Linguistic Research 33(3), 535-550
DOI: 10.17250/khisli.33.3.201612.008

Linearization strategies in Korean language production*

Al-Otaibi Dhari · Soonhyuck Park**
(Pukyong National University)

Al-Otaibi, Dhari and Soonhyuck Park. 2016. Linearization strategies in Korean language production. *Linguistic Research* 33(3), 535-550. This paper analyzes the linearization strategies during language production in Korean. Following Levelt (1989) and Ferreira and Henderson (1998), participants were presented with network branches, varying in length and complexity. The reference of describing the left or right branch first is the dependent measure. Korean participants showed a left-ward bias regardless of the type and length of the networks. These results are consistent with some aspects of Levelt's Memory Load Principle (MLP); however, they differ from the outcome that MLP would predict. Furthermore, the results show that the Conceptualizer is not a language-independent component in language production, but is governed by language-oriented constraints. **(Pukyong National University)**

Keywords linearization, language production, Memory Load Principle, complexity, linear/choice branches, complexity

1. Introduction

In language production, the speaker has to undertake the task of deciding the linear structure of words, clauses, phrases, and sentences. This is not random nor unsystematic; there is a conform process underlying the speaker's decision on this task. In the field of language acquisition and production, this process is expressed by means of 'word order.' Previous studies on word order have determined some of these processes; the general principle seems to be that the more available or salient a concept is, the earlier in the sentence the corresponding linguistic constituents tend

* This study was supported by Pukyong National University grant to the first author and by the Ministry of Education of the Republic of Korea and the National Research Foundation (NRF-2016S1A5A2A01027057) to the corresponding author. The authors thank the anonymous reviewers for their valuable comments on the earlier version of this paper.

** Corresponding Author

to be (Tomlin 1983; Kelly, Bock, and Keil 1986; Bock 1987; Ferreira 1994; Ferreira and Henderson 1998; Park 2015).

However, the nature of a speaker's choice of clause order in large discourse is still terra incognita. Levelt (1982, 1989) defined the speaker's ordering of clauses in an extended discourse as 'Linearization Strategies.' In some cases, the linearization approach is obvious; evident in the case of describing an event in chronological order, in which the speaker would most probably order the clauses temporally. The linearization strategy serves as a direct reflection of the temporal structure of the underlying events (Ferreira and Henderson 1998). In other cases, however, the linearization is less obvious.

Describing the layout of a building, for example, is a case of a spatially organized structure, in which the ordering scheme is less apparent. However, Levelt (1989) reported that the speaker describing a spatially organized structure does so by setting an ordering strategy. For example, when describing a house, the speaker will take the listener on a virtual tour of the place. He or she would probably begin with the main entrance and then describes the way through the different rooms on each floor. This strategy makes it easier for the listener to visualize the house, thus fulfilling the speaker's communicational intentions. This ease of visualization would cease to exist if the speaker jumped from one room to another.

However, in describing a house, numerous 'choice points' will be present, making a simple linear walk through the house improbable. 'Choice points' are occurrences where a speaker faces a choice that would alter the linearization sequences. For example, after describing the entrance of a house, the speaker may have to choose whether to describe the right or left room before continuing to the stairs leading to the second floor. Unlike linear temporal structures, choice points increase the memory load on the speaker, making it more difficult and less desirable than the temporal linear structure (Levelt 1989: Ferreira and Henderson 1998).

Previous studies in Levelt (1981, 1982) and Ferreira and Henderson (1998) examined the language systems' criteria when dealing with choice points. They used colored network systems created by Levelt (1982), called 'Spatial Structures.' These spatial structures are made up of a set of circles connected by horizontal and vertical lines, varying in the number of circles and arrangements (see Figure 1).

a. b.

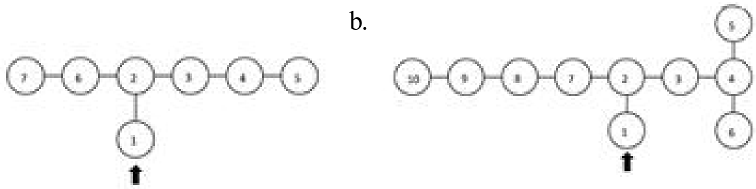


Figure 1. Examples of networks used by Levelt (1981), where (a) is an example of a Linear−linear network and (b), an example of a Linear−Choice network

Subjects were asked to describe the network patterns starting from Circle 1 (identified by an arrow). When the subject reaches Circle 2, he or she is faced with the choice of going right or left. This choice is the focus of our study. To further determine the nature underlying this choice, Levelt altered the nature of the branches. In this study, we will be focusing on two possible branch variations: length and type.

The variety of length used in this study is either 3 or 5 circles for each branch. The variety of type used is ‘Linear’ and ‘Choice’. In the Linear variety, the circles are arranged in a linear fashion; i.e. sequenced in a single line (see Figure 1a). The Choice range, on the other hand, presents the subjects with a choice of choosing which circle to describe first between the upper circle or the lower circle. For example, in Figure (1b), when the subject reaches Circle 4, he or she has to choose which circle to describe first: Circle 5 or Circle 6 (right branch of Figure 1b).

2. Levelt’s blueprint of the speaker

To get a better understanding of the notion of linearization, we should examine Levelt’s (1989) three-tiered production model. The language production components, outlined in his 1989’s concept of the blueprint of the speaker, has acquired a general agreement among linguists and became the most popular referential frame for language production studies. Levelt's “relatively autonomous” speech production apparatus are the Conceptualizer, Formulator, and Articulator. To produce an utterance, according to this three-leveled model, knowledge is first called upon in the Conceptualizer. The Conceptualizer is where the intended message is outlined in term of content. This knowledge is then segmented, selected, structured, and linearized within the conceptualizer.[1]

In the Segmentation process, 'non-structured' units of knowledge are called upon from the non-organized knowledge base. In the 'selection' phase, the speaker has to undergo the task of selecting the units he intends to verbalize, and the constituents, i.e. time, space, or entities, to help put forth these units (Parsons 1990). These units have to be arranged, in the "Structuring" phase, in relation to predicate types, referential frames, and informational status.[2] The last stage is Linearization. In this phase the segmented, selected, and structured units have to be linearized so that it could be reconstructed into the "one-dimensional medium of language" (Levelt 1989).[3]

The preverbal message is then forwarded to the Formulator where knowledge units are transformed into a structure with linguistic aspect (i.e. lexicon, morphology, phonology, syntax). Finally, this linguistically structured message is then passed to the Articulator where it is phonetically produced, as shown in Figure 2.

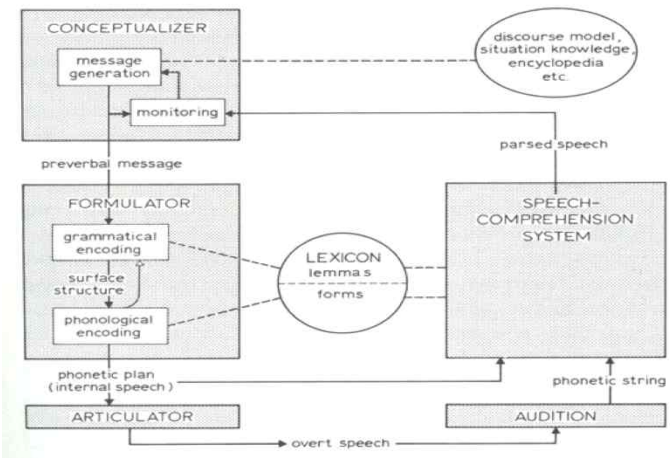


Figure 2. Levelt's blueprint of the speaker

1 See also Stutterheim and Nūse (2003).
2 See also Christiane von Stutterheim and Klein (2002).
3 The outcome structure has numerous names: preverbal message (Levelt 1989), temporary conceptual structure (Carroll and Stutterheim 1993), and input for encoding (Hermann and Grabowski 1994), to name a few. The range of terminology found with respect to this level of planning reflects the lack of clarity on the substance matter. 'Preverbal message' is the term used henceforth in this study.

3. Memory load principle

This paper will focus on two of Levelt's findings. The first finding is that shorter branches are preferred over longer branches, and the second is that participants preferred Linear branches over Choice branches. According to his findings, subjects will prefer the shorter branch over the longer branch if both branches are of the same type (see Figure 1a). Also, subjects will prefer describing the Linear branch over the Choice branch. Levelt explained these results by proposing the 'Minimal Load Principle (MLP),' such that it dictates order continuations in a way to minimize the resulting memory load for return addresses. MLP explains Levelt's findings of subject's preference to shorter branches, in same-type networks (e.g. Linear-Linear networks), over longer branches.

MLP hypothesizes that subjects will try to make the memory load as minimal as possible from choice points or 'return addresses.' In Figure (1a), Circle 2 is a return address, as well as Circle 2 and 4 in Figure (1b). According to MLP, subjects will choose the left branch in Figure (1a) due to the assumption that Circle 2 is held during the description of only two circles (Circle 6 and 7). However, if they chose the right branch, Circle 2 is maintained during the description of three circles, (Circle 3, 4 and 5). This excess memory load makes longer branches less preferable.

Furthermore, MLP explains the preference of Linear branches over Choice branches. Choosing the Linear branch in Figure (1b) dictates that only one return address (Circle 2) should be maintained in memory during the description of this branch. In the Choice branch, on the other hand, two return addresses are held in memory when the subject reaches Circle 4. The excess load of another return address explains the preference of Linear branch over Choice branch.

Ferreira and Henderson (1998) yielded consistent results with Levelt (1981, 1982). Their results fall within the expected outcome by the MLP. Their subjects preferred short branches over long branches and chose Linear branches over Choice branches. Moreover, by cross-referencing all the variables (i.e. type and length of the branches), they reflected the fact that according to the subjects' choices, the preference for Linear branches is stronger than the preference for shorter branches.

(1) English and Dutch participants' preference
    Type > Length > Direction

They suggested that these results can be explained by the assumption that speakers do not base their decision concerning which branch to describe first on plans spanning the domain of an entire network, but instead, do plan only over the domain of a single branch.

In the present study, MLP was put to the test in relation with Korean participants' preferences to see if this principle is universal.[4] If MLP turns out to be universal, it further signifies that Levelt's (1989) conceptualizer truly functions on a *preverbal message* level. However, as we will see in the experiment, unlike Ferreira and Henderson (1998), the MLP explained our results in a different perspective.

4. Experiment

In this experiment, we put the MLP to the test with native speakers of Korean. The primary focus of this investigation is the subject's preference of continuing right or left after reaching the return-address (Circle 2). We tested the subjects' preference to all variables, including length and type of branch.

4.1 Participant

36 undergraduate students of Pukyong National University located in Busan, Korea (26 females, and 10 males; mean age: 23; range 21-44; SD: 2.1) took part in this experiment. All participants considered Korean to be their native or dominant language. All subjects were unaware of the issues under investigation.

4.2 Materials

16 networks, such as the ones in Figure 2, were created. The circles are 2cm in diameter and are connected by 2cm horizontal and vertical lines. Each circle has a unique color that would randomly change in each network. Participants were presented with 8 network conditions:

4 To the best of our knowledge, this empirical study is the first to deal with subjects native to a SOV language.

Table 1. Network types and the number of branches

Network Types	Branches (# of circles)	
	Left	Right
1	Linear (3)	Linear (5)
2	Linear (5)	Linear (3)
3	Linear (3)	Choice (5)
4	Linear (5)	Choice (3)
5	Choice (3)	Linear (5)
6	Choice (5)	Linear (3)
7	Choice (3)	Choice (5)
8	Choice (5)	Choice (3)

The numbers in parenthesis are the number of circles in each branch respectively. For example, in the first condition (Type 1), both branches are Linear, having 3 circles in the left branch and 5 circles in the right branch, as shown in Figure 3a. L-C (3-5) is the condition (Type 3), where the left branch is made up of only Linear with 3 circles and the right one, Choice with 5 circles, which is described in (b). C-L (3-5), on the other hand, is the condition (Type 5), where the left branch contains Choice with 3 circles and the right branch, Linear with 5 circles, as in (c). The condition of C-C (3-5) is the condition (Type 7), where both branches are Choice with the circles of 3 and 5, respectively, as described in (d).

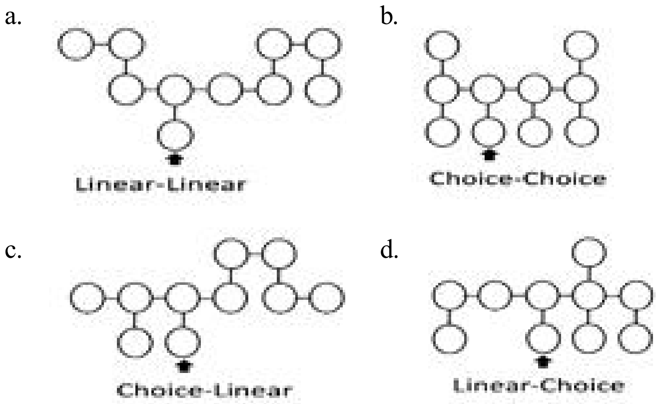


Figure 3. Examples of networks used in the experiment

In addition to these networks, 8 filler networks were added to prevent participants from familiarizing themselves with the type of networks in the trial. These fillers were Linear in nature, having the same number of circles in each branch; i.e. 3 or 5 circles on both branches.

4.3 Procedure

Before the beginning of the trial, a card containing all the colors used in the test was presented to the participant to make sure he or she is familiar with the colors and their names. A card containing a filler network was then shown to the participant, and was asked to describe the network, starting from the circle above the arrow, in a normal conversational fashion and his/her pace. The description should be in a way so that someone else could draw the same network from the description. The examiner would answer any question the participant had, and would correct any departure from the given instructions. The participant was then seated in front of the monitor and was told to begin the real test.

Participants were tested individually in a quiet environmental setting. The computer-based psychological software PsychoPy2™ was used to administer the test. PsychoPy2™ was run using Windows 7, with a 19-inch monitor. After being presented with an explanatory slide, the participant was required to press the spacebar to begin the trial. The 24 networks were submitted in a random order. The spacebar was to be pressed after the description of each network to move to the following network. The software recorded the participant's audio description of the networks and the duration needed for each network. After the beginning of each network, the spacebar was automatically disabled for the duration of 20 seconds to prevent the participant from mistakenly moving to the following network, and to prevent participants from fast-forwarding through the trial. The experimenter was present throughout the test.

4.4 Data analysis

The data was analyzed using the same analysis procedure used by Ferreira and Henderson (1998). The dependent measure was the participant's choice of going left or right after the return address; i.e. Circle 2 (see Figure 1). A right-ward decision is scored as 1, and a left-ward decision is scored as zero. If the mean value was more than 0.5, then it shows a right direction bias. On the other hand, if the mean value was less than 0.5, then it shows a left direction bias.

5. Results

Results from four of the 34 participants were excluded after it was revealed that they were not native Koreans. They were undergraduate students from Myanmar, and although they spoke high-proficiency Korean, it is not their first language. An analysis of variance was conducted on data from the 36 participants and data excluding the 4 participants, and it yielded identical results. Hence, the results reported here are from the 34 native Korean participants.

The data shows that the mean values of all networks' preferences were less than 0.5; i.e. a leftward bias (see Table 1). Participants showed a significant preference to go left regardless of the type and length of branch.

Table 2. Participants' Choices Regarding Left Branch (Value < 0.50) vs. Right Branch (Value > 0.50)

	Number of Circles	
Network Type	3 left, 5 right	5 left, 3 right
Choice-Choice	0.14	0.39
Choice-Linear	0.17	0.45
Linear-Choice	0.16	0.47
Linear-Linear	0.13	0.36

However, despite the leftward preference, there was a distinction regarding the branches' length. In the case where both branches are of the same type, e.g. Linear-Linear, the degree of preference to go left is higher when the left branch is shorter (3 circles) compared to the longer branch (5 circles left). Table 1 shows that in the Choice-Choice network, the mean is 0.14 when the left branch is shorter. It also shows a higher tendency to go right, 0.39, when the right branch is shorter. A statistical analysis supports this claim; although participant preferred to go left, in the Choice-Choice network, the main effect of the length of the right side is significant [$F(1,126)=10.79$, $p<0.05$]. The case is very similar to the Linear-Linear network, [$F(1,126)=10.18$, $p<0.05$]. The participant scored 0.13 when the left branch was shorter, and 0.36 when the right branch was shorter.

Furthermore, the number of circles are significant when the branches are of different types. In the Choice-Linear network, the difference between the number of circles is significant [$F(1,126)=12.77$, $p<0.05$]. Participants showed a high preference to go left when the left side was shorter; 0.17, but also showed less left-ward preference when the right side was shorter; 0.45. This scenario is repeated in the Linear-Choice networks, with participant indicating a strong left-ward bias when the left branch was shorter (0.16), and a more rightward tendency when the right branch was shorter. The number of circles has shown significance, [$F(1,126)=16.18$, $p<0.05$].

Moreover, the data showed that type of branch has no effect on the participants' choices. An analysis of variance on whether the right side was Choice or linear in a (3-5) network was insignificant; [$F(1,126)=0.06$, $p<0.05$]. Likewise, an analysis of variance on whether the right side was Choice or Linear in a (5-3) network was also insignificant; [$F(1,126)=0.03$, $p<0.05$].

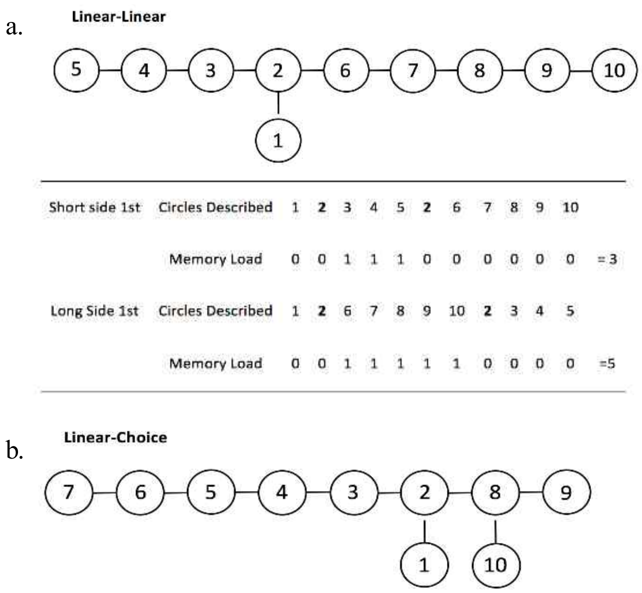
There are two strategies participants adopt in describing networks. These strategies, according to Ferreira and Henderson (1999), are *Jumping* and *Stepping*. Jumping is the act of returning to the return-address, after reaching the end of the branch, without describing the intervening circles. Stepping, on the other hand, is the act of "[moving] sequentially, circle by circle, from the last circle of the first described branch to the return address, mentioning each intervening circle on the way" (Ferreira and Henderson, 1998). 30 participants in this study adopted the jumping strategy, and 2 were steppers. Both of the steppers abandoned this approach to the jumping strategy 3 to 4 networks in the trial.

(2) Korean preference
Direction > Length > Type

6. Discussion

The data showed a clear leftward bias. A bias that points toward an acting force that is overriding Levelt's Minimal Load Principle's predictions. Although the MLP may explain the partial effect on the participants' choices in relation to branches' length, this effect is not enough to alter participants' strong tendency to go left. Even in the network where a right-ward choice is expected to be most favorable, (Choice-Linear (5-3)), participants chose the leftward direction.

The questions that needs addressing are ‘how inconsistent are the findings with Levelt’s MLP?’ and ‘what are the force that is over-riding the MLP predictions?’ One possible way of answering the first question is by advising a chart, (similar to Levelt, 1982; Ferreira and Henderson, 1998), to measure the memory load for each network.



Short side 1st	Circles Described	1	**2**	3	4	5	**2**	6	7	8	9	10	
	Memory Load	0	0	1	1	1	0	0	0	0	0	0	=3
Long Side 1st	Circles Described	1	**2**	6	7	8	9	10	**2**	3	4	5	
	Memory Load	0	0	1	1	1	1	1	0	0	0	0	=5

Linear side 1st	Circles Described	1	**2**	3	4	5	6	7	**2**	**8**	9	**8**	10	
	Memory Load	0	0	1	1	1	1	1	0	0	1	0	0	=6
Choice Side 1st	Circles Described	1	**2**	**8**	9	**8**	10	**2**	3	4	5	6	7	
	Memory Load	0	0	1	2	1	2	0	0	0	0	0	0	=6

Figure 4. Memory load illustration chart

Figure 4 is an illustration of the memory load for two types of branch variations: type and length. This chart was developed on the assumption that the participant is a ‘jumper.’ In the same sort branch (Linear-Linear) if a subject choses to start with a shorter branch, he or she would have to maintain Circle 2, the only return address, in memory for the extent of 3 circles. This results in a total load of 3. However, if the participant choses to start with the longer branch, Circle 2 would have to be maintained to the extent of 5 circles, resulting in a total load of 5. The same logic applies to a Choice-Choice network.

The bottom part of Figure 4 illustrates the memory load for a network with different type of branches. In this network, there are two return addresses (Circle 2 and Circle 8). If the participant choses to describe the Linear part first, then Circle 2 would have to be maintained for the extent of five circles. After describing the Linear branch, the participant would then have to jump to Circle 2 and start describing the Choice branch. In this branch, Circle 8 would have to be maintained to the extent of one circle. This would add up to be 6 memory loads. The memory load would be the same if the participant chose to start this network with the Choice branch.

The same type branch chart revealed minor difference in the total load. This difference between the short and long branch has shown an effect on the participants' preference, which has been mentioned previously in the results. However, it is possible that due to the minor difference between the short and long branches total load, the effect on the participants' choice, although significant, was not enough to alter their leftward preference. In the different branch type chart, both branch types hold the total load of 6. This may explain the fact that the participants' choice was not affected by the type of branch, as both branches contain the same amount of total load.

7. General discussion

It is clear that there is a force making the leftward choice almost inevitable. What if this force was MLP? Previous studies in Level (1982, 1989), Ferreira and Henderson (1998), Bock (1986, 1987), Park (2012, 2015) demonstrate that in language production, constituents are ordered in term of difficulty. People tend to deal with easier materials before difficult materials. This tendency is apparent in both the micro (word order level) and macro level (clauses within discourse level). "[W]ords corresponding to the agent or topic of a sentence tend to occur early. These tendencies can all be taken to reflect a general preference for the most available and accessible word concept to occur early in a sentence." (Ferreira and

Henderson 1998).

This explains the strong tendency for the Korean participants to go left. Ferreira and Henderson (1998) argue that for both the speaker and the listener, there are advantages of ordering clauses so that more accessible words in sentences and less complex clauses in discourse are dealt with first. This strategy is known to allow a speaker to begin with the easier material, which requires less planning time. The remainder of the utterance or discourse can then be planned during articulation.

'Hanguk-eo' or the Korean language is classified as a Language isolate, with SOV as a syntax structure. The verb phrase in Korean may contain one or more verbs (full or auxiliary verbs). Furthermore, the verb in Korean carries all the inflectional suffixes, e.g. tense and honorific form-endings. This sophistication makes the verb a somewhat complex in comparison to the noun. Hence, participants prefer to go left to manage the noun phrase before dealing with the compound verb. This may explain their leftward bias.

According to Levelt's Principle of Minimal Effort (PME), everything else being equal, speakers will prefer to give descriptions which minimize the number and duration of elements on store, and the length of the description. (Levelt, 1982) PME has failed to take into consideration the complexity of such elements, as is the case with verbs compared to nouns. The complexity of verb semantics varies across languages.

Given Gentner's (2006) notion of Relational relativity, verb semantic structures vary substantially across languages." It is worth noting that Levelt's (1981, 1982) participants were Dutch, and Ferreira and Henderson (1998) participants were English. Dutch, a West Germanic language, is one of the closest relatives to English. Thus, the sentence structure and its complexity would be identical, explaining the almost identical results.

There is one more essential question that has to be addressed. If linearization is a process in the conceptualizer, which is considered to operate in language-independent domain (Levelt 1989) or a temporary conceptual structure (Carroll and Stutterheim 1993), how did the properties of the Korean verb have any effect on the participants' preferences? Following Kempen (1977), Levelt (1982) proposed the theory of the speaker, which later became the blueprint for the speaker, which is a set of processes starting from the process of the idea, formulating the grammatical structure, and ending in the course of the articulated form.

The first component in the theory of the speaker is the conceptualizer, followed by the Formulator and the Articulator. The conceptualizer encompasses the conceptualization processes. These processes are ‘Developmental of communicative intentions,’ ‘Selection of information from knowledge base,’ and ‘Linearization’ (Levelt 1982). These have been refined by Stutterheim and Nüse (2003) to include Segmentation, Selection, Structuring, and Linearization. In the Linearization process, which is the last process of the Conceptualizer and the closest to the Formulator, the units selected for verbal representation have to be linearized in order to be transformed into the one-dimensional medium language (Stutterheim and Nüse 2003).

One possible answer to the previous question is that the preverbal message, although language-independent, is language oriented. It has been proposed that the reorganization of the conceptual material takes place at the end of the planning process, thereby shaping the message according to language-specific requirements (Stutterheim and Nüse 2003). According to Levelt’s (1989) model, this reorganization of the conceptual materials for verbalization is language-specific. Thus, the proximity of the last process of the Conceptualizer and the first process of the Formulator may have had an effect on the preverbal message orientation, altering the participant choice of direction.

Another possible answer is the Thinking-for-Speaking Hypothesis. According to Slobin’s (1987) hypothesis, as a component of language production, conceptualization is always language-dependent. Hence, explaining why the syntactical complexity of the verb has altered the Korean participants to prefer to describe the left side first in a Linearization experimental trial.

8. Conclusion

In conclusion, our results show that native speakers of Korean preferred to go left regardless of the type of branch in a Linearization experiment. It also shows there is a significant effect when the length of similar type branches varies, yet this significance could not override their left-ward bias. These results were consistent with some aspects of Levelt’s MLP; however, they differ with the outcome that MLP would predict. Furthermore, the result shows that the Conceptualizer is not a language-independent component of language production, but is governed by language-oriented constraints. A further Linearization test is underway. In this test, the Korean participants will be asked to describe the networks in English. This will give a better understanding of the specifications of the language-oriented constraints governing the Conceptualizer's processes.

References

Bock, Kathryn. 1986. Meaning, sound, and syntax: Lexical priming in sentence production. *Journal of Experimental Psychology: Learning, Memory, and Cognition* 12: 575-586.

Bock, Kathryn. 1987. Coordinating words and syntax in speech plans. In Andrew W. Ellis (ed.), *Progress in the psychology of language*, 337-390. Hillsdale, NJ: Erlbaum.

Carroll, Mary and Christian von Stutterheim. 1993. The representation of spatial configurations in English and German and the grammatical structure of locative and anaphoric expressions. *Linguistics* 31(6): 1011-1041.

Ferreira, Fernanda. 1994. Choice of passive voice is affected by verb type and animacy. *Journal of Memory and Language* 33: 715-736.

Ferreira, Fernanda and John Henderson. 1998. Linearization strategies during language production. *Memory and Cognition* 26(1), 88-96. [http://doi.org/10.3758/BF03211372]

Gentner, Dedre. 2006. Why verbs are hard to learn. In Kohl Hirsh-Pasek and Russell Golinkoff (eds.), *Action meets word: how children learn verbs*, 544-564. Oxford University Press.

Hermann, Theo and Joachim Grabowski. 1994. *Sprechen: Psychologie der Sprachproduktion*. Spektrum Akademischer Verlag.

Kelly, Michael, Kathryn Bock, and Frank Keil. 1986. Prototypicality in a linguistic context: Effects on sentence structure. *Journal of Memory and Language* 25: 59-74.

Kempen, Gerald. 1977. Conceptualizing and formulating in sentence production. In Samuel Rosenberg (ed.), *Sentence Production: Developments in Research and Theory*. Erlbaum, Hillsdale.

Levelt, Willem. 1981. The speaker's linearization problem. *Philosophical Transactions of the Royal Society of London* 295: 301-315. [http://doi.org/10.1098/rstb.1981.0142]

Levelt, Willem. 1982. Linearization in describing spatial networks. In Stanley Peters and Esa Saarinen (eds.), *Processes, Beliefs, and Questions,* 199-220. Dordrecht: Reidel.

Levelt, Willem. 1989. *Speaking*. Cambridge, MA: The MIT Press.

Lloyd, Paul. 1991. Strategies used to communicate route directions by telephone: A comparison of the performance of 7-year-olds, 10-year-olds, and adults. *Journal of Child Language* 18: 171-189.

Park, Soonhyuck. 2012. The effects of neurochemical changes on language development,

Language Research 29: 261-279.
Park, Soonhyuck. 2015. Noun accessibility and syntactic planning among age groups. *The Journal of the British and American Language and Literature Association of Korea* 116: 143-159.
Parsons, Terence. 1990. Events in the semantics of English. *Mind and Language*. [http://doi.org/10.1111/j.1468-0017.1993.tb00295]
Slobin, Dan. 1987. Thinking for speaking. *Proceedings of the Thirteenth Annual Meeting of the Berkeley Linguistics*, 435-445. [http://dx.doi.org/10.3765/bls.v13i0.1826]
Stutterheim, Christain von and Wolfgang Klein. 2002. Quaestio and L-perspectivation. In Friedrich Graumann and Werner Kallmeyer (eds.), *Perspective and Perspectivation in Discourse*, 59-88. Amsterdam; Philadelphia, PA: John Benjamins.
Stutterheim, Christain von and Ralf Nüse. 2003. Processes of conceptualization in language production: Language-specific perspectives and event construal. *Linguistics* 41: 851-881. [http://doi.org/10.1515/ling.2003.028]
Tomlin, Russell. 1983. On the interaction of syntactic subject, thematic information, and agent in English. *Journal of Pragmatics* 7: 411-432.

Dhari Al-Otaibi
Department of English Language and Literature
Pukyong National University
45 Yongso-ro, Nam-gu, Busan 48513, Korea
E-mail: dhari.alotaibi@gmail.com

Soonhyuck Park
Department of English Language and Literature
Pukyong National University
45 Yongso-ro, Nam-gu, Busan 48513, Korea
E-mail: shpark@pknu.ac.kr

Received: 2016. 10. 04.
Revised: 2016. 12. 12.
Accepted: 2016. 12. 12.