findings from SLA data to hypothesized historical

3 I will briefly note here that further investigation should include discussions of bilingual storage of exemplars.
contact situations. Furthermore, an examination of the data from the perspective of both traditional generative theories and Exemplar Theory illustrates that the Uniformitarian Principle holds for language acquisition and LC, and that each approach is able make the theory-internal predictions for both the synchronic and diachronic data. Additionally, the problem of an overmarked system that arises under the Multiple Features Hypothesis in generative approaches is not an issue for Exemplar Theory.

On the surface, it appears as if the theories examined here can account for synchronic SLA data and diachronic LC data showing that the Uniformitarian Principle holds true. However, a more detailed historical dataset would allow for predictions to be made in terms of frequency of tokens and rate of change. Overall, it is clear that investigating the relationship between synchronic and diachronic processes is informative, and bringing together investigations of SLA and historical processes will continue to be a fruitful area of research.

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Contact Information

Lindsay Hracs
lindsay<dot>hracs<at>ucalgary<dot>ca
University of Calgary
School of Languages, Linguistics, Literatures and Cultures
University of Calgary
Craigie Hall D310, 2500 University Dr. N.W.
Calgary, AB T2N 1N4 Canada
From zijt to bent ‘(you) are’ in Early Modern Dutch: a view “from below” approach
Christina I. Terpstra
University of Calgary

Abstract

Dutch exhibits suppletion in the verb ZIJN 'be' with b-roots and s-roots merged into a single paradigm (Donaldson, 1983, p. 182). By the end of the Middle Dutch period (late 16th century), second person singular s-root form zijt and b-root form bent were in competition. Donaldson (1983, p. 182) suggests that the change was motivated by a parallel with the first person singular (present) form ben. However, this account lacks an empirical basis. With the use of the Brieven als Buit ('Letters as Loot') corpus, my investigation attempts to address this gap by adopting a “history from below” approach (Elspaß, 2007, p. 5; 2012, p. 160), offering a quantitative analysis on linguistic as well as social factors conditioning this change. The results of the analysis suggest that the shift from zijt to bent occurred at a faster rate in the active, rather than the passive voice, the indicative, rather than the imperative mood, and in predicate rather than auxiliary verb function; these domains are considered more basic with a wider usage (Kuryłowicz, 1947). However, this language change cannot be fully accounted for by a strictly language-internal framework; women selected the bent alternate at a higher rate than men, reinforcing that both social and linguistic factors must be considered to provide a comprehensive account of language change.

Key words: Early Modern Dutch, historical sociolinguistics, morphological change, view “from below”
1 Introduction

At the end of the Middle Dutch era (circa late 16th century), the verb ZIJN ‘be’ had two competing forms for the second person singular, namely conservative zijt and innovative bent. From the Early Modern Dutch period (circa 17th to 19th century) onwards, the innovative form bent came to win out and zijt fell into disuse for most varieties of Netherlandic Dutch. In this investigation, I analyze how and why the shift took place, adopting a view “from below” approach, involving texts representative of colloquial language used by men and women of all socio-economic ranks. This approach examines linguistic as well as extra-linguistic factors potentially playing a role in the morphological change of the verb ZIJN. This analysis sampled data from the Brieven als Buit (“Letters as Loot”) corpus\(^1\), a private letter corpus representing a diverse authorship in terms of gender and socio-economic class.

The remaining sections are organized as follows: section 2 provides an overview of the literature covering shifts in the second person singular in the ZIJN paradigm. I discuss how prior literature fails to properly account for the zijt/bent alternation and elaborate on the motivations behind analyzing the data through the view “from below” approach. Section 3 lays out the methodology. The results and discussion of the analysis are provided in section 4 and 5 respectively. Section 6 offers concluding remarks and suggestions for future research.

2 Second person singular shifts in the ZIJN paradigm

The literature available on the diachronic developments of the ZIJN paradigm are scant. From Old Low Franconian (Old Dutch) to Middle Dutch, the ZIJN paradigm is relatively stable; particularly, no attestable lasting change is observed for the second person singular, which takes the form of bist(t) from roughly the 10th– to the 16th century (van den Toorn et al., 1997, p. 41, 58, 118). By the end of the Middle Dutch era, shifts took place in the second person singular. According to Donaldson (1983, p. 182), when the second person singular pronoun du ‘you’ disappeared, so did the word-form bist. In its place came the pronoun jij and the word-form bent. Aalberse and Don (2011) state that there is an intermediate stage between Donaldson’s (1983, p. 182) description of the bist to bent transition. When the form bist fell out of use, it left a gap which was temporarily filled by the second person plural form zijt (Aalberse & Don, 2011, p. 347-348). A pilot survey of my investigation confirmed the presence of this intermediate stage in the corpus, that is, the zijt and bent alternation. Instances of the form bist were not observed.

As to an explanation for why these shifts take place, Donaldson claims that the bist > (zijt) > bent shift is governed by Kuryłowicz’s (1947) principle of (analogical) leveling, according to which morphologically, syntactically, or semantically related elements become more similar to each other (Hock, 1986, p. 167) –in this context, the

\(^1\) My investigated relied primarily on the following resources: De Geintegreerde Taal-bank, an Old and Middle Dutch dictionary, Kruyskamp’s (1961) edition of the Van Dale Groot woordenboek den nederlandse taal, a dictionary on contemporary Dutch, and Verdam’s (1911) Middel nederlandsche hand woordenboek, a Middle Dutch dictionary, and finally, the Letters as Loot/Brieven als Buit corpus (details regarding the corpus follow in section 3).
second person singular bent becoming analogous with the first person singular ben (Donaldson, 1983, p. 182). The paradigm is constrained by the one-form-one-meaning principle, whereby if a particular morphophonemic alternation does not signal an important meaning contrast, it may be eliminated (Hock, 1986, p. 169). The direction of the leveled paradigm is governed by “basicness”. “Basic” forms constitute the core of the derived forms. Basicness is understood in terms of spheres of usage: items which are used in more contexts or with greater frequency are said to be more basic (Hock, 1986, p. 183), e.g. the third person is considered to be more basic than the first or second person, the indicative mood to be more basic than the subjunctive or imperative mood, and the active voice to be more basic than the passive voice (Hock, 1986, p. 217-220). However, Donaldson’s (1983) explanations are speculations at best as no empirical evidence is offered for these claims.

Analyzing language change through a strictly system-internal approach as offered by Kuryłowicz (1947) has been criticized. Weinreich et al. (1968, p. 177) argue that by abstracting language from its community matrix, one risks omitting socially conditioned variation from an explanation of linguistic change. Incorporating sociological factors in linguistic analyses has shown to be a highly valuable explanatory tool. For example, Blas Arroyo (2014, p. 22-23) observes that the structure deber de + infinitive as opposed to deber + infinitive ('have to, must/should') was adopted and spread more by youths than by adults in the 16th century. Incorporating a social lens to diachronic analyses, however, presents a number of challenges; historical sociolinguistic studies must reconstruct the society in addition to the language it embeds. Exclusive literacy and access to written communication by the predominantly upper class, the more careful preservation of these texts, and bias against the use of vernacular texts for historical linguistic analyses has led to the imbalanced representation of the historical registers spoken (Elspaß, 2007, p. 3; 2012, p. 159-161).

The language history “from below” aims to counterweight the overrepresentation of upper-class registers found in previous research (Elspaß, 2007, p. 5; 2012, p. 160). This approach examines linguistic patterns produced by the marginally-represented majority population which includes farmers, artisans, soldiers, and housemaids (Elspaß, 2007, p. 5). In order to reconstruct an image of the language of the masses, this approach must utilize texts beyond published works, e.g. "ego-documents" such as private letters and diaries (see Elspaß, 2007, p. 5). A view “from below” also constitutes language change occurring below the level of awareness (the types of variation which are usually not linked to prestige) (Labov, 1994, p. 78). Labov states that such a change may be introduced by any social class, but no instances initiated by the higher strata have been reported (1994, p. 78). In conclusion, a view from below would require analyses of texts written by the lower classes for such changes to be brought to light.

In conclusion, because the form bist virtually disappears by the end of the Middle Dutch period (Donaldson, 1983, p. 182), and Modern Dutch primarily uses bent, the Early Modern Dutch period logically seems to be the locus of the change, and thus serves as the focus-period of my investigation. Moreover, since no prior investigation has provided an empirically-sound analysis of the zijt > bent shift incorporating potential internal and external factors, providing such an empirically-supported analysis of this shift is the ultimate aim here.
3 Methodology

In order to analyze the zijt > bent shift, the Brieven als Buit ('Letters as Loot') corpus was utilized. This is a corpus of approximately one thousand 17th-to-19th century private letters sent by Dutch men and women from a wide range of ages, geographical and socio-economic backgrounds. This diverse corpus was chosen as it most closely captures the Early Modern Dutch vernacular compared to other types of text (see Koch & Oesterreicher, 1985, 1994, on text type and degree of vernacular representation). The dependent variable is binary; no alternate forms in addition to zijt and bent were identified in the corpus. Data was collected by searching the corpus for instances (tokens) of the alternating word-forms along with their patterning linguistic and extra-linguistic information. Section 3.1 and 3.2 respectively detail the linguistic and extra-linguistic factors part of the analysis.

3.1 Linguistic variables

Tense/aspect: tokens were recorded along with information about the TAM (Tense/Aspect/Mood) values of the constructions in which they were situated. In terms of morphological tense, Dutch has a simple present and two past tenses (the future is expressed analytically with auxiliaries); the (preterite) simple past tense is made up of word-forms from the wes- sub-paradigm of ZIJN (Donaldson 1981, p. 139; 1983, p. 182). Furthermore, Dutch also has an analytic past perfect tense, which takes the structure of ZIJN + ge-VINF (Donaldson 1981, p. 141-145). Dutch also has analytic imperfect aspect (Donaldson 1981, p. 165-166) constructions, the most common being ZIJN + aanPREP + hetDET + VINFstructure (Ebert, 2000; Behrens et al., 2013). In order to perform a distribution comparison on tense and aspect usage with the word-form alternates, the tense and aspect constructions were collapsed into a single variable; the tokens were categorized as either [+past, -present] for past perfect constructions, [-past, +present] for simple present constructions, or [-past, -present] for imperfect aspect constructions (simple past tense was not recorded since the simple past tense does not utilize the verb ZIJN).

Mood: Early Modern Dutch has an indicative, imperative, and traces of a subjunctive mood; the subjunctive mood has gradually become obsolete and only persists in archaic expressions, e.g. God zij dank ‘God be thanked’ (Donaldson 1983, p. 182). In Modern Dutch, the imperative mood form is homophonous with the root wes-, although Donaldson mentions that zijt was used for the imperative in Early Modern Dutch (1983, p. 182). Tokens were recorded for Tense, Aspect, and Mood for the entire construction, whether or not the information was expressed primarily by the ZIJN verb or by another (main) verb.

Voice: Dutch morpho-syntax has the capability to express passive alongside active meaning through the use of ZIJN as an auxiliary in periphrastic constructions (Donaldson 1981, p. 161-165). I incorporated voice as a variable since it may have an influence on the distribution of conservative and innovative word-forms.

Verb function: In addition to tense, mood, and voice, I also incorporated verb function as a variable. Like English be, ZIJN can function as an auxiliary, namely in periphrastic constructions (i.e. past perfect tense and progressive aspect constructions), or it can be used as a predicate verb modifying adjectival, adverbial, or prepositional phrases (e.g. x is beautiful, late, broken, etc., and x is here, inside, at sea etc.).
3.2 Extra-linguistic variables

*Time:* the dates of the letters are based on the dates provided by the letters’ authors. Letters which contained the relevant *zijt* and *bent* tokens are divided into two time periods corresponding to the 17th and 18th centuries to measure the rate of change. Period 1 (P1) constitutes letters with *zijt* and *bent* tokens written between 1661 and 1673, and Period 2 (P2) constitutes letters with *zijt* and *bent* tokens written between 1779 and 1783. Both timespans contain an exhaustive collection of tokens available in the corpus. The gap period was decided based on the fact that no tokens were found between these two timeframes.

*Gender:* I added gender as an external factor as numerous socio-linguistic studies (Rydén & Brorström, 1987: p. 200–207; Labov, 1990; Kytö, 1993; Nevalainen & Raumolin-Brunberg, 2003; Blaxter, 2015) have observed a gendered pattern in linguistic variation. Authors’ genders are based on inference of their names (Rutten & van der Wal, 2014, p. 9).

*Class:* my study follows the socio-economic class system proposed by the developers of the corpus (see Rutten & van der Wal, 2014, p. 9-10). The developers use a four-way class system including the low class (blue-collar workers e.g. sailors, servants, or soldiers), low-middle class (petty bourgeoisie, e.g. small-shop keepers, small-scale craftsmen, or minor officials), high-middle class (large-store keepers, or non-commissioned officers), and a high class (bourgeoisie e.g. wealthy merchants, ship owners, academics, or commissioned officers). The extremely poor and the extremely rich are not represented in the corpus as the former did not have access to written communication, while the latter is omitted because of over-representation in external corpora (Rutten & van der Wal, 2014, p. 10). Female authors were assigned a class label according to their husband’s or father’s class division.

While scribal intervention\(^2\), (that is, hired writers for speakers with limited literacy as opposed to self-authorship), could potentially influence representability, my preliminary statistical analysis of authorship effect was shown to be inconclusive (see Rutten & van der Wal, 2014, p. 14 on scribal intervention).

3.3 Data collection and quantitative analysis

In the token collection process, spelling variation is a cause of caution, as variation might express phonological/ morphological distinctions. For these particular forms, spelling variation primarily concerned variation in how the vowel, e.g. *bent:* <*bent*> vs. <*bint*>, and *zijt:* <*zijt*> vs. <*zejt*>, as well as the sibilant in the onset of *zijt* e.g., <*seijt*> vs. <*zeijt*> were represented. These contrasts are purely orthographical and had no influence on the distribution of the dependent variables across linguistic factors. Lastly, token doublets occurring in conjunctive phrases i.e. *zijt* [x] and *zijt* [y] were only counted as one.

The Generalized Estimated Equation (GEE) (Zeger & Liang, 1986; Liang & Zeger, 1986) test was selected as the appropriate procedure to quantitatively measure the significance of shifts and differences in the distribution patterns of (non-)linguistic

\(^2\)Dutch literacy in the 17th to 18th century lies on a continuum. Part of the population could neither read nor write, others could only read. Scribes were hired in order to communicate with loved ones overseas (Rutten & van der Wal, 2014, p. 14).
information with the *zijt/bent* alternation, because it is able to handle data in a categorical value format (discrete data in the form of token counts, see Johnson, 2008, p. 159), and can compare samples of uneven sizes, as well as cope with missing data, e.g. unknown social variables (Liang & Zeger, 1986, p. 13). The test was performed using SPSS software.

4 Results

A total of 168 speakers were sampled from the *Brieven als Buit* corpus. The smallest number of tokens provided by a single speaker was 1 token, whereas the largest number of tokens provided by a single speaker was 16 tokens. From these speakers, a total of 318 tokens were collected: 257 tokens (80.8%) of the form *zijt*, and 61 (19.2%) of the form *bent*.

A distribution comparison between the two time periods, 1661-1673 and 1779-1783, was performed. The distribution of *zijt* and *bent* had shifted to a difference large enough to be considered statistically significant: $\chi^2(1) = 4.70$, $p = 0.03$. In Period 1 (P1), the likelihood for speakers to select the innovative form *bent* is 0.16, whereas a century later, in Period 2 (P2), the likelihood double to 0.32. The results are illustrated in Figure 1.

The distribution of *bent* and *zijt* across Tense and Aspect was recorded; three levels were initially considered: the simple present tense, the past perfect tense, and the imperfect aspect. Only two of the three levels provided further grounds for testing; no instances were

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3 For each bar graph in this chapter, probability out of 1.0 of selecting the conservative form versus the innovative form was converted into percentages.
found of *zijt* or *bent* used in an imperfect aspect context. It is likely that this is due to the fact that occurrences of imperfect constructions are rare in general in the corpus. The present tense and the past perfect tense had enough instantiations of *zijt* and *bent* to be considered for further analyses. There were a total of 278 tokens identified with a present tense context: 232 of the form *zijt* (83.5%), and 46 of the form *bent* (16.5%). As for the past perfect tense, there were a total of 39 tokens identified: there were 24 instances of the form *zijt* (61.5%), and 15 instances of the form *bent* (38.5%). Example (1) provides instances of *zijt* and *bent* in a present tense context, and example (2) provides these in a past perfect tense context.

1) a. ghijs *sijt* sulcken jongen blom.
   you are such young flower
   (You are such a young flower.)
   (Krijtje Mijnemans, November 1672: Brieven als Buit corpus)²
   b. al *bent* gij uijt min oogen gij en *bent* daerom niet uijt min hart.
   even are you out my eyes you NEG are therefore not out my heart
   (Even if you are out of sight, you are not out of mind.)
   (Magrietje Robbers, November 1664)

2) a. gedenk dat gij uijt een eerweerdige stam *zijt* gesproten.
   think that you out a worthy clan are PRF-spring
   (Remember that you come from a noble family.)
   (Hieronymus Sweerts, November 1672: Brieven als Buit corpus)
   b. gij holland geheel vergeete *bent*.
   You Holland completely forget PRF are
   (You have completely forgotten about Holland.)
   (Gerharda Catharina Wirth-Sluijsken, December 1780)

The distribution difference between the present and past perfect tense was found to be statistically significant: $\chi^2(1)= 5.83$, $p = 0.02$. There is a 0.17 probability for speakers to select *bent* with a present tense context, while the probability of selecting *bent* in a past perfect tense context is more than double: 0.38. The interaction of *zijt* and *bent* selection for the tenses across time was also analyzed. Distribution shifts from P1 to P2 in terms of *zijt* and *bent* selection for present tense/past perfect constructions is significant: $\chi^2(1)= 4.46$, $p =0.04$. For present tense constructions, the probability of selecting *bent* doubles from P1 (0.14 probability) to P2 (0.29 probability). As for past perfect constructions, *bent* selection likelihood increases from 0.35 probability in P1 to 0.50 probability in P2. Figure 2 summarizes the results in graphic format.

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Unless otherwise specified, all subsequent sample sentences come from the *Brieven als Buit* corpus

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In terms of mood constructions, there are no instances observed in which *bent* was used in contexts other than indicative constructions. As for the *zijt* form, it was found to be selected for indicative as well as imperative constructions. Example (3) illustrates an imperative use of *zijt*.

3) **Zijt versekert.**  
   *be ensured*  
   *(be ensured.)*  

   (Cornelis van Brakel, October 1780)

As mentioned in section 3.1, Modern Standard Dutch uses neither *bent* nor *zijt* to express the imperative, rather, the form *wees* is used (Donaldson, 1983, p. 182). Since *zijt* as an imperative form is eventually overtaken by the contemporary *wees*\(^5\), a statistical analysis was conducted to determine whether a decrease in *zijt* usage for imperative constructions

\(^5\) No instances of *wees* were found in the corpus
is observable between the 17th (P1) and 18th century (P2); results indicate, however, that this is not the case: $\chi^2(1)= 0.03, p = 0.86$.

In addition to Tense, Aspect, and Mood, Voice was also considered. Tokens were sorted according to whether the construction had active or passive meaning. A total of 162 instances of active voice constructions were identified, of which 109 instances occurred with the *zijt* alternate (67.3%), and 53 instances occurred with the *bent* alternate (32.7%). As for the passive voice, a total of 156 instances were identified, of which 148 constructions occurred with the *zijt* alternate (94.9%), and 8 constructions occurred with the *bent* alternate (5.1%). Example (4a-b) provides instances of *zijt* and *bent* used within active constructions, and example (5a-b) provides instances of *zijt* and *bent* used within passive constructions:

4) a. *ghy op soo een prykeloose rys*  *sijt.*
   you on such a dangerous voyage are
   (you are on a dangerous voyage.)
   (Elisabeth Philipse Amelingh, March 1661)

   b. *gij mijn kint bent in een vreemd lant*
   you my child are in a strange land
   (you, my child, are in a foreign country)
   (Adriana van de Sande-Goeree, June 1780)

5) a. *ghij vande koopman op dort te lossen*  *sijt* geordeneert
   you from the salesman on Dordrecht to unload are PRF-order
   (You are ordered by the salesman to unload in Dordrecht)
   (Jan Muessen Ossenweijder, February 1664)

   b. *terwijl uwe tog so gesien bent bi de Heer gouverneer*
   while you yet well seen are by the Lord Governor
   (Yet, while you are so well received by the Lord Governor)
   (Pieter Kamp, 1780)

The distribution difference between *zijt* and *bent* across active and passive constructions was found to be statistically significant: $\chi^2(1)= 32.43, p < 0.01$. While there is a 0.33 probability of *bent* selection in active voice constructions, passive constructions are almost exclusively combined with the *zijt* form (only 0.05 likelihood for *bent* selection). The extent at which *zijt* or *bent* selection differs for passive/active constructions across time is also statistically significant: $\chi^2(1)= 23.57, p < 0.01$. In both the active and passive voice constructions, the probability of selecting *bent* increases from Period 1 to Period 2. In active voice constructions, there is a 0.29 probability of *bent* selection in P1, which increases by more than one and a half times (0.48 likelihood) in P2; by this time, there is a nearly equal chance of *bent* or *zijt* selection in active constructions. While *bent* selection is still relatively low by Period 2 in passive voice constructions, the probability of selecting *bent* increases by fivefold from Period 1 (0.03 probability) to period 2 (0.14 probability). Figure 3 summarizes the results in graph format.
Tokens of \textit{zijt} and \textit{bent} were further sorted according to the function they employed in constructions. As mentioned in section 3, \textit{ZIJN} can be used either as an auxiliary in periphrastic constructions for the past perfect tense and imperfect aspect, or as a main verb heading a predicate statement (i.e. the head of APs or PPs). An example of each function type is provided in (6):

6) a. \textbf{zijt} van ons gegroet.
   \hspace{1cm} be from us PTCP-greet
   \hspace{1cm} (Receive greetings from us.)

   (Pietertje Fekkes, May 1780)

b. \textbf{waer} dat gij \textbf{zijt}
   \hspace{1cm} where that you are
   \hspace{1cm} (wherever you are)

   (Grietje Matijs, September 1664)

A total of 182 tokens were observed with an auxiliary function, 166 of which occurred with the form \textit{zijt} (91.2%), and 16 of which occurred with the form \textit{bent} (8.8%). As for the predicate function, a total of 136 tokens were observed, 91 of which occurred in the form \textit{zijt} (66.9%), and 45 of which occurred in the form \textit{bent} (33.1%). The difference in distribution of \textit{zijt} and \textit{bent} across an auxiliary or predicate function was found to be
statistically significant: $\chi^2(1)= 25.70, p < 0.01$; there is a 0.33 probability of *bent* selection for predicate function, while there is only a 0.09 probability of *bent* selection for auxiliary function. Results of the statistical analysis suggest that the difference in distribution of *zijt* and *bent* selection for either an auxiliary usage of predicate usage across time is significant: $\chi^2(1)= 17.18, p < 0.01$. In predicate function, the probability of *bent* selection increases by more than one and a half times from Period 1 (0.29 probability) to Period 2 (0.48 probability); there is nearly an equal chance of *zijt* or *bent* selection for predicate constructions in Period 2. While in auxiliary constructions, the probability of *bent* selection is low compared to predicate constructions, the probability of *bent* selection more than doubles between Period 1 (0.07 probability) and Period 2 (0.18 probability). The results of the analyses are summarized in graphic-format in figure 4.

I now turn to the results of the analysis on extra-linguistic factors. To start, a statistical analysis of gender shows that the selection of the innovative or conservative form is gendered: $\chi^2(1)= 5.17, p = 0.02$. Women have a 0.25 probability of selecting *bent*, while men only have a probability of 0.13, indicating that women favour the innovative form over the
conservative form to a greater degree than do men. Figure 5 provides a graphic presentation of the inter-gender variation:

![Figure 5: zĳt vs. bent selection across gender](image)

A statistical analysis of class shows that *zĳt* or *bent* selection across the various social strata is not significant: $\chi^2(3) = 1.67, p = 0.64$. Results from an analysis on *zĳt* and *bent* selection for the three age cohorts (<30, 30-50, >50) suggests that the deviations in selection distribution per cohort are not statistically significant either: $\chi^2(2) = 1.53, p = 0.47$. In addition to main effects analyses of the social variables, I also performed two-way interaction analyses. The interaction of gender and class does not indicate significant distribution differences in the selection of *zĳt* or *bent*: $\chi^2(3) = 1.12, p = 0.77$. The interaction of gender and age also does not indicate statistically significant distribution differences in the selection of *zĳt* and *bent*: $\chi^2(2) = 4.25, p = 0.77$. A class by age interaction analysis could not be performed, due to insufficient data.

5. Discussion

As is apparent from the token frequency, the conservative alternate *zĳt* is still well established in the Dutch language between the 17th and 18th century. However, it is evident from the quantitative analyses that I conducted, that the usage of the innovative alternate *bent* had increased: between the 17th and 18th century, the probability of selecting *bent* doubled. Furthermore, the results from my analysis suggest that the shift is conditioned by both linguistic as well as extra-linguistic factors. The gender comparison indicates a statistically significant selection pattern where women lead the trend by
adopting the innovative form at a higher rate than men. This conforms to the trends observed in socio-linguistic literature (e.g. Labov, 2001, p. 321). Since there is no salient socio-economic class patterning, it provides reason to believe that this is change from below; neither form is linked to (non-)prestige, thus it is unlikely that there was awareness on part of the speakers of this shift taking place.

As mentioned in section 2, Donaldson (1983, p. 182) invokes Kuryłowicz's (1947) principle of analogical leveling to account for the bist > (zijt) > bent change. Kuryłowicz argues that alternating forms level to the form given by basic categories, e.g. the third person, active voice, indicative mood, and present tense (Hock 1986, p. 217-220; see also Section 2 of this paper). However, this particular change involving the second person singular does not actually conform to the principle in the most direct way: the zijt/bent alternation favours the b– root over the s– root. The alternation ultimately favours bent analogous to the first person form ben, not the third person s– root form is.

While Kuryłowicz's principle of basicness does not hold for person inflection, it does appear that Kuryłowicz sphere of usage principle seems to apply when we consider the selection distribution of the alternates across other domains. For voice constructions, the innovative form bent seems to have spread through the active voice domain faster than the passive. This is evident from the fact that the probability of bent selection was much higher for active constructions than passive constructions. Diachronically, the findings suggest that after the innovative form became quite well established in active constructions (where it had nearly 50/50 selection probability by the late 18th century), passive constructions eventually followed suit; the probability of speakers using bent increased fivefold by the late 18th century. In parallel to the passive voice, the usage of zijt for the imperative mood is quite resistant to change as well. Between the 17th and 18th century, there was no statistically significant shift in distribution observed; the loss of zijt as an imperative form is likely to be a much more recent development.

These combined findings allude to Kuryłowicz's (1947) principle of basicness; loss of variation happens at a higher/faster degree within the more basic categories. Conversely, less basic categories such as the passive voice and imperative mood are much more resistant to change. Verb function seems to behave in a similar fashion as well. While Kuryłowicz did not conceptualize the basicness of verbal function types, it could be argued that the predicate function is more basic than the auxiliary function, since they have a greater sphere of usage (i.e. occur with non-verb phrases such as adjectival and prepositional phrases). In the 17th century, a predicate usage of bent was quite high relative to the auxiliary usage. Then by the late 18th century, the usage of bent with auxiliaries caught up with that of the predicate; the probability of bent selection for auxiliary usage had nearly tripled.

The only result which seems initially contradictory to the rest of the results are those from the comparison of zijt and bent usage with the present and past perfect tense. The results indicate that the usage of bent with the present tense is relatively low in comparison to the past perfect tense. If predicate constructions (which favour bent usage) occurred mostly with the present tense, and auxiliary constructions were mostly recorded for past perfect tense constructions, then why do we observe the opposite trend? In order to proceed with a statistical analysis, the SPSS program requires that all cells of the dataset are filled in. By default, I assigned all instances of imperative and passive constructions with present tense. I suspect that since imperative constructions and most of the passive
constructions were coded with the present tense, this may have counterbalanced the effects of zijt/bent selection for the present tense and past perfect tense. Future statistical analyses controlling for these factors may confirm this. Furthermore, it is not clear whether Kuryłowicz’s (1947) principle of basicness plays a role here. The present tense is argued to be the pivot for all other tenses (Hock, 1986, p. 217-220). In this case, this seems to be irrelevant since the simple past tense inflections are based on the wes- root, which at least as is observed from contemporary usage (Donaldson, 1981, p. 139), does not level to either an s- or b- root. Likewise, it is unclear to me how basicness intersects with periphrastic tenses.

6 Concluding remarks

In this investigation, I examined language-internal and external factors governing the direction and pace of the shift from zijt to bent in the Dutch verb ZIJN. The phenomenon did not pattern with socio-economic class in a statistically significant way because neither of the forms carried a prestige value. This makes it likely to conclude that this is a change from below speakers’ awareness. Without the speakers consciously operating on the alternation, the explanatory burden falls primarily on linguistic factors. This seems to be the case here as changes occurred at a faster pace across the domains of active voice, indicative mood, and predicate function, alluding to the idea proposed by Kuryłowicz (1947) that these categories are more basic.

However, whether Kuryłowicz’s (1947) notion of basicness best accounts for the change presented in this analysis is questionable. It is not clear from this principle if the variants ought to be compartmentalized across the various domains monolithically, or if the distribution of this alternation, or any alternations for that matter, transcend category boundaries. The latter would arguably make invoking this principle problematic, yet this is what we find in this analysis—the alternates are found in varying ratios across all of the basic and non-basic domains. To assume the grammar blindly assigns the pivot of leveling according to what form is embedded in a particular basic domain is not empirically supported.

Rather, focus needs to be diverted from the mechanics of the system and brought towards the usage of this system by the speakers. While class did not pattern with the distribution of the alternation, gender did, reinforcing the argument put forth by Weinreich et al. (1968) that linguistic changes cannot solely be accounted for from a system-internal framework. In regards to future research, I propose to examine more closely the interaction between speakers and the system through a Usage-based Grammar framework. The current investigation examined linguistic and social factors as discrete forces and did not account for the interaction between the speakers and the mechanics of the system. One of the main tenets of the Usage-based Grammar approach is that frequency effects influence every domain of grammar (see Barlow & Kemmer, 2000; Bybee & Hopper, 2001). Given the results of this analysis, it seems more likely that it is the interaction of usage on the domains that informs the output of a change, and not the domain itself.

In conclusion, I investigated the zijt > bent ('you are') shift in Early Modern Dutch (17th to 18th century), a linguistic shift for which an empirically-based analysis had not
been previously offered. In addition, the results of my analysis reinforce the importance of considering both linguistic as well as social factors in historical linguistic analyses.

References


Contact information

Christina I. Terpstra
citerpst <at> ucalgary<dot>ca
School of Languages, Linguistics, Literatures, and Cultures
University of Calgary
2500 University Drive N.W.
Calgary, Alberta, T2N 1N4
Canada