LITERA
Vol. 23 No. 2, July 2024
https://journal.uny.ac.id/index.php/litera/issue/view/2711
DOI: https://doi.org/10.21831/ltr.v23i2.71532

The effect of semantic reversibility of agent-target of transitive utterances on utterance structure in BISINDO Yogyakarta

Linda Yusfita Dewi*, Harwintha Y. Anjarningsih
Universitas Indonesia, Indonesia
*Corresponding Author; Email: lindayusfita0598@gmail.com

ABSTRACT

The flexibility of utterance structure can be influenced by semantic factors. At this level, structures can vary in terms of the positions of the constituents, namely subject, predicate, or object. To see how far semantics plays a role in the flexibility of structures, this research aims to investigate how the semantic reversibility of agent-target influences the structure of the resulting BISINDO Yogyakarta signs. The data source for this research was video-recorded signs that had been transcribed into utterances. The data collection instrument used was a collection of pictures that was used to stimulate deaf individuals to produce signed utterances. The results showed that there were differences in the resulting structure. (1) Non-reversible utterance structures tended to produce single-clauses with various patterns dominated by SPO and SOP structures. This diversity was predominantly influenced by the classification of targets, appropriate hand movements, and the omission of the agents. Meanwhile, reversible stimuli tended to produce two structures, namely single-clauses dominated by SPO and multi-clauses dominated by SPO P. The multi-clause structure was the structure that dominated reversible utterances. The complexity of the structure of this reversible content was characterized by an agent-target indexical description, and the involvement of actions/expressions of action targets. This proved the notion that the indexical description found in almost all multi-clause structures was the preference of deaf individuals in avoiding potential ambiguity between agent-target. Just like spoken languages universally, sign languages such as BISINDO in the Yogyakarta region and BISINDO in the Jakarta region also shared linguistic features.

Keywords: Reversibility, sentence structure, agent, target, BISINDO

Article history

Submitted:	*Accepted:*	*Published:*
22 February 2024	*28 July 2024*	*31 July 2024*

Citation (APA Style):
Dewi, L. Y., & Anjarningsih, H. Y. (2024). The effect of semantic reversibility of agent-target of transitive utterances on utterance structure in Bisindo Yogyakarta. *LITERA, 23*(2), 179-195. https://doi.org/10.21831/ltr.v23i2.71532

INTRODUCTION

Indonesian Sign Language or abbreviated as BISINDO is a language that has developed naturally among the deaf. In contrast to SIBI (Indonesian Sign Language System) which was created with the logic of the hearing community, BISINDO was created based on visual observation to targets or events. The signs created in BISINDO usually characterized the targets or events being observed. Wedayanti (2019:144) stated that targets or events, in BISINDO, were symbolized according to the shapes, nature, visuals or characteristics of the targets. This is the basis why BISINDO signs are like visual imitations of targets or events. A study by Stokoe (2001a, 2001b) explored the basic parameters of sign language including (1) hand shape which was considered a phonological characteristic, (2) location as the feature that differentiated minimal pairs, and (3) movement fulfilling morphological and syntactic functions. These parameters underlay the difference between one sign's meaning and that of another.

In contrast to hearing people who use auditory-vocals to differentiate phonological features, deaf individuals use visual-gestures by utilizing hand shapes to differentiate phonological features. Differences in hand shapes in gesture formation influence the resulting phonological variations. This could be seen through how the gesture is carried out, whether the hand shape involves the elbow, all the fingers or certain fingers, the wrist, and even contact between the two hands (Mouton, 2012:40). Then, the location of the hand shape can indicate a minimal pair, such as where the signal is produced,

whether on the head, in front of the chest, around the ear, and so on. An example of a minimal pair, in BSL (British Sign Language), is the words '*afternoon'* and '*name*'. Both have the same hand shape, namely using two finger configurations (index and middle), but involved different locations, namely '*afternoon*' on the chin and '*name*' on the forehead (Fenlon et al., 2019:455). Lastly, movement, which is more complex because it is related to the path of movement, the beginning and the end of the movement. One of the movements can determine the class of signed words produced. For example, the '*sit*' and '*chair*' signs that have the same hand shape and location. These signs which are a verb and a noun respectively can only be differentiated in sign modality by the movement component in the utterances produced (Mouton, 2012:90).

Like languages in general, sign language also has a structure. Even though at first glance it appears to show a variety of structural variations, this does not mean that sign languages do not have structural rules in their use. This flexibility may be due to several linguistic factors. Several researchers have conducted in-depth studies on the structure of sign languages. Fischer first justified that the canonical structure of American Sign Language (ASL) is SVO, based on a review of the noun-verb-noun reversibility sequence (Pichler, 2011:158). Then, the canonical structure of Japanese Sign Language (JSL) is SOV like Japanese, German Sign Language (DGS) uses SOV, and Brazilian Sign Language (*Língua de Sinais Brasileira;* LSB) has SVO canonical structure (Fischer, 2014). The findings of canonical sign language structures in these countries showed that, fundamentally, the canonical structure of sign language was not significantly different from the structure of the related spoken language. However, this basic structure could manifest in various ways when used. Similar to ASL structure, Liddell (1980) asserted that morphological factors, such as hand shape classifiers and verb types, could impact the order of ASL constituents. These classifiers often occurred in sign languages, one of which was when the object being signalled merged with the verb used (Fischer & Hulst, 2003:321) that classifiers in sign languages functioned as anaphoric pronouns that referred to previous nouns. Therefore, when these classifiers were used, the nouns used as antecedents had to have been mentioned previously. These classifiers were also often used to form new signs (Fischer & Hulst, 2003:322). So, once the classifiers were expressed, the antecedents for the classifiers no longer needed to be stated. Then, Fischer argued that semantic factors also played a role in ASL structure (Felix, 2021:7). If the ASL clause structure was transitive and semantically reversible, the structure remained SVO. However, if the agent and target referents were semantically non-reversible, then the structure became relatively free, such as SOV, OVS, and VOS (Felix, 2021:7). This indicated that semantic factors influenced how ASL structures were arranged. However, did something similar occur in other sign languages? A study by Jantunen (2008) demonstrated that reversibility did not affect word order in transitive clauses in Finnish Sign Language. The order of words in sign language was influenced by the presence of indices indicating gestures which in this article were symbolized by IX (see Felix, 2021). What about BISINDO? Several studies on regional BISINDO had been conducted (Felix, 2021; Handhika et al., 2018; Indra et al., 2019; Palfreyman, 2016; Pujiati, 2019), including BISINDO Yogyakarta. Based on observations of BISINDO Yogyakarta, it was stated that the basic constituent of this sign language was SOV (Tim Produksi Bahasa Isyarat Yogyakarta, 2016). However, like other sign languages, several sign language structures that appeared on the surface yielded mixed result (Fischer, 2017; Perniss et al., 2007; Pfau & Steinbach, 2015).

So far, studies of the factors that influence utterance structure related to the reversibility of targets and agents in BISINDO Yogyakarta have not been carried out. A previous study that looked at this possibility was the reversibility study at BISINDO in the Jakarta area. Felix (2021) studied the relationship between semantics and morphology in the structure of simple utterances from three Asian Sign Languages, one of which was the BISINDO Jakarta. This study also targeted the semantic influence and morphological influence on BISINDO. Based on the results of the research carried out, a steady pattern was found that when the relationship between the agent and the target was reversible, the pattern that tended to be used was SVO, while if the relationship was non-reversible, then the pattern tended to be free. Then, does BISINDO Yogyakarta as one of the regional BISINDOs also have a similar influence considering that regional BISINDOs develop independently? Do differences in the semantic relationship between agent-target influence the structure of BISINDO Yogyakarta? Is there any regional universality among BISINDOs developing in Indonesia? By extending the findings of BISINDO Jakarta, this research sets out to further review the influence of agent and target semantic reversibility on the agent-target function relationship on transitive utterance structures produced by

deaf individuals using BISINDO Yogyakarta. In examining the structure of BISINDO Yogyakarta, this research adopted the functional structure of SPOK in Indonesian. The P constituent preference was chosen compared to using V in previous studies because the predicate (P) could include constituents in the form of verb categories (verbs) and adjectives (adjectives) which are possible to produce in BISINDO Yogyakarta.

METHOD

This research used a mix-method approach. The quantitative research method was used to count the number of patterns produced, in order to obtain the dominant structural patterns used by deaf individuals in producing transitive utterances. Thus, the frequency of pattern appearance was utilized as a basis for concluding the trend of the pattern used. Meanwhile, qualitative research method was used to interpret the reasons underlying these patterns. In producing transitive utterances, this research used an instrument in the form of 32 pictures consisting of 16 images with reversible agent-target relationships, and 16 images with non-reversible relationships. These 36 images have been validated by a linguist and user of Bisindo, as well as a member of the sign language developer team at Lembaga Riset Bahasa Isyarat (LRBI; Sign Language Research Institute) at the Universitas Indonesia. The images illustrated the stimuli as follows.

Target Utterances Illustrated by Picture Stimuli

No	Non-reversible	Reversible
1	A man takes a book	A man pushes a woman
2	A woman takes a plate	A woman pushes a man
3	A man paints the door	A woman takes a photo of a man
4	A woman washes clothes	A man takes a photo of a woman
5	A man washes dishes	A woman paints a man
6	A mother cooks fish	A man paints a woman
7	A father cooks eggs	A woman hugs a man
8	A woman drinks a bottle of water	A man hugs a woman
9	A man drinks a glass of water	A car overtakes a motorcycle
10	A woman eats cake	A motorcycle overtakes a car
11	A man eats noodles	A mother combs a girl's hair
12	A woman lifts a chair	A father combs a boy's hair
13	A man lifts a table	A mother pinches a boy
14	A woman hangs clothes	A father pinches a girl
15	A woman peels an apple	A mother feeds a boy
16	A man carves a statue	A father feeds a girl

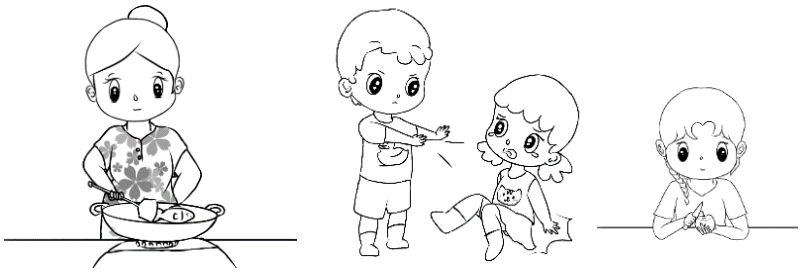


Figure 1. Examples of stimuli picture

The data for this research is in the form of sentence transcriptions from the sign videos. The transcription process was carried out with one interpreter from the Yogyakarta Sign Language Interpreters by translating the signs performed as shown below.

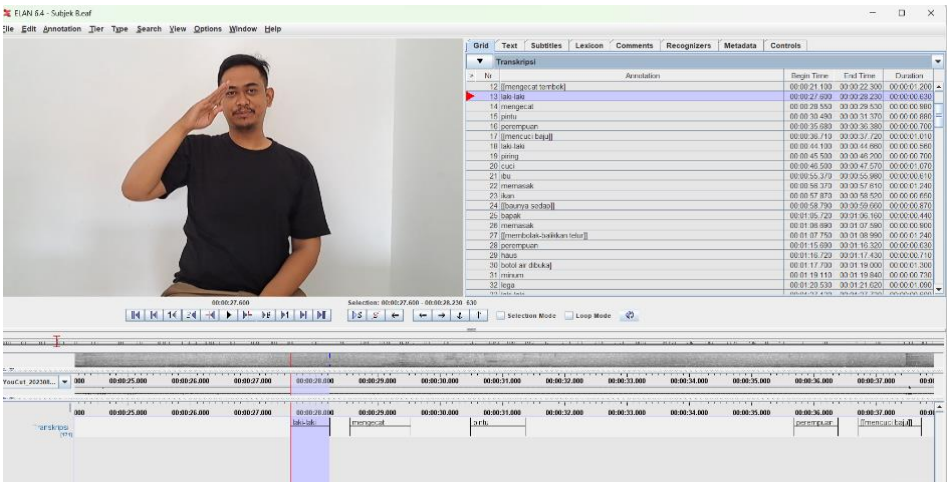


Figure 2. Transcription process

The data was then transferred into table form for further analysis. Data collection was carried out using documentation collection techniques. Documents are records of past events (Sugiyono, 2018:124). This data collection technique allowed researchers to document signed utterances produced by deaf individuals in video form. The deaf individuals who were the subjects of this research consisted of 10 people with conditions including (1) aged late teens to adults with the range of 18 – 35 years. This age was taken because deaf people generally learn BISINDO when they are teenagers or late teens. So, to ensure that deaf individuals had learned BISINDO and were using it every day, this age range was chosen; (2) domiciled in Yogyakarta for at least 5 years; (3) often used BISINDO in daily conversations, (4) had already studied BISINDO at the age of 18, and (5) had minimum educational background at the high school level.

Next, the transcription results were analysed to determine the structural pattern of each utterance produced. To interpret the resulting patterns, this research adopted the structure theory based on function from Kridalaksana (2002). However, it also paid attention to structural studies based on Felix (2021). This was because BISINDO had sequential and simultaneous characteristics that are different from Indonesian, so they influence the method to map its structural patterns. Because the theory adopted is structure based on function, the SPO (agent-Predicate-target) constituents were chosen in mapping the resulting structural pattern compared to SVO (agent-Verb-target). This preference was chosen because based on the results of temporary observations of phenomena that emerged in the field, the use of adjectives was also frequently found, apart from verbs. Apart from that, the use of the predicate as one of the constituents in mapping this pattern allows the pattern to be mapped more simply, both verbs and adjectives, verb phrases and adjective phrases would be part of P (predicate). Apart from that, K (*keterangan*/adverb) as an adverb constituent was also involved because in some stimuli involving place adverbs there was a possibility of K being mentioned by the signers in the resulting structure. Then, in sign language, apart from the noun category and personal pronouns, indexicals using the index finger, could also be categorized as subjects/objects. These indexicals could simply function as a reference for the pronouns *'this', 'that', 'he/she'*, which referred to the nouns/personal pronouns mentioned – symbolized by IX. This reference could also function as a direct object marker, if the noun was mentioned before this indexical. These utterance patterns were then calculated to see the frequency of occurrence of the most frequently used patterns between utterances containing reversible and non-reversible relationships. After the pattern trend was obtained, the researchers interpreted the reasons behind the trend of patterns.

RESULTS AND DISCUSSION

Dominant Structural Patterns

Pictures containing non-reversible and reversible agent-target semantic relationships apparently showed a very significant influence on the resulting structural pattern. The following is the breakdown of structures resulting from reversible and non-reversible agents and targets.

Table 1. Percentage of pattern occurrence

Non-reversible		
Pattern	Frequency	%
SPO	75	46.9
SOP	41	25.6
SP	13	8.1
Multi-clause	7	4.4
SOPK	5	3.1
SKOP	4	2.5
SPOP	5	3.1
SKPO	3	1.9
OSP, SKP, SOPO, SPOPO, SPOK, SPKO, SKPOK	1	0.6
Reversible		
Multi-clause	120	75
SPO	26	16.2
SOP	5	3.1
OSP	4	2.5
SPOP	2	1.3
OP, SOPO, SKPO	1	0.6

Table 1 shows that the frequency of occurrence of transitive utterance forms between reversible and non-reversible referents displayed significantly different patterns. Non-reversible agents-targets showed responses that were dominated by the use of single-clauses (SPO, SOP, SP, SOPK, etc.), while patterns for reversible agents-targets were dominated by the use of multi-clauses. The single-clause patterns were often found in pictures where the agent-target relationship was non-reversible, because with non-reversible referents, deaf individuals did not need further explanation about the agents and targets in the pictures because agents and targets could be identified easily without role ambiguity. In contrast, when a stimulus involved an agent and target who could replace each other's positions without involving active-passive utterances, the utterances produced tended to produce multi-clause patterns. These multi-clause patterns involved a detailed description of the actions carried out by the agents and the behavior of the targets agented to the action, up to the indexicals of the agents and targets. When a context shows the involvement of more than one argument, which can potentially be another actor, it is possible that the resulting speech context will involve more than one predicator. The predicates are not only centered on the agent, but also the action or something perceived by the target. So, the identification of what/who the target is, animate or inanimate, affects the sentence structure. The same goes for indexical involvement. As will be explained in more detail in the reversible structure data, the role of sign language iconicity through indexical reference is very influential on linguistic structure (see Cormier, 2007). Indexicals play the role of pronominals by referring to referents that actually exist outside the discourse (animate/inanimate present in the physical context). This indexical association of the agent-target present seems to be a way for the interlocutor to associate who the agent/target is, where the agent-target is located in the physical context, as well as what the agent/target is doing. It is this effort to make the agent/target understood in its physical context that makes the resulting structure more complex, especially for animate agents.

Non-reversible Structures

In structures where the agent-target roles were non-reversible or could not replace each other, they produced single-clause structures with various patterns, including SPO, SOP, SP, multi-clause, SOPK, SKOP, SPOP, SKPO, OSP, SKP, SOPO, SPOPO, SPOK, SPKO, and SKPOK. These results apparently supported ASL findings showing that if the agent and target references could not be semantically reversed, then the order was relatively free (Fischer, 1975). However, of the various patterns produced, the SPO and SOP patterns were the patterns that were often used. Felix (2021: 9) stated that the SPO and SOP patterns were the basic patterns most often used by (verbal) languages in the world. So, it was natural that these two patterns were also patterns that were often used by deaf individuals considering that some of the canonical structures of sign languages resemble their verbal related-languages. Data from JakSL sign language findings also showed the same thing that SPO and SOP were patterns that

dominated non-reversible utterances (Felix, 2021). However, although both appeared to be used based on the preferences of deaf individuals, some of the emergence of this pattern was influenced by several things related to the linguistic features contained in the sign formation.

Example (1)
LAKI-LAKI CL [=memahat dengan alat pahat] PATUNG
"Seorang laki-laki memahat patung." (SPO)
'A man carves a statue.'


laki-laki


CL [=memahat dengan alat pahat]

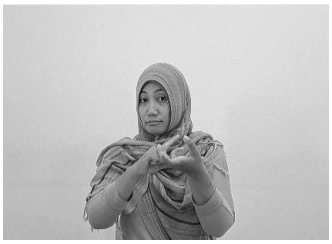

patung

Example 1 demonstrates the use of the verb showed a reference to the use of tools used for sculpting. However, the SPO pattern as indicated in this figure could change to SOP, OSP or SP depending on the preferences of the deaf individuals. These preferences are usually influenced by how deaf people use various possibilities in constructing utterances. There is the term topicalization in several sign languages. Topicalization is a term used when the object that is the focus of speech or discourse moved at the beginning of the speech to be introduced (Fischer & Hulst, 2003:236). This can change the order of the canonical structure and signers could decide to prefer topicalization for certain utterances and this led to a changed structure. Apart from topicalization, the use of classifiers can also influence the structure of the speech produced (Fischer & Hulst, 2003:236). Example 2 shows the change in structure order to SOV because the object classification is in the predicate.

Example (2)
PEREMPUAN APEL CL [=mengupas apel dengan pisau]
"Seorang perempuan mengupas apel." (SOP)
'A woman peels an apple.'


perempuan


Apel


CL [=mengupas apel dengan pisau]

Unlike Example 1, in Example 2, the target was mentioned before the verb. However, the shape of the hand to classify targets was also found in the predicate. This kind of data is called a predicate classifier. In sign language morphological phenomena, predicate classifiers are complex predicates consisting of handshape and motion morphemes that combine in some way to express information about the shape, size, location and motion of the referent (Perniss et al., 2007:9). There are three main types of predicate classifications: handling classifications - manipulating the referent, as in Example 2, entity classifications (see Emmorey, 2003) and size and shape handshapes' specifier (SASS) (see Putri & Yuwono, 2024). It is called a handling classifier because in the predicator of Example 2, there is an attempt to interact between the shape of the hand and the shape of the object (apple) so that one denotes the unity of the apple, while the other represents the movement of the activity of peeling with a knife. This finding provides insight that when verbs used require hand movements imitating objects (peeling

while holding the object being peeled), the structure that will appear is SOP. However, this assumption needs to be further proven with additional research, as Napoli et al.'s (2017) study found that the SPO structure is more preferred by Brazilian Sign Language (Libras) signers. Consider the entity classification in Example 3.

Example (3)
SEORANG LAKI-LAKI CL [= mencuci piring]
"Seorang laki-laki mencuci piring." (SP)
'A man washes dishes.'


seorang


laki-laki

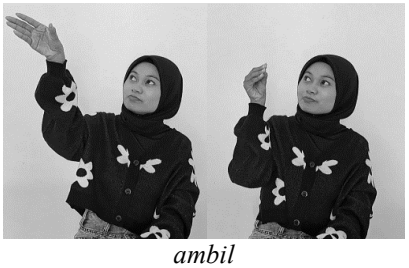

CL [=mencuci piring]

Unlike Example 2, in the case of Example 3, some individuals used the SP structure for entity classification. The predicate mentioned in the structure contained the target depicted in the picture. The shape of the left hand indicated the verb *mencuci* 'wash*'*, while the shape of the right hand indicated the target *piring* 'dish'. Therefore, without having to use the wall sign separately with the verb, the meaning the signal conveyed could be understood. Accordingly, based on Examples 2 and 3, it can be assumed that when the predicate used is a complex predicate, which contains a classification, there are two possible structures that will be produced, namely SOP and SP. In ASL, for example, predicate classification causes the SVO pattern to change into SOV and OSV (object appears preverbal) (see Liddell, 1980), while BISINDO produces a new pattern, namely SP without an object constituent. The SP structure will occur when entity of the object is not mentioned, but its presence in the predicate can still be understood. However, when the object is present and modified in the predicate classifier, in a structure, the object will be mentioned before the predicate it modifies. It is this prior presence of the object that requires deaf people to use the SOP structure (Schlenker et al., 2024:77). The frequency of occurrence of SOP which is more dominant than SP is not without reason. The presence of the object before it is used in modifying the predicate is considered important to help interlocutors more easily identify its classification. This is because the handshape of complex predicates that contain objects will be different from the handshape of basic predicates. Apart from classifiers, movement between predicates and targets sometimes has an influence on their structure. In one of the stimuli there were two verbs with opposite meanings resulting from the visualization of the image, namely *ambil* 'take*'* and *taruh* 'put*'*(additional data as a comparison). These two gestures have the same hand shape and location, but fulfill different movement characteristics. Note the comparison between Examples 4 and 5.

Example (4)
SEORANG PEREMPUAN AMBIL PIRING
"Seorang perempuan mengambil piring." (SPO)
'A woman takes a plate.'


seorang

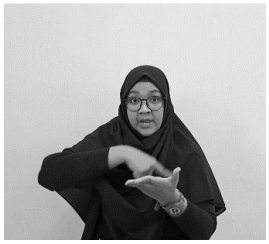

perempuan

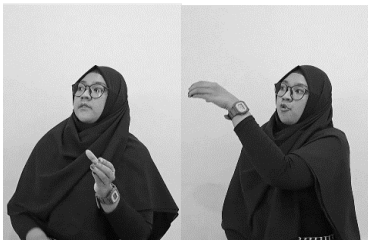

ambil


piring

Example (5)
PEREMPUAN PIRING TARUH
"Seorang perempuan menaruh piring." (SOP)
'A woman puts a plate.'


perempuan


piring

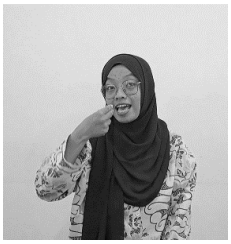

taruh

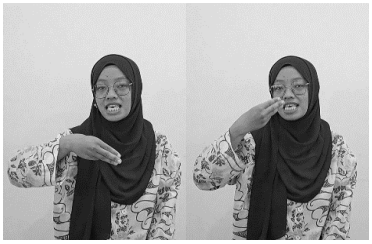
Compare Examples 4 dan 5. The *ambil* 'take' sign in Example 4 used a movement from top to bottom, so that the final location of the *ambil* 'take' hand shape matched the location of the sign for *piring* 'plate' target. The verb *taruh* 'put' required a different movement. Unlike Example 4, the verb *taruh* 'put' in Example 5 incorporated the movement of the hand from bottom to top. The location of the hands started from the bottom, the same position as the sign for *piring* 'plate'. This was the reason why the target in this structure tended to be mentioned before the predicate. The position of the hand shape of the target gesture corresponded to the direction of movement of the *taruh* 'put' sign. In other words, in the use of sign space, the starting and ending points of verb movement can spatially affect the object structure of an utterance. The verb in Example 5 falls into the category of extensional verbs (Schouwstra & De Swart, 2014). Consistently, extensional verbs generally result in SOP structures, placing the object preverbally as seen in Example 5. However, contrary to Schouwstra & De Swart (2014), this extensional construction does not apply to Brazilian Sign Language (Libras) (Napoli et al., 2017). According to Napoli (2017), intensional verbs, such as thinking, actually produce SOP patterns because they involve visualizing arguments (objects) present before the action occurs. This statement is supported by Schlenker et al. (2024:88), who stated that a construction is considered extensional when its denotation is seen before the action is performed, and intensional when its denotation is seen after performing the action. This means that to understand the semantic reversibility of agent-target in utterances having extensional and intensional verbs in BISINDO, further research needs to specifically investigate extensional and intensional verbs.

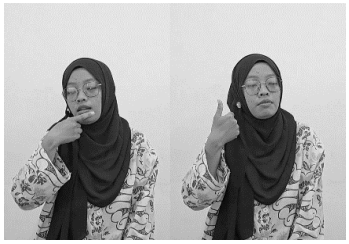
As far as observations from Examples 1 to 5 are concerned, the morphological structures that make up the predicate (handshape, movement, classifier) can influence the construction of the utterance. That is, the morpheme form of the predicator used will determine how the object is positioned in the utterance. In this case, predicates and objects have a very tight relationship in determining sentence structure. Then, the emergence of multi-clauses in non-reversible agent-target utterances was due to the emergence of modifications that clarified the targets, as in Example 6.

Example (6)
LAKI-LAKI MAKAN MI, ENAK
"Seorang laki-laki memakan mi. [rasa mi] enak."
'A man eats noodles. [The noodles taste] is delicious.'


laki-laki


makan


mi


enak

Example 6 shows two clauses in one utterance. Although, basically, if you look at it at a glance, the signs for *mi* 'noodles' and *enak* 'delicious' could be used as a phrase, judging from the pause used, they were both located in different clauses. In this structure, the agent in the second clause was missing. This agent was missing because it contained a repetition of the first clause about *mi* 'noodles', so if the agent was not omitted the resulting signs would tend to be longer. In fact, the principle of BISINDO is structural simplicity. This was why several studies showed results that the shorter character of deaf writing was influenced by shorter sign language production (Vizzi et al., 2022). Accordingly, how does the expression of *enak* come about? Some of the data collection results show that adjectives such as tasty, delicious, relieved appeared in some research subjects consistently. This means that the appearance of these strong expressions can be influenced by deaf people's habits in communicating, so there are additional adjectives used in the resulting utterances. This assumption brings a new question regarding whether the order of constituents that deaf people use to communicate daily can also affect the diversity of structures. In fact, it is possible that in addition to classifier and movement factors producing diverse patterns, deaf people's preference in producing everyday constructions also strongly determines the order between predicates and objects. However, to be sure about this assumption, a long-term comparative study needs to be conducted to review the everyday communication of deaf individuals before they are finally recruited as research subjects.

Reversible Structures

In reversible structures, the results were also quite diverse, namely OP, SPO, SOP, OSP, SPOP, SOPO, SKPO, and multi-clause. However, of the overall patterns produced, the SPO pattern in single-clauses and multi-clauses tended to be used. There were various patterns in the multi-clauses, but these patterns were basically limited by two things, namely (1) the description of the agents and targets through indexicals (signs of reference) and (2) the inclusion of a role for each referent. The indexical (reference sign) in this research adopted the ideas of Felix (2021) and was marked by the symbol IX. In sign languages, signers generally used these indexicals to designate objects, people, or things. In other words, the use of indexicals had the same function as pronouns (personal pronouns and demonstrative pronouns). However, there are times when these indexicals refered to real arguments that are present in the context of the utterance. Mouton (2012:228) strengthened this statement by stating that the singular form of personal pronouns was usually done by pointing with the index finger which was directed directly at the referent or location of the referent in the related sign space. Sign language indexicals that functioned as pronouns such as '*this*' and '*that'* generally referred to referents that were outside the discourse (exophora). In contrast to endophoric references which referred to referents in the discourse, exophoric references referred to referents that were outside the discourse. As in the example data, *itu perempuan* 'that is a woman' often appeared in the signed utterances. In this example, the pronoun did not refer to the referent in the discourse because for referents in the discourse the signers would indicate the presence of the referent using the index finger to point to the referent in question, be it an object or a person. This meant that referents that were outside this discourse were contextual.

First, there was the single-clause with the SPO pattern. This pattern was more common than the SOP/OP or OSP patterns because by using the SPO pattern, the signers could easily show who was the agent and who was the target by placing the verb before the target. This was because the reversible nature (the roles of agent and target could be interchanged) could make the interlocutor fail to understand the agent and target who were placed side by side.

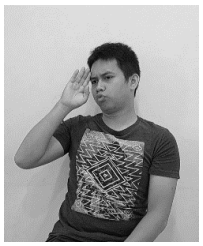
Example (7)

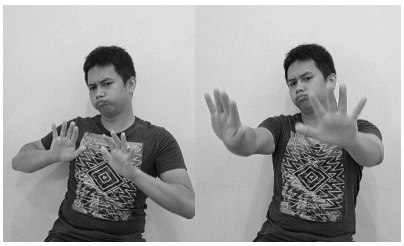
SEORANG LAKI-LAKI DORONG PEREMPUAN

"Seorang laki-laki mendorong perempuan." (SPO)

'A man pushes a woman.'


seorang


laki-laki

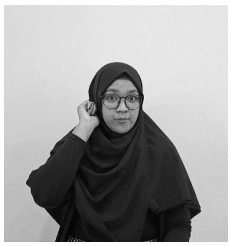

dorong


perempuan

The SPO pattern for utterances whose agents-targets were semantically reversible was not much different from the SPO pattern for utterances whose agent-targets are semantically non-reversible. However, in the agent-target reversible cases, the SPO pattern can change into various structures not due to the influence of morphological levels such as classifiers, but the presence of indexicals and the involvement of two actions-two roles. From all non-reversible agent-target cases, there is almost no use of indexicals and two-action-two-role involvement. This seems to be influenced by the fact that the target is inanimate, so it does not require dual roles. This is in contrast to the reversible agent-target where the object is animate, thus allowing the addition of actions. The morphological level in non-reversible agent-target verbs also only causes changes in the order pattern of the predicate-object. This is different from the case of agent-target reversible data where the diversity of structures causes more complex utterance patterns. Consider the multi-clause structures of Examples 8 to 12. The patterns in these multi-clauses include (1) the SPO P and SP SP patterns (without indexicals), as well as the SP SP P P, SP SP P, SP P SP P patterns (with indexicals).

Example (8)
ANAK PEREMPUAN DORONG LAKI-LAKI, CL [=jatuh ke depan]
"Seorang anak perempuan mendorong laki-laki. [laki-laki] terjatuh ke depan." (*Multi-clause,* SPO P)
'A girl pushes a man. [A man] fell down.'


anak


perempuan


dorong


laki-laki


CL [=jatuh ke depan]

In Example 8, there were three typical characteristics found in utterances where the agent-target were reversible, namely (1) the signers signed both referents at once, namely, agent and target, (2) the SPO structure was used to avoid role ambiguity, (3) the agent of the second clause was missing (the target in the first clause that had been mentioned). In this data, there is the involvement of two actions-two roles, namely the action of the agent and the action of the target. However, uniquely, in this pattern, the male argument is the direct object of the predicate 'push'. This means that the clause break occurs after the object with the SPO P structure, while the agent of the second clause is missing. The omission of the agent in the second clause seems to be done to avoid repeating the mention of the same argument. So, when the argument has been mentioned, the same argument will not be presented again in the

following clause. This simplification is consistent in almost all multi-clause patterns produced. This may be the reason why the number of words produced both orally and in writing by deaf people tended to be shorter (see Vizzi et al., 2022). Apart from that, signing both referents at once was what made the resulting response more than one clause. However, why did the resulting multi-clause not use conjunctions? Of the large number of multi-clause data produced, conjunctions and prepositions in place descriptions tended not to be used by signers. Several studies showed that in deaf writing characteristics, the use of conjunctions was often abandoned (Lintangsari et al., 2019; Novietri & Kushartanti, 2018).

In contrast to Example 8 where the agent's action was mentioned in the first clause, in this pattern without further indexical description the agent's action was mentioned in the second clause, so that each clause had an agent structure. This multi-clause structure was SP SP.

Example (9)
LAKI-LAKI BERPOSE, PEREMPUAN MEMFOTO
"Seorang laki-laki [sedang] berpose. Seorang perempuan [sedang] memfoto [perempuan]." (*Multi-clause,* SP SP)
'A man poses. A woman taking a photo [of a man posing].'

laki-laki *berpose* *perempuan* *memfoto*

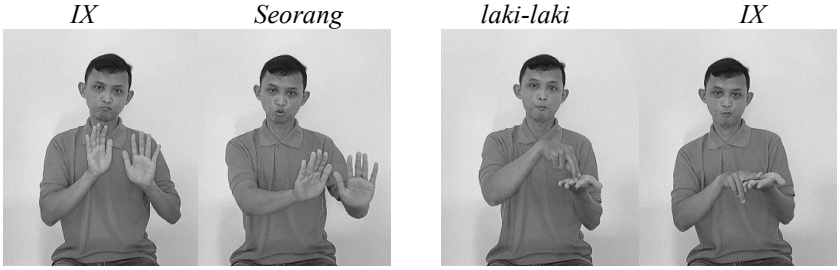
What differentiates Examples 8 and 9? Example 8 was arranged without changing the roles of agent and target into one clause, while Example 9 changed the order of the agent and target. In Example 9, *woman* is the agent, while *man* is the target. However, due to the characteristics of agent-target reversibility, one of the properties of the resulting utterance was to sign both referents at once. This makes the referents who acted as agent and target become the agent of both actions being acted out. Although the role of both actions also applied to data [8], what differentiated data [8] and [9] lay on which referent came first. When the agent was mentioned first, therefore, the target will become the direct object subjected to the action of the agent. However, when the target is mentioned first, the agent will actually lose the target in the final structure. This is similar to the concept of topicalization, which requires the O (target) to be mentioned before the S (agent) P (action) (Pichler, 2011:158). The difference lies in that topicalization generally uses nouns/noun phrases, thus maintaining the OSP structure. However, in multi-clause cases, it appears that the topic plays a role as another agent. In other words, if semantically the target is animate – allowing for involvement in the action – then the target can become the agent of the action. Thus, there are two preference options in creating a reversible structure: single-clause by disregarding the accompanying action on the target; or multi-clause by including detailed action from the target. These preferences may occur depending on how signers understand and interpret images or phenomena.

The next are multi-clause patterns with indexical descriptions. Of the 120 multi-clause produced, 87 data used indexical descriptions (75% of multi-clause data). The indexical description referred to in this article was in the form of a reference using an index finger gesture that explained the referent. There were various patterns produced with this indexical, but the patterns that were often produced were SP SP P P, SP SP P, and SP P SP P. These three patterns were basically the same that there was an indexical

in each SP clause. What made the difference was the action mentioned. In multi-clause with SP SP P P and SP P SP P patterns there were two actions mentioned (agent-target). Meanwhile, in the SP SP P pattern there was only one action mentioned, namely the agent's action.

Example (10)
INI SEORANG LAKI-LAKI, INI PEREMPUAN, DORONG, CL [= perempuan jatuh ke belakang]
"Ini seorang laki-laki. Ini perempuan. [laki-laki] mendorong [perempuan]. Perempuan terjatuh ke belakang." (*Multi-clause,* SP SP P P)
'This is a man. This is a woman. [The man] pushes [the woman]. The woman fell down.'

IX *Seorang* *laki-laki* *IX* *perempuan*



Dorong *CL [=perempuan jatuh ke belakang]*

The use of IX in Example 10 marks the indexical used in sign language. This is a unique feature of sign language, where there is a system of reference that can directly refer to identified references in the real world. In Example 10, the signer attempts to indicate the reference involved using indexicals. It should be noted that indexicals can function as pointing signs (connecting the sign system with the actual reference location) and pronouns at the same time. According to Cormier et al. (2013:231), pronouns in sign language cannot be exclusively characterized as either personal pronouns or pointing signs, but possess characteristics of both. Example 10 is evidence that sign language pronouns exhibit both characteristics: they serve as pointing signs (by extending the index finger) and function as personal pronouns within their syntactic structure. In the SP SP P P pattern, the indexical descriptions related to the referents involved were mentioned at the beginning, while the next two clauses were clauses that explained the actions taken by both the agent and the target by omitting the referents previously mentioned. This pattern was basically the same as the resulting SP SP P pattern but in the SP SP P pattern, the last clause mentioned only referred to the action taken by the agent as in Example 11.

Example (11)
ITU PEREMPUAN, AKU SEORANG LAKI-LAKI, DORONG
"Itu seorang perempuan. Aku seorang laki-laki. [aku] mendorong [perempuan]" (*Multi*-clause, SP SP P)
'It is a woman. I am a man. [I] push [a woman].'

IX *perempuan* *IX* *seorang* *laki-laki*

dorong

In this data, the action mentioned was only the action carried out by agent similar to one-clause patterns. However, because the signer exemplified the agent-target breakdown by mentioning it at the beginning through the indexical, the P of the last clause which should have been SPO (I push the woman), the agent and the target in the last clause were omitted. What is noteworthy about these indexicals is how deaf people refer to their arguments. In Examples 10 and 11, deaf people have different ways of using indexicals. In Example 10, referencing is done by using the index finger as an agent-target entity. The use of this index finger seems to be used to position the signer as a character outside the discourse. In contrast to Example 11, referencing is done by pointing to oneself 'I' and something in front of it 'you' as the indexical. This means that the indexicality done by referring to the agent-target that is actually present outside the discourse (present in the actual condition) positions the signer as part of the agents.

Then, apart from the indexicals mentioned at the beginning, there was sometimes a mention of the actions of each role following an indexical description, such as the SP P SP P pattern. Look at the Example 12.

Example (12)

AKU LAKI-LAKI, MEMFOTO, ITU PEREMPUAN, BERPOSE

"Aku [seorang] laki-laki. [aku] memfoto. Itu [seorang] perempuan. [perempuan] berpose" (*Multi-clause,* SP P SP P)

'I am a man. [I] take a picture. That is a woman. [the woman] is poses.'

IX *laki-laki* *memfoto* *IX* *perempuan* *berpose*

In Example 12, the description of the actions of each role was stated after the indexical mention of each role. This example basically resembled Example11; however, in Example 10, the indexicals of the two roles were mentioned sequentially at the beginning, whereas in this data the indexicals were mentioned separately. Efforts to mention indexicals separately involving the actions of each role were thought to be carried out to avoid the ambiguity of the actions. If the action was mentioned after the indexical description, it could be easily justified that the action that followed was an action of the previously mentioned role. The clause containing the action verb deliberately omitted the agent of the action because it had been mentioned in the previous indexical description. This was in contrast to Example 10 which could cause ambiguity because the actions mentioned could be confused between the agent and the target.

Therefore, basically the three patterns involving indexicals were not much different, namely involving descriptions of roles and actions. It was just that the resulting pattern used different preferences. There were times when the signers mentioned the indexical description of both roles at the beginning to explain the roles involved, but there were times when the signers mentioned the action verbs after describing the roles involved. The characteristic of this pattern involving indexical description was the reference marked with IX to refer to a role that is outside the discourse through an

index finger gesture. Although for certain, the development of the construction from single-clause to multi-clause in agent-target reversals is influenced by the animate target presenting multiple actions as well as the use of indexicals. There is no definitive answer as to why in some multi-clauses the order of agent-target and action varies. Why some have target precedence and others have agent precedence.

Reversible vs Non-reversible

Investigation of semantic reversibility involved examining whether semantically reversible arguments influenced the resulting utterance patterns. Several studies (Ergin et al., 2018; Felix, 2021; Kimmelman, 2012; Massone & Curiel, 2004) have proven that semantic reversibility influenced the resulting utterance structure, such as the investigation in this study. Based on the findings, the patterns resulting from reversible and non-reversible arguments showed that the most-frequent resulting structures were different. Utterances resulting from non-reversible arguments tended to be single-clauses. Meanwhile, utterances resulting from reversible arguments were multi-clauses.

Utterances with single-clause were produced because the signers did not need a description regarding the agent-target being hinted at. This was because semantically, both the agent and the target in the utterance were not reversible. In fact, if they were exchanged, the resulting utterance would be unacceptable. Different from utterances resulting from reversible arguments, when utterances had non-reversible arguments the roles of agent and target in utterances before and after being exchanged could be acceptable. For example, *seorang perempuan mengupas apel 'a woman is peeling an apple'*. In this utterance *a woman* was the agent and *apel* 'the apple' was the target. If the arguments were to exchange, *apel* 'the apple' would have been the agent and *the woman* the target. However, the construction of this utterance was unacceptable from the perspective of its meaning. In contrast, in the utterance *seorang perempuan mendorong seorang laki-laki* 'a woman is pushing a man', *a woman* was the agent, while *a man* was the target. If the arguments in the utterance were reversed to be *seorang laki-laki mendorong seorang perempuan 'a man is pushing a woman'*, then the role of agent was filled *a man* and the target was filled with *a woman*. These exchanged roles could be meaningfully accepted, unlike arguments in non-reversible utterances. This was thought to be one of the reasons why reversible utterance patterns produced more complex clauses than non-reversible ones.

If we look at the resulting utterance structures, there were two reasons why transitive utterances with reversible arguments tended to produce more complex patterns. The first reason was the need to explain the roles of the agents and targets involved. The need to explain agents and targets could be seen from the indexical efforts produced by signers through references using the index finger to explain roles that existed outside the discourse. The second reason was the need to describe the actions carried out by the agents and those carried out by the targets, or the results of the agents' actions. This could be seen from several patterns that produced two action verbs (photo-pose, push-fall, picture-pose, etc.). The explanation of indexicals and additional verbs in explaining the target actions was what made the resulting clauses more complex in arguments that were semantically reversible compared to non-reversible. The possibility of other actions or expressions in the target role caused the signers to produce more than one action verb. These needs were what ultimately made non-reversible utterances produced multi-clauses.

The Universality of the Patterns

Regional BISINDOs generally developed independently. This independent development allowed regional BISINDO to have various differences. One of them was from a lexical perspective. Each region's lexicon was generally different, such as that the BISINDO Jakarta and Yogyakarta (Rahyono, 2018; Wedayanti, 2019). This gave rise to the perspective that sign language was not universal (Wedayanti, 2019: 144). However, this basically did not prove that sign language was not universal. These lexical differences proved that the arbitrariness between symbol and referent was found not only in spoken languages, but also in sign languages. Mouton (2012:23) stated that in sign languages, a number of features operated universally in most sign languages. So, what about it in terms of structure? This research, by extending similar research on regional BISINDOs, sought to see whether there were similarities in the resulting structures. One of the studies from Felix (2021) studied one of the regional BISINDOs, namely BISINDO Jakarta, regarding the influence of semantic and morphological factors on utterance order. Not much different from the results of this research, the results of Felix (2021) proved that utterances with non-reversible arguments tended to produce various structures such as SVO, SOV,

SVOV, OSV, etc. (single-clause). Meanwhile, reversible arguments tended to produce the same pattern, namely SVO, unless there were morphological factors such as classification, spatial verbs or agreement verbs (Felix, 2021). The results showed that the utterance structures whose arguments were semantically non-reversible had similarities between BISINDO Jakarta and BISINDO Yogyakarta, namely diverse single-clause structures with the dominance of SPO and SOP patterns. However, there was a slight difference in the resulting structures for non-reversible arguments.

Signers of BISINDO Jakarta for semantically reversible arguments tended to use an agent-verb-target (single-clause) pattern, while signers of BISINDO Yogyakarta tended to produce two structures (single-clauses dominated by SPO structure and multi-clauses dominated by the SPO P structure). However, what was not different between the two variants of BISINDO was that both showed the same pattern, namely producing a more dominant SPO pattern, both in single-clauses and multi-clauses. The multi-clause structure with the SPO P pattern tended to be different from that produced in BISINDO Jakarta. This difference was thought to be caused by the stimulus used. The target role described in the stimulus contained the expression and consequence of the agent's action, so that the action verb in the second clause appeared as the action of the second subject (target). Another similarity is that in multi-clause structures, indexicals were found in arguments that are semantically reversible. This strengthened the notion that the need to provide a description of the agent and target (explaining the roles involved) to avoid ambiguity tended to be used by the deaf. Therefore, it could be concluded that regional BISINDOs did not show significant structural differences. These different pattern preferences were thought to be caused by individual differences in how potential ambiguity regarding references in reversible contexts is resolved. Therefore, each individual could produce a variety of strategies to resolve the ambiguity of reversible arguments.

CONCLUSION

An examination of the utterance structure of BISINDO Yogyakarta in terms of semantic reversibility leads the researchers to the conclusion that the reversible semantic roles of arguments influence the resulting utterance structures, particularly on how deaf people build associations of predicators with their objects (in non-reversible agent-target) and the complexity of the existence of animate objects (in reversible agent-target). So, when the target is animate, which has the potential to perform actions, it allows for more complex utterances to be produced. It is suspected that these efforts are made because of the need to explain the targets and agents involved.

It should be noted that, in non-reversible agent-target, regardless of individual preferences in predicate-object construction, there are classifiers and movements that clearly influence the diversity of single-clause patterns. However, we realize that the influence of these linguistic factors becomes blurred when looking at the diversity of multi-clause constructions on reversible agent-targets. The extension of single to multi-clause can still be proved by the indexical involvement and the involvement of object-animate actions. However, the difference in structure between SP P SP P, SP SP P, and SP SP P P on indexical usage is thought to be influenced by how individuals process images to their preferences in daily communication. The assumption related to individual preferences that can trigger this structural diversity factor makes other researchers need to re-examine by involving factors outside of language (habits of deaf individuals in communication). Thus, more valid results related to structural diversity in reversible and non-reversible agent-target can be achieved.

What is surprising from these results is that the patterns found in BISINDO Yogyakarta are not much different from BISINDO Jakarta considering that regional BISINDOs develop naturally in each region. This consistency leads to the assumption that basically, in terms of structure, regional BISINDOs are similar. However, to prove this statement, further research needs to be carried out to review the structure of BISINDOs in other regions. Therefore, with this research, it is expected that the consistency and diversity of structures produced by deaf people are not merely seen as causeless variations, but rather become material to be explored again related to factors that might affect them, both in terms of the language and the signers.

This research also contributes to the literature of sign language production which strengthens the notion that certain features are universal in accordance with other sign languages. For example, (1) semantic reversibility influencing word order, as in ASL, (2) classifier and movement as two of the morphological characteristics of syntax also influencing predicate-object/target order, and (3) the existence of a pronominal system identified with deictic markers as personal pronouns, and even

demonstratives as in ASL and BSL (British Sign Language). Thus, the features found to be similar between sign languages in different countries indicate that sign languages essentially have universal properties. To further prove this argument, cross-linguistic research investigating one of the features needs to be carried out in the future.

ACKNOWLEDGEMENTS

The authors would like to thank the reviewers who have provided constructive suggestions for the improvement of this article. Our gratitude also goes to the deaf community who gave us the opportunity to conduct research related to BISINDO Yogyakarta; as well as to those who helped in conducting research and making instruments, sign language interpreters as well as validators.

REFERENCES

Cormier, K. (2007). Do all pronouns point? Indexicality of first personal plural pronouns in BSL and ASL. *Visible Variation:Comparative Studies on Sign Language Structure* (Pamela M., pp. 63–102). De Gruyter, Inc. https://ebookcentral.proquest.com/lib/indonesiau-ebooks/detail.action?docID=364735.

Cormier, K., Schembri, A., & Woll, B. (2013). Pronouns and pointing in sign languages. *Lingua*, *137*, 230–247. https://doi.org/10.1016/j.lingua.2013.09.010

Emmorey, K. (2003). *Perspectives on Classifier Constructions in Sign Language*. Lawrence Erlbaum Associates. https://ebookcentral.proquest.com/lib/indonesiau-ebooks/detail.action?docID=335531

Ergin, R., Meir, I., Ilkbasaran, D., Padden, C., & Jackendoff, R. (2018). The development of argument structure in Central Taurus Sign Language. *Sign Language Studies*, *18*(4), 612–639. https://doi.org/10.1353/sls.2018.0018

Felix, S. (2021). Effects of the semantic and morphological factors on word order in simple transitive clauses in three Asian sign languages. *Senri Ethnological Studies*, *107*, 5–41. http://dx.doi.org/10.15021/00009867

Fenlon, J., Cormier, K., & Brentari, D. (2019). The phonology of sign language. *Sign Language Phonology* (Issue December, pp. 1–344). https://doi.org/10.1017/9781316286401

Fischer, S. D. (1975). Influences on word order change in American sign language. *Word Order and Word Order Change* (Charles Li, pp. 1–25). University of Texas Press.

Fischer, S. D. (2014). Constituent order in sign languages. *Gengo Kenkyu*, *146*, 1–18. https://www.ls-japan.org/modules/documents/LSJpapers/journals/146_fischer.pdf

Fischer, S. D. (2017). Crosslinguistic variation in sign language syntax. *Annual Review of Linguistics*, *3*, 125–147. https://doi.org/10.1146/annurev-linguistics-011516-034150

Fischer, S. D., & Hulst, H. Van Der. (2003). Sign language structures. *Deaf Studies, Language, and Education*. Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199750986.013.0024

Handhika, T., Zen, R. I. M., Murni, Lestari, D. P., & Sari, I. (2018). Gesture recognition for Indonesian sign language (BISINDO). *Journal of Physics: Conference Series*, *1028*(1), 1–9. https://doi.org/10.1088/1742-6596/1028/1/012173

Indra, D., Purnawansyah, Madenda, S., & Wibowo, E. P. (2019). Indonesian sign language recognition based on shape of hand gesture. *Procedia Computer Science*, *161*, 74–81. https://doi.org/10.1016/j.procs.2019.11.101

Jantunen, T. (2008). Fixed and free: The order of the verbal predicate and its core arguments in declarative transitive clause in Finnish sign language. *SKY Journal of Linguistics*, *21*, 83–123. http://www.linguistics.fi/julkaisut/SKY2008/Jantunen_NETTIVERSIO.pdf

Kimmelman, V. (2012). Word order in Russian sign language. *Sign Language Studies*, *12*, 414–445. https://doi.org/10.1353/sls.2012.0001

Kridalaksana, H. (2002). *Struktur, Kategori, dan Fungsi dalam Teori Sintaksis*. Atma Jaya.

Liddell, S. K. (1980). *American Sign Language Syntax*. Mouton Publisher, The Hague. https://doi.org/10.1515/9783112418260

Lintangsari, A. P., Widodo, W., & Kuswoyo, R. A. (2019). Keterampilan narasi siswa tuli pada tingkat mikro. *Linguistik Indonesia*, *37*(2), 159–168. https://doi.org/10.26499/li.v37i2.107

Massone, M. I., & Curiel, M. (2004). Sign order in Argentine sign language. *Sign Language Studies*, *5*, 63–93. http://www.jstor.org/stable/26190759

Mouton, D. G. (2012). *Sign Language: An International Handbook* (R. Pfau, M. Steinbach, & B. Woll

(eds.)). Hubert & Co. http://journal.um-surabaya.ac.id/index.php/JKM/article/view/2203

Napoli, D. J., Spence, R. S., & de Quadros, R. M. (2017). Influence of predicate sense on word order in sign languages: Intensional and extensional verbs. *Language*, *93*(3), 641–670. https://doi.org/https://doi.org/10.1353/lan.2017.0039

Novietri, & Kushartanti, B. (2018). The use of cohesive device in deaf and hearing children's writing. *Cultural Dynamics in a Globalized World*, 811–817. https://doi.org/10.1201/9781315225340

Palfreyman, N. (2016). Riset linguistik dengan metode partisipatoris tentang negasi gramatikal dalam bahasa isyarat Indonesia (BISINDO). *Konferensi Linguistik Tahunan Atma Jaya 14*, *21*(1), 1–9. http://journal.um-surabaya.ac.id/index.php/JKM/article/view/2203

Perniss, P. M., Pfau, R., & Steinbach, M. (2007). Can't you see the difference? Source of variation in sign language structure. *Visible Variation: Comparative Studies on Sign Language Structure* (Perniss, P, pp. 1–34). De Gruyter, Inc. https://ebookcentral.proquest.com/lib/indonesiau-ebooks/detail.action?docID=364735.

Pfau, R., & Steinbach, M. (2015). Person climbing up a tree (and other adventuresin sign languages grammaticalization). *Signs and Structure: Formal Approaches to Sign Language Syntax* (Rutkowski, pp. 71–102). John Benjamins Publishing Company. https://ebookcentral.proquest.com/lib/indonesiau-ebooks/detail.action?docID=4386606

Pichler, D. C. (2011). Using early ASL word order to shed light on word order variability in sign language. *Variation in the Input, Studies in Theoretical Psycholinguistics* (M. Anderss). Gallaudent University. https://doi.org/10.1007/978-90-481-9207-6

Pujiati, D. (2019). *Perbandingan Struktur Antara Sistem Isyarat Bahasa Indonesia (SIBI) dengan Bahasa Isyarat Indonesia (BISINDO): Kajian Sintaksis* [Universitas Pendidikan Indonesia]. http://repository.upi.edu/id/eprint/41281

Putri, I. S. S., & Yuwono, U. (2024). Superstructure and cohesion in the narratives of Jakarta sign language signers. In B. Kushartanti & D. N. Djenar (Eds.), *Language Practices Among Children and Youth in Indonesia* (pp. 69–90). Springer Nature Singapore. https://doi.org/10.1007/978-981-99-4775-1

Rahyono, F. X. (2018). Pengembangan fungsi ragam bahasa isyarat alamiah, BISINDO, sebagai sarana pencerdasan orang tuli. *Kongres Bahasa Indonesia*, 1–13. https://kbi.kemdikbud.go.id/kbi_back/file/foto_media/media_detail_1542337292.pdf

Schlenker, P., Bonnet, M., Lamberton, J., Lamberton, J., Chemla, E., Santoro, M., & Geraci, C. (2024). Iconic syntax: Sign language classifier predicates and gesture sequences. *Linguistics and Philosophy* (Vol. 47, Issue 1). Springer Netherlands. https://doi.org/10.1007/s10988-023-09388-z

Schouwstra, M., & De Swart, H. (2014). The semantic origins of word order. *Cognition*, *131*(3), 431–436. https://doi.org/10.1016/j.cognition.2014.03.004

Stokoe, W. C. (2001a). Sign language versus spoken language. *Sign Language Studies*, *1*(4), 407–425. https://doi.org/10.1353/sls.2001.0017

Stokoe, W. C. (2001b). The study and use of sign language. *Sign Language Studies*, *1*(4), 369–406. https://doi.org/10.1353/sls.2001.0016

Sugiyono. (2018). *Metode Penelitian Kualitatif: Untuk penelitian yang bersifat eksploratif, enterpretatif, interaktif dan konstruktif*. Alfabeta.

Vizzi, F., Angelelli, P., Iaia, M., Risser, A. H., & Marinelli, C. V. (2022). Writing composition ability and spelling competence in deaf subjects: A psycholinguistic analysis of source of difficulties. *Reading & Writting*. https://doi.org/10.1007/s11145-022-10335-w

Wedayanti, N. P. L. (2019). Teman tuli diantara SIBI dan BISINDO. *Senarilip*, *3*, 137–146. https://ojs.pnb.ac.id/index.php/Proceedings/article/view/1513

Tim Produksi Bahasa Isyarat Yogyakarta. (2016). *Bahasa Isyarat Yogyakarta* (1st ed.). FIB UI