Verticality of Space in Japanese and English with Image-Schema in Cognitive Linguistics

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Abstract

The purpose of *this study* is to explore a role of iconic co-speech gesture (ICSG) in expressing vertical space at a foreign language (FL) high school class. Theoretical framework in *this study* is:

- Image schema (Lakoff, 1987),
- Information Packaging Hypothesis (IPH) (Hostetter, Alibali, & Kita, 2007; Kita, 2000),
- Interface Hypothesis (IH) (Kita & Ozyurek, 2003, 2007),
- Gesture-in-Learning-and-Development Framework (GLDF) (Goldin-Meadow 2003, 2009,),
- Growth Point (GP) (McNeill, 2000a, 2000b, 2005, 2008),
- Sociocultural theory (Vygotsky, 1987, 1997a, 1997b,1999), and
- Linguistic relativity (Whorf, 1956).

This study presumes that the theoretical framework noted above may support that ICSG plays a role in reconceptualizing lexicon-grammar in a linguistic categorywith restructured FL mode of thinking at an FL high school class when expressing vertical space.

Introduction

The purpose of *this study* is to explore a role of iconic co-speech gesture (ICSG) when learning FL at high school class in expressing vertical space. Hypothesis: ICSG plays a role reconceptualizing lexicon-grammar in a linguistic categorywith restructured FL mode of thinking at an FL high school class when stating vertical space.

English and Japanese languages use different spatial coordinating system when talking about vertical space. First, English has spatial prepositions which discriminate contact vs. no-contact, unlike Japanese. This suggests that English speakers use two different semantic categorizations, however, Japanese a single semantic categorization when expressing vertical space. Second, there are remarkable typological differences between Japanese and English when describing vertical space. Japanese is classified as an SOV language with a highly flexible word order which develops postpositions. SOV languages like Japanese have postpositions only (e.g. Croft 2003, p. 56; Greenberg,1990, p. 45; Comrie 1989, p. 93), but not prepositions. Conversely, English is an SVO language with a strict word order, which tends to develop prepositions. Clearly, there are significantly dissimilar thinking processes between Japanese and English with regard to conceptualization of vertical space (i.e. contact vs. no-contact).

This study presumes that ICSG may have a salient effect on reconceptualizing lexicon-grammar in a linguistic categoryby restructuring L1 habitual thought to that of EF with social interaction and generality when learning vertical space. Six reasons account for this. First, ICSG may (a) help with the improvement of learners' understanding of the difficult verbal material when expressing vertical space (see IPH), (b) unify their speech and thinking to describe vertical space (refer to IH), (c) mediate remembering of their novel knowledge of vertical space (i.e. GLDF), (d) accelerate the acquisition of linguistic categorywhen expressing vertical space in learning EFL (see GP), (e) provide them scaffolding to organize their thinking in expressing vertical space (refer to GP and Vygotsky, 1987), and (f) facilitate generating an FL mode of thinking when expressing vertical space. Refer to image schema (Lakoff, 1987) and Vygotsky (1987).

Statement of Problem

Based on studies presented by Whorf (1956), Lucy & Wertsch (1987), and Pavlenko (2011a, 2011b), *this study* postulates that Whorf's central concerns were a linguistic category and habitual thought. Nevertheless, very few studies of restructuring a linguistic category have been presented to examine a role of ICSG when expressing vertical space to date. Definition of a linguistic category is that a mental representation linked to lexical and grammatical concepts as a result of categorizing lexicon and grammar (e.g. Pavlenko, 2009, p. 125-6; Kurylowicz, 1965, p.55).

Coventry et al. (2012) points out, "literatures on L1 and L2 spatial language acquisition are rarely considered together" (p. 224). Very few studies have been published with regard to systematic contrastive analyses of vertical space in Japanese and English.

"Research into spatial preposition in general indicates that geometry is essential for their description" (Chilton, 2015, p.16). Geometric relations have gained attention in approaches to spatial language semantics (e.g. Coventry, 2012; Herskovits, 1986; Landau & Jackendoff, 1993). Nonetheless, very few researches on the restructuring of lexicon-grammar in verticality of space have been presented in the field of L2 acquisition and psycholinguistics.

Background of Research

Why did my former American high school students' Japanese oral proficiency improved significantly with the use of ICSGI accompanied auditory training?

I assume that my former American high school students had suffered from reconceptualizing lexicon-grammar in a linguistic category of English to that of JFL in order to restructure their habitual thought in English to that of Japanese.

It is important to note that my first year Japanese language students' performance had been very poor at the beginning of a school year; however, at the time of my instruction to the students, the creation of ICSG accompanied by auditory training and its pictorial representations assisted with the students' competence of lexicon-grammar to improve their Japanese oral production. Crucially, their Japanese oral proficiency improved significantly by the end of school year.

Prior to an introduction to ICSGI, the students had difficulty to converse in structured sentences of Japanese, including verbs, adjectives, particles, negative and affirmative sentences to questions. It was imperative for me to create an effective teaching method to help the students. In order to clarify the experiences, an explication of my Asian puppet shadow show production will be described.

Asian Puppet Shadow Show Production

My Japanese language students (1st year to 4th year) had performed puppet shadow shows in Japanese under my direction for seven years. My students' appreciation of and enthusiasm for the Japanese language and culture further improved due to the production.

I generated the production, while also developing curriculum and receiving support from the parents, administrators and students as well as Japanese communities. However, the lack of an efficacious teaching method for the weak language background first year Japanese language students eroded their desire to learn the language, although they had been motivated to learn Japanese at the beginning of the school year.

Serious discipline problems for the first time in my twenty-five years teaching experience resulted. It takes learners of Japanese about three times as long to learn the language as it would take them to learn a language more closely related to English, such as French or Spanish (Appendix 2). This only concerns speech. If we also teach Japanese writing systems, it will take for students more than three times as long to learn Japanese because the Japanese language has four different writing systems. Thus, if the learners would like to become proficient in Japanese, they need to plan on spending many years studying it. It was urgent for me to produce a relevant teaching method for the weak background students.

Weak Background Students

The 9th through 11th graders enrolled in a first year Japanese class at the high school. Four different levels of English courses (i.e. advanced placement, academic gifted , average, and basic English) were offered at the high school. Usually students, who took advanced placement and academic gifted English courses, enrolled in my class at the high school. However, after teaching them for eight years, the first year Japanese language students who had taken average or basic English courses enrolled my class. One of them failed in Spanish level one and others have never taken a foreign language course. English teachers told me that students of these courses had a difficulty to describe themselves in a written form with their first language (L1). Thus, I foresaw that the students would have problems with learning Japanese because through my twenty-five years of teaching experience, in general, students with L1 problems would have a difficulty to learn JFL.

At the beginning of my class, they conversed with their classmates and me fairly well, though they had fumbled a little with vocabulary. With the introduction of grammar concepts, they totally confused their Japanese conversation skills. The textbook for my class had written by structurists, who had adapted the communicative approach. The lexicon-grammar, syntactical structure, vocabulary, and pronunciation of the Japanese language are entirely dissimilar to these of English except derived words from English. Apparently, students with weak-language-back ground had suffered from the large difference between the two languages. A majority of them did not have good study habits, either. Consequently, their limited language capacity inhibited the use of the method, which had been successful in teaching other high school Japanese language students at the high school for the past eight years.

Higgs & Clifford hypothesis: **Importance of Learning Grammar**

Higgs & Clifford (1982) proposed their hypothesis to learn foreign languages and suggest that:

> While the most efficient way to achieve survival level proficiency would be a course that stressed vocabulary, our experience indicates that such a program would work to the disadvantage of students who wished to develop higher levels of proficiency. Students entering such a program would have to be warned of its potentially negative effect on their long-range aspirations (p.73).

Clifford & Higgs' hypothesis suggests that beginning level students need more structure, repetition, and support. Therefore, the teacher's control with beginners is the gateway to communication success, practicing pronunciation with auditory training, and integrating pronunciation, grammar and vocabulary, which are the crucial points to assist the beginners to acquire a certain level of proficiency. I assume that the students' difficulty existed in the lack of support in reconceptualizing lexicon-grammar from English to that of JFL at the time of my instruction.

Difficulty of Reconceptualization of Lexicon-grammar

As they realized the degree of complexity to learn Japanese with the introduction of certain rules of the Japanese language, the novelty of learning a new language wore off

quite rapidly. Lack of effective teaching methods for the students left me unable to handle their discipline problems. Any modification did not help with their progress. An inevitable consequence was students' misbehavior. My motivation to teach Japanese gradually eroded due to the lack of effective teaching methods derived from an examined theory.

Modification of Total Physical Response-Storytelling

Total Physical Response-Storytelling (TPR-S) (Ray & Seely, 1998) consists of innovative ways, including using a story and gesture as well as drawings which is a groundbreaking way to teach FL. TPR-S has been popular in Spanish and worked very well to improve Spanish students' proficiency. TPR-S allowed me to explore the extent of my interest in the modification of a method to fit the Japanese language students.

Novel activities with Iconic Co-speech Gesture Imitation Accompanied by Auditory Training

The creation of co-speech gesture with memorable visual images, which show how to generate gestures for my students to learn vocabulary and grammar were presented in my class. Primary organization of the instruction was simple skills in isolation as learners can only initially handle simple information. After embodiment of the simple information, I had them process the information slowly and progressively in more complex situations.

Pleasure to Learn the Japanese Language with Iconic Co-speech Gesture Imitation

Assignment

Assigned homework for the students was repeating sentences after an auditory material and copying each sentence from a textbook into their notebook in Japanese and English, using a Japanese textbook with English translation. Cummins (2005) supports providing translation to students in an English as a Foreign Language (EFL) class and points out, "there is empirical evidence that translation can serve useful pedagogical purposes"(p. 16). Another homework assignment was practicing by repeating dialogues with ICSGI and images.

Students were required to do homework every day at least thirty minutes. Cooper et al. (1998) says that the more homework students completed, the higher their achievement at upper grade (6-12 grades). Furthermore, Cooper et al. (2006) points out, "[…] the optimum benefits of homework for high school students might lie between 1 1⁄2 and 2 1⁄2 hours [for six different subjects]." (p. 52). Thus, it is relevant for me to assign them homework for thirty minutes a day.

Emphasis of Listening Practice

A listening practice at home also was mandatory for the students because undoubtedly students, who had problems with repetition practice in my class, had constrained abilities to acquire Japanese conversation skills. There is less remarkable difficulty for English speakers in Japanese phonology; however, lexicon-grammar dissimilarity hinders English speakers' oral production.

I requested the students a fair amount of listening practice that was necessary to reconceptualize lexicon-grammar from English to that of JFL to improve oral production because I assumed that it would help with comprehending the dialogues in the auditory materials and sequencing the dialogues. An explanation of an experience during my school days provided enough information to convince them of the importance of listening to the auditory material.

The grammar-translation method of foreign language teaching, which is one of the most traditional methods, dating back to the late nineteenth and twentieth centuries in Japan, affected learning English.

Undoubtedly, the emphasis on achieving correct grammar with little regard for the free application and oral production is the greatest disadvantage to this method. Readings in the target language are translated directly and then discussed in the native language. Seriously, inevitable result was teachers' correction. "[S]tudents are clearly in a defensive learning environment where right answers are expected." (Omaggio 1993, p. 91).

Despite all of these disadvantages, certain positive traits were found in such a constraint environment, grammar-translation dominated EFL classes in Japan during the 1960s. After studying English for six years with the grammar-translation method in Japan, my listening comprehension inability in English resulted, despite the fact that I was able to comprehend the same sentences as those in a written form when reading them. Insufficient exposure to listening to English sentences impaired my listening comprehension capability. At that time, English textbooks had not accompanied auditory materials, thus, teachers and students had not had a chance to access the materials for the textbooks in Japan.

Hence, I was primed to experience as much of listening to the auditory materials in English as possible. After an exploration of the extent of my interest in the practices to fill the missing link between listening comprehension and written words until the auditory materials became intelligible to me, I suddenly realized that I understood what the auditory materials talk to me. This experience pleased me enormously. This was a starting point for me to progress oral production in EFL. Fabrro (2001) stated, "Further, bilinguals seem to have specific and independent channels according to the direction of translation" (p. 219).

Hence, after the explanation of the reasons that Japanese language students in my class should listen to an auditory material, almost all of them listened to an auditory material diligently.

Classroom activities with Iconic Co-speech Gesture Imitation

My students' problem was the inability of reconceptualizing lexicon-grammar from English to that of JFL to have face-to-face conversation. The challenge was bridging a missing link between lexicon-grammar in English and that of Japanese to have them to talk in Japanese.

The initial stage of the challenge was to have them understand differences between English and Japanese lexicon-grammar.

Second, after I explained the differences, handouts of ICSGI with images were given to the students. In contrast to the text only handouts, handouts with images which have cartoon character drawings for ICSGI were evocative for them. These pictographic cartoons demonstrated happy face representations of actions and emotional states.

Third, ICSGI was performed to explain gestures for the vocabulary and grammar, accompanying speech. They observed ICSGI with full attention. Observing ICSGI seemingly generated some crucial areas in their brain using face-to-face communication.

Fourth, I asked them to imitate my ICSGI and then they practiced several times with me.

Fifth, an assignment was given to each group in class to exercise with ICSGI in a small group, including repetitious practices with imitated gestures and speech.

Sixth, after the completion of the assignment, ICSGI games were performed in the class.

The aim of these activities was to fasten their memory regarding grammar and vocabulary in their brain. There is no doubt that repetitious practices with an ICSGI game accelerated the embodiment of Japanese vocabulary and grammar. They were excited with the games. Their motivation about learning vocabulary and grammar in JFL were quite high.

Seventh, the next challenge was having the students have a conversation in Japanese, which required the students to reconceptualizing lexicon-grammar from English to that of JFL by integrating their phonological, semantic, and grammatical skills. It suggests that they also needed to restructure their L1 mode of habitual thought to that of JFL.

This activity was certainly light-hearted and enjoyable rather than threatening. They were fairly excited about the game with the activities and Japanese conversation to explain their everyday life. Their phonological, semantic and grammatical knowledge orchestrated to speak in Japanese, which indicate that they successfully reconceptualized lexicon-grammar from English to that of Japanese with restructured EFL mode of thinking. Consequently, they motivated and challenged, even though the learning tasks increased the complexity.

The foundation of the novel method pleased the students enormously. This activity dispelled any enduring feeling of reticence or embarrassment during their attempts to speak in Japanese. At this point, they acquired a certain extent of satisfaction in the fact that they were able to show off their abilities to their classmates and family members.

Surprisingly, their oral proficiency in JFL was almost equivalent to that of students who had been taking advanced placement or academic gifted English courses at the high school when I assessed their JFL conversation ability at the end of the school year. They were full of enthusiasm to learn this challenging language for English speakers.

Role of Iconic Co-speech Gesture

What were the differences between communication with ICSGI accompanied by auditory training and in the absence of ICSGI with auditory training?

I assume that ICSGI accompanied by auditory training played a crucial role in reconceptualizing lexicon-grammar from English to that of JFL with JFL mode of thinking. Consequently, their proficiency skyrocketed significantly as stated earlier. A majority of the elements supporting their FL learning were in harmony.

They realized that learning the novel and complicated language was a pleasurable challenge and inspired them to improve their Japanese language proficiency. It would be relevant to say that learning JFL with ICSGI accompanied by auditory training initiated the powerful motivation. It was facilitated with the personification by talking about their everyday life, which allowed the students to improve their conversation skills. Interestingly, ICSGI accompanied by auditory training supported the strong language background students' writing abilities, as well as these of telling stories in Japanese, which are not an easy task for average American high school students. The discipline problems totally vanished in my class; rather their motivation toward the Japanese language and culture initiated further desire to participating in Japanese classes. It is plausible that ICSGI accompanied by auditory training assisted their competency of reconceptualizing lexicon-grammar with JFL mode of thinking a great deal to improve their oral proficiency.

Discussion

This study postulates that a role of ICSG could be facilitating reconceptualization of lexicon-grammar in a linguistic categoryto a certain degree. As a result, habitual thought in L1 is restructured to that of FL when expressing vertical space.

Strikingly Distinct Spatial Coodinating Systems in English and Japanese
There are strikingly distinct spatial coordinating systems in Japanese and English when expressing vertical space. Two reasons account for this: (1) English has spatial terms which distinguish contact vs. no-contact, however Japanese does not. This suggests that English speakers use two different semantic categorizations, however, Japanese employ a single semantic categorization when expressing vertical space. The current study postulates that dissimilar spatial semantic categorization might influence thought when expressing vertical space.

Examples:
- **ON:** ① Ringo ga teeburu no ***ue*** ***ni*** aru.
   Apple GA[1] table LOC-GEN **RN**
   LOC VB.

   'There is an apple on a table.'

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[1] Refer to Appendix 3 for acronyms.

- **ABOVE:** ② Dento   wa   yuka   no   ***ue___   ni___***   aru.

  Light   WA   floor LOC-GEN   **RN   LOC**

  VB.

  'There is a light on (or above) the floor.'

- **OVER** ③   Hikooki ga   yama   no   ***ue___***   wo   tone-de iru

  Airplane   GA   mountain   LOC-GEN   ***RN***   ACC   flying

  PROG:NONP.

  'An airplane is flying over the mountain.'

As the examples noted above, Japanese use the same terms to express vertical space. Conversely, English do not. It suggests that English conceptualize vertical space with two different semantic categorizations (i.e. contact vs. no-contact) and Japanese with a single semantic categorization (i.e. no differentiation of contact and no-contact). In other words, thinking processes differs between English and Japanese speakers when expressing vertical space.

(2) There are striking typological differences between Japanese and English with regard to *lexicon-grammar* when describing vertical space.   As noted above, Japanese is classified as an SOV language with a highly flexible word order which develops postpositions. SOV languages like Japanese have postpositions only, but not prepositions. A default word order is SOV in Japanese. However, Japanese also has an OSV word order (See Saito, 1985). Conversely, English is an SVO language with a strict word order, which tends to develop prepositions.   Examples for OSV word order are as follows:

④<u>Hon</u> wo   <u>tsukue</u>   no   <u>ue</u>   ni   <u>watashi</u>   ga <u>okimasu</u>.

<u>Book</u> ACC   <u>desk</u>   GEN   <u>on</u>   DAT I   GA   <u>put</u>

'I will place a book on a desk.'

⑤<u>Tsukue</u>   wo   <u>hon</u>   no   <u>ue</u>   ni   <u>watashi</u>   ga <u>okimasu</u>.

<u>Desk</u>   ACC   <u>book</u> GEN   <u>on</u>   DAT I   GA   <u>put</u>

'I will place a desk on books.'

As the examples noted above, different word orders create dissimilar meaning in Japanese and English.   A word order is crucial to describe vertical space in English and Japanese.

Role of Iconic Co-Speech Gesture

Based on theoretical frameworks presented by gesture studies, sociocultural theory, image schema, and linguistic relativity, *this study* presumes that to a certain degree, ICSG may have a noticeable effect on reconceptualizing lexicon-grammar and L1 mode of thinking when learning vertical space. Six reasons account for this:

Information Packaging Hypothesis

IPH claims "[co-speech] gestures occur when information is difficult to conceptualize" (Hostetter, Alibali, & Kita, 2007, p. 313). Vygotsky(1987) notes that "[M]otor processes associated with speech play an important role in facilitating the thinking process in particular, accordingly improving the subject's understanding of difficult verbal material" (p. 44).

Hence, having learners engage in co-speech gesture should be beneficial to learn vertical space in an FL class.

Interface Hypothesis

IH claims "[co-speech]gestures originate from an interface representation between speaking and spatial thinking" (Kita & Ozyurek, 2003, p. 17). Gesture is a sign which gives birth to meaning (e.g. Vygotsky, 1997a). Word meaning unifies speech and thinking (e.g. Vygotsky, 1987, p. 51). Co-speech gesture has word meaning in it.

Teaching co-speech gesture might facilitate the unification of speech and thinking when expressing vertical space. Consequently, they may successfully complete the restructuring of L1 habitual thought to that of FL when learning *lexicon-grammar* in expressing vertical space.

Gesture-in-Learning-and-Development Framework

GLDF claims that gesturing may help with shifting some of the load from verbal working memory to another cognitive system which may in turn "reduce demands on verbal working memory, accordingly making it possible to remember more words or letters" (Goldin-Meadow et al., 2001, p. 521). Vygotsky (1999) presents mediated remembering by signs (e.g. p. 53). In other word, remembering occurs by sign mediation.

For this reason, learners may effectively restructure *lexicon-grammar* by enhancing their memory which they will acquire at an FL class with ICSG when explaining vertical space. Furthermore, co-speech gesture might help them in avoiding forgetting newly learnt information in an FL class as time goes by, if they continue using it.

Growth Point

Linguistic categories of relational domains are space and time (e.g. Svoro, 2007, p. 734). The current study focuses on vertical space in prepositional categories of space.

GP proposes that linguistic categorization brings the image into the system of categories of language (e.g. McNeill, 2000, p. 315). Gesture makes image (e.g. Vygotsky,
1997 b, p. 134). Vygotsky (1997b) suggests, "[T]he word is linked to a certain image…an internal picture or pictogram of conditioned sounds connected with the internal image…" (p.126-7). Co-speech gesture has both gesture and words, which

linked images. Images allow learners to categorize vertical space, including contact vs. no-contact and LMHTR[2] and LMLTR[3] as in image schema.

ICSG may assist learners with reconceptualizing vertical space with integrating two different categorizations of vertical space, such as contact vs. no-contact and LMHTR and LMLTR because images help with categorizing vertical space. Consequently, FL learners may successfully reconceptualize *lexicon-grammar* at an FL class when expressing vertical space. See a later chapter for image schema.

Iconicity

Iconic gesture "presents images of concrete entities and/or actions. They are gestures in which…execution embodies picturable aspects of semantic content […]" (McNeill, 2005, p. 39).
McNeill (2005) also notes, "imagistic models of gesture production may offer a plausible account of the production of so-called iconic gestures" (p. 277).   Vygotsky (1987) suggests, "
thinking that consists entirely of memory images with no direct link to the random stimulation of the sense organs or of needs" (p. 64).

Campisi & Ozyurek (2013) note that iconic gesture is a powerful communicative strategy in learning new information which plays a role of a scaffolding device (e.g. p. 14).
Therefore, iconic gesture may contribute to organizing learners' thinking about vertical space by providing them scaffolding to understand and thinking about vertical space in EFL.

Image Scheme and Speech

"Sign, word and sound are the means of social interaction" which "has been seriously oversimplified" (Vygotsky, 1987, p. 48) due to a lack of generality

Image schema could be considered as generalized conceptual structures from our bodily experience (e.g. Croft & Cruse 2004; Mittelberg, 2008; Talmy 1988).   Image schema generalizes vertical space. Hence, it helps in facilitating social interaction.

Social interaction occurs when talking about vertical space. "Speech is a means of social interaction, means of expression and understanding" (Vygotsky, 1987, p. 48).

Vygotsky (1987) also claims, "The essence of the development of the concept lies in the transition from one structure of generalization to another…the child moves from elementary generalizations to higher forms of generalization. This process is completed with the formation of true concepts" (Vygotsky, 1987, p.170).

Examples of integration of LMHTR vs. LMLTR with contactness in image schema are:

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[2] Land mark is higher than trajector.
[3] Land mark is lower than trajector.

(1) *On*: Contact only.
- A spider walking *on* the celling (i.e. LMHTR with contact).

(Tyler & Evans, 2003, p. 92).

(2) *Over*[4]: No-contact and contact with covering sense.
- The tablecloth is over the table (i.e. LMLTR with contact).

(Tyler & Evans, 2003, p. 44).

- They put a transparent plastic sheet over the painted ceiling of the chapel during repairs (i.e. LMHTR with no-contact).   (Tyler & Evans, 2003, p. 91).

(3) *Above*: No-contact and contact.
- The ceiling *above* the lamp (i.e. LMHTR with no-contact).

(Herskovits, 1985, p. 62).

- Be careful! The rung *above* the one you're standing on is broken. (The Next-one-up Sense) (i.e. LMLTR with contact).   (Tyler & Evans, 2003, p. 120).

Image schema "provides a foundation for language acquisition" (Mandler, 1992, p. 587).   EF learners may form concept of vertical space by integrating speech and image schema when expressing vertical space.

Thus, speech in ICSG and image schema may facilitate formation of an FL mode of thinking when expressing vertical space. As a result, FL learners may successfully restructure L1 mode of habitual thought to that of FL thinking to formulate appropriate speech with restructured lexicon-grammar. FL learners' generalization may move from elementary generalizations to higher forms of generalization when expressing vertical space as Vygotsky (1987) suggests.

Conclusions:

English and Japanese speakers use distinct spatial coordinating system when talking about vertical space: (1) English has spatial prepositions which discriminate contact vs. no-contact, conversely, Japanese does not. English speakers employ two different semantic categorizations, however, Japanese a single semantic categorization when expressing vertical space which does not distinguish contact vs. no-contact. (2) There are striking typological differences between Japanese and English regarding *lexicon-grammar* when expressing vertical space. Thus, there is significantly dissimilar thinking processes between Japanese and English with regard to conceptualization of vertical space (i.e. contact vs. no-contact) exist.

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[4] "Over" denotes a spatial relation between two objects. The spatial relation concerns the vertical space dimension (Gardenfors, 2007, p. 59).

Based on six different theoretical framework, *this study* postulates that ICSG may have a salient effect on reconceptualizing lexicon-grammar in a linguistic category by restructuring L1 habitual thought to that of EF with social interaction and generality when expressing vertical space at FL high school classes.

Limitations:

This study will not present studies regarding gesture imitation and listening comprehension because: (1) "motor theory of speech perception is still controversial after more than 40 years, as in the role of mirror neurons" (Corballis, 2014, p. 235). It suggests that the mirror neuron theory of action has presented little convincing evidence that explains a connection between speech perception and gesture at this point. (2) Moreover, not only listening comprehension, but also auditory perception[5] has not formed commonly accepted hypotheses. The processes of listening comprehension and/or auditory perception in cognitive science are highly complex (e.g. Suvorov, 2007, p. 8; Lotto & Holt, 2010). (3) Data analysis of reconceptualizing lexicon-grammar in FL classes will not be presented. Future research may include these noted above.

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[5] "By this theoretical account, *speech perception* relies on a specialized perceptual system, distinct from general *auditory processing* and linked to speech production" (Weiner & Craighead, 2010, p.1684). *The current study* does not involve speech perception, which describes phoneme categories (Liberman et al., 1957), because *this study* does not discuss phoneme category in English and Japanese.

References:

Campisi, E., & Ozyurek, A. (2013). "Iconicity as a communicative strategy: Recipient design in multimodal demonstrations for adults and children." *Journal of Pragmatics* 47: 14-27.

Chilton, P. (2015). *Language, Space and Mind: The Conceptual Geometry of Linguistic Meaning*. New York, Cambridge University Press.

Comrie, B. (1989). *Language Universals and Linguistic Typology: Syntax and Morphology*. Chicago, IL, University Of Chicago Press.

Cooper, H., Nye, B., and Greathouse, S. (1998). "Relationships Among Attitudes About Homework, Amount of Homework Assigned and Completed, and Student Achievement." *Journal of Educational Psychology* 90(1): 70-83.

Cooper, H., Robinson, JC., & Patall, EA. (2006). "Does Homework Improve Academic Achievement? A Synthesis of Research,1987–2003." *Review of Educational Research* 76(1): 1-62.

Corballis, M. (2014). *The Recursive Mind: The Origins of Human Language, Thought, and Civilization*. Princeton, NJ, Princeton University Press,.

Coventry, K., Guijarro-Fuentes, P., & Valdes, B. (2012). "On the First and Second Language Acquisition of Spatial Language." *Spatial Cognition & Computation* 12(4): 219-230.

Croft, W. (2003). *Typology and Universals*. New York, Cambridge University Press.

Croft, W. C., D. A. (2004). Cognitive Linguistics. New York, Cambridge University Press.

Cummins, J. (2005). "Teaching for Cross-Language Transfer in Dual Language Education. 'Possibilities and Pitfalls." *paper presented at TESL Symposium on Dual Language Education: Teaching and Learning Two Languages in the EFL Setting*: 1-18.

Fabbro, F. (2001a). "The Bilingual Brain: Cerebral Representation of Languages." *Brain and Language* 79: 211-222.

Fabbro, F. (2001b). "The Bilingual Brain: Bilingual Aphasia." *Brain and Language* 79: 201-210.

Gardenfors, P. (2007). Cognitive semantics and image schemas with embodied forces. *Embodiment in Cognition and Culture*. M. Krois, Rosengren, M., Steidele, A., & Westerkamp, D. Amsterdam/Philadelphia, John Benjamins Publishing Company: 57-76.

Goldin-Meadow, S. (2003). *Hearing Gesture: How Our Hands Help Us Think*. Cambridge, MA, Belknap Press of Harvard University Press.

Goldin-Meadow, S., Nusbaum, H., Kelly, S., & Wagner, S. (2001). "EXPLAINING MATH: Gesturing Lighten the Load." *PSYCHOLOGICAL SCIENCE* 12(6): 516-522.

Greenberg, J. H. (1990). *On Language: Selected Writings of Joseph H. Greenberg*. Stanford, CA, Stanford University Press.

Gullberg, M. (2008). A Helping Hand? Gestures, L2 Learners, and Grammar. *Gesture: Second Language Acquisition and Classroom Research*. S. McCafferty, & Stam, G. New York, Routledge: 185-210.

Herskovits, A. (1986). *Language and spatial cognition. An interdisciplinary study of the prepositions in English*. New York, Cambridge University Press.

Higgs, T. V., & Clifford., R. (1982). The Push Toward Communication. *Curriculum, Competence, and the Foreign Language Teacher*. T. V. Higgs. Lincolnwood, IL, National Textbook Co.

Hoemann, H. W. (1978). PERCEPTION BY THE DEAF. *Perceptual Ecology*. E. C. Carterette, & Friedman, M. P. New York, Academic Press, Inc. 10: 43-64.

Hostetter, A. B., Alibali, M. W. & Kita, S. (2007). "I see it in my hands' eye: Representational gestures reflect conceptual demands." *Language and Cognitive Processes* 22(3): 313-336.

Institute, U. S. F. S. (2014). *Foreign Service Institute Course Catalog*. Washington, D. C.: 1-332.

Kita, S. (2000). How representational gesture help speaking. *Language and Gesture*. D. McNeill. New York, Cambridge University Press: 162-185.

Kita, S., & Ozyurek, A. (2003). "What does cross-linguistic variation in semantic coordination of speech and gesture reveal?: Evidence for an interface representation of spatial thinking and speaking." *Journal of Memory and Language* 48: 16-32.

Kita, S., & Ozyurek, A. (2007). How does Spoken Language Shape Iconic Gestures? *Gesture and the Dynamic Dimension of Language Essays in honor of David McNeill*. S. D. Duncan, Cassell, J., & Levy, E. T. Amsterdam, John Benjamins Publishing Co.: 67-74.

Kolers, P. A. (1963). "Interlingual word associations." *Journal of verbal learning and verbal behavior* 2(4): 291-300.

Kurylowicz, J. (1965). "The evolution of grammatical categories." DIOGENES 13(51): 55-71.

Lakoff, G. (1987). *Women, Fire and Dangerous Things: What Categories Reveal about the Mind*. Chicago, IL, University Of Chicago Press.

Landau, B., & Jackendoff, R. (1993). "'What' and 'where' in spatial language and cognition." *Behavioral and Brain Sciences* 16(2): 217-265.

Lotto, A., & Holt, L. (2010). "Psychology of auditory perception." *WIREs Cognitive Science*.

Lucy, J., & Wertsch, J. (1987). Vygotsky and Whorf: A Comparative Analysis. *Social and functional approaches to language and thought*. M. Kickmann. FL, Academic Press: 67-86.

Mandler, J. M. (1992). "How to build a baby: II. Conceptual primitives." *Psychological review* 99(4): 587–604.

Marblestone, K. L. (2007). *Semantic and Syntactic Effects on Double Prepositional Phrase Ordering*. Ann Arbor, MI, ProQuest.

Mayberry, R., & Nicoladis, E. (2000). "Gesture Reflects Language Development: Evidence From Bilingual Children." *Current Directions in Psychological Science* 9(6): 192-196.

McNeill, D. (2000a). *Language and Gesture (Language Culture and Cognition)*. New York, Cambridge University Press.

McNeill, D., & Duncan, S. (2000b). GROWTH POINTS IN THINKING-FOR-SPEAKING. *Language and Gesture*. D. McNeill. New York, Cambridge University Press: 141-161.

McNeill, D. (2005). *Gesture and Thought*. Chicago/London, University of Chicago Press.

McNeill, D. (2008). Imagery for speaking. *Crosslinguistic Approaches to the Psychology of Language: Research in the Tradition of Dan Isaac Slobin*. J. Guo, Lieven, E., Ervin-Tripp, S., Nakamura, K., & Ozucaliskan, S. London, UK, Psychology Press: 517-530.

Mittelberg, I. (2008). Peircean semiotics meets conceptual metaphor: Iconic modes in gestural representations of grammar. *Metaphor and Gesture*. C. C. Muller, A. Amsterdam/Philadelphia, John Benjamins Publishing Company: 115-154.

Omaggio, H. (1993). *Teaching Language In Context*. New York, Heinle & Heinle.

Pavlenko, A. (2009). Conceptual representation in the Bilingual Lexicon and Second Language Vocabulary Learning. *The Bilingual Mental Lexicon*. A. Pavlenko. Bristol, UK, Multilingual Matters: 125-160.

Pavlenko, A. (2011a). Thinking and Speaking in Two Languages: Overview of the Field. *Thinking and Speaking in Two Languages*. A. Pavlenko. Bristol, UK, Multilingual Matters: 237-257.

Pavlenko, A. (2011b). *Introduction: Bilingualism and Thought in the 20th Century*. *Thinking and Speaking in Two Languages*. A. Pavlenko. Bristol, UK, Multilingual Matters: 1-28.

.

Ray, B., & Seely, C. (1998). *Fluency Through TPR Storytelling: Achieving Real Language Acquisition in School*. Berkeley, CA, Command Performance Language Institute.

Rose, M., & Douglas, J. (2001). "The differential facilitatory effects of gesture and visualization processes on object naming in aphasia." *Aphasiology* 15(10-11): 977-990.

Saito, M. (1985). *Some asymmetries in Japanese and their theoretical implications*. Cambridge, MA, MIT.

Svorou, S. (2007). Relational Constructions in Cognitive. *The Oxford Handbook of Cognitive Linguistics*. D. Geeraerts, & Cuyckens, H. New York, Oxford University Press: 726--752.

Talmy, L. (1988). "Force dynamics in language and cognition." Cognitive Science 12(1): 49-100.

Tyler, A., & Evans, V. (2003). *The Semantics of English Prepositions: Spatial Scenes, Embodied Meaning, and Cognition*. New York, Cambridge University Press.

Vygotsky, L. S. (1987). *The Collected Works of L.S. Vygotsky: Volume 1: Problems of General Psychology*. New York, Plenum Press.

Vygotsky, L. S. (1997a). *The Collected Works of L.S. Vygotsky: Volume 3: Problems of the Theory and History of Psychology*. New York, Plenum Press.

Vygotsky, L. S. (1997b). *The Collected Works of L.S. Vygotsky: Volume 4: The History of the Development of Higher Mental Function*. New York, Plenum Press.
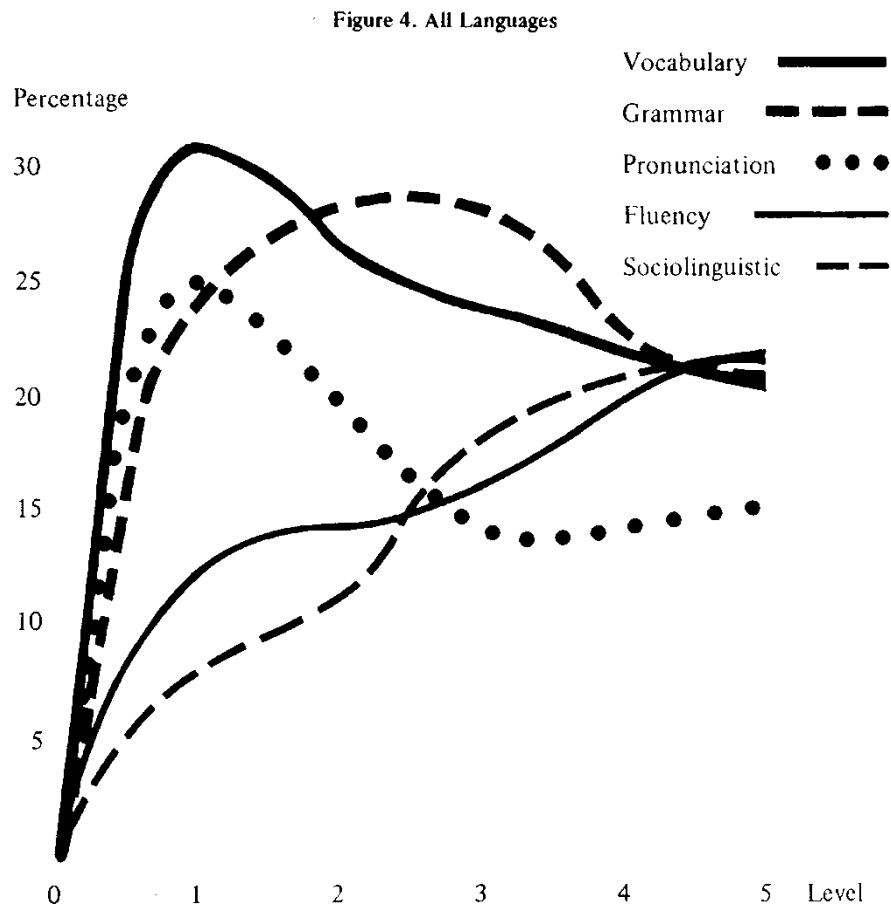
Vygotsky, L. S. (1999). *The Collected Works of L. S. Vygotsky Volume 6: Scientific Legacy*. New York, Plenum Press.

Whorf, B. L. (1956). *Language, thought, and reality [electronic resource : selected writings*. Cambridge, MA, MIT Press.

APPENDIX

Appendix 1

Higgs & Clifford Hypothesis

Figure 4. All Languages

Higgs & Clifford (1982, p. 71)

Appendix 2

The Basic Courses at FSI: Long-Term Language Studies

　　Most *Basic* courses consist of an extensive core curriculum of speaking, reading and listening practice, with accommodation to individual jobs and learning styles. Students at Foreign Service Institute (FSI) are adult learners, are native speakers of English, and have a good aptitude for formal language study, plus knowledge of several other foreign languages. FSI teaches over seventy different foreign languages (FSI, 2014, p. 176). Students study in small classes (FSI, 2014, p. 188).
The Department of State language categories and expectations are as follows:

Category I	
24 weeks	
Danish Dutch French (30 weeks) Italian	Norwegian Portuguese Romanian Spanish Swedish
Category II	
36 weeks	
German Indonesian	Malay Swahili
Category III	
44 weeks	
Most non-Romance/Germanic	except Arabic, Chinese (Cantonese and Mandarin,) 　　　　Japanese and Korean
Category IV	
88 weeks	
Arabic Cantonese Mandarin	Japanese Korean

(FSI, 2014, p. 176)

Appendix 3

Acronym	Explanations
ACC	Accusative particle
DAT	Dative particle
GEN	Genitive particle
LOC	Locative particle
RN	Relational noun
V, (VB)	Verb(al)
WA	Marker for commonly considered as topic

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