The Effect of Continuance on the L2 Production of Onset Clusters

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1. Introduction

Several studies have observed the effect of sonority distance on onset cluster production (Broselow and Finer 1991, Eckman and Iverson 1993, Barlow and Dinnsen 1998, Pater and Barlow 2003, Carlisle 2006). Clusters with a large sonority distance are considered less marked than clusters with a small sonority distance; among sC clusters, this means that [st] is more marked than [sn], which is more marked than [sl] (Carlisle 2006, Cardoso and Liakin 2009). Some studies suggest that continuance also impacts the production of onset clusters. Morelli (2003) developed a typology indicating that clusters which violate the Obligatory Contour Principle (Yip 1988) for continuance (OCP[+cont]) are more marked than those that do not. In the domain of acquisition, Yavaş and Someillan (2005) studied bilingual Spanish-English children, finding that continuance of C2 impacts correct production of sC clusters. However, since English and Spanish freely violate OCP[+cont] in onsets such as [fl], it is unclear whether these learners are already sensitive to English and Spanish constraints. The current study examines the effect of continuance on L2 English learners whose L1s do not allow onset clusters. These speakers lack evidence of OCP[+cont] from either the L1 or L2.

Among sC clusters, those which violate OCP[+cont], such as [sw], also have a large sonority distance. The two universals, sonority distance (SD) and OCP[+cont], make opposite predictions regarding the production of these clusters. The current study examines both sC clusters and CC clusters in order to isolate continuance and sonority distance as factors impacting correct production. Participants are 8 L2 English learners (L1 Mandarin Chinese, Cantonese, Japanese). Data come from a word list reading task, including 83 tokens of CCVC words, representing all sonority distances in English.

Results show a difference between the production of sC clusters and the production of CC clusters by these participants. Among sC clusters, there is a significant difference between the production of clusters that violate OCP[+cont] and those that obey OCP[+cont]. sC clusters that violate OCP[+cont], such as [sw], are likely to be modified using vowel epenthesis, whereas clusters that obey OCP[+cont], such as [st], are likely to be produced correctly. Among CC clusters, no OCP effect emerges. Results suggest that speakers of L1s that do not allow onset clusters are sensitive to OCP[+cont] in sC clusters. There is no evidence of OCP[+cont] in the L1, and there is evidence that it is violated in the L2, yet their pattern follows neither the L1 or nor the L2 constraints. Instead, an OCP effect emerges.

2. Literature Review

Several researchers have examined the role of sonority distance in the production of onset clusters by L2 learners. Broselow and Finer (1991) studied the production of onset clusters by Korean, Japanese, and Hindi speakers of English. Their data suggest that L2 speakers attend to the Minimal Sonority Distance (MSD) parameter. The production errors they observed indicate that speakers are attending to a MSD that is somewhere between that of the L1 and the target language. Eckman and Iverson (1993) re-examine Broselow and Finer's data, suggesting that the results are due to sonority

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distance alone, or what they term "typological markedness" (p.240), rather than MSD. In both studies, sonority distance informs L2 cluster production.

Both Carlisle (2006) and Cardoso and Liakin (2009) applied the study of sonority distance specifically to sC clusters. Carlisle (2006) examined the relative markedness of st >> sn >> sl in the production of 17 native Spanish speakers learning English. He found that clusters with a large sonority distance, which are less marked, are produced correctly more often than clusters that are more marked in terms of sonority distance. Cardoso and Liakin (2009) examined the relative impact of sonority distance and input frequency on determining the accuracy rates of onset s-cluster production by L2 speakers. Their data indicate that sonority distance has a greater effect on production than frequency. The non-native speaker production of the target clusters [st], [sn], and [sl] corroborates Carlisle's findings and suggests that onset clusters with a larger sonority distance between C1 and C2 are acquired earlier than onset clusters with a small (or negative) sonority distance between C1 and C2.

While some sC clusters violate sonority sequencing, and other sC clusters violate various other principles of syllable well-formedness, sC clusters are quite common among the world's languages. Morelli (2003) approached her study of sC clusters from the perspective of typological markedness. She researched which types of onset clusters are more common among the world's languages, and whether certain cluster types have typological implications. Morelli studied four types of clusters: fricative-stop clusters, stop-fricative clusters, stop-stop clusters, and fricative-fricative clusters. Her findings indicate that fricative-stop clusters are the least marked typologically, even though they exhibit a more serious sonority violation. The presence of stop-fricative clusters in a language, which is the least marked type in terms of sonority distance, implies the presence of fricative-stop clusters; this indicates that fricative-stop clusters, to which s-stop clusters belong, are the typologically unmarked clusters.

While the typology of sC clusters is somewhat tangential to the current study, Morelli (2003) discusses her findings by employing several OT constraints, one of which will be relevant to this paper. The constraints OCP[+cont] and OCP[-cont] are markedness constraints that prohibit violations of the OCP in terms of the feature [±continuant]. These constraints suggest that clusters which violate OCP[+cont] or OCP[-cont] will be harder to acquire or will be acquired later; however, Morelli does not examine the implications of these markedness constraints on acquisition.

Yavaş and Someillan (2005) also refer to the feature [±continuant] in their study of onset sC clusters. They studied Spanish-English bilingual children. They gathered data on the production of sC clusters, explicitly looking for a natural way to group sC clusters. In the children's production of sC clusters, s-stop and s-nasal clusters patterned together, while s-approximant clusters patterned together. Yavaş and Someillan note that s-approximant clusters ([sw] and [sl]) have a second consonant that is [+continuant], whereas both s-stop and s-nasal clusters have a second consonant that is [-continuant]. Yavaş and Someillan indicate that participants' production of s-stop and s-nasal clusters "can be explained with reference to a binary split between /s/ + [-continuant] vs. /s/ + [+continuant]," (p. 54). They mention sonority in their discussion, but do not attribute their results to sonority.

Yavaş and Someillan's (2005) data suggest an interesting interaction between the OCP and sonority distance in the production of sC clusters. The participants made significantly fewer errors when producing s-approximant clusters than they did with both s-stop and s-nasal clusters. However, s-approximant clusters, the group that resulted in the fewest errors, violate the OCP in terms of the feature [±continuant]. The constraint OCP[+cont] is a markedness constraint prohibiting elements in a cluster from having the same value for [continuant]. Clusters that violate this constraint are more marked than clusters that do not. /s/ + [+cont] clusters also have a greater sonority distance between the two consonants than /s/ + [-cont] clusters, so although /s/ + [+continuant] clusters are less marked in terms of sonority distance, they are more marked in terms of OCP.

Although definitions of sonority vary, the function of sonority within a syllable is widely acknowledged (Clements 1990, 1992). Sonority scales vary as well. Following Yavaş and Someillan (2005) and Yavaş (2011), the current study references the ten-point sonority scale put forth by Hogg and McCully (1987). The sonority scale, with sonority indexes, is reproduced in Table 1.

Table 1: *Hogg and McCully sonority scale*

Sounds	Sonority Index (S.I.)
Low vowels	10
Mid vowels	9
High vowels	8
Flaps	7
Laterals	6
Nasals	5
Voiced fricatives	4
Voiceless fricatives	3
Voiced stops	2
Voiceless stops	1

Another commonly used sonority scale is the five-point sonority scale proposed by Clements (1990). This scale ranks the sounds as follows: obstruent < nasal < liquid < glide < vowel. Because this scale combines stops and fricatives into the category 'obstruent', this scale results in s-stop clusters being classified as sonority plateaus rather than sonority reversals. The ten-point sonority scale allows for a more precise examination of the role that sonority plays in the production of sC clusters.

Among sC clusters, the clusters which violate OCP[+cont] are precisely the clusters with a large sonority distance: s-approximant clusters. For instance, the cluster [sw] has a sonority distance of 5, and it violates OCP[+cont]. On the other hand, the cluster [st] has a sonority distance of -2, and it obeys OCP[+cont]. However, among CC clusters, the opposite is true. Clusters which violate OCP[+cont] have a *smaller* sonority distance than those which do not. Compare [fl], which violates OCP[+cont] and has a SD of 3, to [kl], which does not violate the OCP and has a SD of 5.

The two universals, sonority distance and OCP, make the same predictions regarding acquisition and production of CC clusters. Both universals predict that [kl] will be produced more accurately and will be acquired sooner than [fl]. By contrast, sonority distance and OCP make opposite predictions about the acquisition of sC clusters. If sonority distance determines correct production, then [sw] should be easier to produce than [st]. On the other hand, if OCP[+cont] determines correct production, then [st] should be easier to produce than [sw]. The current study examines both sC clusters and CC clusters in an attempt to isolate sonority and continuance as factors influencing production. The study uses participants who are speakers of languages that do not allow onset clusters, who therefore lack direct evidence of OCP[+cont] from the L1.

3. Method

This study examines the production of both sC clusters and CC clusters. Among sC clusters, the clusters in which both segments are [+continuant] are the same as the clusters with a large sonority distance, as in [sl] and [sw]. Sonority distance predicts that [sw] will be easier to produce than [st], while OCP[+cont] predicts that [st] will be easier to produce than [sw]. In CC clusters, the opposite is true. Both sonority distance and OCP[+cont] make the same predictions for CC clusters. For example, the sonority distance between [bl] is larger than [fl], and [bl] does not violate OCP[+cont], while [fl] does. Both accounts predict that [bl] is easier to produce than [fl]. This study includes s-stop, s-nasal, and s-approximant clusters, as well as stop-liquid, stop-glide, and fricative-liquid clusters. By looking at both sC clusters and CC clusters, the study will examine the relative influences of sonority distance and continuance on L2 onset cluster production.

8 participants were recruited through the English Language Institute at the researcher's university. All participants are L2 English speakers who are enrolled in an intermediate level ESL program at the university. 6 are native speakers of Mandarin Chinese, 1 is a native speaker of Japanese, and 1 is a native speaker of Cantonese. Each of these languages does not have onset clusters; therefore, these speakers have no evidence of OCP[+cont] from the L1. The age of English onset ranges from 10-16, with a mean of 12. All participants began learning English academically overseas. Length of residence in the United States ranges from 6 months to 13 years, with a mean of 3.2 years. The three participants

who have lived in the United States for more than a year all report speaking their native language along with English at work and with friends. There are 5 male participants and 3 female participants.

Participants read from a word list that included 83 test items and 37 filler items. All test items are CCVC. Filler items are all CVCC. The sonority distance between C1 and C2 of the onset clusters ranged from -2 to 7. The word list contained 3-9 tokens of each sonority distance. The word list includes test items such as “twin” (SD 7, obeys OCP[+cont]), “star” (SD -2, obeys OCP[+cont]), and “fresh” (SD 3, violates OCP[+cont]). Additionally, the word list contains 56 tokens that obey OCP[+cont], and 28 tokens that violate OCP[+cont]. Test items and filler items were arranged so that no two tokens of the same cluster type occurred back to back.

All test items were analyzed in Audacity (http://audacity.sourceforge.net). The onset cluster productions were coded as correct or incorrect. Incorrect productions were categorized as vowel epenthesis or “other”, with notes indicating the type of error classified as “other”. The focus of the study is the production of onset clusters; therefore, the correct or incorrect production of the vowel and coda were not considered in coding the data.

4. Results

The task produced 664 tokens of onset clusters. 466 were produced correctly (70%). The most common modification strategy is internal vowel epenthesis. There are 131 occurrences of vowel epenthesis, accounting for 66% of errors and 20% of all productions. Deletion of C2 is rare; there are only 2 occurrences in the data. There are no occurrences of C1 deletion. The remaining nontarget-like productions were substitution (51 occurrences). Results indicate no difference in production among L1 groups.

4.1. sC clusters

Descriptive results indicate that sC clusters with a smaller sonority distance are produced correctly more often than sC clusters with a larger sonority distance. This means that participants are more likely to correctly produce “star” than “swim”. Additionally, sC clusters that obey OCP[+cont] are produced correctly more often than sC clusters that violate OCP[+cont].

Proportions were normalized by arcsine transformation for the statistical analyses. Correct production values are reported as untransformed proportions for descriptive purposes. A correlation returns a Pearson R which indicates that, among sC clusters, sonority distance is negatively correlated with correct production at alpha level $p < .05$ ($r(32) = -.511$, $p = .003$). As sonority distance increases, correct production decreases. Table 2 displays individual results as well as the mean correct production for each sonority distance. Correct production of s-stop clusters ranges from 60% to 100%, with a mean of 86%, and correct production of s-nasal clusters ranges from 44% to 100%, with a mean of 79%. A paired t-test indicates no significant difference between s-stop and s-nasal clusters ($t(7) = 1.099$, $p = .301$). Therefore, clusters which obey OCP[+cont] can be grouped together. Correct production of [sl] ranges from 17% to 100%, with a mean of 61%, and correct production of [sw] ranges from 20% to 100%, with a mean of 43%. A paired t-test indicates no significant difference between [sl] and [sw] ($t(7) = .983$, $p = .358$). Therefore, clusters which violate OCP[+cont] can be grouped together. Correct production of clusters which obey OCP[+cont] ranges from 53% to 100%, with a mean of 83%, and correct production of clusters which violate OCP[+cont] ranges from 18% to 82%, with a mean of 50%. A paired t-test indicates that the difference in correct production of clusters which obey OCP[+cont] and clusters which violate OCP[+cont] is statistically significant at alpha level $p < .05$ ($t(7) = 3.45$, $p = .011$). Clusters which obey OCP[+cont] are significantly more likely to be correctly produced than clusters which violate OCP[+cont], as shown in Table 3.

Table 2: *sC cluster correct production by sonority distance (in %)*

Participant	s-stop (SD -2)	s-nasal (SD 2)	sl (SD 3)	sw (SD 5)
1	90	67	17	20
2	60	44	100	20
3	80	89	17	40
4	100	100	83	60
5	100	100	33	60
6	100	100	67	20
7	80	44	100	20
8	80	89	67	100
mean	**86**	**79**	**61**	**43**

Table 3: *sC cluster correct production by OCP (in %)*

Participant	clusters obeying OCP	clusters violating OCP
1	79	18
2	53	64
3	84	27
4	100	73
5	100	45
6	100	45
7	63	45
8	84	82
mean	**83**	**50**

4.2. CC clusters

CC clusters show a different production pattern from sC clusters. For CC clusters, both sonority distance and OCP[+cont] have a negligible effect on correct production. Among CC clusters, there is no correlation between sonority distance and correct production (r(40) = -.176, p = .278). Correct production by sonority distance and participant is shown in Table 4. Sonority distance 7 includes clusters such as [kw], SD 6 includes clusters such as [dw], SD 5 includes clusters such as [pl], SD 4 includes clusters such as [bl], and SD 3 includes clusters such as [fl].

Table 4: *CC cluster correct production by sonority distance (in %)*

Participant	SD 7	SD 6	SD 5	SD 4	SD 3
1	88	25	75	100	73
2	100	0	33	67	47
3	38	0	83	83	53
4	100	100	92	92	73
5	75	25	75	67	67
6	88	25	83	67	100
7	38	25	75	75	60
8	88	0	100	92	67
mean	**77**	**25**	**77**	**80**	**68**

Correct production of clusters which obey OCP[+cont] (tw, kw, pɹ, pl, kl, tɹ, kɹ, bɹ, bl, gl, gɹ, dɹ) ranges from 56% to 94%, with a mean of 73%. Correct production of clusters which violate OCP[+cont] (fɹ, fl, ʃr, θɹ) ranges from 47% to 100%, with a mean of 67%. A paired t-test compared correct production of CC clusters that obey OCP[+cont] to correct production of CC clusters that violate OCP[+cont]. Results indicate that the difference between the correct production of CC clusters that obey OCP[+cont] and the correct production of CC clusters that violate OCP[+cont] is not significant ($t(7) = .464$, $p = .657$). Continuance does not affect correct production of CC clusters. Results are displayed in Table 5.

Table 5: *CC cluster correct production by OCP (in %)*

Participant	clusters obeying OCP	clusters violating OCP
1	81	73
2	56	47
3	64	53
4	94	73
5	67	67
6	72	100
7	64	53
8	83	67
mean	**73**	**67**

5. Discussion

The object of the experiment is to study the impact of sonority distance and OCP[+cont] on the L2 production of onset sC clusters and CC clusters. Results indicate that OCP[+cont] influences production of sC clusters but not other clusters. Sonority distance negatively correlates with correct production in sC clusters, meaning that clusters with a larger sonority distance are produced correctly less often than clusters with a smaller (or negative) sonority distance. Sonority distance does not correlate with correct production in CC clusters.

The production of [sl] is highly variable, with two participants producing all tokens of [sl] correctly, and two participants producing only 17% of tokens correctly. Participants largely modified [sl] using internal vowel epenthesis, using the same modification strategy that occurs with other clusters. Following Yavaş and Someillan (2005), /l/ is considered [+continuant] (Chomsky & Halle 1968, Katamba 1989, Carr 1993). It is possible that participants' difficulty with [sl] is because of [l]. In general, though, participants do not show particular difficulty with [l]. The high percentage of epenthesis shown in [sl] is not apparent in other clusters involving [l], such as [pl] and [kl]. There are also only 4 occurrences in the data of substituting [l], and there is only 1 occurrence in the data of deleting [l]. In addition to violating OCP[+cont], [sl] violates another OCP constraint: OCP for place of articulation; both [s] and [l] are coronal (McCarthy 1988). I suggest then that the high variability in production of [sl] is due to the combination of the two sounds, rather than difficulty with the segment [l].

The low correct production of [sw] prompts a similar inquiry: perhaps [sw] is problematic because of the individual segments rather than the combination of the two. However, Mandarin Chinese has [w] as a glide preceding a nuclear vowel and after an initial consonant, as in [s^{w}an] 'sour' (Duanmu 2000). Cantonese has the approximant [w] as an initial consonant, and also as the second part of a coarticulated stop [k^{w}] (Matthews and Yip 2011). Japanese has [w] as an initial consonant (Vance 1987). Based on the native phonetic inventories, one would expect that the cluster [sw] would not pose a particular problem for these participants. However, despite having the phonemes in the L1, the cluster [sw] is still produced correctly less often than other sC clusters.

A reviewer notes that the vowel following the onset cluster may impact production of the cluster. For instance, whether [l] or [w] is followed by [i] or [u] could influence production accuracy. In the current study, the vowel following the onset cluster was not controlled for specifically; however, each onset cluster occurs before multiple different vowels, so we expect that any vowel effects will be canceled out. Future work may look to control for potential vowel effects more precisely.

There is also highly variable production of SD 6, with three participants producing no correct tokens, and one participant producing all tokens correctly. In English, the onset clusters with a sonority distance of 6 are [dw] and [gw]. These onset clusters are rare in English. There are few tokens in the data, and the tokens that are included are infrequent[1]. The primary modification strategy for SD 6 is epenthesis, which means that SD 6 is treated like the other clusters in terms of cluster modification. However, to see if the low production of SD 6 was influencing the results, the statistics were run again without these tokens. Even without the tokens of SD 6, though, sonority results ($r(32) = 0.126$, $p = .49$) and continuance results ($t(7) = 1.25$, $p = .25$) are not significant.

The discussion of the results so far has been based on mean correct proportions. Individual results also show a preference for sC clusters that obey OCP[+cont]. For seven of the eight participants, correct production is higher for sC clusters that obey OCP[+cont], although for Participant 8 the results are very close. Participant 2 shows the opposite results: this individual produced clusters that violate OCP[+cont] more accurately (64%) than clusters that obey OCP[+cont] (53%). The results for CC clusters are not significant; however, looking at individual results, a preference seems to emerge for clusters that obey OCP[+cont]. Six of eight participants performed better on clusters that obey OCP[+cont]. One participant produced both types of clusters with the same accuracy, and one participant, Participant 6, produced clusters that violate OCP[+cont] more accurately. Again, the CC cluster results are not significant, but they do perhaps show a trend.

Participants in the current study are not deleting segments in onset clusters. Sonority distance is not a factor for these participants. OCP[+cont] seems to influence production of sC clusters, resulting in s-stop and s-nasal clusters being easier to produce than [sl] and [sw]. Other research has generated similar findings. Major (1996) studied 4 Brazilian Portuguese speakers learning English. He found that "#FL (fricative-liquid) contributes much more strongly to error…than do #SL (stop-liquid) and #FS (fricative-stop). #FL promotes error, #FS is least likely to do so." (p.87). He attributes the results to positive transfer for s-stop clusters. In Brazilian Portuguese fast speech, an initial epenthetic vowel that occurs prior to [s] + stop is often devoiced or dropped entirely. While this would likely not be parsed as a cluster by a speaker of Brazilian Portuguese, it may inform the production of Major's participants. Abrahamsson (1999) conducted a longitudinal case study of 1 Spanish speaker learning Swedish. The speaker modified /sl/ more often than s-stop and s-nasal clusters. Abrahamsson attributes this to the small number of /sl/ tokens in the study. I suggest that OCP[+cont] plays a role in both these sets of results.

The OCP effects that seem to emerge for sC clusters potentially demonstrate an example of the emergence of the unmarked (McCarthy and Prince 1994). Broselow, Chen and Wang (1998) observe a similar interlanguage system with their L2 English participants (L1 Mandarin Chinese), who demonstrated a tendency to devoice final obstruents. Broselow et al. suggests that the OT markedness constraint NO OBSTRUENT CODA is highly ranked in the interlanguage, despite the fact that English violates this constraint, and Mandarin Chinese does not have obstruent codas. Devoiced final obstruents are not target-like, but they also cannot be a case of L1 transfer; this is the emergence of the unmarked. A similar situation occurs in the data here. The markedness constraint OCP[+cont] seems to be highly ranked in the interlanguage, despite the fact that this constraint does not come into play in either the L1 or the L2. This suggests that perhaps OCP[+cont] is a universal constraint that remains dormant until it is activated during the acquisition process.

Cardoso and Liakin (2009), in their study of frequency effects versus sonority distance effects, observed that /st/ comprises about 90% of sC clusters in spoken and written English. It is possible that the participants in the current study performed quite well on s-stop clusters because of their frequency in the input. Because Cardoso and Liakin wanted to control for place of articulation in their study, they reported the frequency only for /st/, /sn/ and /sl/. Word frequency was not controlled for in the current study. Because the current study uses many different clusters of each sonority distance, in order to accept or reject a frequency account of the results, we would need to determine the input frequency of all the clusters used in this study. This is a topic for future research.

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[1] The frequency of each word in the task was checked using Google Ngram. Frequency was assessed over the last 50 years. When there was a large change in frequency across that time, the most recent frequency was recorded. Frequency was not used as a criterion for the inclusion/exclusion of certain words in the task; it was used post hoc to potentially account for SD 6 results.

The structural representation of sC clusters put forth by Kaye (1992) and argued for by Pan and Snyder (2004) and Goad (2012) can potentially account for the preference for clusters with a smaller sonority distance over clusters with a larger sonority distance. Under this representation, the /s/ in an sC cluster is not part of a binary branching onset, but rather, is the coda of an empty-nucleus syllable preceding the onset. As Goad (2011, 2012) notes, this predicts that sC clusters have the phonotactics of a coda-onset pair, including the Syllable Contact Law's preference for a drop in sonority between coda and onset (Murray and Vennemann 1983). However, there is not a significant difference between the production of s-stop and s-nasal clusters, or between /sl/ and /sw/ among participants in the current study, indicating that s-stop and s-nasal clusters are treated the same way and that /sl/ and /sw/ are treated the same way. This binary split cannot be accounted for under this representational account or under a sonority distance account, although the negative correlation between sonority distance and correct production perhaps indicates that results are moving in this direction. This too is a topic for future research.

It should be noted that the number of participants in this study is small; N=8. Additionally, the number of participants in each L1 group is unevenly distributed. While all L1s used in this study are languages that do not have onset clusters, as a reviewer notes, it is possible that some other indirect behavior could affect acquisition. And although all the L1s lack onset clusters, it is also possible that some other OCP effects could be redeployed in the acquisition of onset clusters.

An additional limitation of the study is the use of a word list reading task. From a sociolinguistic perspective, reading tasks generally elicit careful speech (Labov 1972), which is more likely to result in vowel epenthesis among L2 speakers than a more casual style of speech (Lin 2001). While this does not account for the *pattern* of vowel epenthesis, it is important to acknowledge that a different speech style may provide different results.

6. Conclusion

The participants in the current study have evidence from the L2 that OCP[+cont] can be violated. English freely violates OCP[+cont] in clusters such as [fl]. Because participants are all native speakers of languages that do not allow onset clusters, there is no evidence of OCP[+cont] from the L1, at least not in onset clusters. However, the participants' production follows neither the L1 nor the L2 constraints. If speakers followed the L1 constraints, they would repair all clusters, or repair clusters of all types equally. If speakers followed the L2 constraints, they would correctly produce all clusters, or correctly produce all types of clusters to the same degree. Instead, these speakers, in general, modify sC clusters that violate OCP[+cont], while correctly producing sC clusters that obey OCP[+cont]. OCP effects emerge in the interlanguage. The data suggest that learners are more sensitive to OCP[+cont] in sC clusters than in CC clusters. sC clusters behave differently from CC clusters in terms of several different syllable constraints; OCP[+cont] may be another constraint for which sC clusters behave differently from CC clusters.

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