

The phonotactics of type-III syllables of Japanese Sign Language



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PURPOSE: The purpose of this study is to try to find the rules that function to distinguish the well-formed and ill-formed syllables of Japanese Sign Language (JSL). This poster presentation will focus on so-called type-III syllables, where the non-dominant hand remains still while the dominant hand moves, and show some of the well- and ill-formedness conditions of the JSL type-III syllable in the light of syllable constituents.

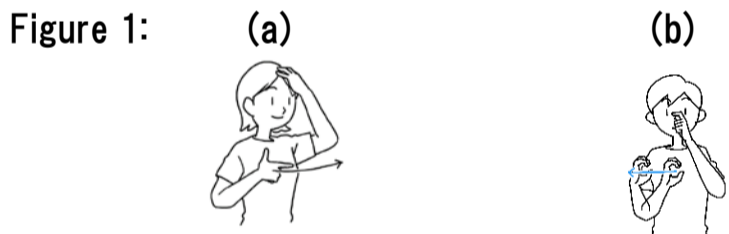
BACKGROUND: The JSL syllable is composed of one or two handshapes, one location, one or two movements, palm and finger orientations, and some others, but not all the mathematically possible combinations are unattested: Some of the non-existent ones are accidental gaps whereas some do never and will never exist because they violate the phonotactics of JSL. We call syllables that violate it ill-formed syllables (IFS's) while syllables that observe it well-formed syllables (WFS's). To find out the conditions that play important roles in distinguishing between the WFS's and IFS's, we have collected both kinds of type-III syllables.

CORPORA: For collecting WFS's, we have used *Japanese and Japanese Sign Language Dictionary* (Federation of the Deaf 1997) . For collecting IFS's, we have used *New Signs I -IV, and 2011 -2016* (Japan Institute for Sign Language Studies).



ANALYSES:

#1:Examining the corpora, we have found that **type-III syllables with two different locations like those in Figure 1 are ill-formed.**

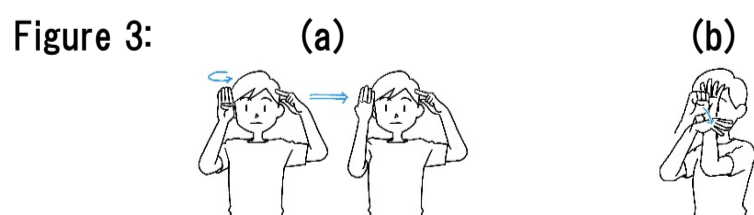


Note that you find some well-formed syllables with two locations in the corpora, but they either include multiple morphemes as in Figure 2(a) or are mimicry as in Figure 2(b).



⇒ It follows from the result of the analysis #1 that **both hands must be specified with a single location.**

#2: Looking at syllables with a single location listed in the corpora of IFS's, it is revealed **that type-III syllables with a higher location (probably higher than the mouth) are ill-formed.**

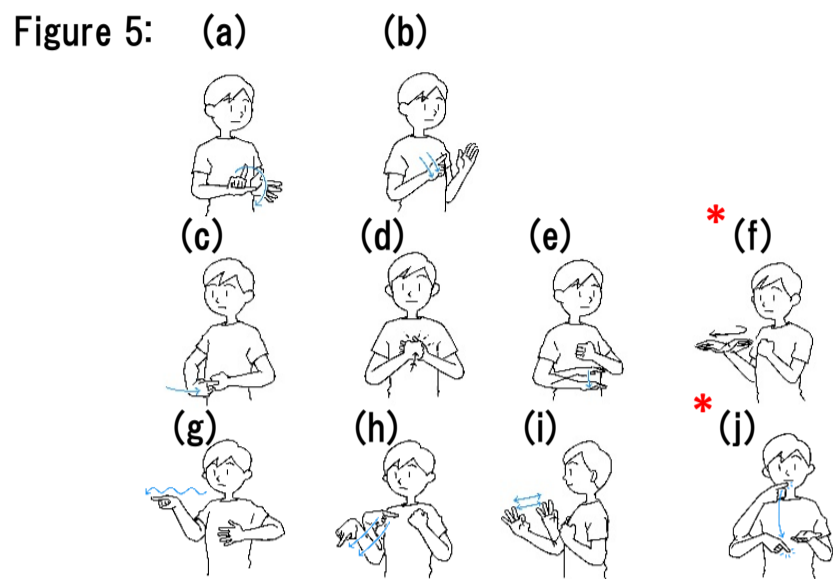


Note again that there are some well-formed type-III syllables on or near the face in the corpora. But they either include multiple morphemes as in Figure 4(a) or are mimicry as in Figure 4(b).



⇒ It follows from the analysis #2 that **well-formed type-III syllables must be specified with a lower location, i.e., neutral space (NS) or trunk (TK).**

#3: Looking at type-III syllables in the lower location listed in both corpora, it is revealed that not all of them are well-formed. Some examples are shown in Figure 5 and Table 1, in which ill-formed syllables are asterisked.



	LOCATION		CONTACT TO:	
	Dom HD	Nondom HD	Dom HD	Nondom HD
(a) TEMPLE	NS	NS	NO	NO
(b) TIME	NS	NS	Nondom HD	Dom HD
(c) INTENTION	TK	TK	Nondom HD	Dom HD,TK
(d) IMPLICIT SIGNING	TK	TK	Nondom HD	Dom HD,TK
(e) TO REFRAIN	TK	TK	TK	TK
* (f)	TK	TK	NO	TK
(g) ELECTROCARDIOGRAM	NS	TK	NO	TK
(h) FITNESS TRAINER	NS	TK	NO	TK
(i) ABUSE	NS	TK	NO	TK
* (j)	TK	NS	TK	NO

Table 1: Location and Contact Place of Type-III Syllables represented in TK and/or NS

Figure 5 and the table show that **the hand in TK must make contact with the TK location:** the contact can be direct contact or indirect contact, the later of which is contact with the other hand on TK. There is no syllable with the hand in TK not in contact with the TK location in the corpora EXCEPT the syllable (f), which is judged ill-formed.

Also note that it follows from the syllables from (g) to (i) that **the locations TK and NS can co-occur only when the dominant and non-dominant hands are in NS and TK respectively,** not vice versa. To confirm this, we have coined a syllable with the dominant and non-dominant hands in TK and NS respectively (see (j)), and had its well-formedness judged. The result is negative.

The co-occurrence of the TK and NS locations is against the result of Analysis #1. To reconcile this conflict, we have hypothesized here that there exists a **superordinate location** including both TK and NS, which we call **A-zone**, or **Anterior-to-the body Zone**.

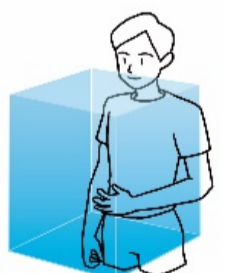


Figure 6: A-ZONE

CONCLUSION:

1. Type-III Syllables must be represented in A-zone (except multi-morphemic syllables and mimicry).
2. The hand in TK must be in contact with the TK location in the Type-III syllable regardless of whether the contact is direct or indirect.

FUTURE STUDY:

1. We need to find other phenomena in which TK and NS should be treated as members of A-zone.
2. The combination of the dominant hand in TK and the non-dominant hand in NS is not allowed. Why?
3. Contact plays an important role in the syllable formation. Its role should be elucidated.