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Gestures Reveal Thinking-For-Speaking Patterns in High and Intermediate Proficiency L2 Learners

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This study examined how gestures reveal developmental shifts among English language learners when they express path of motion events across tasks in their native Korean language (L1) and adopted English (L2) language. Languages were categorized as satellite- (English) or verb-framed (Korean). Participants (N = 32) watched the same cartoon and told the story in Korean and in English. Advanced English language learners exhibited L2 speech-gesture coordination or *growth points*, as evidenced by conflating path-only gestures primarily with grammatical satellites (i.e., adverb, prepositions, or path) as native English speakers do. Intermediate English language learners conflated path-only gestures predominantly with verbs when speaking in L1 and L2, consistent with Korean communication practices. Results suggest that gestures signal the "trailing edge" of language development among non-advanced L2 speakers that marks a prevailing Korean language representation even when speaking in English. These findings underscore the manner in which language serves thinking-for-speaking in its dynamic and multimodal qualities. As a result, it seems to be critical that L2 educators utilize gestures as a tool to evaluate L2 learners' developmental levels by observing learners' TFS patterns by exploring how they think when they speak in L2 and how gesture shows their L2 developmental levels.

[thinking-for-speaking patterns/path gesture/second language acquisition/growth points/verb-framed/satellite-framed language, 말을 위한 생각하기 유형/경로 제스쳐/제 **2** 언어 습득/제스쳐와 언어가 만나는 지점/동사 구조 언어/부속물적 구조 언어 **]**

I. INTRODUCTION

Historically, language, as captured at a moment in time, has been regarded as a static

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system with a stable lexicon and set of syntactic rules (Saussure, 1915/1959; McNeill, 2005). Second language acquisition (SLA) has largely been steeped in this perspective, where a majority of SLA researchers have focused primarily on the verbal aspects of language learning and linguistic competence (Corder, 1973; Dulay, Burt, & Krashen, 1982; Gregg, 1993). This narrow scope of language inherently limits the advancement of research on understanding (Clark, 1997). The dialectic view, promoted by Vygotsky (1978, 1986) reframes language in psychological and socio-cultural terms, highlighting its dynamic and holistic qualities. The dynamic quality addresses how speakers use language in real time in the process of thinking, communication and intellectual development. Further, gestures in particular serve as "material carriers" of meaning (Vygotsky, 1986) in that they materialize through enactment and imagery elements of the on-line thinking process of the speaker (Chung, 2005; Goldin-Meadow, 2003; McNeill, 1992).

More recently, as the study of SLA has become more sensitive to actual language use and participation in real situations, research on social context has gained more influence in SLA. In this view it is by participation in social interactions that learners acquire the semiotic resources of multimodal communication, including speech and gesture, which have been developed culturally and historically within the second language (L2) community (Lantolf, 2006a, 2006b). Further, a growing number of researchers have examined how gesture is associated with L2 acquisition and learning (Gullberg, 2008; Stam & McCafferty, 2008). However, due to lack of studies, it has not been well known how gesture shows the L2 process of Korean English learners at different proficiency levels. Therefore, in this study, I explore how they think when they speak in L2 and how gesture shows their L2 developmental levels.

II. LITERATURE REVIEW

1. Speech and Thought

While the dynamic and holistic qualities of language use may be ever-present, we can obtain a fresh perspective by studying the communication patterns of emerging bilinguals -- English language learners who are developing the communication practices of their newly adopted (L2) language in the context of existing communication practices of their first language (L1). Slobin's (1996) *Thinking-for-Speaking* (TFS) Hypothesis presents the idea that thought and speech are in a dynamic relationship and it is possible to observe "a special kind of thinking that is intimately tied to language--namely, the thinking that is carried out on-line in the process of speaking" (p.75). This hypothesis can be applied to English language learners. In other words, Slobin argued that L2 speakers tend to think in

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their L1 when they are speaking in an adopted language because they are used to thinking-for-speaking from the L1 point of view.

One method to address how different TFS patterns appear in the speech of different language speakers, researchers have used Talmy's (1985, 2000) two typological categories, based on path and manner of motion events. *Motion events* are defined as including these components: A *figure*, or object moving or located with respect to another object (ground); *ground* as a reference object in relation to which the figure moves; *path* as a trajectory expressed by the figure; and *motion* as the presence perse of motion in the event. One language category is called satellite-framed language (S-language; e.g., English or Chinese), in which the path of motion is indicated through particles or adverbs. The second category is identified as verb-framed language (V-language; e.g., Spanish or Korean), in which the path is expressed in the motion verb itself.

Consider how differently path of motion appears in S-language (e.g., English) and V-language (e.g., Spanish and Korean). Examples (1) and (2) compare how English and Korean native speakers describe the scene from a popular cartoon in which Sylvester is climbing up the drainpipe (Choi, & Lantolf, 2008, p. 194).

(1) L1 English speaker
Sylvester climbed *up the drain pipe*.

(2) L1 Korean speaker[1]

그래서	막	올라	가는데
kŭlesə	*mak*	*oll-a*	*ka-nŭn-te*
so	intensively	ascend-INF	go-and
		[path]	[motion + deixis]

'so [the cat] went up'

In (1) the English native speaker (NS) conflated path information with a particle "*up*." In contrast, V-language NSs express path with a motion verb: in (2) Korean NS expressed path with the compound verbal system, which consists of a main verb (deictic) and subordinate verbs (manner and/or path) (Choi & Bowerman, 1991). These main and subordinate verbs are combined through such suffixes as "–e/a" (functioning as an infinitive), "*-ko/tey*" (and), or "*–ese/ase*" (and then) (Oh,2003). The Korean NS conflated path information with the dual-verbs--a path verb "*oll-a* (ascend)" and adeictic verb "*ka*"(go).

[1] For Korean narration transcriptions, I use the Korean alphabetic system Hangul and its English translation that Young and Lee (2004) presented as follows: 1. The first line is written in Korean Hangul. 2. The second line is Korean written in the English alphabet. 3. The third line is an English morpheme-by-morpheme gloss. 4. The fourth line is a free English translation.

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2. Gesture Patterns in Path of Motion Events

McNeill and Duncan (2000) have argued that, by directly linking with Vygotsky's (1987) notion of *inner speech*, gestures provide "an enhanced window into mental processes" (p. 144) in that they reveal a speaker's "psychological predicate" -- a departure from the immediate context and, simultaneously, an implied reference to it (p.145). According to Vygotsky (1986), a psychological predicate depends on context. He provided the following example. Suppose we say "the clock fell." In the case that we noticed the clock was broken, the psychological subject is "the clock" while "fell" in the predicate. However, when we heard something fall in the next room, psychological subject and predicate are reversed because the main idea (subject) is on "fell" and the clock is a psychological predicate, or "the carrier of topical emphasis" (p. 221). Drawing from inner speech, McNeill and Duncan (2000) proposed the existence of a *growth point* (GP), at which the imagistic form of a gesture is dialectically (in the Vygotskian sense) combined with the linguistic content of speech. In this view, gesture and speech are mediated by the same underlying mental processes, and, as a consequence, thought, language, and gesture are interconnected; that is, "the speakers' minimal idea unit…can develop into a full utterance together with a gesture" (McNeill, 1992, p. 220). McNeill (1985) provides a trove of evidence of the interrelationship of speech and gesture, including developmental, semantic, temporal, and pragmatic parallels.

Stam (2006) also explored how path is expressed in L2 (English) speech production of Spanish NSs and what type of TFS patterns L2 learners employ. Her findings were: (a) half of path gestures of English NSs accompanied a satellite or a verb + satellite, and the other half co-occurred with verbs and noun phrases, (b) path gestures of Spanish native speakers were conflated primarily with verbs, and (c) intermediate and advanced Spanish learners of ESL produced path gestures with satellites, ground noun phrases, and verbs + satellites as English native speakers did, but path gestures were still conflated with phrasal verbs (e.g., *get in*) as in Spanish. In contrast, an advanced learner of L2 English produced one path gesture with a path verb as the following example shows (in the examples, * means interruption or repair: % - nonspeech sound; / - unfilled pause; bold – gesture stroke):

(3) Advanced English Learner - *Sylvester and bowling ball (English)*

a. and [then* %**click / so he g**oes] out-PATH of the (e) / water drain 11

iconic: *right hand arcs straight down, then curves a little to the right and holds (Sylvester and the bowling ball going down and out the drainpipe*) PATH

b. and (uh) /// the ball keeps moving with / h(h)im / right?

c. and [he **goes to-PATH** the*] / to-PATH a bowling place

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iconic: *right hand moves up and away from body a little (Sylvester entering bowling alley*) PATH (Stam, 2006, p. 157)

In (3), the advanced L2 speaker conflated downward path gestures with the path verb "goes." As a result, although L2 verbal production is grammatically correct, some advanced L2 learners are gesturally grounded in L1 TFS patterns. This result suggests that L2 speakers are at the transitory phase from L1 to L2 TFS patterns and have not completely acquired the target language.

As demonstrated above, most of the L2 studies on motion events have predominantly examined TFS patterns of English and Spanish speakers. However, there has been only one study (Choi & Lantolf, 2008) to investigate how Korean-English bilinguals express path and manner of motion in the narrations of their L1 and L2. In this study, two advanced Korean speakers of ESL participated and, they were asked to narrate the story in L1 Korean and L2 English just after viewing a cartoon 'Canary Row.'First, consider how Korean learners of English encode path information in their L2, compared with English NSs when they describe Sylvester climbing up the drainpipe.

(4) Korean speaker of ESL
Climbing <uh> up the building #<uuhh> [RH/**through the gutter**/]
While LH holds a gutter shape, RH, with all digits extended and pointing upward with palm slightly cupped, rises up from lap and moves up through LH: path-only information (Choi & Lantolf, 2008, p. 208)

(5) L1 English speaker [anyway the<e>] [/cat] [RH/climbs **up** the gutter/]
RH, with a palm facing forward, rises up and stops: path-only information
(Choi & Lantolf, 2008, p. 206)

In (4), the advanced L2 speaker conflated path gesture with a satellite and a ground NP "through the gutter." This TFS pattern was very similar to that of the English NS who bundled the path gesture with a satellite "up" as shown in (5). Hence, Choi and Lantolf concluded that there was a shift from L1 to L2 TFS patterns at least for path of motion.

However, Choi and Lantolf found that in the expressions of manner of motion, L2 English speakers maintained their own L1 TFS patterns. To figure out their L1 TFS patterns, compare the differences of Korean (Example 6) TFS patterns.

(6) L1 Korean speaker
[막 올-라 갔-어-요]
mak *oll-a* *ka-s'-ə-yo*

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Intensively ascend-CNC[2] go-TNS-HON
'[the cat] went up'
BH wave up and down, imitating Sylvester's paws climbing up the pipe while moving up: manner + path information (Choi & Lantolf, 2008, p. 209)

In (6), the L1 Korean speaker presented manner information through crawling-motion gestures, not a verbal route (i.e., a manner fog) because Korean (V-language) tends to pay less attention to manner than S-languages do. Although a path verb 'oll-a (ascend)' and a deictic verb 'ka (go)' did not convey manner of motion, manner was encoded in hand gestures like 'Sylvester climbing up a drainpipe with his paws.' Thus, the Korean TFS pattern is to encode manner on manner fog.

In sum, Choi and Lantolf's findings suggest that the examination of TFS patterns of L2 speakers manifests a TFS transfer occurring in path of motion, but not in manner of motion. The reason can be inferred from Talmy's (2000) claim that path of motion is obligatory in both S- and V-languages although manner of motion is optional. For this reason, Choi and Lantolf argued that a transfer in the path TFS pattern seems to occur naturally without reformulation, but L2 speakers need to retrain their L1 thinking ways to L2 manner TFS patterns. Consequently, the authors supported Ushakova's (1994), Lee's (2007), and Jung's (2008) position, in which, because L2 speakers are ontogenetically trained to think from the L1 perspective and tend to think in L1 for L2 speaking, it is hard to incubate L2 TFS patterns.

The current findings extend this work by examining the data from both intermediate and advanced English language learners. The main purpose of this study is to examine two research questions: (1) "Do speakers with more limited language proficiency retain L1 (native Korean) TFS patterns in their L2 (English) narrations by synchronizing path-only gestures with verbs (i.e., enact L1 GPs?" and (2) "Do native Korean speakers identified as advanced English speakers *shift* to L2 (English) TFS patterns synchronous with English NSs, by virtue of sufficient linguistic knowledge and the appropriation of L2 norms and ways of thinking, due, perhaps, to their long and early exposure to English speaking practices?"

[2] Korean grammatical morphemes used in the transcripts: ACC: Accusative case; AUX: Auxiliary; CNC: Concatenating suffix; CND: Conditional CNJ: Conjunctive suffix; FP: Final particle; INS: Instrumental case; LOC: Locative case; NEG: Negator; NOM: Nominative case; TNS: Tense; -yo: An honorific suffix.

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III. METHOD

1. Participants

Thirty-two Korean-English bilinguals studying in the U.S. participated in this study, constituting two separate groups: Intermediate speakers and advanced speakers. Group assignment was determined by a combination of factors, including age of arrival to an English-speaking country, length of stay, and performance on a standardized test score. The spoken English proficiency of all participants was measured with a standardized test, the Versant Test of Spoken English provided by Pearson. Levels of proficiency are: Emerging (20-25), Elementary (26-35), Intermediate-Low (36-46), Intermediate-Middle (47-57), Intermediate-High (58-68), Advanced (69-80). This test was administered over the phone for about seven to nine minutes and scored by computer immediately after the test was completed.

Those in the Intermediate group (n = 16) had a mean score 46 on the test of spoken English (range 37 – 56), arrived in the US in their early 20s (age 21 to 28) and at the time of data collection had stayed in the US for less than 2 years (1 to 3 years). Those in the advanced group (n = 16) had a mean test score of 69 (range 59 – 78), arrived in the US in their teens (age 12 to 15) and attended high school here, and at the time of data collection had stayed in the US for a minimum of 8 years (5 to 14 years).

2. Procedure and Coding

All participants watched the "Tweety and Sylvester" cartoon entitled "Canary Row," which is well known as a gesture stimulus in many studies (e.g., McNeill, 1992; Stam, 2006). Instructions were provided in both Korean and English. Participants were not informed about the intended focus on their use of gestures, only that there was interest in how they narrated their account in Korean and in English. After watching the cartoon, each participant retold the story to the listener, the first author of this study, in English first and Korean later. The cartoon consists of eight episodes, and between each episode there is a black screen. Because the long length of the story might give any memory challenge to participants, each participant retold the story twice in English: First after watching the first four episodes and later after watching the rest of four. The English retelling was followed by Korean full story-retelling without any break. The role of the listener was to provide only back channels and continuers such as "OK" and "uh huh." Each participant was video-recorded.

All video-recorded data were imported into Transana, a computer tool developed by Fassnacht and Woods (2005) to analyze digital video data. Utilizing conversation analysis

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(CA) verbal transcript conventions (Jefferson, 1989; Appendix), we transcribed each participant's speech, and then, his/her gesture was also transcribed on the basis of McNeill's (1992) gesture transcription conventions (Appendix) were used.

First, for gesture analysis, I watched the video data, first with the volume off and later with the volume on, and in a regular and slow motion over and over. Gesture was classified as iconics, deictics, metaphorics, and beats under McNeill's (1992) category, and path gesture (e.g., a trajectory of the bowling ball or Sylvester) was identified. For the temporal synchrony of path gesture-speech, I utilized McNeill's (1992) gesture unit (i.e., preparation, stroke, and retraction) and identified the temporal match point that each path stroke was synchronous with part of speech (i.e., satellites, verbs, ground NPs, etc.) by running the video very slowly. Beat gestures superimposed on any path gesture was considered as one path gesture. As Alibali, Heath, & Myers, H. J. (2001) reported, most of the gestures in this data ended in a rest position, but some of them were successively generated without ending at the rest position. In these successive cases, I determined a change of hand shape, motion, or position of hand(s) as a unit of an individual gesture. Path information in motion events, which appeared in a speaker's linguistic and gestural expressions, were identified and coded as co-occurring either with (a) motion verbs, (b) satellites (i.e., path adverbs or path prepositions), (c) ground NPs, (d) more than one element (e.g., a verb + satellite, a verb + ground NP, a verb + satellite + ground NP; cf. Stam, 2006), and others (e.g., pauses, onomatopoeia, non-path adverbs/prepositions, conjunctions, etc.). 10% of the gestures were selected from the entire data, two other peer researchers played a role as inter-raters reliability, we established 91% of agreement. Two consecutive path gestures synchronous with repaired speech were counted separately because I did not know what speaker's intention was. The mean rate of path gesture per 100 words in L2 English was counted to compare the path-encoding differences between intermediate and advanced speakers. As Alibali et al. (2001) pointed out, the gesture rate per minute may reflect the difference of speech rates, rather than the difference of gesture rates. For this reason, the rate of gestures per 100 words was chosen as a main dependent variable instead of that of gestures per minute as they did. We should also note that speech production errors were quite rare in these data overall, so they were not addressed in this analysis.

IV. RESULTS AND DISCUSSION

1. Path Expression in L1 Korean Speech and Gesture

Supporting the previous studies mentioned above, this study found that L1 Korean

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participants revealed typical V-language TFS patterns in encoding path information in their L1. As other V-language NSs did, Korean participants conflated a majority of path gestures (71%: 194 out of the total 274 path gestures) with motion verbs. The second frequent encoding pattern was path gestures conflated with ground NPs (14%; 38 out of 274 path gestures). Another 8% (23 out of 274) of path gestures were conflated with other elements: 7 (30%) with onomatopoeia, 7 (30%) with non-path adverbs (e.g., just, also, like), 7 (30%) with filled/unfilled pauses, and 2 (10%) with conjunctions. The rest 7% (19 out of 274) of path gestures were synchronous with more than one element: 11 (58%) of the total 19 path gestures with a ground NP + suffix, 3 (16%) with a ground NP + suffix + verb, 2 (11%) with a suffix + verb, 2 (11%) with a non-path adverb + verb, and 1 (5%) with a ground NP + suffix + non-path adverb. No gestures of both proficiency groups were focused on a satellite in L1 Korean narrations.

While, as described above, my finding is consistent with results of other studies on Spanish NSs' TFS patterns, the sole other Korean language study of path gestures appears to be slightly discrepant. According to Choi and Lantolf (2008), a majority of L1 path-only gestures by Korean NSs were conflated with motion verbs (5 out of 13 path gestures) and ground NPs (5 out of 13). In contrast, my study found that Korean NSs expressed path gestures predominantly on motion verbs, but only a small portion of such gestures on ground NPs. The different results between mine and Choi and Lantolf's might be related to the difference of the total number of path gestures (274 path gestures in my study vs. 13 in theirs). Hence, it appears hard to compare the frequency in two studies.

Next I explore how Korean NSs' TFS patterns are manifested in L1 speech and gesture by examining their typical TFS patterns embedded in path-encoding patterns. Consider the following qualitative examples to see a detailed picture of their L1 TFS.

2. Korean L1 TFS manifested in encoding L1 path information

As mentioned just above, the typical TFS patterns manifested in Korean L1 narrations was to encode path gestures on motion verbs. However, although the portion was small, a certain number of path gestures were conflated with more than one element and ground NPs, and thus, they tended to be identified as weak L1 TFS patterns.

1) Typical L1 TFS pattern: Conflating path gestures with motion verbs

Korean participants revealed typical Korean L1 TFS patterns by synchronizing a majority of path gestures (71%) with motion verbs. Typical examples are demonstrated in Excerpts 1 to 3. In Excerpts 1 and 2, HN tells the story of Sylvester entering the building where Tweety lives.

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Excerpt 1 (HN encodes a path-only gesture on a path verb "enter")

1. 막 (0.4) 빌딩으로 [들-어- 갔더-니]
(1)

mak bildiŋ-ŭlo tŭ-ə- kas'de-ni
intensively building-into enter-CNC- go-TNS-CNJ
[path] [motion + deixis]

'[the cat] enters the building'

(1) LH moves right to left, drawing a short straight line (*path-only*).

In Excerpt 1, HN drew a horizontal line to show the cat's trajectory while telling the story about the cat entering the building. The gestural stroke was conflated with the path verb 들어 'tŭlə' (enter) HN drew a horizontal line to show the cat's trajectory, and the path gesture was focused on a path verb 들어 'tul-e' (enter). This is a typical Korean TFS pattern manifested in Korean path encoding.

The typical Korean GP also appeared in Excerpts2, in which Korean L1 speakers HN and TH, respectively, describe Sylvester climbing up the pipe.

Excerpt 2 (HN encodes a path-only gesture on path and deictic verbs "ascend + go")

1. 게 옷을 이제 대신 입-고 [올라-갔어-요]
(1)

ke os-ŭ l ice tæsin yip-ko olla-kas'-ə yo
that clothes-ACC now instead wear-CNJ ascend-CNC-go-TNS-F
[path] [motion + deixis]

'[the cat] wears the monkey's clothes and goes up [the building]'

(1) RH moves up, drawing a very short vertical line (*path-only*)

In Excerpts 2, Korean NSs expressed path linguistically through compound verb constructions ([path] + [motion + dexis]) and their path gesture and speech were conflated. In Excerpt 2, HN moved his right hand vertically at a very short distance. The gestural stroke focused on the bi-verbal construction that consists of the path verb 올라 'ol-la' (ascend) and the deictic verb 갔 'ka's" (go) as suggested by Choi and Lantolf (2008).

2) Path gestures conflated with ground noun phrases

Korean speakers expressed 14% (38 out of the total 274 path gestures) of path gestures on ground NPs. The portion seems to be comparable other V-language speakers' path gestures conflated with ground NPs, i.e., 24% of such path gestures in Negueruela, et al.'s (2004) study and 13% in Stam's (2006) study. As a result, although the most prominent of

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V-language L1 path pattern is path gestures synchronous with verbs, it could be unreasonable to ignore the portion of path gestures conflated with ground NPs. Consider the following example, in which JS describe Sylvester entering Granny's living room, gesturing the trajectory of the cat.

Excerpt 3 (JS encodes a path-only gesture on a ground NP "living room")

1. 할 할머니 (0.3) [리빙룸-으로 딱 들-어-갔-는데]
(1)

(1) *hal halməni liviŋrum-ŭlo t'ak tŭ-ə- kas'-nŭte*
grandmother living room-LOC with a bang enter-CNC-go-TNS-CNJ
[path] [motion + deixis]

'[the cat] entered Granny's living room with a bang'

(1) RH draws a line from right to left (*path-only*).

In Excerpt 3, the right hand of the speaker drew a horizontal line from right to left depicting the path of the cat. The gestural stroke was conflated with a ground NP 리빙룸[3] 'livŋrum' (living room) as McNeill & Duncan (2000) found in their Spanish data. After the stroke, she held the path gesture through onomatopoeia 딱 't'ak' and bi-verbs (path + deixis). It should be noted that as Kellerman and van Hoof (2003), Negueruela, et al. (2004), McNeill and Duncan (2000), and Stam (2006) found in Spanish native speakers' L2 English speaking, Korean speakers conflated a certain number of path gestures with ground NPs.

3) Path gestures conflated with more than one element and onomatopoeic expressions

Although not identified as most typical L1 TFS patterns, a small portion of path gestures (7%; 19 out of the total 274 path gestures) were conflated with more than one linguistic element. Among those items, the most frequent type was path gestures accompanying a combination of ground NP + suffix (11 out of the total 44 more than one element). Moreover, as discussed above, path gestures synchronous with onomatopoetic expressions (7 out of the total 44) are typical of V-language TFS patterns that are not observed in S-languages. Therefore, I still need to consider path gestures conflated with other elements.

First, consider a typical example of how path gestures were conflated with ground NP + suffix. In Excerpt 4, JU depicts the scene in which the cat enters the bird's place.

[3] This is a word borrowed from English, and has similar pronunciation with English.

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Excerpt 4 (JU encodes a path gesture on the ground NP and a suffix "interior-via")

1. 이제 [파이프 속으로 들어- 가-요]
(1)

ice	*phaiphŭ*	*sok-ŭlo*	*tŭə- ka-yo*
now	pipe	hole-via	enter-CNC-go-FP
			[path] [motion + deixis]

'[the cat] goes into the pipe'

(1) RH, drawing a straight line, moves forward and passes through the inside of cupped LH (*path-only*).

In Excerpt 4, JU described the scene in which Sylvester goes into the pipe with his right hand passing through the left hand which portrayed a pipe in the shape of a cup. In this process, he conflated the stroke of the path gesture with a combination of a ground NP + suffix 속으로 'sok-ŭlo' (hole-via), and this result aligns with the pattern of Korean NSs described by Choi and Lantolf (2008). At the end of this phrase, the bi-verbal system of a path verb and a deixis (main) verb was followed.

Second, let me demonstrate a typical example of how path gestures were conflated with an onomatopoetic word. In Excerpt 5, JJ tells the story of when Sylvester walks on the trolley wires, a trolley follows him and he tries to run away.

Excerpt 5 (AA conflates path gestures with an onomatopoetic word "쭈욱.")

1. 와이어 전기 선 타고 [이렇게 쭈욱 갈라-했는-데]
(1)

waiə	*cənki sən*	*tha-ko*	*irə hke c'uwuk*	*kall-*	*hæs'nŭ-te*
wire	electric wire	ride-CNJ	like-this	rapidly go-CNC-do-TNS-CNJ	

'[the cat] tries to run fast along the overhead wire'

(1) The index finger of RH moves right to left (*path-only*).

In Excerpt 5, the speaker depicted the trajectory of Sylvester when he runs away from the trolley while the index finger moving from right to left horizontally. At this point, the gestural stroke was conflated with the Korean onomatopoetic word 쭈욱 'c'uwuk' which imitates the shape of rapid motion without any interruption. This supports a Korean typical TFS pattern described by Choi and Lantolf (2008), which is a distinguished aspect from Spanish TFS pattern under the same V-language category.

In sum, when encoding path information in Korean L1, Korean speakers conflated path gestures mainly with motion verbs and a number of path gestures with ground NPs. This suggests that a typical Korean TFS pattern is to express path gestures on motion verbs as suggested by Choi & Lantolf (2008). However, we still need to pay attention to weak TFS

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patterns (i.e., the small portion of path gestures synchronous with ground NPs and more than one element) because they still appeared in Korean narrations and path gestures conflated with onomatopoetic words are a Korean TFS pattern.

3. Path Expressions in L2 English Speech and Gesture

How do intermediate and advanced speakers encode path information on their L2 English speech and gesture and how do such gestures serve as a window on their TFS patterns? The answer is that L2 speakers' TFS patterns depended on their proficiency; that is, whereas intermediate speakers retained their L1 TFS patterns, advanced speakers tended to shift to L2 TFS patterns.

Let us begin with the analysis of the L2 data by intermediate speakers. Intermediate speakers were more likely to retain their L1 TFS patterns by conflating path gestures most frequently with motion verbs (43%; 53 out of the total 122 path gestures), but only 25% (31 out of 122) on satellites. Consistent with Korean NSs' TFS patterns in Choi and Lantolf's (2008) study, the strong tendency of path gestures with verbs also aligns with L1 TFS patterns of Spanish in other studies (Kellerman & van Hoof, 2003; Negueruela et al., 2004; Stam, 2006). This tendency is in contrast to English NSs' TFS pattern that is identified as a majority of path gestures synchronous with satellites, but not verbs in Negueruela et al.'s study (2004). 15% of path gestures (18 out of 115) were conflated with ground NPs, and a similar frequency of such gestures also appeared in Spanish NSs' and English NSs' L1 speaking in Negueruela et al.'s (2004) and Stam's (2006) study. A small portion of path gestures (10%; 12 out of 122) were conflated with more than one element: 83% (10 out of the total 12 path gestures) with a verb + satellite, 8% (1 out 12) with a non-path adverb + verb, and 8% (1 out of 12) with a satellite + ground NP. The rest of 7% (8 out of 122) were conflated with others, such as conjunctions, non-path adverbs, or filled/unfilled pauses.In contrast, advanced speakers revealed different TFS patterns from their L1 by following English NSs' patterns. In other words, a majority of path gestures (52%; 62 out of the total 119 path gestures) were conflated with satellites, but only 2% (29 out of 119) in motion verbs. This tendency is comparable with typical TFS patterns of English NSs found in previous studies (Choi & Lantolf, 2008; Negueruela et al., 2004). 13% (15 out of 119) were conflated with ground NPs. Only 6% (7 out of 119) of path gestures were synchronous with more than one element: 71% (5 out of the total 7 path gestures) with a verb + satellite, 14% (1 out of 7) with a satellite + ground NP, and 14% (1 out of 7) with a satellite + conjunction + verb. The rest of 5% (6 out of 119) co-occurred with other linguistic elements, such as non-path adverbs and conjunctions.

Consequently, this finding shows that in L2 English narrations, intermediate speakers were more likely to maintain their L1 TFS patterns by synchronizing path gestures mainly

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with path verbs. By contrast, advanced speakers were more likely to employ English L2 TFS patterns by conflating path gestures mainly with satellites as English NSs do. The result aligns with findings in other studies (Choi & Lantolf, 2008; Stam, 2006), which reported that some L2 speakers may shift L1 V-language to L2 S-language TFS patterns when they encoded path information on L2 English. My finding has a closer alignment with Özyürek's (2002) research, in which advanced L2 English (L1 Turkish; a V-language) speakers, who had been educated in English-speaking schools since age 11 and had lived for the past 10 years in the United States, employed more target language-like path gestures in their L2 than beginning learners, who had only one year's experience of L2 learning starting at age 19.

The differences between intermediate and advanced speakers became clearer when we compare the mean rates of path gestures per 100 words in L2 narrations. As Table 1 shows, the effect of L2 proficiency on satellites and motion verbs was very strong. However, the mean rate of path gestures synchronous with ground NPs and more than one element by intermediate and advanced speakers was not statistically different. To clarify why/how such differences were produced by different proficiency L2 speakers, consider the following excerpts in which I demonstrate the different TFS patterns of intermediate and advanced speakers.

1) L2 TFS by advanced speakers: Conflating path gestures with satellites

Table 1 shows that the effect of L2 proficiency on satellites was very strong. Typical English TFS patterns (i.e., conflating path gestures primarily with satellites) appeared much more often in L2 narrations of advanced speakers than intermediate speakers; the mean rate of path gestures synchronous with satellites by advanced speakers was statistically much greater than the mean rate by intermediate speakers (*Cohen's d*=.78).

TABLE 1
Mean Rates of Path Gestures with Satellites, Ground NPs, More than one element, and Motion Verbs in English L2 Produced by Intermediate and Advanced L2 Speakers.

	Intermediate	Advanced					
Categories	*M* (*SD*)	*M* (*SD*)	*t*(30)	*P*	95%	CI	Cohen's *d*
Satellites	0.33 (0.29)	0.58 (0.35)	1.20	0.04	0.18	0.48	0.78
Motion verbs	0.56 (0.42)	0.28 (0.22)	2.34	0.03	0.04	0.52	0.77
Ground NPs	0.18 (0.15)	0.14 (0.15)	0.77	0.45	-0.07	0.15	0.27
More than one element	0.20 (0.29)	0.15 (0.25)	0.59	0.56	-0.14	0.25	0.18
Others	0.16 (0.20)	0.14 (0.19)	0.29	0.78	-0.12	0.16	0.10

NB. M = mean; *SD* = standard deviation; CI = confidence interval

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Typical examples of such cases are shown in Excerpt 6, in which advanced speakers HN and SB describe how Sylvester goes into the drainpipe.

Excerpt 6 (HN encodes a path gesture on a satellite "into")
1. so he actually this time [went **into** the pipe]
(1)
(1) The index of RH moves inside of cupped LH (*path-only*).

In Excerpt 6, the speaker inserted the index finger of his right hand into a cup shape of the left hand to portray path of the cat (see Gesture 1). In doing so, the speaker conflated path gestures with particles, or prepositions – a typical action in English. In other words, in Korean, the path verb requires a suffix to show a trajectory of a Figure; hence, the path verb 들어 'tŭl-ə' (enter) should co-occur with a directional suffix 로 'lo' (into). As Selinker (1972) pointed out, this indicates that native language (Korean L1) may influence English L2 constructions, a condition defined as interlanguage. In a similar vein, this can be an example of how a dual GP of L1 and L2 might be embedded in L2 speech and gesture[4]. Thus, such inaccurate use of satellites might seem to be associated with higher rate (i.e., 25%) of path gestures conflating with satellites by intermediate speakers. However, the increased rate of such path gestures from 0% in L1 Korean to 25% in L2 English may suggest that intermediate speakers were in transition from L1 to L2 TFS. As demonstrated above, while advanced L2 speakers conflated a significantly higher mean rate per 100 words of path gestures with satellites than intermediate speakers. This finding suggests that advanced speakers were more likely to shift to L2 TFS, but the increased percentage of path gestures from L1 to L2 by intermediate speakers might indicate that they were in a transitory phase from L1 to L2 TFS patterns.

2) L1 TFS by intermediate speakers: Conflating path gestures with verbs

Strong L1 TFS patterns appeared in L2 narrations of intermediate L2 speakers. As shown in Table 1, the pattern to encode path gestures on motion verbs (i.e., L1 Korean TFS patterns) was prominent in intermediate speakers in English L2; the mean rate of path gestures synchronous with motion verbs by intermediate speakers was much greater than that by advanced speakers (*Cohen's d*=.77).

[4] In a discussion session during his talk on June 23, 2009, McNeill explained a dual GP would breathe in L2 speakers' mind and that is revealed through gesture, which is grounded in L1 thought.

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Excerpt 7 shows a typical example of how path gestures were conflated with motion verbs. In this excerpt, intermediate speaker CH describes the cat entering the building where the bird is.

Excerpt 7 (CH encodes a path gesture on a path verb "enter")

1. so [he **enter**] the building
   (1)

(1) The thumb of RH moves slightly forward (*path-only*).

In Excerpt 7, intermediate speaker CH thrust his left thumb forward to portray that the cat enters Tweety's apartment, conflating the path gesture with the verb "enter." These examples are consistent with Korean L1 TFS patterns in which path gestures are mainly expressed on verbs, and thus, suggest that intermediate proficiency L2 speakers maintain their L1 TFS patterns in encoding of path information in their L2. As demonstrated above, intermediate speakers were more likely to retain their L1 path-encoding pattern by expressing path gestures on motion verbs. This aligns with TFS patterns of the beginning L2 English speakers in Özyürek's (2002) study of Turkish NSs.

3) Path gestures conflated with ground noun phrases and more than one element

As shown in Table 1, the effect of L2 proficiency on path gestures conflated with ground NPs and more than one element was weak (Ground NPs, *Cohen's d* = .27; more than one element, *Cohen's d* = .18). This result implies that although the tendency of conflating path gestures with satellites or motion verbs can be a signal to differentiate TFS patterns of intermediate and advanced speakers, path gestures synchronous with ground NPs and/or more than one element are not strongly related to L2 proficiency. However, in contrast to the statistical result, descriptive data show some differences between intermediate and advanced speakers. Consider the following examples:

First, consider Excerpt 8, in which intermediate speaker HY encodes a path gesture on a ground NP, while telling the story that Sylvester rolls down the street.

Excerpt 8 (HY encodes a path gesture on a ground NP "bowling ball")

1. he um::: he (3.4) um:::: (5.4) he went [to the **bowling ball** center]
   (1)

(1) Thumb of LH points to right while moving to right slightly (*path-only*).

In Excerpt 8, an intermediate speaker moved her thumb to the right side slightly, pointing to that side. Two pauses (3.4s and 5.4s) and stretched filled pauses "um::::" seem

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to show that she might have troubles producing the following utterances. After the long pauses, finally she described the trajectory that the cat moved with the path gesture being conflated with a ground NP "bowling ball center." It is notable that, although there was no significant statistical difference of path gestures synchronous with ground NPs between intermediate and advanced speakers, neither gesture nor speech of most intermediate speakers was more likely to be expressive enough to describe the actual moment that Sylvester rolls down the street to the bowling alley, but only a few advanced speakers did. This result aligns with Stam's (2006) finding that intermediate English learners "seem to follow the L2 pattern not the L1 Spanish one… in terms of expressing what actually occurred in the motion event, neither speech nor gestures capture all aspects of Sylvester's movements" of rolling (p. 162).

Another qualitative difference between intermediate and advanced speakers appeared when they described Sylvester rolling down the street to the bowling alley. The "rolling down" motion event was more likely to be expressed only by advanced speakers properly, who conflated a downward path gesture with a verb + satellite "roll down."Consider Excerpt 9 in which a path gesture was conflated with the combination of a verb + satellite "roll down"

Excerpt 9 (NY encodes a path gesture on a motion verb + satellite "rolling down")

1. [he **was rolling down**] (1.2) uh to the bowling alley
   (1)

(1) Index finger of LH slides down to right diagonally (*path-only*).

In Excerpt 9, advanced speaker NY moved her left hand down to show the down trajectory of the ball. The path gesture was conflated with the combination of a verb + satellite "rolling down," and this expression was descriptive enough to capture the scene in which Sylvester rolls down the street to the bowling alley as did English native speakers in Stam's (2006) study.

To summarize, whereas advanced speakers tended to conflate path gestures with satellites (i.e., with English NSs' TFS patterns), intermediate speakers conflated path gestures mainly with verbs (i.e., with Korean NSs' TFS patterns). This finding suggests that advanced speakers tended to shift to L2 TFS patterns, but intermediate speakers were more likely to maintain their L1 TFS patterns. However, when we consider the percentage of path gestures synchronous with motion verbs, the percentage of such gestures by intermediate speakers was decreased a lot from L1 (71%) to L2 (43%).The decreased rate might seem to show that intermediate speakers were in a transitory phase from L1 to L2 TFS patterns. While advanced speakers' shift and intermediate speakers'

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non-shift to L2 TFS patterns align closely with the findings of Özyürek (2002), intermediate speakers' transitory phase supports Stam's (2006) findings.

V. CONCLUSIONS

Prior studies have shown that monolinguals of Spanish, a V-language, exhibit path gestures predominantly along with spoken verbs, and rarely if ever with spoken satellites (e.g., Negueruela et al., 2004; Stam, 2006). This study extends that work by investigating coordinated speech and gesture use among native Korean speakers, another V-language. A further contribution is that these participants were intentionally sampled from among groups of speakers of different proficiency levels, based on their age of arrival to the US, length of stay, and performance on a standardized test of spoken English. Advanced speakers - those arriving earlier, staying longer, and with higher standardized test scores -- conflated a majority of path gestures along with spoken satellites, showing that they commonly shift to L2 TFS patterns, as native English speakers do. Further, when reporting in L2, their TFS patterns were different than when these same speakers reported in their L1. In contrast, intermediate speakers -- those arriving recently, at later ages, and with significantly lower test scores -- tended to maintain V-language TFS patterns during both L1 and L2 narrations so that a majority of path gestures were conflated with verbs, in a manner consistent with their L1. It should be noted that while the advanced group certainly showed higher levels of spoken English proficiency, the performance levels of those in the intermediate group still indicated competency of spoken English.

The unique empirical finding is that speakers' integrated speech-gesture productions, or growth points, tracked their proficiency levels: Intermediate level speakers exhibited Korean GPs for motion events even when speaking English, while advanced speakers speaking English exhibited GPs consistent with native English speakers, but generated GPs consistent with their L1 when speaking in Korean. TFS patterns of advanced speakers have become more like English native speakers' GPs. Intermediate proficiency level speakers are more likely to exhibit a conflicting GP that draws on L1 gesture patterns and L2 speech when they report out in English.

Based on this, I claim there is something different going on than observing expert-novice differences among L2 speakers. Gestures can indicate the developmental "leading edge" for young children in areas like the principles of conservation (Church & Goldin-Meadow, 1986), Earth science (Singer, Radinsky, & Goldman, 2008), and arithmetic (Alibali, 1999) — signaling those students most ready to make a developmental advancement. Yet gestures can also indicate the historical trace of speakers' prior developmental levels once major portions of the shift have already occurred (Church, Perry

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& Goldin-Meadow, 1988). Hence, I suggest that L2 educators need to know that GPs of intermediate level speakers reveal the "trailing edge" of their linguistic development as bilinguals. It seems to be critical that L2 educators utilize gestures as a tool to evaluate L2 learners' developmental levels by observing learners' TFS patterns.

However, this study has several limitations. The first limitation is that although this study examined TFS patterns of intermediate and advanced L2 speakers through path gestures, we need to examine how beginning levels of L2 speakers encode path information in their L2 in the future. Through that examination, we can have a clearer picture of how proficiency is related to L2 learners' TFS patterns.

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Appendix

Gesture (McNeill, 1992) and Speech (Jefferson, 1989) Transcription Conventions

Gesture	Speech
[gesture phrase] [[gesture] [unit]] **stroke** hold (number of each gesture) LH, RH, BH Left hand, right hand, and both hands	(0.4) Duration of silence a second . Nuclear tone on a pitch unit :: Prolongation or stretching

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Examples in: English
Applicable Languages: English
Applicable Levels: Secondary

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