

## **Phonological Patterns of Kana-based Signs in Japanese Sign Language**

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**Background and purpose:** Japanese Sign Language (JSL, *Nihon Shuwa*) has a kana syllabary-based finger-spelling (Figure 1). These finger-spelled expressions have been incorporated into signs used by native signers. However, when a major political organization for deaf and hearing-impaired Japanese began to invent new signs by borrowing finger-spelled kanas and including them in the training materials for interpreters, fierce criticism from the deaf community emerged. Many of the ‘new’ signs do not match the intuition of native JSL signers. Previous analysis of foreign vocabulary in ASL (Padden 1998, Brentari and Padden 2001) revealed that newly developed signs with finger-spelled components follow phonological constraints observed in native signs. The current study is an attempt to describe the phonological characteristics of kana-based signs, focusing on the relationship between physical contact and location. It has been known that physical contact is influential in phonological changes in the formation of compounds (Liddell 1984).

**Procedure:** A list of 36 commonly used kana-based signs were created by a native signer of JSL who was trained with sign language phonology. Native signers were requested to sign the word list on their own and make judgments about whether the physical contact (hand-to-hand/hand-to-body) was required with the sign or not.

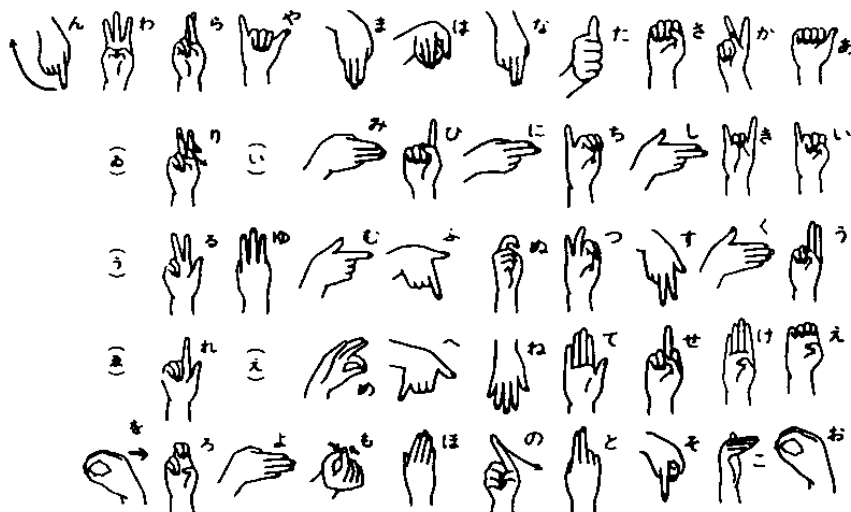
**Observations:** Our observations are as follows: (1) two-handed signs followed Battison’s two conditions (Battison 1978). If both hands have the same handshake, they move in an identical or symmetrical fashion. In this case, signs may or may not include physical contact (Figure 2). On the other hand, if the hands were shaped differently, they follow the Dominant Hand condition and physical contact is required (Figure 3). (2) For one-handed signs, there is an interaction between the location of the sign and the requirement of physical contact: expressions signed below the chin require physical contact, either to the non-dominant hand or a part of the body such as the arm/chest (Figure 4), while expressions signed higher than the chin (such as cheek or temple) do not include contact (Figure 5). The chin area seems to be the borderline location: signs in this area may or may not require physical contact. Signs without contact tend to include repeated internal movement such as reciprocation/rotation (Figure 6).



**Analysis:** Two-handed kana-based signs were accepted as long as they follow phonological constraints such as Battison’s conditions. One-handed signs tend to require physical contact, according to their location: the lower the location of the sign is, the more likely it is to require a form of physical contact. It is possible that the physical contact increases the visual salience of the sign (Sandler and Lillo-Martin 2006). The pattern observed here matches the conjecture that the visual salience of the sign

increases as the sign appears in the upper central area (i.e. around the face). In other words, kana-based signs with a lower location complement tend to enhance their phonological salience with physical contact or repeated movements. Observations made in the current study strongly indicate that kana-based signs used by native signers should follow phonological constraints.

**Figure 1. Fingerspelled kanas with the corresponding kana syllabary**

N	WA	RA	YA	MA	HA	NA	TA	SA	KA	A
		RI		MI	HI	NI	TI	SI	KI	I
		RU	YU	MU	HU	NU	TU	SU	KU	U
		RE		ME	HE	NE	TE	SE	KE	E
	(W)O	RO	YO	MO	HO	NO	TO	SO	KO	O



<p><b>Figure 2:</b> Two-handed kana-based signs (symmetrical)</p>	<p><b>Figure 5:</b> Kana-based sign <u>without</u> contact, higher location</p>  <p>KNOWLEDGE (TI)</p>
<p><b>Figure 3:</b> Two-handed kana-based signs (dominant)</p>	<p><b>Figure 6:</b> Kana-based sign with no contact, with rotation, chin location</p>  <p>TOMATO (TO)</p>
<p><b>Figure 4:</b> Kana-based sign <u>with</u> physical contact, lower location</p>	



SING (U)



STRESS (SU)



FEELING (KI)