A Thesis

entitled

Language Learning through Dialogs:

Mental Imagery and Parallel Sensory Input in Second Language Learning

by

Yifan Zhao

Submitted to the Graduate Faculty as partial fulfillment of the requirements for the

Master of Arts Degree in English with a Concentration in ESL

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An Abstract of

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According to current theories of second language learning that take into account how memories form in the brain, learners must be exposed to perceptual input that allows them to form associations between speech behaviors ("words") and parallel sensory input from other things in their environment. Yet many learners do not receive this exposure, and still succeed. A UT master's thesis (Postica, 2006) found evidence that some learners can create a substitute for such parallel sensory input by means of mental imagery. Her study provided a possible explanation for how people can learn a second language despite the absence of theoretically required parallel sensory input.

This study is an extension/replication of Postica's MA thesis research but with new dialogues. In the study, all the subjects were divided into two group and then will receive three very short mini-dialogues composed in an artificial language with translations in English (via PowerPoint). During the experiment, one of the groups was instructed to try to imagine the scene as they read the dialogues. The other group was not given this added instruction. Subjects were then allowed to review the dialogues and a vocabulary list for a fixed period of time (5 minutes). In the study period instructions, again one of the groups is instructed to visualize the people, the things in the scene, and

the actions as they try to imagine hearing the lines of the dialogue. Afterwards, a post-test measures both accuracy and understanding of the elements of the target language that were presented in the mini-dialogues. Several other questions will also be asked about the subjects' learning strategies used during the study period. One of the strategies they were asked about was whether they tried to visualize the people, the things in the scene, and the actions as well as tried to remember hearing the lines of the dialogue.

There were two hypotheses that were tested in the study. The first one explored if the subjects who reported their use of mental imagery did better than those who reported not using mental imagery. The second one was to see if the subjects who received the instructions and the narratives of the events did better than the subjects who did not receive that added instruction. The results of the study show failure of replication but indicate that the added instructions and narratives of the events inhibit the ability of people to use mental imagery and actually decrease the accuracy. We need to find something more effective to help people to learn.

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Chapter One

Input in SLA and Mental Imagery

Assumptions about Input in SLA

Input in SLA (Second Language Acquisition) is usually defined as what Saussure (1959) called the "objects of language", i.e., words or morphemes arranged in hierarchical relations in sentences possessing certain grammatical structures, and so on (Coleman, 2013a, p. 1). This assumption is just as what Ellis states, that "input constitutes the language to which the learner is exposed…it serves as the data which the learner must use to determine the rules of the target language" (Ellis, 1986, p. 299). That is to say the input in SLA is thought of as the target language that "comes from a variety of sources including the language that the learner hears (e.g. in the classroom by the teacher, outside of the classroom by speakers of the second language), reads (in textbooks, in other reading materials), or sees, in the case of a signed language" (Gass and Selinker, 2008, p. 31). The assumption that input consists of language is so widespread in the field of SLA because it is an important part of the extremely influential theoretical framework for language learning offered by Chomsky (Coleman, 2013a, p. 1).

Chomsky (1964) held the assumption that input consists of "primary linguistic data" which is defined as well-formed sentences in the language to be learned (p. 26). He explained that "we can take as an objective for linguistic theory the precise specification of two kinds abstract device, the first serving as a perceptual model and second, as a model for acquisition of language" (Chomsky, 1964, p. 26). His assumed device of language processing is shown in Figure 1.

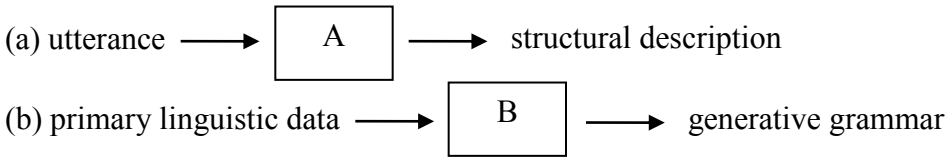

Figure 1. Chomsky's (1964) assumed device for language processing

Chomsky (1964) argues that language learning is an innate process based on the "innate specifications of heuristic procedures and built-in constraints on the character of the task to be performed," (p. 26) and he assumes that there is a "language organ" in peoples' brains that allows them to process language. His second assumed language processing device now referred to as the LAD (language acquisition device) was supposed to receive data from language and then transformed into grammar for people to communicate (Postica, 2006, p. 8). Chomsky (1975) believes that "all children share the same internal constraints which characterize narrowly the grammar they are going to construct" (p. 98). Therefore, by his assumption, the process of learning language is receiving input which is referred to as "primary linguistic data", then processing such input via LAD and at last producing output. Cook and Newson (1996) explains in *Chomsky's Universal Grammar* that

> Children hear a number of sentences said by their parents and other caretakers the 'primary linguistic data'; they process these in some fashion within their black box, called the Language Acquisition Device (LAD), and they acquire linguistic competence in the language, i.e. a 'generative grammar'. (p. 79)

However, Chomsky's idea of 'generative grammar' had been proved to be unlearnable by Gold (1967) in "Language identification in the limit." He points out that grammar is unlearnable if given the input assumed by Chomsky's LAD and the output which it produces. He demonstrated that in the language learning process assumed by

Chomsky, both positive instances which is the grammatical strings of the input language and the negative instance which is the ungrammatical strings of the input language are needed (Morgan, 1986, pp. 28-37). Therefore, languages learners need to be presented in both positive and negative instances which means they need to hear both "right" and "wrong" sentences during the process (Morgan, 1986, pp. 28-37).

Faced with Gold's challenge, Chomsky's response was not to change but to propose an additional assumption of Universal Grammar (UG) which redefined the language as "simply that part of human psychology that is concerned with one particular 'mental organ', human language" (Chomsky, 1975, p. 36). He generated his idea as follows:

> Stimulated by appropriate and continuing experience, the language faculty creates a grammar that generates sentences with formal and semantic properties, we say that a person knows the language generated by this grammar. Employing other related faculties of mind and the structures they produce, he can then proceed to use the language that he now knows. (Chomsky, 1975, p. 36)

Cook (1993) also summarized the basic structure of Chomsky's Universal Grammar theory in *Linguistics and Second Language Acquisition* as follows. If a native speaker of a particular language knows a certain feature of his or her language and that feature is provably unlearnable when the learner is given only the primary linguistic data, it can be said that the language feature cannot have been learned from experience and must be built-in to the mind (pp. 207-208). He calls this "how the [learner's] mind turns the language input it encounters into a grammar by using its built-in capabilities" (p. 1). That is to say, Chomsky sees the creation of Universal Grammar as a mechanism to explain

how the speaker knows the unlearnable: he claims language does not need to be learned because it is innate (Coleman, 2005, p. 206). Therefore, it is commonly assumed that the LAD itself can be seen as synonymous with the language faculty, i.e. Universal Grammar (Cook & Newson, 1996, p. 81). Cook also reproduces and illustrates Chomsky's (1964) diagram as follows.

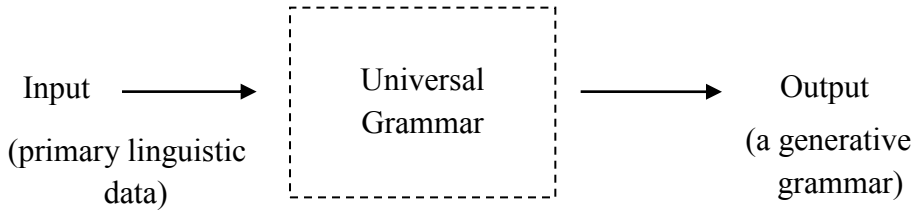

Figure 2. Cook's (1996) assumed device for language processing

It is also important to note that Chomsky (1964) made a distinction between language learners' competence and their performance. Chomsky claims that "a distinction must be made between what the speaker of a language knows implicitly (what we may call his competence) and what he does (his performance)" (Coleman, 2013b, p. 24). In Chomsky's (1965) point of view, competence is "the speaker/hearer's knowledge of his language", whereas performance is the actual use of language in concrete situations (p. 4). Carroll (2001) also defined the linguistic competence as "knowledge of a language however it happens to be represented [and] this knowledge might correspond to a psychogrammar – defined here as the grammatical information used in parsing and producing a language" (p. 24). Chomsky (1964, 1965, 1975 and 2002) mentioned many times in his theoretical framework about language input that the output of language learning device is linguistic competence – the linguistic faculty of possessing grammar consisting of principles, parameters and lexicon, and it is a limited set of rules for organizing language, out of which people develop their language abilities later on (Xin,

2012, p. 4). In other words, language learners will have the ability of processing grammatical structures after they receive only the "primary linguistic data".

Krashen generally agrees with at least the basic elements of the Chomskyan view of language learning, but in the process he distinguishes "acquisition" as the "subconscious process for developing language ability via the language 'mental organ' (Krashen, 1985, p. 100) and he recasts the central issue of learning as "comprehensible input" (Coleman, 2013a, pp. 1-2). However, it seems like Krashen (1985) made an argument which is self-contradictory. On the one hand he argues that "input is the essential environmental ingredient," and "the acquirer does not simply acquire what he hears—there is a significant contribution of the internal language processor (Chomsky's Language Acquisition Device: LAD)" (pp. 2-3). He points out that "not all the input the acquirer hears is processed for acquisition, and the LAD itself generates possible rules according to innate procedures" (p. 3). On the other hand, he states that the input is comprehensible because "we are able to understand language containing unacquired grammar with the help of context, which includes extra-linguistic information, our knowledge of the world, and previously acquired linguistic competence" (Krashen, 1985, p. 2). In other words, Krashen believes that input is consists of "primary linguistic data" which is Chomsky's point of view, however, he also believes what makes input comprehensible is not part of that "primary linguistic data". Krashen generalized his ideas as follows.

> The extensive evidence for the Input Hypothesis, reviewed below, supports Chomsky's position, and extends it to second-language acquisition. We may see individual variation 'on the surface' – different

> sources of comprehensible input, different strategies for obtaining input, different messages, and of course different languages – and this variation may be of practical concern. But deep down, the 'mental organ' for language (Chomsky 1975) produces one basic product, a human language, in one influential way. (Krashen, 1985, p. 3)

A review of the field (Coleman, 2013a) shows that the assumptions that language input consists of "objects of language" are also widespread and accepted by most linguists in the area of SLA. Morgan (1986) holds an alternative but essentially Chomskyan view which assumes that not only the language input consists of "primary linguistic data" but also that input contains bracketing information about the hierarchical structures present in it (Coleman, 2013a, p. 2). According to Gass and Selinker (2001), input consists of "objects of language" and that "learners are exposed to a body of second language data…known as input" (p.400). Sharwood Smith (1994) defines the input as "language data (utterances, texts) which the learner is exposed to" and he explicitly points out that "Children must learn from the 'normal' input, i.e., from utterances in the target language as produced by parents and caretakers" (p. 144). In other words, "utterances" are the only thing which available for language learners in Sharwood Smith's argument. Saleemi (1992) generalized a brief overview about number of variations of the Chomskyan paradigm (Chomsky, Chomsky & Miller, Fodor, Pinker, and Wexler & Culicover) which "all seem to share the assumption that the "data" for language learning — also referred to as "the available evidence", or "environmental input"— consists of language" (Coleman, 2013a, p. 2). In regards to language learning, as Saleemi put it "The evidence constitutes the input to the learner.... the evidential data

consist of a finite set of particular examples relating to the object of learning, such as a natural language" (p. 8). Long (1985) also sees language learning as "environmental contributions" and defines them as "any linguistic or conversational experiences which serve to facilitate, delay, or preempt language acquisition" (p. 392).

From the literature of the stream main assumptions about language input in the area of SLA reviewed above, it is obvious that two main assumptions about language input have been made. First, input is the target language that consists of the "primary linguistic data". Second, the process of learning a target language is that the learner receives the input, then after process in LAD which is innate procedures in brain and the learner constructs grammatical structures by themselves, at last produces the output. However, with a closer review of the assumptions about input made by other researchers, it can be demonstrated that language input cannot make language learning effective.

Language is Not Real

The definition of language had been discussed for centuries in the field of linguistics. In the long course of human history, language has been regarded as human's inherent ability that lends itself to study but eludes an unequivocal definition and schools or philosophical of thought have re-defined "language" for best fit the intellectual framework of their time (Postica, 2006, P.1-2). The range of definitions of language has been explained by Botha as follows.

> [Language is] something material, something behavioural, something mental, something biological, something abstract, something social or something cultural – to mention some of the stuffs language has been supposed to consist of. As for shapes, language is thrust down one's throat

> as a thing, pushed as process, promoted as a procedure, auctioned as action, flogged as form, sold as system and marketed as means. Which bring us to diversity in design, conceptions of language being available in many a mode: nominalist, conceptualist, realist, obscurantist, eclecticist and so on. And each conception of language has its own finish. As for origin: conceptions of language come with all kinds of credentials, tagged as Aristotelian, Platonic, Cartesian, Humboldtian, Saussurian, Bloomfieldian, Sapirean, Wittgensteinian, Chomskyan, and so on and so forth. (Botha, 1992, p. xii)

Many linguists over the centuries think that language can be studied systematically. They began the formal language learning by classifying sounds into consonants, vowels, and word classes such as nouns and verbs, dividing sounds into phonemes, formulating morphological and syntactical rules and so on (Xin, 2012, p. 8).

However, Saussure (1959) recognized the "objects of language" which is the phonemes, morphemes, phrases, clauses, sentences, and so on do not have the objective existence (Coleman, 2013a, p.4), As he put it:

> Other sciences work with objects that are given in advance and that can then be considered from different viewpoints; but not linguistics…in linguistics, far from it being the object that antedates the viewpoint, it would seem that it is the viewpoint that creates the object. (p. 8)

Yngve (1996) also make his argument in *From Grammar to Science* that: "a linguistics focused on the objects of language and grammar cannot be scientific: it does not study objects given in advance like the natural sciences do…this is a characteristic of

the logical domain, not the physical" (p. 30). In other words, Yngve held the point of view that language does not exist in the psychical domain and cannot be systemically studied like any other scientific courses which based on the natural world and have physically existence.

In order to further discover the reason why language cannot be learned scientifically, Yngve (1996) gave his point of view based on the examples he provides as follows.

> A runner on the women's Olympic team is at the starting mark. A gun is discharged and she hears the noise. With as short a delay as possible she starts to run. In this case the equipment in her head has been set to interpret the noise from the starting gun as a starting signal and to act on it as quickly as possible. (p. 3)
>
> …
>
> A schoolboy is about to start in a race. The starter says, "Go!" The boy starts to run with as short a delay as possible. Here the boy is set to start when he hears a different sounding noise. (p. 3)
>
> …
>
> After dinner the boy and his sister are considering playing a board game. "What game should we play?" he asks. "Go!" she says. Here the equipment in the boy's head is set to interpret the noise as the name of a game, like checkers or chess. He does not start running with as short a delay as possible. (p.4)

From the examples mentioned above, Yngve (1996) clearly expressed his idea that different noises might be interpreted in the same way and similar noises might be

interpreted in different way. What matters most during that process is how the people interpret what they hear. Those interpretations depend not only on those noises which people hear but also depends on the "equipment in the head of the speaker or hearer and the momentary state of the speaker or hearer and how the state changes reflecting the tasks in which the noise plays a part…this is where the linguistic action is" (p. 4). Also, people should not continually put too much effort on analyzing in isolation the sound waves of speech during the study of language. The sound waves of speech are purely physical properties of what people spoken or heard and it can be scientifically measured and observed in acoustics and acoustic phonetics (Yngve, 1996, p. 4). Those sound waves actually do not carry any meaning or grammatical structures, which are purely the subject experiences of the speaker or hearer (Yngve, 1996, p. 4). Therefore, as what Yngve concludes:

> The sound waves do not carry their interpretations from a speaker to a hearer as ancient theory would have it. To speak of sounds in a scientific context as carrying meanings is to invite continuing confusion and error…the common conception of utterances as having grammatical structure and carrying meaning conceals false assumptions from the tradition that will not stand up to even elementary scientific examination and are in fact incorrect. We find in nature only the physical sound waves; their interpretation is entirely in the heads of the speakers and hearers. A scientific analysis must include, besides the study of the physical sounds themselves, a careful and detailed study of the people who produce and interpret the sounds and of what they are doing at the time. (p. 4)

Coleman (2010) also makes another similar argument as Yngve's, but based

on writing. In Figure 3, there are three pictures and the marks “PIES” for people to choose which picture matches those marks,

> Since you are reading this in English, you probably will say "picture B" without hesitation. But if I were to ask someone else a similar question in Spanish, the person would respond by indicating picture C, and if I asked a similar question of a person who understood Polish, the response would be for that person to point at picture A. (p.8)

Figure 3. Coleman’s (2010) “PIES”

The example above shows that different language speakers will choose different pictures which indicates that the words, phrases or sentence we perceive are only marks on paper and when we say there are words on the paper, we are just project our own subject experiences onto those marks.

Generally speaking, language does not exist in the physical domain and cannot be studied scientifically like the objects of natural sciences. The nouns, phrases, sentences or meanings are just the interpretations people have based on their own subjective experiences. Thus, the definition accepted by most linguists that linguistics is “the scientific study of language” is in fact incorrect. As Yngve (1996) put it,

> [Saussure] even exclaimed that the illusion [that] things [are] naturally given in language is profound. The illusion certainly is profound: many linguists still appear to believe that the objects of language exist in nature and are thus given

> in advance and appropriate candidates for scientific study. But Saussure was right. It is an illusion. (p.30)

Therefore, since language does not have physical existence, the assumptions that the input is the target language and consist of "primary linguistic data" seems contrary to evidence and make no sense for effective language learning.

The True Nature of Language Input

Krashen (1985), for example as one of those linguists who has explicitly recognized that only input (language) is not enough and something more needs to be added for effective language learning. He states that "we are able to understand language containing unacquired grammar with the help of context, which includes extra-linguistic information, our knowledge of the world, and previously acquired linguistic competence" (p. 2). Krashen make it clear that he agrees with "language containing unacquired grammar" which is Chomsky's assumption that input consists of "primary linguistic data". However, he explained that input need to be added with "extra-linguistic information, knowledge of the world, and previously acquired linguistic competence" to make input comprehensible. Pinker (1994), who is the supporter of Chomsky's Universal Grammar theory and regarded UG as a "genetic endowment" (Coleman, 2013a, p. 6), also claims that only "primary linguistic data" is not enough for language learning. He said "Though speech input is necessary for speech development, a mere soundtrack is not sufficient" (p. 278).

In the volume of *Input in Second Language Acquisition*, two researchers also hold the point of view that we need more than language input only. Saville-Troike (1985) states that input must be consist of not only "information about the phonological,

grammatical, and lexical nature of the [target] language", but also "cultural information" (p. 52). She explains that

> "New words are encountered along with new cultural artifacts, new verbal routines with new social expectations in role relationships, and new rules for appropriate usage with new cultural values, attitudes, and beliefs" (p. 52).

Wong-Fillmore (1985) also gave a similar statement when refer to an example which related to teacher's teaching. That example is about a teacher trying to teach the English word "weak" to a class of Spanish native speakers; she concludes that "it is doubtful that they could have made much sense out of" the teacher's "rather verbose explanation"(Wong-Fillmore, 1985, p. 35; cited by Coleman, 2013, p. 6). Even though the teacher originally uses English to explain, then she translated of what she said into Spanish. It is still impossible for students to fully understand the English version until they understand the Spanish after the translation by the teachers. Also, during the time when the teacher explained in English, "she did nothing that allowed them to figure out what her words meant" (p. 36).

In 1986, Klein is one of those linguists who seem to understand the key point about the main issue of language input. His famous analogy proved that Chomsky and Krashen's assumptions are false. He said, "what makes learning possible is the information received *in parallel* to the linguistic input in the narrower sense (the sound waves): the learner must know who is speaking to whom, when and where, he must be able to watch the accompanying 'body language' (gesture, facial expression, etc.), and he must note the reactions of the listener" (Klein, 1986, p. 44). Klein illustrates this in a thought experiment, the Chinese Room. "Suppose you were locked in a room and were

continually exposed to the sound of Chinese coming from a loudspeaker; however long the experiment continued, you would not end up speaking Chinese" (Klein, 1986, p. 44). In Klein's point of view, what he mean by "in parallel" is that for that input, it should be contain contextual information including the environment of the communication, gesture or facial expression for the people who have the interaction (Coleman, 2013a, p. 7). He provides the following example.

> Suppose you are a Japanese visitor and you happen to be in Germany without knowing a single word of German. You are having breakfast in your hotel with a couple of Germans. One of the Germans turns to you and produces a sequence of speech sounds like this [axkoenənzi:mi:rma:ldaszaltsraIçənbItəšoe:n]. (p. 59)

Klein wants to make it clear here that the "linguistic input in the narrower sense (the sound waves) cannot contribute to language learning. The only information of that Japanese visitor received is the utterances he know nothing about. However, the context of where the interaction happened may lead to language learning, as Coleman (2013a) explained:

> For example, suppose the speaker looks at you, raises his eyebrows, glances down at the table toward the salt and pepper shakers, gestures toward them and then speaks, holding out an open hand afterwards? For the Japanese speaker, there probably is too much new here for any language learning to occur. He/she might be perplexed as to which thing the German wanted, but would certainly be aware that the speaker was making a request. He/she might offer both, and let the German choose. If you know English, however, you would be likely to guess that

> one part of the sequence, [szalt], refers to salt, and would simply pass the salt: there would be both comprehension and learning. (pp.7-8)

Therefore, with the "parallel input", "people should eventually be able to establish a relationship between identifiable segments of the sound stream and particular segments of the parallel information" (Klein, 1986, p. 44)

In general, Krashen is right about the comprehensible input and the extra linguistic knowledge which is needed successful communication, however, he is wrong about his assumption that language physically exists and is an unacquired part of input (Postica, 2006, p. 25). "Krashen is wrong to the degree that he shares [the] false assumption that the relevant input consists of 'primary linguistic data' and nothing more" (Coleman, 2005, p. 207). Many practices in the traditional class environment shows that Krashen is wrong about people cannot learn by themselves, "generations of teachers stand witness to their learners' inexplicable success" (Postica, 2006, p. 27). According to Coleman, "Comprehension' in a real-world sense is a physical change in state in one of the participants as a result of linkage events. Its causes can include information in any of several channels in the linkage" (Coleman, 2005, p. 208). Input consists of "the full range of sensory experience available to the learner at a given time" (Coleman, 2005, 207). Therefore, input for language learning is the full range of sensory experience available for learners and triggers a change in their internal physical state (Postica, 2006, p. 26).

Over the years, neuroscience research shows that changes in the internal properties of a human organism which lead to the onset of communicative behaviors occur in the brain (Postica, 2006, p. 28). The process that allows neural circuits to work as usual in the absence of electrical impulses received from the motor-sensory receptors,

thus allowing humans to recreate scenes, sounds or smells in their brain is called mental imagery (Bloom, 2001, p. 344) and has been studied intensively since the 1950's both in cognitive psychology and later in neuroscience (Postica, 2006, p. 29).

Language, Brain and Mental Imagery

Chomsky (1980) has mentioned many times in his theoretical frameworks that there is a "language organ" in people's brain and help them automatically processes language, as what he states that "we may usefully think of the language faculty, the number faculty, and others as systems of mental organs as well, analogous to the heart or the visual system or the system of motor coordination and planning" (p. 29). Later, Chomsky (2002) consistently argues that "the theory of language is simply a part of human psychology that is concerned with one particular 'mental organ'", which processes human language (p. 36); also, "the study of language falls naturally within human biology" (p. 123).

Brain has been regarded as the most important part in human organism from a very early time. In second century A.D., the early dissectors of animal brains had discovered that brain was only for the center of the system of nerves which caused human body's sense and move (Bloom, 2001, p. 9). Many years after Chomsky's assumptions about a "language organ" were proposed, researchers have fully explored what brain really is and reach a conclusion that it is nothing more than an object existing in the physical domain and it is just an organ of the human body which contains

> billions of nerve cells … each cell communicates, on average, with 10,000 others, making up miles and miles of living wires. The nerve cells communicate with each other by means of a multitude of different

> chemical signals, of which only 40 or so have been identified, although their total number is likely to be far greater … [The brain] grows, repairs itself, and constantly adapts to the demands of the individual and the environment under the direction of an enormous array of brain specific genes that scientists are just beginning to inventory and explore. (Bloom, 2001, p.2)

Also, many new technologies which have been down recently which indicate that there might be some relationship between the activities happens in brain and the human's communication behavior and those technologies make it possible for researchers to find more new things about that relationship. As Lieberman (1998) put it,

> Techniques such as positron emission tomography (PET), magnetic resonance imaging (MRI), and functional magnetic resonance imaging (fMRI) allow us to view the structure of living brains and make reasonable inferences about the way they work. Tracer techniques have revealed some of the complex pathways of the brain. Computer systems that generate and analyze speech have shown that human vocal communication is a key element that makes it possible for us to transmit complex thoughts to each other at rates unattainable by other means. (p. xv)

As the result of studies of brain activity, mental imagery has been regarded as at the heart of mental activity theories since classic Greek philosophers and it became predominant in both philosophy (until the 19th century) and early scientific psychology (Kosslyn, 2006, p.6). Over the years of researches about mental imagery, it has been seen as one of the most important parts which cannot be separated from human behavior such

as communication, memory, problem solving, creativity and emotion (Kosslyn, 2006, p. 4).

> Mental imagery is a phenomenon most of us encounter numerous times every day…whether spontaneous or deliberate, solving problems and memorizing information to daydreaming…It is likely to be one of the first higher cognitive functions that will be firmly rooted in the brain. (Kosslyn, 1984, p. 1)

Kosslyn (1984) also states that words and images are the two important vehicles when people communicate with each other but for "words", they have a serious drawback because they are not innate and must be taught through language (p. 5). Other researchers like Damasio (1999) who viewed mental imagery as a main constituent of an "integrated and unified composite of diverse sensory images – visual, auditory, tactile, olfactory and others" (p. 115). "Helene (2006) proved that imagery training without actual task performance has a similar effect on working memory and the acquisition of implicit knowledge as task performance" (Postica, 2006, p. 32).

Those research mentioned above seem to suggest that there are some relationships between mental imagery and human's communication behavior. So, it may help to explain why second language learners succeed themselves in learning language while the theories said that they shouldn't. "This would explain how, in the absence of input for learning to communicate changes in internal properties nevertheless occur in some learners allowing them to develop new communicative abilities" (Coleman, 2005, p. 203-213). This thesis asks, as Postica's did, *can mental imagery substitute for missing parts of parallel sensory input?*

Chapter Two

Methodology

In order to further understand the relationship between mental imagery and parallel sensory input, a research group[1] from Applied Linguistic I class in Fall 2013 did an extension / replication study of Postica's Master thesis research in 2006, but with a new instrument, including new dialogues which were designed by Douglas W. Coleman, professor of English at The University of Toledo, Ohio (he was the supervisor of the research group).

Participants

The participants in this study included both undergraduate students and graduate students from the University of Toledo, both male and female and all above 18 years old. During the process of the participants' selection, we used intact groups instead of random selection in order to avoid having to individually test subjects in the experiment. The undergraduate students were native speakers from six English Composition I classes and native speakers from five English Composition II classes in fall semester 2013 and spring semester 2014. The four graduate students were the instructors from those English Composition I and English Composition II classes. Those subjects were selected to participate in the study with a total number of 180 people.

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1 Including graduate students Timothy Escondo, Jeremy Holloway, Rosemary Sorg, and myself.

We did the selection as mentioned above for some important reasons. First, the input we used is an artificial language accompanied by translations in English. Therefore, non-native speaker of English would have to use their second language (English) to learn another third language. That may cause problems; in the same amount of time during the learning period, the non-native speakers might fall behind then the native speakers of English. Therefore that kind of "confounding variable" may affect the final results of the experiment. Thus, we chose only Composition I and Composition II classes for native speakers. Second, the main source who enrolled in English Composition I & II classes are college freshmen or sophomore students. It can make sure that the age group is balanced and decreases some possible "confounding variables" which might occur during the experiment. Third, the ability to grasp an unfamiliar language are balanced among the subjects because both Composition I and II were required courses which means that students may came from all kinds of major. As Xin (2012) put it,

> Students' major of study was more evenly distributed in such classes in comparison to other classes, where students might have the advantage or disadvantage due to the nature of the study. For instance, students from a linguistic class might perform better compare to students from an engineering class, which would ultimately affect the outcome of the study. (p. 30)

Furthermore, the gender of the subjects may more evenly distributed since male students would choose the science majors like physics or computer science and more female students would majoring in art majors like music or literature.

Input Design

Before doing the research, it was important to choose the appropriate input which will be used in the experiment. The essential factor for choosing that kind of input is "to find a language that was seldom spoken and that had few people that had any level of proficiency within the university community" (Ziegler, 2007, p. 19). However, because the only source we have for collecting data is inside the university, to find a language that few people to speak is difficult since quite a few of students which form the whole community are international students or knowledgeable of a language other than English. Ziegler (2007) also mentioned that problem he met during his process of designing the input that "This was troublesome because a significant portion of the student body population at the University of Toledo were native speakers of languages other than English…it was inferred that the nonnative speakers of the student body likely possessed the ability to communicate in an English speaking environment, even if their ability to communicate was at a basic level" (pp. 19-20). Also, for those who are native speakers of English in the community, it is logical to infer that they have the similar ability to possess an unfamiliar language to a certain level as nonnative speakers since some of them have former experience of learning a foreign language in high school and some of them take foreign language classes in college as it is one of the course requirement.

Therefore, in order to avoid any "confounding variables" which might occur during the data collection because of subjects being familiar with the language they were exposed to, we needed to have an input unknown to any subjuct. Thus, an artificial language named *Térus*, designed by Professor Douglas W. Coleman being adopted and which was also used by Adina M. Postica (2006) and Yifei Xin (2007) in their Master's

Thesis experimental designs. *Térus* was created by Dr. Coleman who performed place of articulation rotations on Polish words while preserving a simplified grammatical structure based on Polish which is a method inspired by Saussure's analogy of the chess game (Postica, 2006, p. 34). For instance, [t] became [k] and [k] became [p], [a] remains unchanged; thus, Polish [tak] became Térus [kap] (Postica, 2006, p. 34).

Then, after deciding what input was to be used in the experiment, the next important step was to design the dialogs to be used in the whole process. Because Professor Douglas W. Coleman used to help design the dialogs for Adina M. Postica's and Yifei Xin's Master's Thesis experiments, he oversaw dialogue design. There are three mini dialogs based on short scenes of regular school life. A portion of the dialogues can be seen in Figure 4, and a complete version of the three dialogues is shown in Appendix A.

Wam: Tsost. Wap so na?	Wam: Hi. How are you?
Osha: Tsost. Gédzo. A ku?	Osha: Hi. OK. (And) you?
Kar: Tsost.	Kar: Hi.
Osha: Tsost.	Osha: Hi.
Wam: Gédzo. Ey, shéswa ontwóza.	Wam: OK... hey, class is starting.

Figure 4. Sample Dialogues

After our group received the finished script of the dialogues from Professor Douglas W. Coleman, each of the members in the research team recorded our voices into the file. Each of us read along all the three mini dialogues line by line and then sent it to Dr. Coleman to edit for the final version of the recording.

Instruments/Materials

In the experiment, two distinct groups of subjects were used, one experimental group and one control group. Professor Coleman designed two versions of the PowerPoint, study sheet and answer sheet. The experimental group which is mental imagery instructed (MI-instructed) group and the control group which is the no-mental imagery instructed (no-MI-instructed) group.

PowerPoint Design. In both of the PowerPoint, subjects will first read and listen for a few slides which is the instructions they will follow during the whole experiment. It is shown in Figure 5.

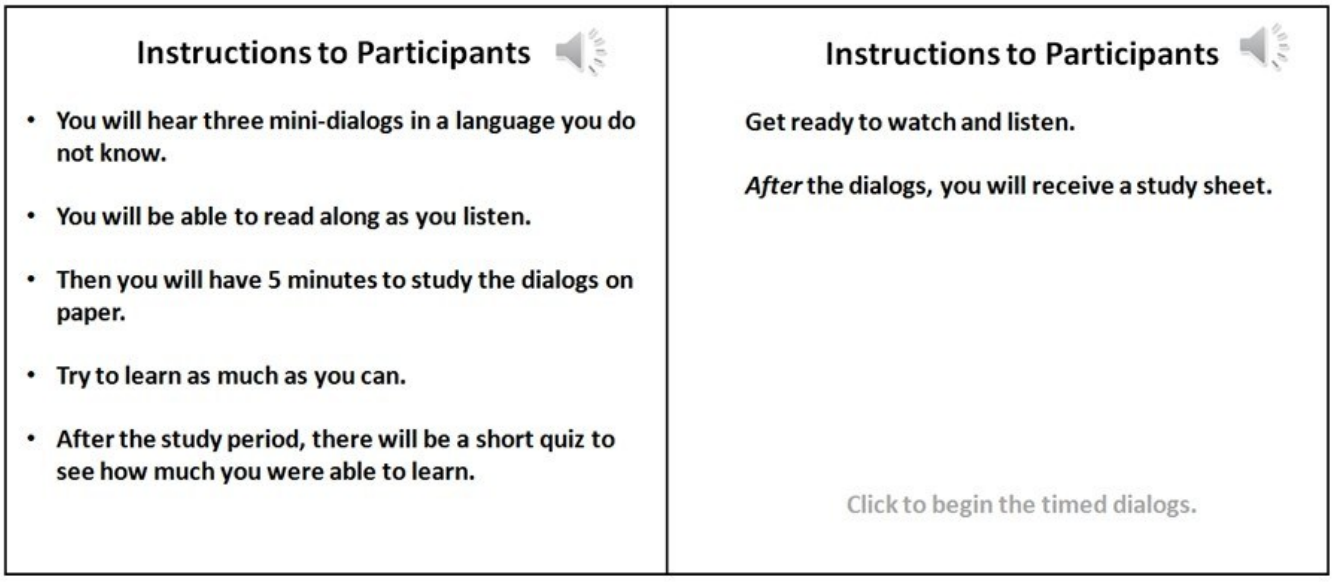
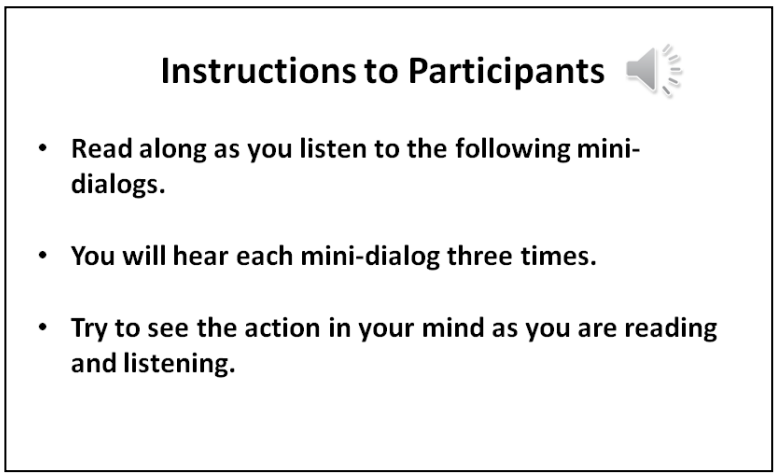
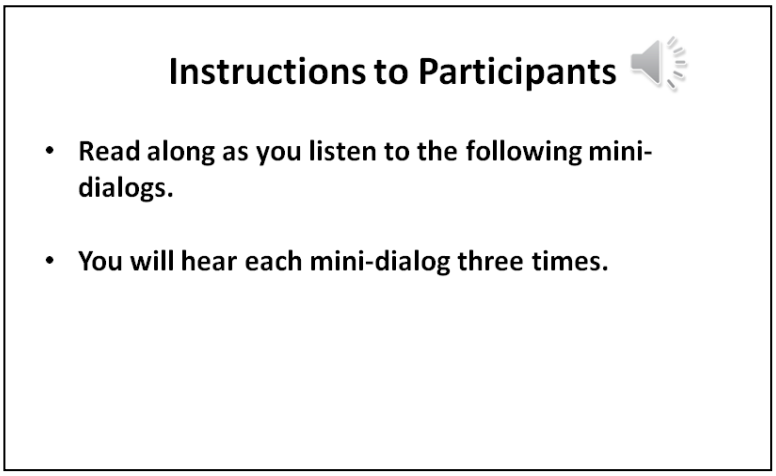


Figure 5. Same instructions on both of the PowerPoint

However, for the no-MI-instructed group, there will no instructions to lead the subjects to use mental imagery during the study, as shown in Figure 6.



a. MI-Instructed

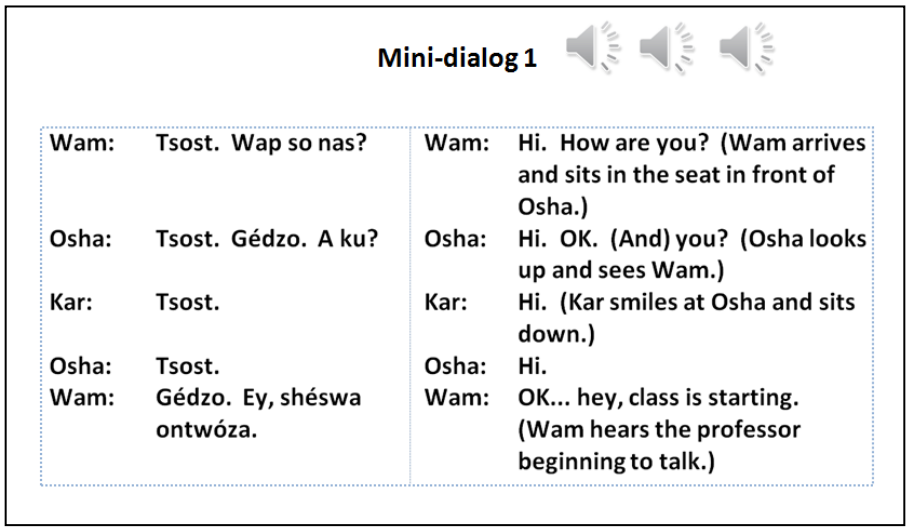


b. No-MI-Instructed

Figure 6. Difference between MI-instructed group and no-MI-instructed group's instruction

Then, after the instructions, students will read along as they heard three mini dialogues. Those three mini dialogues were in a target language (*Térus*) but with translations in English besides that. However, the difference between the two groups is that for the MI-instructed group, the subjects were instructed to try to see the action (to visualize the people, the things in the scene, and the people's actions) in their mind as they were reading and listening. Also, there were narratives about the actual scene beside each

dialogue for the mental imagery (MI-instructed) group. The no-MI-instructed group, they did not receive this added instruction, as shown in Figure 7.



a. MI-Instructed

b. No-MI-Instructed

Figure 7. Sample of dialogues in the PowerPoint

Study Sheet Design. The subjects also received a study sheet which was different for the two groups. Both of the study sheets have two sides. One side was the three mini dialogues and the content was the same with what have shown in the PowerPoint. The other side of the study sheet was a vocabulary list and the common expressions of the

input which would assist subjects to learn. A sample is shown in Figure 8, and a complete version of the study sheet is shown in Appendix B,

Vocabulary List

a	and
dálgzo	very, a lot
éke	here's / here you have
eshkákmwo	later

Expressions

Dálgzo tlésan.	You're welcome. (literally, 'I beg very [much]')
Shussa!	Hush! / Be quiet!
Wap so na?	How are you? (literally, 'how-self-have' — an idiom)

Figure 8. Sample vocabulary list and Expressions

Comprehension test Design. The comprehension test in the experiment was a ten-item multiple-choice test. Figure 9 shows a sample of the multiple-choice test, and a complete version of the comprehension test is shown in Appendix C.

1. Tsost. a. A ku tsost. b. Kap, ku na? c. Tsost. Wap so na? d. Eshkákmwo.	2. Wap so na? a. Gédzo. A kus? b. Ta. A na? c. Gédzo. A ku? d. Ta. Nísan shéswan.
3. Twe¯le ku na? a. Kap. Tlésan. b. Dálgzo tlésan twe¯le. c. Gzamp e¯wan. d. Dálgzo tlésa. Mwo na.	4. Eke eye¯zop. a. Gzamp e¯wa ku. b. Kap, tlotlása tsost. c. Nísan ugzoks. d. Dálgzo gzamp e¯wan.

Figure 9. Sample test items

For the comprehension test, the subjects need to select the appropriate response for each question. It also should be noted that each question and answers are not only directly adopted from the original sentences from the study sheet or the PowerPoint. It was designed "according to the entire scope of the script… to make sure that subjects would not be tested on their ability to memorize the sentences" (Xin, 2012, p. 28). In fact, no item could be correctly answered only based on the subjects' memory of the dialog (Xin, 2012, p. 28). The subjects needed to learn from the dialogues more generally to choose the formally correct response (Xin, 2012, p. 28). This kind of test strategy was based on what used by Postica (2006), and also described in Postica and Coleman (2006).

Each items in the test had four responses, none exactly matching anything from the dialogs they read or heard. However, based on the information in the dialogs, one available response was both accurate in the target language and meaningful, one was accurate but not meaningful, one was meaningful but not accurate, and one was neither accurate nor meaningful. A sample test item is shown in Figure 10.

1. Tsost (Hi)
a. A ku tsost. (And you hi) (meaningful but not accurate)
b. Kap, kun a? (Sure, you have) (neither accurate nor meaningful)
c. Tsost. Wap so na? (Hi, how are you) (both accurate and meaningful)
d. Eshkákmwo. (Later) (accurate but not meaningful)

2. Wap so na?
a. Gédzo. A kus? (meaningful but not accurate)
b. Ta. A na? (accurate but not meaningful)
c. Gédzo. A ku? (both accurate and meaningful)
d. Ta. Nísan shéswan. (neither accurate nor meaningful)

Figure 10. Sample of Multiple-choice question

Answer Sheet Design. The answer sheet for the MI-instructed group was Form 1 and the answer sheet for the no-MI-instructed group was Form 2. Even though the content in both answer sheets were same, in order to make the process of enter the data into Exel for analysis convenient, Professor Coleman pre-labeled answer sheets as Form1 (MI-instructed group) and Form 2 (no-MI-instructed group) to make coding easier. Both of the answer sheets also had two sides. One side had the question number and the answers for subjects to circle and the other side had several questions asked about the subjects' learning strategies used during the study period, as shown in Figure 11.

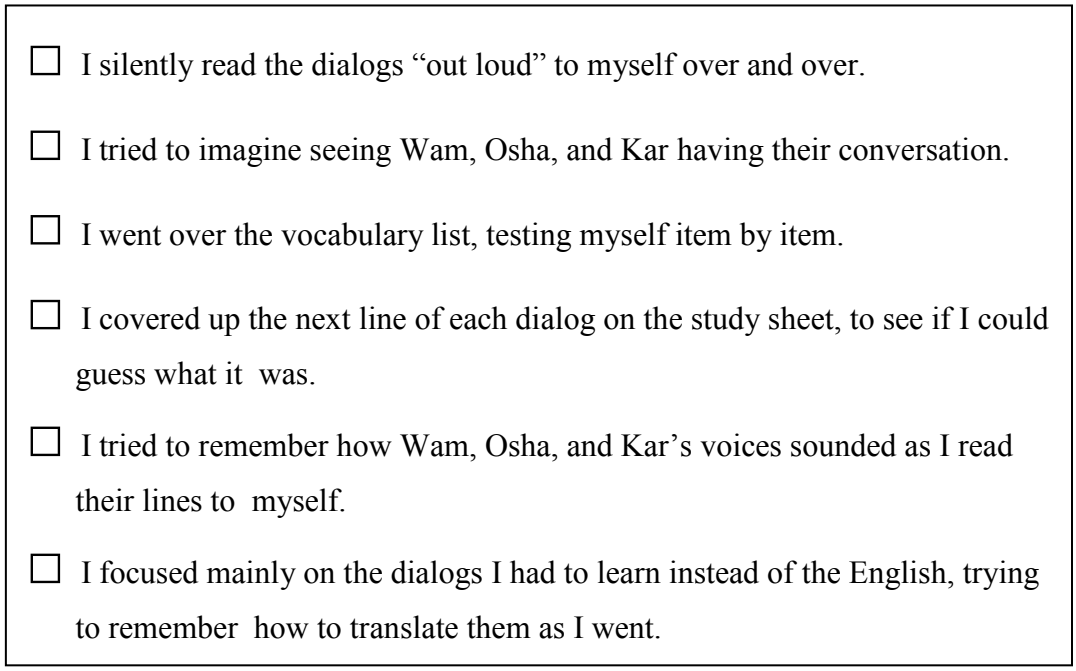


Figure 11. Self-report items

During the experiment, we also maintained consistency across both groups in order for the results to be reliable. For example, if we had Form1 for the first class, in the second class we used Form 2.

Procedure

In order to collect the data in those English Composition classes, each of our team members tried to contact the instructors who were teaching Comp I and Comp II classes and try to get their approvals that our team can use their classes for collect the data at a certain time. After we set up specific time with each instructor, we were then ready to collect the data.

Before the experiment, we orally briefed the subjects about the purpose of our experiment: we said we wanted to find out some important facts about how people can learn a second language. We then gave the subjects the consent forms for them to sign and all of the participants could choose to volunteer to take part in the study or not. After we collected all the consent forms, we then showed the PowerPoint slides which were used to explain the process that the subjects would follow during the experiment and the test. Then subjects read along and heard a series of mini-dialogues via PowerPoint composed in *Térus*. They received different treatment based on their group.

After that, all the subjects got a study sheet including vocabulary lists and a copy of the dialogues. Then all of them were given a short study period of about five minutes with two different treatments again (one group with instructions and narratives to imagine the scene and the other group not given this added instruction or narratives). After five minutes, the researcher collected all the study sheets, and handed out the comprehension test. All the subjects then spent another five minutes to complete the test and self-report. The total duration of the experiment was around fifteen to twenty minutes.

Hypothesis

In this experiment I wanted to find out if mental imagery really could substitute for the parallel sensory input. I also want to see if the narratives shown with the dialogues in the PowerPoint and on the study sheets can cause people to use mental imagery and help them to learn.

H_1: The subjects who report they use mental imagery do better than the subjects who report that they do not use mental imagery. [Replication of Postica (2006).]

H_2: The subjects who receive the instructions and the narratives of the events do better than the subjects who do not receive that added instruction. [New element to the study.]

Chapter Three

Results and Discussion

Data Collection

Our team collected data from 120 subjects for the MI-instructed group (n=60) and no-MI-instructed group (n=60) in fall 2013. However, the results did not support either of my hypotheses. Therefore, in order to exploring some important facts about the study, I collected an additional 60 subjects' data only on no-MI-instructed group in spring 2014. Among the total of 180 subjects participated in the experiment, 7 test results were excluded because they were incomplete. Therefore, 173 effective tests were used for data analysis, including 58 subjects from the MI-instructed group and 115 subjects from the no-MI-instructed group.

Results for the Data Collected in Fall 2013

There are 116 effective tests were used for data analysis in fall 2013, including 58 subjects from the MI-instructed group and 58 subjects from the no-MI-instructed group. After the data were collected, they were first entered as raw data in Excel. Then the Excel file was imported into R Statistics. Because both of the hypotheses were to see how well the subject did in the comprehension test, the total accuracy of the test was the main factor being calculated in R. Ten questions were being coded as "*it_accur1*" for question 1, "*it_accur2*" for question 2 etc. They were assigned the variable value as "1" if the answer was accurate; and if the answer was not accurate, it was assigned the variable value as "0". The variable "*tot_accur*" was assigned to represent the total number of a subject's accurate answers to the multiple-choice items. In the statistical analysis, eight factors were assigned and considered as possible predictors of accuracy: the six learning

strategies (Figure 12) and the different instruction type that the subject received. The variable called "*instruct_type*" was being assigned with the values of "MI-instructed" for MI-instructed group and "no-MI-instructed" for no-MI-instructed group. (Recall that the MI-instructed group also had additional narrative in the PowerPoint.)

silent
imagine
vocab
covered
remember
dialogue

Figure 12. Statistical variables for learning strategies

As one of the hypotheses is to see the difference between the subjects who report they use mental imagery and the subjects who report that they do not use mental imagery, the variable "*imagine*" was assigned the variable value as "yes" if the they use mental imagery and if they did not use mental imagery, it was assigned the variable value as "no".

The data was first tested for normality of distribution using the Shapiro-Wilk test. If the p-value was greater than .05, that means the test distribution would be considered as normal and thus the data could be treated at interval level. The p-value for the Shapiro-Wilk test performed on the "*tot_accur*" is 0.0003889 which was not greater than .05, indicating that the data was not normally distributed and it could not be treated as being at the interval level.

Once the level of the data was determined not to be interval, H_1, which states the subjects who report they use mental imagery would do better than the subjects who report

that they do not use mental imagery, was tested using a Wilcoxon test. The result shows that there was no significant difference between the *tot_accur* for those who reported using mental imagery and those who did not (p-value = 0.3405, p-value>.05). Also, median total accuracy on the comprehension test was the same for those who reported using mental imagery and those who did not (median = 6). Therefore, the result indicates that the H_1 must be rejected.

Based on the result of another Wilcoxon test, H_2, which states the subjects who receive the instructions and the narratives of the events do better than the subjects who do not receive that added instruction, was also rejected. The result shows that there was no significant difference between the *tot_accur* for the MI-instructed group and the no-MI-instructed group (p-value = 0.74, p-value>.05). Also, median total accuracy on the comprehension test was 5 and 6 respectively for MI-instructed group and no-MI-instructed group.

Since I was also interested in finding out whether or not the instructions and the narratives of the events can cause people to use mental imagery and help them to learn, I decided to run a second set of analyses. Therefore, the data for the MI-instructed group and no-MI-instructed group was analyzed separately.

The data for the MI-instructed group was first being tested for normality of distribution using the Shapiro-Wilk test. The p-value for the Shapiro-Wilk test performed on the "*tot_accur*" is 0.02783 which was not greater than .05, indicating that the data was not normally distributed and it could not be treated as being at the interval level. Then the data was analyzed through a Wilcoxon test and the results show that there was no significant difference between the *tot_accur* for those who reported using mental imagery

and those who did not (p-value = 0.981, p-value>.05). Also, median total accuracy on the comprehension test was the same for those who reported using mental imagery and those who did not (median = 5) (Figure 13).

Reported-MI (Y/N)	Median Total Accuracy	n (sample size)
Yes	5	26
No	5	32

Figure 13. Results for the MI-instructed group

Then, the data for the no-MI-instructed group was also first tested for normality of distribution using the Shapiro-Wilk test. The p-value for the Shapiro-Wilk test performed on the "*tot_accur*" is 0.0004091 which was not greater than .05, indicating that the data was not normally distributed and it could not be treated as being at the interval level. Then the data was analyzed through Wilcoxon test and the results shows that there was no significant difference between the *tot_accur* for those who reported using mental imagery and those who did not (p-value = 0.05169, p-value>.05). Also, median total accuracy on the comprehension test was 7 and 6 respectively for those who reported using mental imagery and those who did not (Figure 14).

Reported-MI (Y/N)	Median Total Accuracy	n (sample size)
Yes	7	12
No	6	46

Figure 14. Results for the no-MI-instructed group

Therefore it looks like the use of the narratives did not cause the subjects to use mental imagery. The additional narratives added in MI-instructed group in fact seem to inhibit the ability of people to use mental imagery and actually decreases the accuracy.

It should be noted that for no-MI-instructed group, the median total accuracy between the subjects who reported they use mental imagery and the people who did not is 7 and 6 respectively with a p-value of 0.05169 which is very close to 0.05. So it seemed possible that my hypothesis that the subjects who report they use mental imagery do better than the subjects who report that they do not use mental imagery could support Postica with a larger dataset.

Therefore, in order to further exploring if H_2 can be accepted with a larger dataset, I continued collected additional 60 subjects' data only on no-MI-instructed group in spring 2014 and added 57 effective tests into the 58 effective tests on no-MI-instructed group in fall 2013.

Results for the Data Collected in Spring 2014

There are a total of 115 effective tests were used for data analysis in spring 2014 only for no-MI-instructed group. The data was also first being tested for normality of distribution using the Shapiro-Wilk test. The p-value for the Shapiro-Wilk test performed on the "*tot_accur*" is 0.00003014 which was not greater than .05, indicating that the data was not normally distributed and it could not be treated as being at the interval level. Then the data was analyzed through Wilcoxon test and the results shows that there was no significant difference between the *tot_accur* for those who reported using mental imagery and those who did not (p-value = 0.2397, p-value>.05). Also, median total accuracy on the comprehension test was 6 and 6 respectively for those who reported

using mental imagery and those who did not. Therefore, even though with a larger dataset, the H_2, which states the subjects who receive the instructions and the narratives of the events do better than the subjects who do not receive that added instructions, was still rejected.

Discussion

Based on the statistical analysis done in previously, both of my both of my hypotheses were being rejected. My results shows that the subjects who reported they used mental imagery did not do better than the subjects who reported that they did not use mental imagery. Further, the additional narratives added in MI-instructed group inhibit the ability of people to use mental imagery and actually decreases the accuracy. Therefore we have a failure to replicate Postica's study and my results seem to contradict her results which states that "learners who use mental imagery while studying a communication task are able to develop specific communication behaviors that allow them to avoid breakdowns in communication" (Postica, 2006, p.42).

The failure replication study made me go back and look over Postca's study, yet our experiments overall were extremely similar but hers showed a significant result. I noticed that the significant different between my experiment and Postica's is the comprehension test. Her study used video prompts (captioned live video) with 4-way multiple-choice responses. However my test used only textual questions and there are no voices or visual prompts. Her test was closer to being like a real-life situation and mine was closer to being like a test in school. The two tests measured different things. Also, a written test allows more time for each question. According to Krashen, this allows the monitor to come more into play; it allows more access to conscious memory. To put it in

Krashen's terms, Postica's test was slanted more to acquisition and my study is more about learning.

But my study obviously showed that the attempt to add narratives in order to encourage mental imagery is a bad idea because it makes it worse, not better. That means there is no "patch" we can provide to textbooks that fail to provide parallel sensory input. We need something more effective to help people to learn. A suggestion for the next study is that not add extra narratives like we did in MI-instructed group. We should only use what we have for the no-MI-instructed group, but have two different tests—a video completion test and a text-only test.

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Appendix A

A Complete Version of the Three Dialogues

Wam: Tsost. Wap so na? Osha: Tsost. Gédzo. A ku? Kar: Tsost. Osha: Tsost. Wam: Gédzo. Ey, shéswa ontwóza.	Wam: Hi. How are you? Osha: Hi. OK. (And) you? Kar: Hi. Osha: Hi. Wam: OK... hey, class is starting.
Wam: Ey, tlotlásan, twe´le ku na? Osha: Shussa! Mwo. Mwo nan. Eye´zop wost gédzo? Wam: Kap. Osha: Tlésan. Wam: Gzamp e´wan.	Wam: (Oh,) excuse me, do you have a pen? Osha: Hush! No. I don't have (one). Is a pencil OK? Wam: Sure. Osha: Here you go. Wam: Thanks.
Wam: éke kus eye´zop. Gzamp e´wan. Osha: Dálgzo tlésan. Wam: Tlotlásan. Nísan ugzoks. Osha: Ta. Wam: Eshkákmwo. Kar: Ta.	Wam: Here's your pencil. Thanks. Osha: You're welcome. Wam: (I'm) sorry. I have to go. Osha: See you. Wam: Later. Kar: Bye.

Appendix B

A Complete Version of the Study Sheets

Study Sheet (Mental Imagery Group)

As you study, use the dialog below to try to imagine *seeing* and *hearing* the dialogs.

Notes: the accent mark shows stress; "ē" is pronounced "ee" as in m***ee***t; "a" is always "ah", never like the sound in "cat".

Wam: Tsost. Wap so na?
Osha: Tsost. Gédzo. A ku?
Kar: Tsost.
Osha: Tsost.
Wam: Gédzo. Ey, shéswa ontwóza.

Wam: Hi. How are you? (Wam arrives and sits in the seat in front of Osha.)
Osha: Hi. OK. (And) you? (Osha looks up and sees Wam.)
Kar: Hi. (Kar smiles at Osha and sits down.)
Osha: Hi.
Wam: OK... hey, class is starting. (Wam hears the professor beginning to talk.)

Wam: Ey, tlotlásan, twe´le ku na?
Osha: Shussa! Mwo. Mwo nan. Eye´zop wost gédzo?
Wam: Kap.
Osha: Tlésan.
Wam: Gzamp e´wan.

Wam: (Oh,) excuse me, do you have a pen? (Wam turns and whispers to Osha.)
Osha: Hush! No. I don't have (one). Is a pencil OK? (Osha looks through his bag and holds out a pencil.)
Wam: Sure. (Wam reaches out to take the pencil.)
Osha: Here you go.
Wam: Thanks. (Wam takes the pencil.)
Wam: éke kus eye´zop. Gzamp e´wan.
Osha: Dálgzo tlésan.
Wam: Tlotlásan. Nísan ugzoks.

Osha: Ta.
Wam: Eshkákmwo.
Kar: Ta.

Wam: Here's your pencil. Thanks. (Wam gives the pencil back to Osha.)
Osha: You're welcome. (Osha smiles.)
Wam: (I'm) sorry. I have to go. (Wam glances at his watch and looks surprised.
Osha: See you. (Osha gets up, waves goodbye.)
Wam: Later. (Wam smiles and waves.)
Kar: Bye. (Kar looks up and sees Osha leaving.)

Vocabulary List

a	and
dálgzo	very, a lot
éke	here's / here you have
eshkákmwo	later
ey	hey / oh
eye´zop	pencil
gédzo	good, OK
gzamp e´wan	thanks (literally, 'I thank [you]')
kap	yes / sure
ku	you
kus	your
mwo	not / not
nats	to have (nan = 'I have' / na = 'you have')
nísats	must (nisan = 'I must / have to')
ontwóza	starts / is starting (ontwózats = to start)
shéswa	class
ta	bye / see you
tlésan	please / here you are/go (literally, 'I beg [you]')
tlotlásan	excuse me / sorry (literally, 'I regret')
tsost	hello / hi
twe´le	pen
ugzoks	to go
wost	is

Expressions

Dálgzo tlésan.	You're welcome. (literally, 'I beg very [much]')
Shussa!	Hush! / Be quiet!
Wap so na?	How are you? (literally, 'how-self-have' — an idiom)

Study Sheet (No-Mental Imagery Group)

Notes: the accent mark shows stress; "ē" is pronounced "ee" as in m***ee***t; "a" is always "ah", never like the sound in "cat".

Wam: Tsost. Wap so na?
Osha: Tsost. Gédzo. A ku?
Kar: Tsost.
Osha: Tsost.
Wam: Gédzo. Ey, shéswa ontwóza.

Wam: Hi. How are you?
Osha: Hi. OK. (And) you?
Kar: Hi.
Osha: Hi.
Wam: OK... hey, class is starting.

Wam: Ey, tlotlásan, twe´le ku na?
Osha: Shussa! Mwo. Mwo nan. Eye´zop wost gédzo?
Wam: Kap.
Osha: Tlésan.
Wam: Gzamp e´wan.

Wam: (Oh,) excuse me, do you have a pen?
Osha: Hush! No. I don't have (one). Is a pencil OK?
Wam: Sure.
Osha: Here you go.
Wam: Thanks.

Wam: éke kus eye´zop. Gzamp e´wan.
Osha: Dálgzo tlésan.
Wam: Tlotlásan. Nísan ugzoks.
Osha: Ta.
Wam: Eshkákmwo.
Kar: Ta.

Wam: Here's your pencil. Thanks.
Osha: You're welcome.
Wam: (I'm) sorry. I have to go.
Osha: See you.
Wam: Later.
Kar: Bye.

Vocabulary List

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a	and
dálgzo	very, a lot
éke	here's / here you have
eshkákmwo	later
ey	hey / oh
eye´zop	pencil
gédzo	good, OK
gzamp e´wan	thanks (literally, 'I thank [you]')
kap	yes / sure
ku	you
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tsost	hello / hi
twe´le	pen
ugzoks	to go
wost	is

Expressions

Dálgzo tlésan.	You're welcome. (literally, 'I beg very [much]')
Shussa!	Hush! / Be quiet!
Wap so na?	How are you? (literally, 'how-self-have' — an idiom)

Appendix C

A Complete Version of the Comprehension Test

Comprehension Test (10 items). Select the correct response by circling the appropriate letter.

1. Tsost.
   a. A ku tsost.
   b. Kap, ku na?
   c. Tsost. Wap so na?
   d. Eshkákmwo.

2. Wap so na?
   a. Gédzo. A kus?
   b. Ta. A na?
   c. Gédzo. A ku?
   d. Ta. Nísan shéswan.

3. Twe¯le ku na?
   a. Kap. Tlésan.
   b. Dálgzo tlésan twe¯le.
   c. Gzamp e¯wan.
   d. Dálgzo tlésa. Mwo na.

4. Eke eye¯zop.
   a. Gzamp e¯wa ku.
   b. Kap, tlotlása tsost.
   c. Nísan ugzoks.
   d. Dálgzo gzamp e¯wan.

5. Nísan ugzoks. Ta.
   a. Dálgzo tlotlásan.
   b. Kapan mwo.
   c. Ta a ku.
   d. Eshkákmwo.

6. Shussa! Shéswa ontwóza.
   a. Wap so ontwóza?
   b. Ey, tlotlása dálgzo.
   c. Dálgzo tlotlásan.
   d. Gédzo mwo twe¯lan.

7. Eye¯zop ku na?
   a. Wost twe¯le gédzo na?
   b. Kap. Éke eye¯zop.
   c. Tlotlása ku dálgzo.
   d. Wap so nan?

8. Nísan ugzoks.
   a. Eshkákmwan.
   b. Kap, eye¯zop na?
   c. Ta. Eshkákmwo.
   d. Shéswa mwo ontwóza.

9. Tlotlásan.
   a. Gzamp e¯wan.
   b. Ku gédzo wost.
   c. Tlésan dálgzo.
   d. Ey, wost gédzo.

10. Gédzo. A ku?
    a. Dálgzo eshkákmwo.
    b. Dálgzo gédzo.
    c. Tlésan kap na.
    d. Nan gédzo.