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Chance vs. *Chants*: Not Every Final /s/ Is Created Equal

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Abstract

This study was designed to determine if there is a difference between English Language Learner (ELL) production of /s/ in words such as *prince* and *prints*, as it appeared that ELLs were pronouncing "prince" for the former, but "print" for the latter. Study subjects completed a dictation task using a paragraph with many words ending in /s/. The results were that final /s/ in words such as *prince* was produced in 94.1% of the required contexts, while /s/ in words like *prints* was produced in 64.9% of the required contexts. The structural difference between pairs such as *prince* and *prints* is that *prince* has no internal morphological structure, while *prints* consists of *print* + *s*. The different production rates for final /s/ suggest that ELLs are processing the words differently, and are apparently unconsciously aware of the morphological difference between pairs such *prince* and *prints*. Contrary to expectations, this morphological awareness leads to incorrect responses. The discussion shows that issues such as salience, sonority, and L1 transfer cannot account for the data obtained in the study. In the paper suggestions are presented for raising morphological awareness to a more conscious level, thereby potentially aiding acquisition.

Keywords: *Final /s/, sonority, salience, syllable, morphological awareness*

Introduction

English language learners (ELLs) frequently have difficulty producing a word-final /s/. Reasons for the difficulty have been attributed to issues such as lack of salience of final /s/, L1[1] transfer, and syllable complexity. I teach Basic English courses to university students in Puerto Rico. I have seen that in words in which the final /s/ is non-morphemic and intrinsic to the word, as in *chance* [t͡ʃæns] and *prince* [prɪns], my students typically produce final /s/ with no problem. But in words in which final /s/ is morphemic, as in *chants* [[t͡ʃæns] and *prints* [prɪns], whether as nouns or verbs, they frequently produce *chant* [t͡ʃænt] and *print* [prɪnt]. Since the final /s/ is equally phonetically salient in pairs such as *chance* and *chants*, it follows that the frequent failure of ELLs to produce morphemic final /s/ on verbs and nouns results from grammatical processing issues rather than from transfer and/or phonetic salience considerations.

The literature review will show that morphological awareness is usually seen as a positive. The data in the present study, however, appears to indicate that though the subjects showed morphological awareness, the awareness had a negative effect on their production of final /s/. The study thus indicated that morphological awareness, contrary to what is commonly reported, is not always beneficial.

The purpose of the study was to answer two research questions.

Research Question 1: Does the morphemic/non-morphemic status of /s/ correlate with final /s/ production?

Research Question 2: What does the answer to Question 1 suggest about how ELLs are processing the two types of final /s/?

Literature Review

Referring to benchmark studies as well as recent work, the literature review covers second language acquisition of grammar morphemes (focusing on production of final /s/ inflections), the reliability of dictation as a measure of L2 competence, salience, whether or not final /s/ always sounds the same, segmental sonority, syllable structure, L1 transfer, and morphological awareness.

[1] L1 is a person's first language, and L2 is a second language.

Final /s/ Production and the Acquisition of Grammar Morphemes

Roger Brown's "A First Language" (1973), parts of which began appearing in 1971, is a benchmark work on acquisition of grammar morphemes. He studied first language acquisition of English and reported that grammar morphemes are typically acquired in a particular order. Brown found that the final /s/ morpheme at issue in the present study is acquired at various points in the sequence depending on its function. As a plural marker, it is acquired fairly early (fourth of the fourteen), followed soon after (sixth) by the acquisition of /s/ as a marker of possession, and then later (eleventh), /s/ as a marker of third-person singular appears (Brown, 1973, p. 274).

Inspired by Brown's work, researchers began studies of Second Language Acquisition (SLA) morpheme acquisition order, the most influential being publications by Dulay and Burt (1972, 1974a, 1974b). They studied the child SLA of eleven grammar morphemes and found that acquisition of plural /s/ occurs early, and was followed much later by /s/ as a possessive marker, and then /s/ as a marker of third-person singular (Dulay & Burt, 1974b).

Claims for a typical order for the acquisition of grammar morphemes in the second-language acquisition of English have been repeatedly challenged (e.g., Hakuta, 1974; Anderson, 1977; Bley-Vroman, 1983). But these findings have been supported by many researchers, among them Larsen-Freeman (1976) and Pica (1983), and are now generally accepted and even taken as given. O'Grady et al. (2018, p. 75) remarked, for example, "it is well known that verbal -s is mastered late in the course of first language acquisition and second language learning."

Qi (2022) reported on a study of third-person singular /s/ in the writing of ESL students in China. She listed 15 studies from 1994 onwards on the difficulties that second language learners have with inflectional morphemes, adding that most studies have focused on speech while her study focused on writing. She reported, in results like those of the present study, that her participants produced third-person singular /s/ in 50% of the required contexts.

In a study of the pronunciation of the *-ed* and /s/ morphemes in the English of Nigerian high school students, Aliyu (2017) indicated that his subjects showed low correct production rates for the given phonemes. In addition to specific attention to form, he advocated more practice in English in general, underscoring that production/comprehension of such morphemes is more of a processing issue than a phonological/phonetic one.

Aliyu (2017) reported on the production of the *-ed* and /s/ morphemes by Nigerian students learning English, along with Nguyen and Newton (2022), in their study of Vietnamese speakers learning English in Vietnam. Processing issues appeared to be a cause of student difficulty with production of such morphemes.

Salience

Some researchers focus on the concept of salience to account for aspects of second-language acquisition. They generally see salience as a composite construct, based on components such as acoustic salience, semantic complexity, and frequency. For example, the study of Gass et al. (2018) consisted mainly of papers exploring how a multi-faceted conception of salience functions in the acquisition of a second language.

Fukuta and Yamashita (2023, p. 430) pointed out that work on salience and acquisition relies on circular reasoning. They wrote, "The researchers … regarded various features that past research found to influence L2 acquisition as components of salience. Therefore, if these components are used for the purpose of identifying factors influencing learning and knowledge, the argument becomes circular." Fukuta and Yamashita provided a non-circular conception of salience: a grammatical form is less salient to the degree that it is redundant. Since, for example, third-person /s/ is redundant, as it is required by the context and provides no new information, it would be less salient than a non-redundant plural /s/.

An issue with their conception of salience is that, as seen in the morpheme order studies, possessive /s/, a non-redundant form, is acquired right before late-acquired verbal /s/ (Dulay & Burt, 1974b). The redundancy/salience connection cannot explain why possessive /s/ is acquired so late.

In one paper Gass et al. (2018) questioned the role of salience. O'Grady et al. (2018) refer to a study in which inflectional markers such as final /s/ are clearly heard/perceived by infants, suggesting that such morphemes are not as inaudible as is sometimes thought. They also comment that the inclusion in the concept of salience of a "broad range of non-acoustic effects," as in the other papers in the volume, complicates a picture that can be readily explained by a more unified process-based approach (p. 63).

O'Grady et al. (2018) considered two processing routines at play in the use of verbal /s/. The first is word order and the second is subject-verb agreement. They commented that in 95% of the sentences in the Switchboard corpus [a collection of about 2,400 telephone conversations involving all areas of the United States (Godfrey & Holliman, 1993), the subject comes before the verb, and pointed out that sentences using present tense, third-person singular form a subset of the 95%. That is, all of the 95% use Subject-Verb-Object (SVO), but only some of the 95% also use present tense, third-person singular (O'Grady et al., 2018). The difference in frequencies of SVO vs. present tense, third-person singular is important because processing-based accounts hold that more frequent routines are more thoroughly entrenched (i.e. learned) than less frequent routines.

O'Grady et al. (2018) thus find it unsurprising that ELLs will get word-order correct but fail to inflect third person singular verbs. They comment that in English, the SVO word-order routine is more entrenched than the agreement routine, and that the word order routine usually expresses the intended idea, whether or not there is subject-verb agreement. ELLs can thus fail to have verb and subject agree but succeed in expressing what they are trying to say. VanPatten's (1996, 2004) Input Processing Theory supports the approach advocated by O'Grady et al (2018). Part of the theory involves the primacy of meaning principle, which holds that learner's process input for meaning before processing it for form (2004). VanPatten (2004, p. 8) formulated a sub-principle to the primacy of meaning principle as follows: "Learners process content words in the input before anything else." Thus, when ELLs omit morphemic /s/, they are arguably focusing on meaning rather than on form.

Does the Final /s/ Always Sound the Same?

Plag et al. (2017) conducted a study of final /s/ duration in the spontaneous speech of adult native speakers of English. They found that non-morphemic /s/ has a longer duration than morphemic /s/. They noted that an earlier study by Walsh and Parker (1983) reported the opposite result. Plag et al. attributed the contradictory findings to different data collection methods. Walsh and Parker's (1983, p. 202) subjects read the target forms in short sentences such as "I ran two laps today" and "My insurance is going to lapse today." Plag et al. (2017, para 42) cited research showing that when such data collection methods are used, subjects "tend to read at a regular pace when asked to read word lists or words in short carrier phrases." In such speech, speakers tend to pronounce carefully, unlike spontaneous speech, which, as is well known, is subject to deletion and many other effects.

Dictation

"Dictation is one of the few exercises consistently employed throughout the history of language teaching" (Kelly, 1969, p. 94). In spite of its long history, dictation has not always had the support of language teachers. Stansfield (1985), in a paper on the history of dictation, quotes Gouin (1892 pp. 331-332), an influential language teacher of the late 19th century: "This deplorable exercise is severely interdicted …. During the time that [the student] scribbles and blots under dictation, he could assimilate and read it over twenty times. Therefore we have no more … dictation." Stansfield then quotes, in contrast, Joynes (1899, p. xxviii), who writes, "[Dictation's] value includes not spelling only … but all that belongs to grammar, phrase or sentence."

Dictation fell out of fashion during the audio-lingual era. Lado (1961, p. 34), a principal audio-lingual proponent, writes that since everything came prepackaged, there was no analysis for students to do, and therefore, dictation "appears to measure very little of language."

Since Lado's era, researchers have studied dictation and shown its value as a learning tool and as a measure of proficiency. Oller (1971) reported on data gathered during an effort to evaluate and

revise the English as a Second Language Placement Exam for the University of California at Los Angeles. The test involved vocabulary, writing, phonological discrimination, grammatical acceptability, and dictation. Oller (1971, p. 254) reported that dictation scores "correlated more highly with the other parts of the test than did any other part." In other words, student dictation scores were a reliable indicator of their language ability. Oller reported on studies from 1958 through 1967, all of which confirmed the reliability of dictation as an indicator of proficiency in a language.

Lai (2022) reported on her study of the value of dictation. The participants, Japanese university students learning English in Japan, took a pre-test and then completed a weekly dictation task during the thirteen-week testing period. One task, on alternate weeks, involved a cloze dictation task and lasted about fifteen minutes. On weeks with no cloze task, the participants watched a two-minute video of someone speaking and typed what was said. At the end of the study, participants took a post-test. The results of the post-test were significantly better than on the pretest. Lai's study thus supported dictation as a teaching technique and as a reliable measure of competence.

Sonority and the Syllable

Researchers have frequently seen a role for sonority in the L2 acquisition of syllable structure. Linguists have long acknowledged that some segments are more sonorous than others. Many sonority hierarchies have been proposed, with the basic factor affecting sonority being openness of the vocal tract: the more open, the more sonorous. The hierarchy proposed by Clements (1992, p. 65), and presented in (1), is a typical formulation.

1. Clements' Sonority Scale—The suggested hierarchical sequence was: Vowel > glide > liquid > nasal > obstruent.

In Clements' hierarchy, vowels are more sonorous than glides, which are more sonorous than liquids, and so on. Most hierarchies, many quite detailed, proposed by researchers show basic similarity to that by Clements. Some (Parker, 2011) claimed that the sonority hierarchy operates in all languages, while others have proposed (Noellieste, 2019) that a language can have its own hierarchy. Armstrong (2006) presented a critique of the sonority tradition.

Regarding how sonority is said to function, Elizabeth Selkirk's 1984 paper continues to be cited. After proposing a detailed hierarchy in basic agreement with that of Clements, she suggested the Sonority Sequencing Generalization (SSG), presented in (2).

2. The Sonority Sequencing Generalization (Selkirk, 1984, p. 116)
In any syllable, there is a segment constituting a sonority peak that is preceded and/or followed by a sequence of segments with progressively decreasing sonority values.

According to the Sonority Sequencing Generalization (SSG), the sonority levels in a syllable slope up to the nucleus. A syllable may consist of up to three parts. A *Stop*, for example consists of an onset (st), a nucleus (o) and a coda (p). A group of consonants, as occurs in the onset of *stop*, is called a cluster that then slopes down through the coda. Selkirk's formulation has been alluded to by many. Noellieste (2019), for example, used it in her account of a Bavarian dialect of German.

Zampini (2008) reviewed a number of studies and reported that sonority issues frequently fail to account for acquisition of L2 syllable structure and that transfer from the L1 must be considered. She cited a study of the acquisition of English onsets by native Spanish speakers showing that more complex onsets ("complex" in that they did not conform to the SSG) were learned before less complex onsets (p. 234).

Trung Le and Boonmoh (2020) studied the pronunciation of four coda cluster types by Thai speakers learning English. The cluster types they studied were stop-stop, fricative-stop, nasal-stop, and liquid-stop. They expected that the SSG would govern the results and that sequences, in violation of the SSG (the stop-stop clusters), would be the most difficult for their subjects. Instead, they found that "Sonority may not play an important role in explaining how Thai students produce different clusters" (Trung Le & Boonmoh, 2020, p. 22). They concluded that the influence from the L1 was the more important factor, as the modifications the subjects most often made to English coda clusters reflected Thai coda constraints.

Syllable Codas

Blevins (1995) reported on syllable structure. Regarding Spanish and English, the languages primarily at issue in the present study, she indicated that Spanish syllables can end either in a V(owel) or V(owel) C(onsonant), and that English syllables show V, VC, VCC, and VCCC endings.

Syllable Codas and Transfer From the L1

There appears to be no always-true statement about the effect of transfer on L2 acquisition other than "sometimes it is a factor." For example, in a review of studies on the effect of the L1 on acquisition of English codas, Hansen (2001, p. 339) stated the finding, "L1 transfer is a predominate factor in [English L2] acquisition." Then, in her own study of Mandarin speakers learning English, she found a very limited role for transfer. On the other hand, as indicated previously, Trung Le and Boonmoh (2020) found an important role for transfer. More recently, Fradsham (2022) studied French and English speakers learning Russian syllable codas. She reported that both groups produced Russian codas that were allowed in their respective L1s, but had difficulty with codas not allowed in the L1.

Morphological Awareness

Morphological awareness refers to knowing, consciously or unconsciously, whether a particular word has internal structure. For example, if an ELL sees *Lars* and produces /larz/ but sees *cars* and produces /kar/, the different pronunciations suggest that the individual may be unconsciously aware that *Lars* and *cars* have different internal structures.

Researchers have published many studies relating to increasing ELL vocabulary through raising morphological awareness. Al-Haydan (2020), for example, reported that when his subjects improved in morphological awareness, their reading comprehension improved as well. Similarly, Yamashita and Kusunagi (2024) reported that the better their subjects understood morphology, the higher their reading comprehension score. This approach, as in Varatharajoo et al. (2015), frequently involves getting students to recognize and understand the functions of derivational morphemes such as *-ness* and *re-*, thereby increasing their L2 vocabulary. Morphological awareness is thus generally seen as a positive.

No researcher has reported a correlation between morphological awareness and performance in the L2 such that morphological awareness was positively associated with errors in production.

Methodology

I constructed a paragraph containing pairs such as *prince*/*prints* and other words ending in /s/. The task of participants was to reproduce the paragraph via a dictation task. The data were collected from course work of students in three of my classes.

The participants were Puerto Rican university students. Two of the classes were Basic English courses at the University of Puerto Rico, one of which was a first-year course. The other was a conversational course for students who had completed the first-year course, and was aimed at developing student ability to carry out simple conversations. The two courses were for students at a rather low level of English proficiency. The third group of students studied at a private university in an English course that was not designed for any particular level of English ability. Impressionistically, it appeared that the English of most students in the course was slightly below the students in the other two courses.

All who did the task were included in the study, except for two who produced perfect dictation and one whose work was illegible. The perfectly done work was not included because the method of the study was to use student errors to detect tendencies. Perfect work shows no such tendency.

The data were drawn from participant production of the following paragraph in which the eleven non-morphemic /s/ forms are <u>underlined</u> and the 10 morphemic forms are **bolded**:

> The <u>Oasis</u> Mall parking **lots** … were filled with **cars** on the day after <u>Thanksgiving</u>. Frank, Pete, and my older brother <u>Lars</u> … went to the Mall too. They went <u>because</u> **Frank's** dream … was to go to the <u>Prince</u> concert … and he wanted to buy the **singer's** recent **CDs** … so he would know all the **songs**. You can

imagine my surprise … when I learned that the police arrested Frank. After they took his **fingerprints**, however, they let him go. It was a case of mistaken identity. Frank **looks** just like a guy who **tries** to spread disease by sneezing in public **places**.

The paragraph was read slowly with careful pronunciation, with pauses at periods and at the gaps in the paragraph above. After each pause, I repeated what had just been read, paused again, and continued. Upon finishing the paragraph, I read it slowly without pausing. Students took the time needed to finish.

The reading had two occurrences of *was*: One in the third sentence, and one in the sixth. To avoid skewing the findings in favor of a "yes" answer to Research Question One, data for only one of the two *was* occurrences were included. To avoid cherry-picking, I included the data for the second *was*, as it showed a lower rate of production (96.3%) than the first *was* (98.2%).

The focus of the study was on the production of final /s/. If a participant produced an /s/ in the coda of the syllable in question, the answer was marked correct, no matter the spelling of the word. When the expected response was *lots* (see the first sentence of the reading), but the participant wrote *lost*, I marked the answer correct. This approach helped avoid skewing the data in favor of a positive answer for the first research question. Skipped words were not included in the dictation data. For example, in one group of sixteen students, fourteen attempted *Lars* (see the second sentence of the reading) and two omitted the word. Eight of the fourteen correctly indicated final /s/, for a ratio of 8/14 = 57.1% correct.

Findings

In replicating the paragraph, participants produced non-morphemic /s/ in 94.1% of the required contexts, while the production rate for contexts requiring morphemic /s/ was 64.9%.

The totals for morphemic and non-morphemic /s/ appear in Table 1. There was little difference among the three groups, justifying lumping the results together as done throughout the paper.

Table 1 *Totals for Morphemic and Non-Morphemic Final /s/*

Morphological Feature	Correct	Attempts	Percent Correct
Non-morphemic	532	565	94.1
Morphemic	322	496	64.9

Table 2 presents the results broken down by group, and shows that there is little difference in the results of the three groups.

Table 2 *Totals for Morphemic and Non-Morphemic /s/ by Group*

Group Source	Non-Morphemic Final /s/	Morphemic Final /s/	Morphemic and Non-Morphemic Final /s/
Private University	156/168	86/145	242/313
	92.8%	59.3%	77.3%
First-year course at University of Puerto Rico	210/217	128/194	338/412
	96.7%	65.9%	82.0%
Second-year course at University of Puerto Rico	164/175	110/161	276/339
	93.7%	68.3%	81.4%

As evident in Table 2, the results for the three groups differ only slightly from each other, justifying lumping the results together as is done throughout the paper.

The paragraph used six pairs of words that had approximately phonetically identical endings. Data for the paired words appear in Tables 3 and 4. The totals for the individual pairs are shown in Table 3, and the overall totals for the paired words are given in Table 4.

Table 3 *Data for Word Pairs Ending With /s/*

Pairing Success	Oasis/ Places	Lars/Cars	Thanksgiving/ Frank's	Prince/Prints	Disease/CDs	Surprise/Tries
Correct	44 / 49	34 / 33	45 / 32	52 / 35	43 / 36	55 / 19
Attempts	46 / 51	42 / 51	53 / 52	53 / 44	46 / 55	55 / 51
Correct%	95.6 / 96.0	80.9 / 64.7	84.9 / 61.5	98.1 / 79.5	93.4 / 65.4	100 / 37.2

Table 4 *Totals for Paired Words*

Pairing Success	Non-Morphemic /s/	Morphemic /s/
Correct	273	204
Attempts	295	304
Correct%	92.5	67.1

As evident in Tables 3 and 4 regarding the paired words, non-morphemic /s/ was produced at a much higher rate than morphemic /s/. The data thus far indicated a consistent difference between production of final morphemic final /s/ and non-morphemic final /s/, participants produced non-morphemic final /s/ much more frequently than morphemic final /s/.

In Table 5, the words in the paragraph ending with morphemic /s/ appear grouped by coda complexity (Note: The rankings in the table reflect the view that SSG violations make a syllable more complex, and the view that the more consonants in a coda, the more complex it is). The codas in Group A use singleton codas. The Group B codas consist of two consonants and do not violate the Sonority Sequencing Generalization (SSG). The codas of *lots* and *looks* in Group C violate the SSG because in each case, the stop with which the coda begins is less sonorous than the following /s/. The coda of *Frank's*, Group D, uses a CCC coda that violates the SSG as the stop, /k/, is less sonorant than the /s/ that follows it.

Table 5 *Words Grouped According to Word-Final Coda Complexity*

Pairing Success	Group A tries, places, CDs	Group B songs, prints, cars, singer's	Group C lots, looks	Group D Frank's
Correct	104	127	59	32
Attempts	157	196	91	52
Correct %	66.2	64.7	64.8	61.5

No consistent correlation is evident in Table 5 between word-final coda sonority-oriented complexity and production of final /s/. The codas in Group C, for example, violate the SSG but, contrary to sonority-based expectations, received correct responses at a slightly higher rate than the sonority-compliant CC codas in Group B. The sonority-violating CCC coda in Group D did receive the lowest correct response rate but, because the study did not include a SSG-compliant coda ending with /s/, it is not possible to attribute the lower correct production rate to sonority. Finally, the difference of only 4.7% between the highest correct response rate, 66.2%, and the lowest, 61.5%. This suggests that coda complexity, whether sonority-oriented or not, had little influence on correct production of morphemic final /s/.

A further issue addressed was whether production of the morphemic final /s/ was related to whether the /s/ indicated plural, third-person singular, or possession. The totals for correct final /s/ in plurals, third-person singular, and possessives are presented in Table 6.

Table 6 *Final /s/ on Plural Nouns, Third-Person Singular Verbs, and Possessive Nouns*

Identification Success	Plural /s/ lots, prints, places, cars, CDs, songs	Verbal /s/ looks, tries	Possessive /s/ Frank's, singer's
Correct	217	51	55
Attempts	288	103	105
Percent Correct	75.3	49.5	52.3

According to the morpheme order studies, of the three /s/ forms, plural /s/ is acquired first, followed much later by possessive /s/, which is acquired right before verbal /s/. A corresponding result for Table 5 would be higher scores on plural /s/, with much lower scores on possessive /s/ and still lower scores on verbal /s/. Table 6 shows the expected trends. Plurals show the highest correct response rate, followed by possessives, and then by verbal /s/. The data of Table 6, thus, suggest that the particular function of final /s/ correlates with correct production rates.

We now consider the /s/ in *Thanksgiving*. The word consists of *thanks* and *giving*. To an ELL, the first part of the word, *thanks,* could appear to be a plural form, and thus more likely to undergo /s/ deletion, as we saw with *finger**prints***. On the other hand, the *Thanksgiving* /s/ is non-morphemic, and thus supposedly less subject to deletion. One would expect, therefore, since /s/ in *Thanksgiving* could be seen to show non-morphemic and morphemic characteristics, that it would be omitted more often than non-morphemic /s/, but less often than morphemic /s/.

Data regarding production of the /s/ of *Thanksgiving* is given inTable 7. Column A indicates the the correct response rate for non-morphemic /s/, not including the Thanksgiving data. Column B indicates the Thanksgiving data, and Column C indicates the data from Table 1 for morphemic /s/.

Table 7 *Production Rates for Thanksgiving /s/ Compared with Other Data from the Study*

Identification Success	**Column A**	**Column B**	**Column C**
	Total non-morphemic /s/ not including *Thanksgiving*	*Non-morphemic /s/* of *Thanksgiving*	Total morphemic /s/
Correct	487	45	322
Attempts	512	53	496
Percent	95.1%	84.9%	64.9%

As seen in Table 7, the /s/ of *Thanksgiving* was, as expected, produced at a higher rate than morphemic /s/ data, and at a lower rate than non-morphemic /s/. Similar to what will be seen in the discussion of Table 7, the validity of the test paragraph was supported by the non-random relation between production rates for the Thanksgiving data and the other data.

So far we have considered the tendencies of study subjects as a whole. Now we will take a closer look at the data and at individuals within these groups.

No student did better on the morphemic /s/ than on the non-morphemic /s/, and in the three cases where students made only one error, the error was with morphemic /s/. The three words involved were *lots*, *Frank's*, and *looks*.

Based on the general reliability of dictation as a measure of linguistic ability, it could be predicted that students who correctly wrote all 11 non-morphemic tokens of final /s/ had higher ability in English and would do better on the morphemic /s/ than those not having all 11 correct. The relevant data is given in Table 8.

Table 8 *Morphemic /s/ Production Broken Down by Correct Responses to Non-Morphemic /s/*

Identification Success	**Column A**	**Column B**
	Morphemic /s/ production of subjects who responded correctly to all non-morphemic /s/	Morphemic /s/ production of subjects who did not respond correctly to all non-morphemic /s/
Correct morphemic /s/	134	188
Attempts	185	311
Percent	72.4%	60.4%

As seen in Table 8, the group perfectly producing non-morphemic /s/ did better on morphemic /s/ (Column A) than those who did not perfectly produce non-morphemic /s/ (Column B). Assuming the reliability of dictation, the data in Table 8 support the test paragraph's validity by confirming the prediction that those who did better on non-morphemic /s/ would do better on morphemic /s/.

Discussion

Answering the Research Questions and Teaching Final /s/

The answer to Research Question 1, "Does the morphemic/non-morphemic status of /s/ correlate with final /s/ production?" is, as has been repeatedly shown throughout the paper, an emphatic "Yes." The answer to Research Question Two, "What does the answer to Question One suggest about how ELL's are processing the two types of final /s/?" is that the differing production rates for morphemic and non-morphemic /s/ indicate an awareness of the morphemic/non-morphemic split.

It could be argued that the morphological awareness was unconscious when the task posed is considered. The subjects were being tested on how well they wrote down what they were hearing. It seems unlikely that they would knowingly omit anything from the texts that they were preparing.

While the findings indicate that morphological awareness correlated with lower percentages of correct responses, the papers discussed in the literature review show that conscious morphological awareness results in improved acquisition. It appears, therefore, that making students consciously aware of and able to explain the fact that words like *prince* consist of one morpheme, and that words like *prints* consist of two morphemes, would help improve learner production of morphemic /s/.

Final /s/ Production and the Acquisition of Grammar Morphemes

The data reported in the study support the acquisition sequence reported in earlier studies; plural /s/ is acquired first, followed much later by possessive /s/ and verbal /s/. Because plural /s/ is acquired relatively early and because any difficulties with possessive /s/ seem related to its relatively low frequency, our discussion focuses on verbal /s/. Verbal /s/ refers to the /s/ added to the verb when the subject is singular and in the third person, the tense is present tense, and the activity being referred to is habitual. In other words, four categories have to be specified before one can know if an /s/ on the verb is required. By contrast, to know whether to use the plural /s/ morpheme, one usually needs only to know if the subject is plural or singular, and to use possessive /s/, one needs only to know if there is a possessive relationship between items referred to in the sentence. Knowing when to use verbal /s/ obviously requires more processing then either plural or possessive /s/.

Transfer from Spanish

As indicated earlier, Spanish syllables end either V or VC, and English allows V, VC, VCC, and VCCC endings. A transfer-oriented expectation would be that participants in the present study would show a higher percentage of final /s/ in syllables ending VC than in syllables ending VCC and VCCC. The data in Table 5 do show that Group A, the only set of codas in the table with permissible Spanish VC endings, had the highest correct response rate. On the other hand, the correct response rate for impermissible CC codas (groups B and C) was within 1.5 percentage points of the correct response rate for the singleton codas. Similarly, the production rate of the CCC codas in Group D of Table 4 was the lowest of the four coda types, but was less than five percentage points below the rate for Group A. The slight differences in production rates of the Table 5 data suggest that transfer from Spanish had little or no effect.

Further evidence of the non-importance of transfer comes from the data of Table 3. The pairs *Lars/cars, Thanksgiving/Frank's and Prince/prints* violate Spanish coda conventions, yet the non-morphemic forms were produced at high rates. The *surprise/tries* pair is remarkable in that *tries* conforms with Spanish coda conventions but received the lowest production rate of any form in the study, while on the other hand, *surprise* was the only form produced correctly by all subjects.

Regarding Dictation

The different production rates for morphemic and non-morphemic /s/ indicate that participants were processing final /s/ in ways consistent with the function of the /s/, a factor especially evident in the *surprise/tries* pair of Table 3. That they were doing processing, and not just blindly repeating the input, supports the continued use of dictation as a teaching tool.

Additional Thoughts Regarding the Late Mastery of Verbal /S/

In many ESL textbooks, verbal /s/ is one of the first topics covered. Yet as seen in the literature, the data reported in the present study, and as known by every ESL practitioner, verbal /s/ is almost always acquired late. This difficulty is sometimes attributed to salience, the effects of the Sonority Sequence Generalization, and to transfer from the L1. While research has indicated that transfer from the L1 can sometimes be a factor, the present study showed no influence from the L1, and that attempts to "blame" salience and/or the SSG have not been successful.

A further argument against salience is the likelihood, as discussed in the "Does final /s/ always sound the same" section, that in the dictation, morphemic /s/ was given greater duration, and thus greater salience than non-morphemic /s/, yet was produced much less consistently.

The contribution of the present study includes the idea that the late mastery of verbal /s/ can be explained by combining the ideas of VanPatten (1996, 2004) and O'Grady (2018). VanPatten's somewhat general theory that ELLs pay more attention to content than to form explains the overall situation, while O'Grady's more specific theory that more frequent routines are more "entrenched" and mastered earlier than less frequent routines helps explain why verbal /s/ is mastered so late.

A further issue regarding the concept of entrenchment is that impressionistically, it appears that well-entrenched, frequent routines are more general than less frequent routines. The SVO word order, for example, is general, while each /s/ morpheme is more specific than SVO word order. Verbal /s/ is especially specific, as it, as indicated earlier, depends on particular settings of several categories.

Conclusion

Aliyu (2017) indicated that his subjects showed low correct production rates for the *-ed* and final /s/ phonemes he was studying. In addition to specific attention to form, he advocated more practice in English in general, underscoring the fact supported in the present study, that production/comprehension of such morphemes appears to be more of a processing issue than a phonological/phonetic one.

Similarly, a participant in the study by Nguyen and Newton (2022, p. 35), wrote (translated from Vietnamese by the study authors), "Everyone knows that verbs in the present tense with the third person singular need an 's,' but we pay more attention to the meaning of a sentence."

The present paper, based on classwork of Puerto Rican university students and referencing studies from all over the world, suggests that the acquisition of final /s/ poses the same set of difficulties to all L2 English learners. So, as implied in the remarks of the student in Vietnam, teachers need to be patient about the acquisition of morphemic /s/. But, on the other hand, since learners appear to be at least unconsciously aware of morphemes, raising the level of awareness by specific teaching about the morphemic difference between pairs such as *chance* and *chants*, teachers may able to speed up acquisition of the various uses of morphemic /s/.

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