

Syracuse University

SURFACE

Theses - ALL

May 2020

Cross-linguistic transfer in the L2 learning of spatial concepts

Azusa Tojo
Syracuse University

Follow this and additional works at: <https://surface.syr.edu/thesis>



Part of the [Arts and Humanities Commons](#)

Recommended Citation

Tojo, Azusa, "Cross-linguistic transfer in the L2 learning of spatial concepts" (2020). *Theses - ALL*. 411.
<https://surface.syr.edu/thesis/411>

This Thesis is brought to you for free and open access by SURFACE. It has been accepted for inclusion in Theses - ALL by an authorized administrator of SURFACE. For more information, please contact surface@syr.edu.

ABSTRACT

Previous research has demonstrated persistent difficulties in learning spatial expressions in a second language (L2) (Ahlberg et al., 2018; Ijaz, 1986; Jarvis & Odlin, 2000; Mukattash, 1984; Munnich & Landau, 2010; Park & Ziegler, 2014). Recent studies have suggested that these difficulties may come from the learners' native language (L1) spatial conceptual systems, which remain persistent and influence conceptualization in second language acquisition (Ahlberg et al., 2018; Coventry & Garrod, 2004; Jarvis, 2016). Through a combination of triad picture matching and description tasks, the present study examined whether conceptual transfer is involved in L2 learning of Japanese spatial expressions among learners from two different L1s (Chinese and English) and two different proficiency levels (beginning and advanced).

Results of the study showed that although there were clear linguistic differences in spatial descriptions among languages, specifically in the adpositions used, the stimuli failed to yield clear cross-linguistic differences in spatial conceptualization. Thus, no evidence of L1 transfer to the L2 at the cognitive level was found, at least in these data. However, findings from the study also suggested that target-like conceptualization may be related to learners' accurate use of L2 spatial expressions regardless of their L1 or proficiency. Thus, if learners can identify linguistic concepts underlying L2 spatial expressions, they may be more likely to use the expressions correctly. Further investigations are necessary to examine how and to what extent learners' spatial categorizations are affected by learning new concepts in an L2, which conceptualization patterns might not be affected, and how the conceptualization systems are structured in bilinguals' minds.

Cross-linguistic transfer in the L2 learning of spatial concepts

by

Azusa Tojo

B.A., Sophia University, Japan, 2005

Thesis

Submitted in partial fulfillment of the requirements for the degree of
Master of Arts in Linguistics Studies

Syracuse University

May 2020

Copyright © Azusa Tojo 2020
All Rights Reserved

Acknowledgements

I would first like to express my sincere gratitude to my advisor Prof. Amanda Brown for her encouragement, guidance and patience. Prof. Brown supported me not only academically but also emotionally during my difficult time of thesis writing. I appreciate all of her time and energy that she devoted to this thesis over the past semesters. Prof. Brown also introduced me to the field of second language acquisition when I took her course in my first year. I feel incredibly grateful that Prof. Brown has been always supporting me all throughout my studies.

My sincere gratitude also goes out to my thesis committee members: Prof. Christopher Green, Prof. Rania Habib and Prof. Tej Bhatia for their encouragement and insightful feedback.

I would also like to extend my gratitude to the entire Department of Languages, Literatures, and Linguistics, especially Tomoko Walter, Stefano Giannini and M. Emma Ticio Quesada who allowed me to conduct research in Japanese language program. Thanks also go to my fellow friends Ying Gong, Xuan Wang and Yan Shi to help me understand Chinese language and Chinese participants' data.

Last but not the least, I would like to thank my family. My husband Chris and my children, Koharu and Mugen for their patience, understanding and love during the past few years, and my parents and my mother in laws for offering support during my studies. Without support of my family, I would never have been able to complete this thesis.

TABLE OF CONTENTS

| | |
|--|-----------|
| <i>CHAPTER 1: INTRODUCTION</i> | <i>1</i> |
| <i>CHAPTER 2: LITERATURE REVIEW</i> | <i>3</i> |
| 2.1 Spatial Expressions Across Languages..... | 3 |
| 2.2. The L2 Acquisition of Spatial Relationships | 5 |
| 2.3. Acquisition of L2 Japanese locative postpositions <i>ni</i> and <i>de</i> | 11 |
| 2.4. Typological comparison of Chinese, English and Japanese Adpositions | 15 |
| 2.4.1. Japanese locative postpositions..... | 15 |
| 2.4.2. English locative prepositions | 16 |
| 2.4.3. Chinese locative preposition | 17 |
| 2.4.4. Cross-linguistic comparison of adpositions among Japanese, English and Chinese. . | 19 |
| <i>CHAPTER 3: PRESENT STUDY</i> | <i>21</i> |
| <i>CHAPTER 4: RESEARCH METHODS</i> | <i>24</i> |
| 4.1. Participants..... | 24 |
| 4.2. Materials | 25 |
| 4.3. Procedures..... | 31 |
| <i>CHAPTER 5: RESULTS</i> | <i>34</i> |
| 5.1. Task 1 Results | 34 |
| 5.1.1 Task 1 Original (five sets of pictures)..... | 34 |
| 5.1.2 Posthoc Revised Task 1 Coding | 36 |
| 5.1.3 Revised Task 1 (three sets of pictures) | 37 |
| 5.2. Task 2 Results | 42 |
| 5.2.1 Monolinguals' L1 Descriptions | 42 |
| 5.2.2 Learners' L2 Descriptions..... | 47 |
| 5.3. Association between language use and spatial conceptualizations..... | 51 |

| | |
|--|-----------|
| 5.4. Task 3 Results | 53 |
| CHAPTER 6: DISCUSSION..... | 57 |
| 6.1. Research Question 1 | 57 |
| 6.2. Research Question 2 and 3..... | 58 |
| 6.3. Research Question 4 | 60 |
| 6.4. Pedagogical Implications | 62 |
| 6.5. Limitations and additional implications for future study..... | 64 |
| 6.6. Conclusion | 68 |
| APPENDICES..... | 69 |
| REFERENCES..... | 84 |
| VITA..... | 88 |

LIST OF TABLES

| | |
|---|----|
| Table 1: Learner Data | 24 |
| Table 2: Example of Spatial Categorization in Task 1 | 27 |
| Table 3: Feature Combinations for Pictures in the Triad matching task | 28 |
| Table 4: Example of Picture Description in Task 2 | 29 |
| Table 5: Participants' Conceptual Category Responses in Task 1 by Group | 35 |
| Table 6: Original and Revised Participants' Conceptual Category Responses in Task 1 by Group | 38 |
| Table 7: Frequency of preposition types produced by English monolinguals | 43 |
| Table 8: Frequency of postposition types produced by Japanese monolinguals | 44 |
| Table 9: Frequency of prepositional phrase produced by Chinese monolinguals | 46 |
| Table 10: Frequency of postpositions and verb types produced by L1 Chinese and L1 English learners of L2 Japanese | 48 |
| Table 11: TLU (target-like use) for accuracy of de and ni among learner groups | 50 |
| Table 12: Accuracy rate of locative postpositions produced by L1 Chinese learners and L1 English learners by their conceptual categorizations | 52 |
| Table 13: Participants' Conceptual Category Responses in Task 3 by Group | 53 |

LIST OF FIGURES

| | |
|--|----|
| Figure 1: Participants' Conceptual Category Responses in Task 1 by Group | 34 |
| Figure 2: Original and Revised Participants' Conceptual Category Responses in Task 1 by Group | 38 |

CHAPTER 1: INTRODUCTION

Previous studies have shown that languages are different in the use of spatial expressions to “carve up” the spatial world (Ahlberg et al., 2018; Coventry, Guijarro-Fuentes, & Valdés, 2012; Jarvis & Odlin, 2000; Munnich & Landau, 2010; Park & Ziegler, 2014; Yvonne, 2018). A number of important studies have found that these differences in spatial expressions across languages might result in difficulties to learn spatial expressions in second languages (Ahlberg et al., 2018; Ijaz, 1986; Jarvis & Odlin, 2000; Mukattash, 1984; Munnich & Landau, 2010; Park & Ziegler, 2014). Recent researchers have claimed that learning spatial expressions in a second language (L2) is difficult because learners’ first (L1) and second languages categorize space differently (Ahlberg et al., 2018; Coventry & Garrod, 2004; Jarvis, 2016). These studies have suggested that difficulties arise from the mismatch between learners’ L1 and L2 spatial categorization systems. Because the learners’ L1 and L2 might see spatial relationships differently, the learner might have a different mental picture regarding where a person or an object is located. In other words, learners might see objects/situations through their L1 spatial system even when they speak their L2. When the learners try to transfer mismatched L1 spatial categorizations to the L2, this mismatch could cause errors in their L2 comprehension or production of spatial expressions.

Although it is temporary (Krashen, 1983), many studies have shown that the L1 influence of spatial systems persists to advanced levels (Ahlberg et al., 2018; Jarvis & Odlin, 2000; Munnich & Landau, 2010; Park & Ziegler, 2014). These recent cross-linguistic studies also have focused on cognitive aspects of the L2 learning of spatial expressions. These studies have claimed that learners’ spatial categorizations are cognitive domains and that speakers from

different languages might be influenced by their L1 spatial conceptualization patterns in their L2 learning. Studies have also shown that the learners' L2 language proficiency affects the speakers' way of categorizing and classifying spatial relations (Ahlberg et al., 2018; Park & Ziegler, 2014).

Previous studies have mainly dealt with English and other European languages. The present study investigated the use of Japanese locative postpositions *ni* and *de*, (roughly translated as *in/on/at*) by L2 learners from two different L1 backgrounds: Chinese and English. In order to examine whether learner's L1 spatial conceptualization patterns influence their acquisition of L2 spatial concepts, the study compared the learners' data with those from Japanese, English and Chinese monolinguals¹. Also, by examining the data from different L2 proficiency levels, the study aimed to investigate the role of proficiency in restructuring spatial categorization in L2 learning.

¹ In this thesis, Chinese monolinguals are speakers of Mandarin Chinese.

CHAPTER 2: LITERATURE REVIEW

2.1 Spatial Expressions Across Languages

Different languages have different ways to describe where objects or people are located in relation to a reference object. Previous research has shown that spatial expressions across languages are different on typological grounds: morphologically, syntactically, semantically and conceptually. For example, languages such as English, French, Spanish, German and Chinese describe spatial relations with prepositions, which appear before nouns, whereas languages such as Turkish or Japanese use postpositions, which appear after nouns (Ahlberg et al., 2018). In a language such as Finnish, most spatial relations that are expressed in English with prepositions are expressed as agglutinative suffixes on nouns and their modifying adjectives (Jarvis & Odlin, 2000).

The ‘relativity hypothesis’ (Coventry & Garrod, 2004) claims that the way we think and view the world is influenced by the way we speak (Ellis 2015: 135; Jarvis, 2016; Park & Ziegler, 2014). In other words, each native language has trained its speakers to conceptualize and categorize the world around them based on the options offered by that language. Previous studies have offered support for this hypothesis and suggested that spatial expressions across languages vary in how they interpret and categorize spatial relations (Ahlberg et al., 2018; Bowerman & Choi, 2001; Choi et al., 1999; Jarvis, 2016; Majid et al., 2004; Park & Ziegler, 2014).

For example, English distinguishes between the locations in which an object is in direct contact with the upper surface of the reference object (*on*) versus the locations in upper space where an object does not have contact with the reference object (*above*). German and Russian have a similar way to describe the spatial relations between one object and a reference object

with their translation equivalents of *on* and *above*. In other words, similar to English, German and Russian each have two different spatial terms to describe the area above and in contact with the surface of a reference object (Ahlberg et al., 2018). In contrast, languages such as Turkish and Korean do not differentiate these spaces. In Turkish and Korean, an object can be located in the area above a reference object regardless of whether the object is in contact with it or not (Ahlberg et al., 2018). In other words, unlike English, German and Russian, Turkish and Korean do not have specific spatial terms to differentiate an object that occupies the space above but not in contact with a reference object and an object that directly contacts the reference object's surface. Turkish has two spatial terms to cover English prepositions *on* and *above*, but they are interchangeable. Korean has one spatial term for both spatial configurations regardless of contact in the space above a reference object.

Other studies have also described the divergence in spatial relations between English and Korean (Bowerman & Choi, 2001; Choi et al., 1999; Park & Ziegler, 2014). These studies demonstrated how both adult and child L1 speakers of Korean classify spatial concepts based on “tight-fit” relations, whereas both adult and child L1 English speakers categorize spatial relations based on containment and support relations. Using eye movement tests, Choi et al. (1999) reported that children at the age of one and half and two years old spent more time looking at language-specific aspects of spatial relations. Korean-speaking toddlers, for example, spent more time looking at tight-fit relations, whereas English-speaking toddlers spent more time looking at containment than non-containment cases. These findings provided evidence that spatial expressions and spatial conceptualizations are strongly connected. In this way, different spatial expressions across languages help to structure the language specific ways of conceptualizing spatial relations.

As illustrated above, a number of studies have described considerable differences in how languages carve up space. As the ‘relativity hypothesis’ suggests, different languages seem to influence the speakers’ ways of viewing the world. Considering the connection between spatial conceptualizations and speakers’ language use, knowing spatial expressions in a language might entail a specific conceptualization. If this is true, how can learners’ knowledge of two languages affect patterns in cognitive domains? The next section reviews previous studies on L2 acquisition of spatial expressions and discusses how the learners’ conceptualizations are affected by second language acquisition.

2.2. The L2 Acquisition of Spatial Relationships

In the field of cross-linguistic transfer in the spatial domain, many previous studies have claimed that learning spatial expressions is difficult because learners tend to transfer L1 semantic meanings of spatial expressions to L2 words (Ijaz, 1986; Mukattash, 1984), often using the L1 translations (Jiang, 2004). Jiang (2004) argued that semantic transfer occurs when L2 words are mapped to the learners’ L1 existing meanings in L2 lexical acquisition. For example, Mukattash (1984) conducted an error analysis to discover the type and cause of errors that Arabic learners of English made using English prepositions. He found that Arabic learners of English tend to over-use the English preposition *in*, because the Arabic preposition *fī* can be used in all the contexts that require the use of *in*, *at* and *on*. He concluded that learners were influenced by L1 semantic meanings of locative prepositions in L2 prepositional acquisition. However, in the studies of cross-linguistic influence of spatial relation terms, semantic transfer might not sufficiently explain all the difficulties of learning L2 spatial expressions.

Instead of examining differences in language structure, some researchers examine how the concepts associated with one language might affect the learners' language uses in another language. Jarvis (2009) suggests in semantic transfer, the learners' L2 word and L1 word mean the same thing and simply express the meaning differently, whereas in conceptual transfer, crosslinguistic expressions do not mean the same thing, and an L1 item has a different mental representation as compared to an L2 item. Jarvis (2016) re-explored his own previous research (Jarvis & Odlin, 2000) and suggested that conceptual differences in spatial terms between Finnish and Swedish influenced the choice of L2 prepositions made by Finnish versus Swedish learners of English. He indicated that this reflects conceptual not semantic transfer (Jarvis, 2016). In the original study, Jarvis and Odlin (2000) examined the learners' tendencies to use different English prepositions to describe the same situation in English. Their research showed that Finnish learners of English and Swedish learners of English have different tendencies to choose English prepositions to describe a scene where a man and woman are sitting on the grass. Finnish learners of English have a strong tendency to use *on* whereas Swedish learners of English tended to use *in*. Jarvis (2016) suggested the possibility that this difference arose because the learners from each L1 did not see the same scene in the same way. For example, for the Swedish speakers, the length of the grass would play an important role in their choice of preposition with *in*, and they might have chosen to use *in* because of the height of the grass. Whereas, for the Finnish speakers, the location of the grass may have been relevant, and they might have chosen the *on* to describe the same scene because the grass was located in front of the house. In other words, he argued that the learners from two different languages chose different prepositions because of spatial conceptualizations in their native languages. Jarvis concluded that if the learners had relied on their L1 conceptual knowledge to choose English prepositions, this could

be explained as conceptual transfer, not as semantic transfer. Jarvis (2009) claimed that although both semantic representation and conceptual representation constitute meaning transfer, they should be carefully distinguished (p. 76). Conceptual transfer has focused more on influences of the learners' L1-based patterns of cognition on L2 language use rather than on influences of different meanings of spatial words across the languages. If L2 learners choose spatial expressions based on their ways of seeing the spatial relations in their native language, conceptual transfer may be involved.

In this way, the idea of conceptual transfer suggests that learners from different L1 backgrounds conceptualize spatial relationships differently. Each language carries a specific spatial conceptualization pattern. Learners tend to conceptualize spatial relations within their L1 system when they speak L2. Since conceptual transfer is a result of differences in conceptualization between the L1 and L2, overcoming linguistic errors in conceptual transfer will require learners not just to learn the correct L2 linguistic form, but also to develop new concepts or to modify their existing L1 concepts (Ellis 2015: 137).

Some studies have investigated how bilinguals' conceptualization patterns are different from monolinguals' especially when their L2 includes conceptualization patterns that are different from their L1 (Athanasopoulos, 2007; Athanasopoulos & Kasai, 2008; Cook et al., 2006; Park & Ziegler, 2014). For example, Athanasopoulos (2007) and Athanasopoulos and Kasai (2008) have investigated the perception of shape/color categorization for Japanese learners of English. They studied Japanese monolinguals, English monolinguals and Japanese L1-English L2 bilinguals to see how they categorized novel objects based on either common color or shape. Using triad-matching and picture description tasks, the studies showed that English monolinguals prefer to classify objects based on shape significantly more frequently than do Japanese

monolinguals. For Japanese L1-English L2 bilinguals, advanced learners performed like English monolingual speakers, whereas intermediate bilinguals followed a similar pattern to Japanese monolinguals. The studies suggested that learners with intermediate proficiency levels may be dominated by L1 cognitive categorization patterns, whereas the categorization of advanced learners seems to be restructured as they achieve higher L2 proficiency.

Park and Ziegler (2014) have investigated how different patterns of categorization in spatial relations can affect learners' use of another language by using a triad matching task similar to the study by Athanasopoulos and Kasai (2008) with Korean learners of English, Korean monolinguals and English native speakers. They studied English native speakers' and Korean ESL learners' reference to placement events described with either *put in* or *put on*. Their data supported previous studies such that Korean monolinguals and English monolinguals categorized spatial concepts differently. Korean monolinguals classified spatial concepts based on "tight-fit" relations, whereas English-speaking monolinguals categorized spatial relations based on containment. Similar to the results of Athanasopoulos and Kasai (2008), the study showed that in the L2, patterns of spatial categorization correlated with the level of L2 proficiency. The learners with lowest English proficiency followed the Korean pattern, whereas the learners with highest English proficiency showed a similar pattern to English native speakers, and the learners in the middle showed a mixed tendency between the two systems. Along with the study of Athanasopoulos and Kasai (2008), Park and Ziegler (2014) also suggest that cognitive representations do not seem fixed to the L1 but are able to be restructured as learners achieve higher L2 proficiency. These previous studies showed the critical role of L2 proficiency; that L1 conceptual transfer is persistent, but it can be overcome and that learners have a capacity for conceptual development.

On the other hand, some studies have argued that the difficulties of L2 learning of spatial relationships are not only because of L1 transfer. For example, Munnich and Landau (2010) showed how geometric and functional concepts in different spatial expressions affect learners' acquisition of adpositions (prepositions and postpositions). For example, as the researchers described, the English preposition *in* can represent "both inclusion (geometry) and containment (function)" and the English preposition *on* represents "both contact (geometry) and support (function)" (p. 25). The researchers studied adult Korean and Spanish learners of English by asking them to produce and judge the English prepositions *in* and *on*, which required learners to differentiate the geometric and functional factors in spatial expressions. The study showed that the learners from both L1 groups performed well with choosing prepositions in geometric relations, but not in functional relations. For example, learners did not confuse *under* with either *on* or *over*, which describe the differences in geometric features along the vertical axis of spatial term. However, the phrases such as "lizard *on* jeans" and "blanket (folded) *on* man" led to one of the highest levels of participant error whereby the learners described these spatial relationships using *over*. These results showed that learners had difficulty distinguishing functional features of *over* and *on* with respect to reference objects. Although both Spanish and Korean learners did not show the same patterns of errors in their use of English prepositions, the study concluded that learners who started to learn English at advanced age had equal difficulty to differentiate functional concepts of *in* and *on* regardless of their L1s.

Overall, L2 acquisition of spatial expressions is a complex process. The result of past studies has shown that spatial conceptualizations of prior learned languages can carry over to the acquisition and use of a new language. As Jarvis (2009) stated, L1 transfer involves not only cross-linguistic influences because of structural differences between L1 and L2; differences in

language concepts and specific patterns of conceptualization need to be considered to understand L1 transfer in second language acquisition. Although there might be universal tendencies involved in L2 acquisition of spatial conceptualization, previous studies have suggested that L1 transfer might work alongside universal factors. The previous studies also have shown that bilingual conceptualization patterns resemble both that of source (L1) and target (L2) monolingual conceptualization patterns, but they are also unique. The study of Park and Ziegler (2014) has suggested that the spatial domain can be considered as a cognitive domain where the learners' way of thinking in L1 transfers to ways of usage in L2.

In line with the study of Park and Ziegler (2014), the present study investigated how the L1 conceptual system affected L2 use of spatial expressions. Park and Ziegler investigated only Korean learners of English. According to Jarvis (2000), evidence of inter-L1-group heterogeneity is necessary to identify L1 transfer as opposed to universal effects of L2 acquisition. Therefore, the current study investigated learners with two different L1 backgrounds in order to identify L1 transfer in learning L2 spatial relations. Also, the previous studies have shown that as learners achieved higher proficiency in L2, the learners' L1 categorization might be restructured. The present study also investigated this idea with inclusion of two different proficiency levels as well as how the bilingual conceptualization was different from that of monolinguals. Given that previous studies in conceptual transfer have mainly studied English and other European languages, the current study investigated the conceptualization of spatial relation in L2 Japanese from two different native languages: Chinese and English.

2.3. Acquisition of L2 Japanese locative postpositions *ni* and *de*

In Japanese, particles have important roles for the structure of sentences. Japanese has two different types of particles: case particles and postpositions. According to Tsujimura (1996: 135), the roles of case particles are functionally determined within a sentence indicating how the accompanying nouns function, whereas the roles of postpositions are to deliver the semantic contents with the accompanying nouns. In terms of describing the location of objects or people, Japanese uses locative postpositions². Postpositions are the Japanese counterpart of prepositions in English. Postpositions are placed after nouns while prepositions are placed before nouns (Tsujimura 1996: 133). The Japanese locative postpositions *ni* and *de* are both used to describe location.

Masuda (2007) indicates that the choice of Japanese locative postpositions can be explained by the way a speaker interprets the subject in relation to the ground. She explained that when the subject is perceived as involved in an action, *de* is used, whereas when the subject is perceived as stationary, *ni* is likely to be used. As we can see in (1), *ni* marks a location in an existential sentence whereas *de* indicates a location where the action expressed by the verb takes place in (2)

- (1) Ueda wa gakkou ni iru.
Ueda -TOP₃ school at is
'Ueda is at school.'
- (2) Ueda wa gakkou de benkyo-shita.
Ueda -TOP school at study-past
'Ueda studied at school.'

² Different researchers label *de* and *ni* as postpositional particles, locative particles or postpositions. For the purpose of this thesis, I refer to them as locative postpositions.

³ TOP indicates topic marker in Japanese which is placed after a noun marked as a topic of the sentence.

In this way, Japanese locative postpositions can be used differently based on whether they accompany an action or existential verb. Because different languages have different spatial conceptualization, the use of Japanese locative postpositions *de* and *ni* has been claimed to be challenging for L2 learners of Japanese. A detailed comparison of Japanese locative postpositions, English locative prepositions and Chinese locative preposition will be discussed in Chapter 3. In this section, the focus will be on previous studies of Japanese locative postpositions.

The difficulties for L2 learners to appropriately use Japanese locative postpositions might occur because of the multiple meanings that can be expressed by a single particle. As mentioned previously, *ni* and *de* – the focus of this study - are both associated with multiple meanings. Kabata (2016) and Moriyama (2008) have proposed patterns of usage of *ni* and *de* by English learners of Japanese at different proficiency levels by analyzing the KY corpus (a collection of Oral Proficiency Interviews between learners of Japanese and native speaker interviewers). Although their research methodologies were different (Moriyama analyzed the learners' correct use whereas Kabata conducted research on the learners' errors), their studies reported similar conclusions. They found that the learners associated both particles with locative meanings first, and the other senses appeared later.

Although Kabata and Moriyama showed that the spatial meanings for particles might have been acquired first, the locative meanings of *ni* and *de* are still challenging among Japanese learners of different first languages. In order to demonstrate this difficulty for L2 learners, Hasuike (2007, 2012) showed how cross-linguistic differences influence L2 learners' use of the locative postpositions *ni* and *de*. She investigated the use of these locative postpositions cross-linguistically using a particle-choice test and a grammaticality judgement task. She studied the

production of learners of Japanese from three different L1s (Chinese, Korean and English) and at two different proficiency levels for each in order to see how the L2 proficiency influenced performance. Although the tasks in the study did not exclude the locative meanings of *de* and *ni*, the study suggested that Chinese learners of Japanese tend to overuse *ni* more than English learners and Korean learners of Japanese. Korean learners were able to achieve higher scores on tasks because of L1 positive transfer since Korean has translational equivalents of Japanese locative postpositions *de* and *ni* (Hasuike, 2012). The studies concluded that L1 transfer seemed to be involved in learning Japanese locative postpositions.

On the other hand, Sakoda (2001) has shown that L1 transfer may not be responsible for learner errors in the use of locative postpositions in Japanese. She explored the learning strategy of Japanese learners from two different L1s (Chinese and Korean) by conducting a fill-in-the-blank task. Her study showed that regardless of their L1, the learners seemed to use a similar unit formation strategy, where *ni* was learned to appear immediately after locative nouns and *de* was learned to occur immediately after buildings or countries. Unlike Hasuike, Sakoda concluded that the difficulty of learning Japanese locative postpositions was not because of L1 negative transfer, but rather the learners' strategy of using formulaic sequences, which might have caused errors.

Okada and Hayashida (n.d.) studied L1 Chinese learners of L2 Japanese to investigate how the locative particle *de* is acquired by using a fill-in-the-blanks task. Their study concluded that learners confused *de* and the destination particle *ni*, not the locative particle *ni*. Although their study only included one L1, the researchers concluded that the difficulties in learning locative postpositions in Japanese is due to the particle's polysemous character not L1 transfer.

In line with these previous studies, the current study examined the acquisition of Japanese locative postpositions. The previous studies mainly focused on learner errors based on their production in particle choice, fill-in-the-blanks, and grammaticality judgement tasks. Although Hasuike (2012) provided insightful data supporting cross-linguistic transfer in learning Japanese locative postpositions, the data did not reflect the learners' spontaneous language usage. In the present study, a picture description task was conducted in order to explore learners' use of the target postpositions cross-linguistically. This task was chosen because compared with fill-in-the-blanks or particle choice tasks, the picture description task gave the participants more freedom in their language use. Another difference from the previous studies of Japanese locative postpositions is that the present study is interested in the relationship between L2 Japanese learners' language use and conceptual representations. The current study investigated whether the learners' different tendencies to choose locative postpositions are motivated by their L1 patterns of spatial conceptualization. Therefore, in addition to the picture description task mentioned above, a non-verbal task of triad-matching was conducted to tap into the learners' conceptual system. Lastly, following Hasuike (2012) and Sakoda (2001), the current study conducted a systematic comparison between learners of different L1s. Following Jarvis's (2000) methodological framework, the present study investigated similarities in conceptual tendencies and language use tendencies within the same L1 group (intra-L1-group), differences between learners of two different L1s; Chinese and English (inter-L1-group) and similarities in language use between each learner group and the native speaker group (inter L1 group congruity).

2.4. Typological comparison of Chinese, English and Japanese Adpositions

Before embarking on the present study, it is important to understand how spatial locations are expressed in the source and target languages.

2.4.1. Japanese locative postpositions

As described in the previous section, the Japanese postposition “*に* (*ni*)” is used to express a location of existence or state whereas “*で* (*de*)” is used to describe a location where actions take place. The following examples illustrate.

(3) Neko wa hako *ni* iru
Cat -TOP box in is
‘The cat is in the box.’

(4) Neko wa hako *ni* iru
Cat -TOP box on is
‘The cat is on the box.’

(5) Neko wa hako *de* naku
Cat -TOP box on cry
‘The cat cries on the box.’

If a verb in the sentence is a stative verb or indicates a location of existence of an object/person, the locative postposition *ni* should be used. If a verb in the sentence is an action verb, the locative postposition *de* should be used. In examples (3) and (4), regardless of the location of the cat, the postposition *ni* is used because the verbs in the sentences are both stative verbs *iru*. In example (5), the verb is an action verb; therefore, *de* is used. In this way, Japanese locative postpositions are chosen based on whether the actions are involved in the context. The

location of the cat does not affect a speaker's choice of postposition. In order to specify the location of a figure, the postpositions can appear with locative nouns⁴.

2.4.2. English locative prepositions

The English language has different spatial relations compared to the Japanese language. There are three common locative prepositions, *in*, *on* and *at* in English. According to Huddleston (1984), the preposition *in* indicates a containment, where the entity is a physical object completely or loosely contained within a clearly bounded reference area. Huddleston mentioned that the preposition *on* is used when the entity and a reference point are in physical contact with each other, with the reference area located below the entity, supporting it. Many previous studies have found that English monolingual speakers differentiate the locative prepositions *in* and *on* based on whether the spatial relations are containment, contact or support (Munnich & Landau, 2010; Park & Ziegler, 2014). In the translation equivalents of examples (4) and (5), whether to describe that “the cat cries *on* the box” or that “the cat is *on* the box”, *on* is used in English. In other words, the preposition *on* is used with either an action or a stative verb. In contrast, as shown in the translation equivalent of example (3), in the situation where the cat is inside the box, the preposition *in* is used. Thus, English locative prepositions are not classified by whether an action is involved in the context or not, but by the place where the figure object is located.

Another common English preposition *at* is used to describe two entities having the same spatial location with each entity being seen as a point (Huddleston, 1984). The prepositions *in* and *at* might be used to describe the same spatial relations as illustrated in (6) and (7). When a

⁴ Examples (3) and (4) as listed do not distinguish between English *in* and *on*. This distinction would be inferred through context or alternatively with the insertion of a spatial noun: *Neko wa hako no naka ni iru* ‘The cat is inside the box’ versus *Neko wa hako no ue ni iru* ‘The cat is on top of the box’. Similarly, example 5 could use the same spatial nouns to distinguish ‘in/inside’ from ‘on/on top of’.

person or a thing is *at* some place, it does not necessarily mean that they are inside of the place, as illustrated in (8) and (9).

(6) He is in the library.

(7) He is at the library.

(8) He is at home playing with his children outside.

(9) He is at home doing his work.

In sum, English locative prepositions conceptualize space based on containment, support relations and the relationships between figure and location. Unlike Japanese postpositions, the English locative prepositions are not categorized based on whether actions are involved in the context.

2.4.3. Chinese locative preposition

Chinese has a locative preposition 在(*zai*) to describe the different spatial relations. The preposition *zai* can be used to describe the spatial relations representing the English preposition *in* (containment) and also those representing the English preposition *on* (non-containment). Unlike Japanese postpositions, the same preposition *zai* can also indicate the location of the action or the location of state or existence. This is illustrated in the following examples (10) – (12). Similar to Japanese, in order to further specify the location of the figure, the preposition can appear with locative nouns.

⁵ The example of locative nouns in Chinese are *shang* ‘top’, *xia* ‘under’, and *li* ‘inside’.

(10) (Chinese) Zhe zhi⁶ mao zai he zi
The CL cat on the box
'The cat is on the box.'

(11) (Chinese) Zhe zhi mao zai he zi
The CL cat in the box
'The cat is in the box.'

(12) (Chinese) Zhe zhi mao zai he zi ku
The CL cat in the box cry
'The cat cries in the box.'

The Chinese locative preposition *zai* conceptually describes the location of existence or state and the location of action as well as the spatial relations of containment and non-containment. As illustrated in (10) and (11), whether the cat is on the box or in the box, the locative preposition *zai* is used to describe the location of the cat. Examples (11) and (12) show that the preposition *zai* is also used to describe the situation where the action “crying” is involved and also the situation where no action is involved. In other words, unlike English, the Chinese language does not differentiate spatial terms based on the “containment/non-containment” contrast, and unlike Japanese, there is no differentiation at least at the lexical level based on the “action/non-action” contrast.

However, Chinese does differentiate the composition of sentences in describing “action” or “non-action” concepts. Here, “sentence composition” indicates the way the sentence is structured in Chinese. When states or non-action are expressed, no verb occurs with the preposition *zai*. However, when actions are expressed, *zai* occurs with verbs either in a preverbal

⁶ In example sentences (10)-(12), *zhi* is a classifier for animals (Zhang 2007).

position or postverbal position. Li and Thompson (1989: 398) suggest that all verbs could occur with the preverbal *zai*, indicating a general locational meaning, whereas postverbal *zai* are restricted to certain types of verbs. Although previous studies have discussed the possible difference of meaning between the postverbal and preverbal *zai*, these studies have agreed that *zai* with a verb phrase can indicate the location where an action or event takes place (Li & Thompson, 1989; Liu, 2009; Ryo, 2011).

In this way, the Chinese preposition *zai* can be used to describe both an “action” concept and a “non-action/existence” concept. However, the Chinese locative preposition also differentiates the concept of “non-action/existence” by not appearing with a verb. In other words, the Chinese preposition *zai* is sensitive to the differentiation of the “action” concept and “non-action” concept just like the Japanese postpositions *de* and *ni*.

2.4.4. Cross-linguistic comparison of adpositions among Japanese, English and Chinese.

As discussed above, English locative prepositions are classified by the location where the actions take place or the objects exist. As we have seen in the examples, the preposition *on* can indicate both locations where the cat cries and where the cat is. Unlike Japanese postpositions, English prepositions can be used to describe both the place of actions/movements, which is expressed by *de* in Japanese, and the place of state/existences, which is expressed by *ni* in Japanese. A landmark framework proposed by Stockwell et al. (1965) called “the hierarchy of difficulty” was proposed to explain how differences between the L1 and L2 influence cross-linguistic transfer and ease of acquisition. They categorized the differences between L1 and L2 into the following five categories organized from most to least difficult: Differentiation, New, Absent, Coalesced, Correspondence. Based on this theory, the difficulty of learning the Japanese

postpositions, *ni* and *de* for English speakers is classified as “differentiation”, where a single lexical item in the learners’ L1 will translate into more than one item in the L2. The Chinese preposition *zai* can be also used to express both *de* and *ni*. Therefore, L1 Chinese learners’ semantic difficulty in learning these Japanese postpositions can be also classified as “differentiation” according to the theory of the ‘hierarchy of difficulty’.

However, the Chinese locative preposition *zai* differentiates whether an action is involved by changing sentence compositions as illustrated in examples (10-12). In other words, Chinese language changes the sentence structure based on “action/non-action” contrast. This indicates that Chinese is more sensitive to the differentiation between actions and states than English. By changing sentence structures, L1 Chinese learners can differentiate the meanings of *zai* either as “location of existence,” or “location of action,” something that English prepositions cannot do. For Chinese learners of Japanese, then, their difficulty in learning Japanese postpositions can also be classified as “coalesced”, where two different sentence compositions in the learners’ first language become one in their second language. In other words, the sentence compositions change between the translation equivalents of *de* and *ni* in Chinese, but the sentence compositions should not change in the L2 for Chinese learners of Japanese. Based on the latter, in the present study, the sensitivity of Chinese regarding the differentiation of action and state in use of *zai* was hypothesized to provide an advantage for Chinese learners of Japanese compared to English learners of Japanese in the learning of Japanese postpositions *de* and *ni*.

CHAPTER 3: PRESENT STUDY

Partially replicating Park and Ziegler (2014), the current study examined whether conceptual transfer is involved in L2 learning of Japanese spatial expressions, specifically *ni* and *de* (roughly translated as *in*, *on* or *at*). Previous studies of Japanese locative postpositions have investigated L1 transfer in learning L2 Japanese spatial expressions, but their analyses focused mainly on the structural differences between Japanese and the learners' L1. This study investigated whether learners' L1 conceptual systems affect their use of L2 Japanese spatial expressions *ni* and *de*. The study aimed to find out whether learners' choices of Japanese locative postpositions relied only on their linguistic knowledge, or also on their conceptual patterns of spatial categorization. To achieve this goal, conceptualization patterns and L2 Japanese language use from learners of two different L1s were studied: English, which differs structurally and conceptually from Japanese, and Chinese, which shares some conceptual and structure similarities with Japanese.

In order to identify possible influences of L1 on L2 spatial conceptualization, conceptualization patterns of Chinese monolinguals, English monolinguals and Japanese monolinguals were also examined. The non-verbal spatial categorization patterns and language uses of locative prepositions based on e.g. containment/non-containment in English have been well documented in previous research (Bowerman & Choi, 2001; Choi et al., 1999; Park & Ziegler, 2014). Given that the previous studies primarily investigated language use of locative adpositions in Chinese and Japanese, the current research also aimed to investigate whether language specific spatial conceptualization patterns exist in Japanese and Chinese.

Furthermore, two different proficiency levels for bilinguals were examined to see how their proficiency plays a role in restructuring the learners' conceptual systems. The research was guided by the following specific questions:

1. What inter-language similarities and differences exist among Japanese, Chinese and English monolinguals spatial categorization systems?
2. What intra-language similarities and differences exist between L1 Chinese and L1 English speakers' spatial categorization systems in L2 Japanese?
3. What intra-language similarities and differences exist among Japanese, Chinese and English monolingual and Chinese-Japanese and English-Japanese bilingual spatial categorization systems?
4. How does L2 proficiency level influence learners' acquisition of spatial conceptualizations?

Related to these research questions, the following three hypotheses were proposed.

1. Chinese monolinguals will have similar conceptualization patterns to Japanese monolinguals since Chinese differentiates sentence compositions based on the same semantic concepts underlying the use of Japanese locative postpositions, i.e. action/non-action. On the other hand, English has a different conceptual system compared to Japanese and Chinese, i.e. containment/non-containment; therefore, English monolingual categorization patterns will be different than those of Japanese and Chinese monolinguals.
2. The bilingual language use of L2 spatial expressions will be affected by their L1 conceptualization patterns. Chinese bilinguals should have more advantages than English

bilinguals in learning L2 Japanese spatial expressions because of their L1 spatial conceptualization systems.

3. L2 proficiency will play a role in the restructuring of the L2 spatial conceptual system. Regardless of the L1, as L2 proficiency increases, the L2 spatial conceptual system will be restructured to be similar to spatial conceptualization patterns of native speakers of the target language.

The findings of this study may have implications for language teachers through an understanding of learner difficulties in learning L2 concepts that differ from their first languages, which may prompt pedagogical solutions.

CHAPTER 4: RESEARCH METHODS

4.1. Participants

Participants in the present study included three different monolingual groups (Japanese, Chinese and English) and two groups of learners of L2 Japanese with different L1s (L1 Chinese and L1 English). 45 L1 Chinese learners and 17 L1 English learners were recruited for this study. The differing numbers of bilingual participants reflected the availability of the relevant language groups in local Japanese language classes. For monolingual participants, 10 people were recruited for each language group.

The participants in learner groups were undergraduate students who were enrolled in Japanese as a foreign language courses at a large university in the northeast USA. In order to identify learners' development over time, the study used cross-sectional samples for each L1 group. The participants were divided into two different proficiency levels. The learners with beginning levels of Japanese for each L1 group had finished ten weeks of Japanese coursework. The learners with advanced levels of Japanese language for each L1 group had studied for at least 4 semesters. The number of students for each level and each proficiency level is shown in Table 1. There were two students whose L1s were Burmese and Korean, respectively, but their data are not included in the study.

Table 1: Learner Data

| | Beginning Level | Advanced Level | Total |
|------------|-----------------|----------------|-------|
| L1 Chinese | 22 | 23 | 45 |
| L1 English | 12 | 5 | 17 |

The way in which the students learned the use of *de* and *ni* was not considered since this study did not investigate the role of instruction.

The participants for each monolingual group were recruited through personal connections. These participants were people who currently reside in their L1 speaking countries and their dominant languages in their daily lives were their native languages. Monolingual participants were all aged between 19 and 23 years old, and they were enrolled in universities or recently graduated. Because most Japanese and Chinese receive English language classes as a part of their school curriculum, monolinguals were considered ‘functional monolinguals’ in this study based on their reported daily language usage, which comprised only their native languages. This was also a weakness for the Chinese bilinguals, which will be discussed below.

4.2. Materials

In line with Park and Ziegler (2014), materials for the current studies were designed based on the predicted crosslinguistic differences and similarities in spatial conceptualization in Japanese, English and Chinese. The first task was a triad matching task, which aimed to measure participants’ conceptualization of space through their nonverbal production. The second task was a picture description task, where the participants were asked to describe the same pictures from Task 1 in writing. The purpose of this task was to examine associations between the learners’ nonverbal production (Task 1) and verbal production (Task 2). Finally, Task 3 asked the participants to explain in writing their choices in Task 1 verbally. The purpose of this task was to examine whether the participants’ choices in Task 1 were made based on their language use in Task 2.




Instructions and tasks were given to monolingual groups in their native languages with the assistance of a native-language speaking facilitator. For learners of all levels, oral instructions and tasks were given in Japanese with English written instructions due to the absence of a native-language speaking facilitator. Materials can be found in Appendix 1 and 2.

Task 1: Triad matching task

Task 1 aimed to measure the participants' non-verbal patterns of spatial categorization. It was important to collect participants' non-verbal data before collecting verbal data in order to minimize the possibility that the participants' responses in a verbal task affected the decisions made in a non-verbal task (Jarvis 2016). Following Park and Ziegler (2014), participants were presented with five sets of pictures in a PowerPoint presentation. Each set consisted of two pictures showing the same spatial concepts and one picture showing a different spatial concept depending on the spatial categorization of each language. Within the given time of ten seconds per set, the participants were asked to choose one picture that did not match the other two pictures. Each set of pictures was designed to be categorized in two different ways (containment/non-containment or action/non-action); therefore, the participants were expected to answer for each set based on how they conceptualized space. If the participants relied on the English conceptualization system, they should categorize pictures based on whether the location of figure in the pictures would most commonly be described based on a "containment" or "non-containment" contrast. If the participants relied on the Chinese or Japanese conceptualization systems, they should categorize the pictures based on whether an action was involved or not. To control for extraneous variables, each picture in each set of three pictures was designed to be nearly identical except for whether the figure was inside (representing containment) or outside

(representing non-containment) and whether any action was involved in the picture. These possibilities are outlined in Table 2 below.

Table 2: Example of Spatial Categorization in Task 1

| | A | B | C |
|--|---|--|---|
| |  |  |  |
| English monolingual expected A = non match | Non-containment | Containment | Containment |
| Chinese monolingual expected C = non match | Action | Action | Non-action |
| Japanese monolingual expected C = non match | Action | Action | Non-action |

The English monolinguals were expected to choose Picture A for the picture that does not match the other two pictures in Table 2, because in English, B and C represented the “containment” concept whereas A represented the “non-containment” concept. On the other hand, Chinese monolinguals and Japanese monolinguals were expected to prefer the “action/non-action” contrast for this categorization task. They were predicted to choose C as a non-match picture because A and B represented the “action” concept whereas C represented the “non-action” concept. If English and Chinese learners of Japanese had similar patterns of

conceptualization to those of monolinguals of their native languages and different to one another, this would be interpreted as an evidence that the learners are influenced by their L1 conceptualization systems. The participants were asked to circle the letter of the picture they deemed was different in each set to indicate their answers on answer sheets. Following previous studies (Athanasopoulos 2007; Athanasopoulos & Kasai 2008; Park & Ziegler 2014), since this task was intended to measure the participant intuitions rather than prepared responses, the task was timed (10 seconds per set). The learners were not allowed to go back to a previous set during the task.

Following Jarvis’s (2016) suggested stimuli set, Table 3 describes how the picture features in the task were varied equally across five sets. All the possible feature combinations were covered in the task. Set 1 and Set 5 below are in the same condition using different action verbs. The full set of stimulus pictures can be found in Appendix 1.




Table 3: Feature Combinations for Pictures in the Triad matching task

| Set | picture | Outside | Inside | Action | Non-action |
|-----|---------|---------|--------|--------|------------|
| 1 | A | - | + | + | - |
| | B | + | - | + | - |
| | C | - | + | - | + |
| 2 | A | - | + | - | + |
| | B | + | - | + | - |
| | C | + | - | - | + |
| 3 | A | - | + | + | - |
| | B | + | - | + | - |
| | C | + | - | - | + |
| 4 | A | - | + | + | - |
| | B | + | - | - | + |
| | C | - | + | - | + |
| 5 | A | - | + | + | - |
| | B | + | - | + | - |
| | C | - | + | - | + |

Task 2: Picture Description Task

In Task 2, participants were asked to describe four sets of pictures from Task 1 in writing using sentences that included the location of any actions. Four of the five sets were chosen in order to manage the time of the whole experiment. Since the conditions were repeated in sets 1 and 5, set 5 was removed in this task. Learners were asked to describe pictures in both Japanese and their native languages. However, the current study focuses only on learners' L2 Japanese descriptions. Monolinguals were asked to describe pictures only in their native languages. There was some vocabulary that learners may have not learned at the time of the study (e.g. *shibafu* 'lawn', *kaidan* 'stairs'). If learners did not remember or did not know any of vocabulary in Japanese, they were allowed to write the word in English. The examples of picture descriptions were illustrated below.

Table 4: Example of Picture Description in Task 2

| | A | B | C |
|-----------------------------|---|--|---|
| |  |  |  |
| English monolingual | She is eating ON the grass. | She is studying IN the classroom. | She is IN the café. |
| Chinese monolingual | <i>ZAI cao di chi shu pian</i> 'She is eating ZAI the grass.' | <i>ZAI jiao shi xuexi</i> 'She is studying ZAI the classroom.' | <i>ZAI ka fei dian</i> 'She ___ ZAI the café.' |
| Japanese monolingual | <i>Shibafu DE tabemasu.</i> 'She is eating DE the grass.' | <i>Kyositsu DE benkyo simasu.</i> 'She is studying DE the classroom.' | <i>Café NI imasu.</i> 'She is NI the café.' |

The English monolinguals were expected to choose different prepositions for spatial description based on the “containment/non-containment” contrast, describing A with the preposition *on*, and B and C with the prepositions *in/at*. On the other hand, Chinese monolinguals were expected to differentiate the sentence compositions based on the “action/non-action” contrast, describing picture C only with a prepositional phrase with no verb because C represents a “non-action” concept. For pictures A and B, Chinese monolinguals were predicted to use different action verbs with the prepositional phrases. Japanese monolinguals were expected to use different postpositions for spatial description depending on whether an action is involved in the location. Therefore, pictures A and B were expected to be described focusing on the location of the action using the postposition *de*, whereas picture C was expected to be described focusing on the location of figure using the postposition *ni*.

This verbal task was aimed to examine associations between the participants’ conceptualization systems and their language use. If learners’ nonverbal choices in Task 1 corresponded to their choices of Japanese locative postpositions in Task 2, this was interpreted as evidence that the way the learners conceptualized space might have affected their choices of Japanese postpositions *de* and *ni*. The materials for Task 2 can be found in Appendix 2.

Task 3: Survey

In Task 3, the participants were asked to explain in writing, in their native language this time, i.e. Japanese, English or Chinese, the reason for their answers to three of the sets in Task 1. Three of the five sets were chosen in order to manage the time of the whole experiment. This task provided additional evidence for any associations between the learners’ spatial

conceptualization patterns and their language use. The materials for Task 3 can be found in Appendix 2.

4.3. Procedures

Volunteer bilingual participants completed the tasks in their classrooms with the non-instructor researcher after their regular Japanese classes. They had been introduced to Japanese locative postpositions *ni* and *de* by their Japanese instructors at the university. Before they started the experiment, they filled out consent forms. The materials in Task 1 were presented on the large screen at the front of the room, and the learners marked their answers on given answer sheets. Task 2 immediately followed Task 1. In Task 2, the participants were given papers that included four sets of pictures from Task 1 and were asked to write sentences to describe each picture in Japanese and in their native language. Following Task 1 and 2, the bilinguals were asked to explain in writing the reason behind three of their answers in Task 1. The same tasks were administered to Japanese, English and Chinese monolinguals. For Japanese and Chinese monolinguals, the instructions were given online individually, and they sent their answers to the researcher by email. English monolinguals were tested individually in person.

4.4. Analyses

In Task 1, the participants were asked to choose one picture that did not match the other two pictures. Each set of pictures was designed to be categorized in two different ways (containment/non-containment or action/non-action). Therefore, they could choose a ‘different’ picture that described a different concept from the perspective of the Japanese/Chinese conceptual system (action/non-action) or the English conceptual system (containment/ non-

containment). The third picture did not differ by either the Japanese/Chinese or the English conceptual systems. Rather, this picture represented an undifferentiated conceptual system because answers could be interpreted within either system, and represented another potential choice for the participants. This choice in each set was categorized as Other categorization.

Following the scoring method of the triad matching task in Park and Ziegler's (2014) study, the participants' choices in Task 1 were converted to numerical data. For each triad set, one point was given to one of the three categories (English, Japanese(/Chinese) and Other) depending on the participants' choices of pictures. For example, if a participant chose a picture that described a different spatial concept using the English conceptual system, one point was given to the English category. Responses were scored as the number of times each participant selected a particular categorization pattern.

In Task 2, the participants were given papers that included four sets of pictures from Task 1 and were asked to write sentences to describe each picture. Learners were asked to describe pictures in both Japanese and their native languages whereas monolinguals were asked to write them in their native languages. The description data were analyzed to examine whether the participants' language use was associated with their choices of spatial conceptualizations. English monolinguals were expected to differentiate their use of prepositions *on* versus *in/at* based on the "containment/ non-containment" contrast. Japanese monolinguals were expected to differentiate their postpositions based on the "action/non-action" contrast, using *de* for pictures involving action and *ni* for pictures involving non-action. Chinese monolinguals were expected to use the Chinese preposition *zai* with different sentence compositions (with verb/ without verb) based on the "action/non-action" contrast. Learners' description data were also examined using a target-like use analysis (Pica, 1983) to measure their accuracy in the use of Japanese

postpositions. Target-like use analysis is used to measure learners' acquisition of L2 features by considering learners' overuse in non-obligatory contexts in addition to their accurate uses in obligatory contexts (Ellis 2015: 94).

For Task 3, the participants were asked to provide their reasons behind their choices on three sets of pictures from Task 1. Each of the participants' answers were classified into one of three categories. If the participants' responses were related to the "containment/ non-containment" contrast, they were categorized as English spatial categorization factors. If the participants' responses were related to the "action/non-action" contrast, they were categorized as Japanese/Chinese spatial categorization factors. If participant answers were not related to either categorization, they were classified as Non-relevant factors since this showed that the participants' conceptualizations were not based on either the spatial factors relating to "containment/ non-containment" or the "action/non-action" contrast and were therefore not immediately relevant to this study and its hypotheses.

CHAPTER 5: RESULTS

5.1. Task 1 Results

5.1.1 Task 1 Original (five sets of pictures)

Initially, following Park and Ziegler (2014), participants' scores for each picture categorization were converted to percentage scores and the mean score in each category was calculated for each group of participants. Figure 1 represents the mean percentage scores of the Japanese/(Chinese), English and Other conceptual categories for the monolingual and learner groups in Task 1.

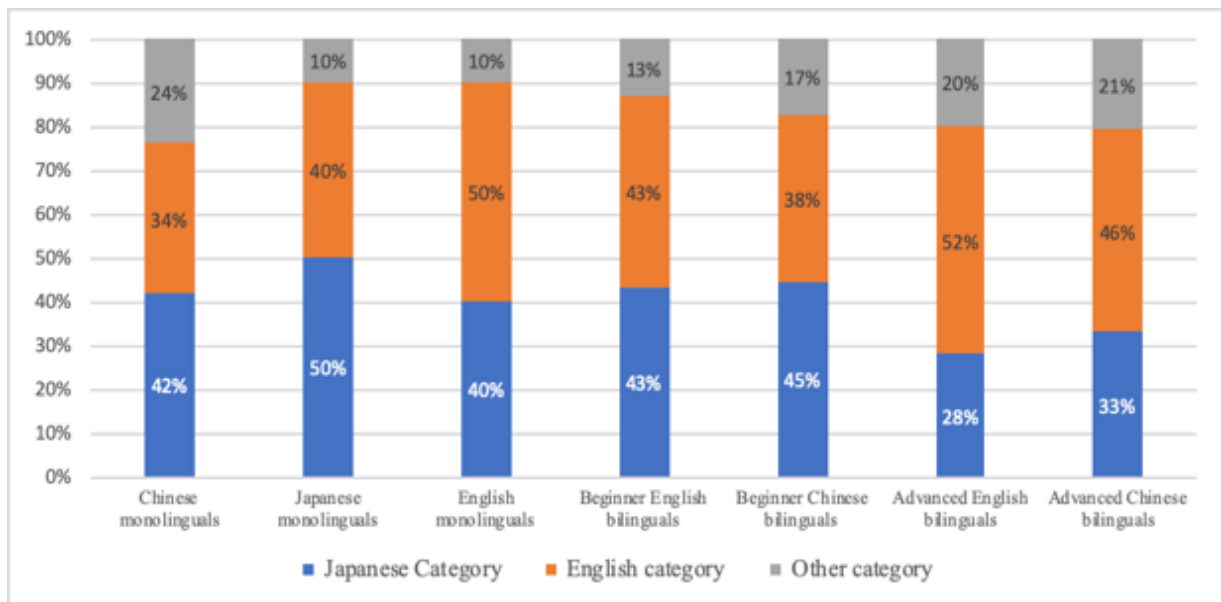


Figure 1: Participants' Conceptual Category Responses in Task 1 by Group

Table 5 adds the standard deviations in addition to mean percentage scores of the Japanese, English and Other conceptual categorizations for each monolingual and learner group.

Table 5: Participants' Conceptual Category Responses in Task 1 by Group

| | Japanese/Chinese | | English | | Other | |
|---------------|------------------|----|---------|----|-------|----|
| | M (%) | SD | M (%) | SD | M (%) | SD |
| C.M. (N=10) | 42 | 22 | 34 | 25 | 24 | 16 |
| J.M. (N=10) | 50 | 36 | 40 | 38 | 10 | 17 |
| E.M. (N=10) | 40 | 31 | 50 | 37 | 10 | 17 |
| E.B.B. (N=12) | 43 | 22 | 43 | 25 | 13 | 15 |
| C.B.B. (N=22) | 45 | 25 | 38 | 21 | 17 | 18 |
| E.B.A. (N=5) | 28 | 30 | 52 | 36 | 20 | 14 |
| C.B.A. (N=23) | 33 | 27 | 46 | 25 | 21 | 16 |

Note: "bilinguals" and "second language learners" are interchangeable.

*C.M. = Chinese monolinguals, *J.M.= Japanese monolinguals, *E.M.= English monolinguals. *E.B.B.= English Bilinguals at Beginning level *C.B.B.= Chinese Bilinguals at Beginning level *E.B.A.= English Bilinguals at Advanced level *C.B.A.= Chinese Bilinguals at Advanced level

The data in Table 5 indicate that the monolinguals generally though not strongly followed predicted patterns. Thus, Chinese monolinguals descriptively relied slightly more on the predicted Japanese/Chinese categorizations (42%) than the English categorizations (34%). Similarly, Japanese monolinguals tended to use the predicted Japanese/Chinese categorizations (50%) more than the English categorization (40%), whereas English monolinguals tended to use the predicted English categorization (50%) more than the Japanese/Chinese categorization (40%).

Results for the bilingual data were mixed. At the beginning level, L1 Chinese learners followed Chinese monolingual patterns, choosing Japanese/Chinese categorizations slightly more often (45%) than English categorizations (38%). L1 English beginning level learners chose both Japanese/Chinese and English categorizations equally (43%). However, contrary to predictions, regardless of their L1, advanced learners relied more on English categorizations than Japanese/Chinese categorizations.

While Table 5 suggests some descriptive differences in conceptualization patterns depending on L1 and proficiencies, inferential ANOVA tests showed no statistically significant differences between groups in choice of conceptual categorization pattern.

5.1.2 Posthoc Revised Task 1 Coding

Coding of Task 3 responses revealed that participants did not reliably recall their choices made in Task 1. Task 3 asked the participants to explain in writing the reason for their answers to three of the sets in Task 1. The purpose of Task 3 was to examine whether the participants' choices in Task 1 were made based on their different spatial conceptualizations. In Task 3, several participants in both monolingual and bilingual groups made different classifications of pictures than they had done in Task 1. For example, some participants chose pictures representing the English categorization (“containment/non-containment”) in Task 1. However, in Task 3, they chose pictures representing the Japanese/Chinese categorization (“action/non-action”) for the odd picture and explained the reasons behind their choices as “action/non-action” categorization. Some other participants provided completely unrelated reasons for their choices in Task 3. For example, some participants chose a picture representing Japanese/Chinese categorization in Task 1; however, the reason they provided for their choice in Task 3 was that the subject in the picture looked more relaxed than in the other two pictures. In other words, the participants did not choose the picture representing Japanese categorization based on “action/non-action”. In this case, the participants' answers should have been categorized as “Other” (not related with Japanese categorization or English categorization) in Task 1.

In order to take these changes into consideration, three sets of pictures in Task 1 were reanalyzed using the responses for those three sets of pictures from Task 3. If the participants'

responses in Task 3 were related to the “containment/ non-containment” contrast, they were recoded as English categorizations. If the participants’ responses were related to the “action/non-action” contrast, they were recoded as Japanese/Chinese categorizations. For example, responses such as “A is outside, B and C are inside” or “Only A is sitting outside the room” were labeled as English categorizations, whereas participants’ responses such as “In C, she does not do anything” or “A and B are doing something but C is not” were labelled as Japanese/Chinese categorizations. If participant answers were not related to either categorization, such as “A is working, but B/C are relaxing” or “A seems more serious.”, they were classified as Other categorization / Non-relevant factors since this showed that the participants’ spatial conceptualizations were not based on either the “containment/ non-containment” relations or the “action/non-action” contrast.

5.1.3 Revised Task 1 (three sets of pictures)

After recoding the subset of Task 1 pictures included in Task 3, results were calculated following the same process as the original calculation. Figure 2 represents the mean percentage scores of participants’ responses in original and revised Task 1 data for the subset three sets of pictures for each group.

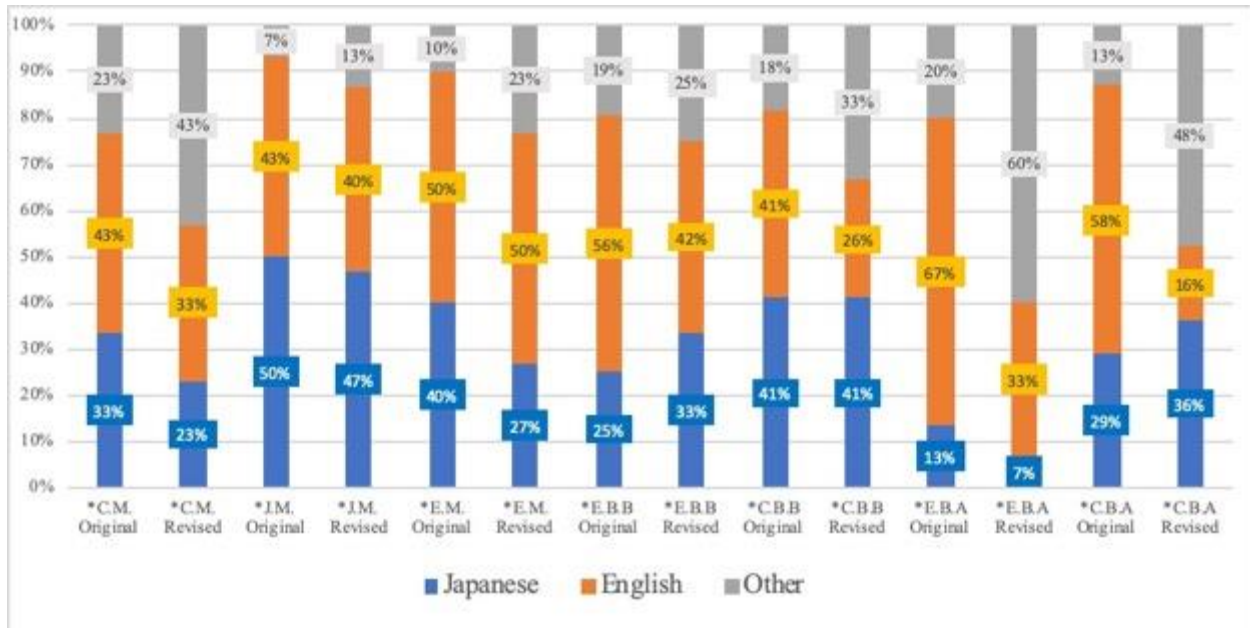


Figure 2: Original and Revised Participants' Responses in Task 1 by Group

*C.M. = Chinese monolinguals, *J.M.= Japanese monolinguals, *E.M.= English monolinguals. *E.B.B.= English Bilinguals at Beginning level *C.B.B.= Chinese Bilinguals at Beginning level *E.B.A.= English Bilinguals at Advanced level *C.B.A.= Chinese Bilinguals at Advanced level

Table 6 shows the standard deviation of participants' responses in addition to the mean percentage scores in original and revised data for the three sets of pictures for each group.

Table 6: Original and Revised Participants' Conceptual Category Responses in Task 1 by Group

| | Japanese/Chinese | | English | | Other categorization/ Non-relevant factors | |
|------------------|------------------|----|---------|----|---|----|
| | M (%) | SD | M (%) | SD | M (%) | SD |
| *C.M. Original | 33 | 31 | 43 | 38 | 23 | 22 |
| *C.M. Revised | 23 | 22 | 33 | 41 | 43 | 32 |
| *J.M. Original | 50 | 39 | 43 | 38 | 7 | 14 |
| *J.M. Revised | 47 | 35 | 40 | 38 | 13 | 23 |
| *E.M. Original | 40 | 41 | 50 | 39 | 10 | 22 |
| *E.M. Revised | 27 | 30 | 50 | 39 | 23 | 27 |
| *E.B.B. Original | 25 | 25 | 56 | 33 | 19 | 22 |
| *E.B.B. Revised | 33 | 40 | 42 | 43 | 25 | 32 |
| *C.B.B. Original | 41 | 38 | 41 | 29 | 18 | 22 |
| *C.B.B. Revised | 41 | 37 | 26 | 37 | 33 | 33 |
| *E.B.A. Original | 13 | 29 | 67 | 40 | 20 | 18 |

| | | | | | | |
|------------------|----|----|----|----|----|----|
| *E.B.A. Revised | 7 | 15 | 33 | 27 | 60 | 28 |
| *C.B.A. Original | 29 | 30 | 58 | 30 | 13 | 16 |
| *C.B.A. Revised | 36 | 32 | 16 | 28 | 48 | 33 |

Note: *C.M. = Chinese monolinguals, *J.M.= Japanese monolinguals, *E.M.= English monolinguals. *E.B.B.= English Bilinguals at Beginning level *C.B.B.= Chinese Bilinguals at Beginning level *E.B.A.= English Bilinguals at Advanced level *C.B.A.= Chinese Bilinguals at Advanced level

Table 6 shows that the preferences for Japanese/Chinese and English classifications for the revised Task 1 overall decreased as compared to the original results for Task 1. In parallel, the mean score preferences of the Other categorization / Non-relevant factors in the revised Task 1 increased compared to the results from the original Task 1 for all participant groups. This means that some participants who chose an odd picture seemingly using the Japanese/Chinese categorization (“action/non-action”) or English categorization (“containment/ non-containment”) in Task 1 did not report those concepts underlying their choices. Instead, they reported factors not relevant to the current study. (See responses below in analyses of Task 3).

As for monolinguals’ responses in the revised Task 1 data, Table 6 suggests that although 43% of Chinese monolinguals reportedly made their classification decisions based on factors not relevant to this study (such as weather, facial expressions on the subject, etc.) in the revised Task 1, Japanese monolinguals explicitly verbalized their preference for the predicted “action/non-action” pattern (47%) slightly more than the English “containment/ non-containment” pattern (40%) or the Other categorization / Non-relevant factors (13%), and English monolinguals explicitly verbalized their preference for the predicted “containment/ non-containment” pattern (50%) rather than “action/non-action” pattern (27%) or the Other categorization / Non-relevant factors (23%).

Data for the bilingual participants from the revised Task 1 showed that L1 Chinese beginning level learners preferred a more Japanese/Chinese-oriented “action/non-action” contrast

(41%) as compared to the English “containment/ non-containment” contrast (26%), though often chose the Other categorization / Non-relevant factors (33%). L1 English beginning level learners of Japanese, on the other hand, more often selected the English “containment/ non-containment” contrast (42%) as opposed to the Japanese/Chinese “action/non-action” contrast (33%).

Similarly, L1 Chinese advanced learners of Japanese identified the Japanese/Chinese “action/non-action” categorization (36%) more often than the English “containment/ non-containment” contrast (16%), but most often they identified Other categorization / Non-relevant factors (48%). In contrast, L1 English advanced level learners of Japanese preferred the English “containment/ non-containment” contrast (33%) more than the Japanese/Chinese “action/non-action” categorization (7%), though most often chose the Other categorization / Non-relevant factors. (60%).

Limiting comparisons to the English-like “containment/ non-containment” contrast and the Japanese/Chinese-like “action/non-action contrast, the results for the revised Task 1 data suggest that the English learners of Japanese aligned with English monolingual patterns regardless of their proficiency whereas the Chinese learners of Japanese did not align with Chinese monolingual patterns. This suggests that the spatial conceptualization for L1 English learners might have been influenced to some degree by their L1 “containment/ non-containment” pattern even after they acquired advanced proficiency in their L2 Japanese. On the other hand, contrary to predictions, Chinese monolinguals identified slightly more with the predicted English-like “containment/ non-containment” pattern (33%) than the predicted Japanese/Chinese “action/non-action” contrast (23%). However, both groups of Chinese learners of Japanese identified more with the predicted Japanese/Chinese-like “action/non-action” pattern than the predicted English-like “containment/ non-containment” pattern regardless of their proficiency.

That being said, limiting comparisons to the English-like “containment/ non-containment contrast and the Japanese/Chinese-like “action/non-action contrast has limited value because so many participants, especially Chinese L1 learners of Japanese, identified factors not relevant to the current study.

While the descriptive data in Table 6 suggest conceptualizations to some extent in line with predictions based on the participants’ L1 and proficiency level, inferential ANOVA tests revealed no significant differences between the groups in predicted choices of classification strategies, though there was a significant difference among the groups in choice of the Other categorization / Non-relevant factors ($F(6, 85)=2.589$ $p =.024$). This result appeared to be coming from a difference between Japanese monolinguals and advanced Chinese learners of Japanese in the participants’ preferences of the Other categorization / Non-relevant factors (13% versus 48% respectively) for the revised Task 1, which Tukey post hoc tests revealed approached statistical significance ($p =.062$)⁷. Although the results should be interpreted with caution, it appears that L1 Chinese advanced learners in particular were more likely to report features relevant to their categorization beyond the “containment/ non-containment” or “action/non-action” contrast than Japanese monolinguals. Similarly, Table 6 showed that 60% of L1 English advanced level learners also identified the Other categorization / Non-relevant factors. Previous studies (Athanasopoulos 2007; Park & Ziegler 2014) suggested that bilinguals restructured their conceptualization patterns towards their L2 conceptualization patterns, and their conceptualization patterns were not similar to either L1 or L2. Although the present study did not demonstrate that the learners’ conceptualizations were restructured towards their L2

⁷ Anything lower than .09 is labeled as a statistically approached significance due to the sample sizes and variability.

conceptualization, advanced learners' conceptualizations might have been different from either monolingual conceptualization. One theoretically possible interpretation of these results is that bilingual conceptualization for advanced learners might be unique and different from either Japanese monolinguals or their L1 monolingual equivalents.

Overall, in both the original and revised Task 1 results, English and Japanese monolinguals generally performed descriptively according to predictions for conceptualization of spatial relations but results for Chinese monolinguals were less clear and more mixed. However, the data in this study failed to reveal a statistically significant difference in conceptualization of spatial relations among monolingual speakers. With respect to bilinguals, L1 English learners of Japanese generally appeared to favor their L1 English-based conceptualizations, except for the revised patterns from advanced learners. The pattern from Chinese learners of Japanese in terms of L1 influence was difficult to interpret given the mixed results from Chinese monolinguals. In general, the data from both groups of bilinguals did not clearly show a gradual restructuring towards L2 with greater proficiency, and the analyses did not provide robust statistical evidence that learners' conceptualization patterns were influenced by their L1.

5.2. Task 2 Results

5.2.1 Monolinguals' L1 Descriptions

The quantitative summary results from English monolingual written descriptions of four of the picture sets from Task 1 are displayed in Table 7. The data for the Task 2 descriptions for monolinguals can be found in Appendix 3. English monolinguals were expected to differentiate their use of the locative prepositions *in/at* versus *on* based on the “containment/ non-containment” contrast. Table 7 shows that English monolinguals primarily used *on* and *outside*

for pictures involving “non-containment ” relations and *in* or *at* exclusively for the pictures involving the “containment” relationships. This result supports previous studies which suggested a major distinction in spatial categorizations in English is governed by containment relationships (Choi et al 1999; Park & Ziegler 2014).

Table 7: Frequency of preposition types produced by English monolinguals

| Preposition used | Frequency: Non-containment (%) | Frequency: containment (%) | Examples |
|------------------|--------------------------------|----------------------------|--|
| on | 20 | 0 | Eating chips while sitting down on lawn |
| on + in | 18.33 | 0 | Sitting on the ground in the yard eating chips |
| on + outside | 60 | 0 | She is sitting on the ground outside, eating chips |
| outside | 1.67 | 0 | She is eating chips outside |
| in | 0 | 38.33 | Doing work in a classroom |
| at | 0 | 6.67 | Eating at a restaurant |
| at + inside | 0 | 10 | She is studying at a desk inside |
| at + in | 0 | 13.33 | Sitting at a table in a restaurant |
| inside | 0 | 31.67 | She is inside a classroom reading |

A full 60% of the pictures representing “non-containment” events were described with the word *outside* and the preposition *on* in the same sentence as shown in Table 7. One possible reason for this result is that the preposition *on* indicates the concept of contact with an external surface, but it does not express specifically the “containment” concept. On the other hand, *outside* can express a meaning of “to the outside” which is indicative of the “non-containment” concept. In order to make a distinction between “containment” and “non-containment” concepts, English monolinguals might have used *outside* with *on* to describe pictures representing the “non-containment” concept. On the other hand, 93% of the pictures representing “containment” events were described with the word *inside* or *in*. The preposition *in* can exhibit the concept of

containment by itself, whereas the preposition *at* itself cannot exhibit the “containment” concept. Therefore, *at* appeared in sentences with the prepositions *in* or *inside*, as shown in examples (13) and (14) below.

(13) She is studying at a desk inside.

(14) Doing work at a desk in a classroom.

In this way, the picture descriptions for Task 2 showed that English monolinguals seemed to distinguish their use of locative prepositions based on the “containment/ non-containment” contrast.

Japanese monolinguals were expected to differentiate their postpositions based on the “action/non-action” contrast, using *de* for pictures involving action and *ni* for pictures involving non-action. Table 8 summarizes Japanese monolingual use of *de* and *ni* to describe pictures representing “action” and “non-action” concepts. One participant who did not include any locative phrases was excluded from the analysis.

Table 8: Frequency of postposition types produced by Japanese monolinguals

| Postposition used | Frequency: Action (%) | Frequency: Non-action (%) | Examples from data |
|---|--------------------------|------------------------------|---|
| <i>de</i> with action verbs | 92.59 | 79.63 | Eating snacks <i>de</i> park |
| <i>de</i> with non-action verbs | 0 | 0 | |
| <i>ni</i> (existence) with action verb | 0 | 0 | |
| <i>ni</i> with non-action verbs | 0 | 9.26 | Being <i>ni</i> bakery waiting for a friend |
| <i>ni</i> (directional) | 7.41 | 11.11 | Sitting <i>ni</i> bench relaxing |

The data indicate that the postposition *de* is used to describe that vast majority of pictures (92.59%) containing the concept of “action”. However, contrary to predictions, a very large proportion of pictures designed to represent the concept of “non-action” (80%) were interpreted by participants as containing actions and thus also described with the postposition *de* and action verbs. In parallel, only 9% of the non-action pictures were interpreted as such and described with the postposition *ni* to describe the “non-action” concept. For example, the picture designed to elicit *café ni imasu* ‘being in café’ actually elicited *café de hito wo matte imasu* ‘waiting for someone in café’, with the participant interpreting an action. Table 8 also shows that Japanese monolinguals used the directional meaning of *ni* to describe both “action” pictures (7%) and “non-action” pictures (11%). This directional meaning of *ni* was not a focus of this study, so further discussion of use this particle is not included at this time.

Overall, most Japanese monolinguals did not recognize the “non-action” concept in pictures designed to represent “non-action”, and thus the stimuli failed to yield an evenly distributed distinction in use of postpositions based on an “action/non-action” contrast. However, when the postpositions were used, they were used grammatically with the predicted verb type, i.e. *de* appeared only with action verbs and not with non-action verbs, and existential *ni* appeared with the stative verb *imasu* but not with action verbs, providing evidence that Japanese monolinguals differentiate their postpositional uses based on whether verbs are action or non-action.

Chinese monolinguals were expected to use the Chinese locative preposition *zai*, which can describe both “containment/ non-containment” and “action/non-action” concepts, in order to describe locations of the figure. However, the Chinese language also differentiates the sentence composition based on the “action/non-action” contrast. Thus, *zai* with verbs were expected for

pictures representing “action” concepts whereas *zai* without verbs were expected for pictures representing “non-action”. Table 9 illustrates how Chinese monolinguals differentiated the sentence compositions in their descriptions. One participant who did not include any locative phrases was excluded from the analysis.

Table 9: Frequency of prepositional phrase produced by Chinese monolinguals

| Sentence composition with preposition | Frequency: Action (%) | Frequency: Non-action (%) | Examples from data |
|---------------------------------------|-----------------------|---------------------------|------------------------------|
| Prepositional phrase with verb | 100 | 88.9 | eating snack <i>zai</i> lawn |
| Prepositional phrase without verb | 0 | 11.1 | <i>zai</i> the bakery |

Table 9 shows that all sentences from Chinese monolinguals used a prepositional phrase with verbs to describe the pictures representing “action” concepts, whereas 11.1% of sentences from Chinese monolinguals used the prepositional phrase without a verb to describe the pictures with the “non-action” concept. The latter is lower than expected, and like Japanese monolinguals, Chinese monolinguals often did not recognize the concept of “non-action” in the stimuli. However, they still differentiated sentence compositions in their descriptions of “action” or “non-action” concepts. The data, though limited, do demonstrate that Chinese monolinguals used the “action/non-action” contrast in their description tasks. In the other words, Chinese monolinguals appeared to rely on the same linguistic concepts as Japanese monolinguals in the use of spatial expressions in their languages.

In summary, although Task 1 - the triad matching task – failed to yield clear and evenly distributed differences in conceptual categorizations among monolinguals, Task 2 - the picture description task - suggested that different conceptualization patterns underlie monolinguals’ language use.

5.2.2 Learners' L2 Descriptions

As illustrated in the monolingual Japanese data above, the postposition *de* should appear with action verbs whereas *ni* should appear with stative verbs. However, some learners chose incorrect postpositions for some of their descriptions. For example, some wrote their descriptions as **kyoshitsu ni hon wo yomimasu* 'reading a book in the classroom' for the picture where a figure is reading a book inside a classroom. Because reading is an action verb, the location particle should be *de* instead of *ni* for this description. This type of learners' mistake was labeled as "Ni- *action verb" in Table 10. In other cases, some learners wrote a description as **shokudo no naka de iru*. 'being at cafeteria' for the picture where a figure is at a café. Because the verb *to be* is an existential verb, the correct postposition to be used in this situation was *ni*. This type of mistake was labeled as "De- *non-action verbs" in Table 10.

Advanced level learners also used the directional meaning of *ni* to describe some pictures, similar to Japanese monolinguals. However, since this meaning of *ni* is not in focus in this study, it was labeled as Other. In other cases, learners did not produce postpositions at all, but instead produced a simple noun phrase and a verb, e.g. **kouen hon wo yomu* 'reading a book park' for the picture where the figure is reading a book in a park. In this case, the postposition *de* was missing after *kouen* 'park' in the description. This non-occurrence of *de* or *ni* was considered to be an error as Japanese monolinguals never omitted locative postpositions in their descriptions. Therefore, the case where the learners produced only noun phrases and verbs without locative postposition was labeled as " *no postposition" in Table 10. In other cases, the lower level learners left descriptions blank, answered in English, or did not include any postpositional phrases in their descriptions. For example, many participants answered, *hon wo*

yomu ‘reading a book’ instead of *kouen de hon wo yomu* ‘reading a book in park’. Those cases where the descriptions did not include any locative phrases were excluded from the analyses.

The data for the Task 2 descriptions for learners can be found in Appendix 3.

Table 10 shows the results of Japanese descriptions produced by two different L1 groups of learners of L2 Japanese at two different proficiencies. Given the exclusions described above, the answer rates for each learner group (advanced L1 Chinese 75%, advanced L1 English 77%; beginning level L1 Chinese 58%, beginning level L1 English 65%) are important to keep in mind when reviewing the data.

Table 10: Frequency of postpositions and verb types produced by L1 Chinese and L1 English learners of L2 Japanese

| Postposition | Verb | Frequency: action (%) | | | | Frequency: non-action(%) | | | |
|-----------------|-------------------|-----------------------|--------|--------|--------|--------------------------|--------|--------|--------|
| | | E.B.B. | C.B.B. | E.B.A. | C.B.A. | E.B.B. | C.B.B. | E.B.A. | C.B.A. |
| De | action verbs | 66 | 55.42 | 66.67 | 70.23 | 4.55 | 21.43 | 46.43 | 42.86 |
| | *non-action verbs | 0 | 0 | 0 | 0 | 15.91 | 1.43 | 3.57 | 2.38 |
| Ni | *action verbs | 28 | 37.35 | 16.67 | 16.03 | 6.82 | 28.57 | 14.29 | 11.11 |
| | non-action verbs | 0 | 1.20 | 0 | 0 | 61.36 | 44.29 | 10.71 | 13.49 |
| Others | | 0 | 0 | 16.67 | 13.74 | 2.27 | 2.86 | 25 | 30.16 |
| No postposition | | 6 | 6.02 | 0 | 0 | 4.55 | 1.43 | 0 | 0 |

Note: *E.B.B.= English Bilinguals at Beginning level *C.B.B.= Chinese Bilinguals at Beginning level *E.B.A.= English Bilinguals at Advanced level *C.B.A.= Chinese Bilinguals at Advanced level

Table 10 shows that Advanced Chinese learners of Japanese (CBA) and Advanced English learners of Japanese (EBA) generally produced similar patterns. For both learner groups, action verbs with *de* were produced most frequently to describe both “action” and “non-action” concept of pictures, which is similar to Japanese monolinguals. There were some cases where both advanced level learner groups made some errors using action verbs with the existential meaning of *ni* to describe both types of pictures.

On the other hand, beginning level learners' choices of predicates and postpositions were different from the advanced learners. L1 Chinese beginning level learners (CBB) differentiated verb types based on "action" or "non-action" concepts. However, they failed to choose the appropriate locative postposition with each verb type. They chose action verbs to describe 92% of the pictures representing "action" concepts. However, in 37% of descriptions, *ni* was used with action verbs incorrectly where *de* was expected. The CBB group used both non-action verbs and action verbs to describe "non-action" concept pictures. *Ni* was correctly used with non-action verbs; however, again, they did not use *de* with action verbs. The data in this verbal task suggests that L1 Chinese beginning level learners might have recognized the "action/non-action" concepts by using different types of verbs, however, they might have overused *ni* with "action" verbs.

L1 English beginning level learners (EBB) chose action verbs most frequently to describe the pictures representing the "action" concept. Although there were some erroneous uses of *ni* with action verbs, they successfully chose *de* with action verbs in most of the descriptions representing the "action" concept. Unlike the other learner groups, the EBB group mostly used non-action verbs to describe the pictures representing the "non-action" concept. Although there were almost no incorrect uses of *de* with non-action verbs among CBB learners, some errors of *de* with non-action verbs were observed among EBB learners.

Overall, the result of learners' data suggests that choice of verb type varied by proficiency. Advanced level learners' language uses were similar to Japanese monolinguals since they used action verbs to describe both "action" and "non-action" pictures. Beginning level learners, on the other hand, generally used action verbs for "action" pictures and non-action verbs for "non-action" pictures. One possible reason for this result is that advanced learners have

broader vocabularies to describe pictures and thus used a greater range of action verbs, whereas beginning level learners only have a limited number of action verbs which they applied along with the existential verb. Thus, beginning level learners might have distinguished the “action/non-action” pictures more because of their limited vocabulary than the salience of the contrast. However, beginning level learners still used the incorrect postpositions. The learners’ description data was also examined using a target-like use (TLU) analysis (Pica, 1983) to measure accuracy in their use of Japanese postpositions in non-obligatory context and obligatory context, with results presented in Table 11. Non-occurrence of *de* or *ni* observed in beginning level learners’ descriptions were considered to be errors because Japanese monolinguals did not omit *de* or *ni* in their descriptions.

Table 11: TLU (target-like use) for accuracy of *de* and *ni* among learner groups

| | De (%) | Ni (%) |
|------------------------------|--------|--------|
| English Bilinguals Beginning | 54.69 | 50.94 |
| Chinese Bilinguals Beginning | 51.26 | 38.10 |
| English Bilinguals Advanced | 76.74 | 23.08 |
| Chinese Bilinguals Advanced | 79.35 | 30.91 |

The results of the current study demonstrate that all learners had more difficulty in using *ni* correctly as opposed to *de* regardless of their L1 and proficiency levels. The accuracy rate for using *de* improved as learners achieved higher proficiency whereas the accuracy rate for using *ni* declined from the beginning level learners regardless of their L1. Although previous studies did not exclude the locative meaning of *de* and *ni*, the result of those studies demonstrated the overuse of *ni* among Chinese learners of Japanese and indicated that English learners of Japanese were able to differentiate *ni* and *de* better than Chinese learners of Japanese (Hasuike 2012). In line with the previous studies, the current study also demonstrated the strong tendency among

Chinese learners of Japanese to overuse *ni* to describe spatial relations. However, in the current study, the tendency to overuse *ni* was also observed among English learners of Japanese. This indicates that advanced level learners seemed to acquire a higher accuracy in the use of *de* regardless of their L1; however, their accurate use of *ni* seemed to decline regardless of their L1. This result might support research by Kabata (2018), suggesting that the acquisition of stative *ni* is non-linear but is instead U-shaped. Kabata's study showed that TLU for stative *ni* was lower among intermediate level learners than beginning level learners, but it increased among higher level learners. Although the current study did not divide advanced level learners into different proficiency groups, the data might suggest that the acquisition process of stative *ni* might be different from that of *de*.

5.3. Association between language use and spatial conceptualizations

Although the ANOVA tests failed to support statistical differences in conceptualization patterns among monolinguals of different languages in Task 1 and the revised Task 1 data, the description data from Task 2 suggest that Japanese monolinguals might have identified “action/non-action” distinctions more than “containment/ non-containment” contrasts, by differentiating their postpositional uses based on whether the verbs were action or non-action in their descriptions.

With this in mind, the learners' data was analyzed to find out whether learners' spatial conceptualizations in the revised Task 1 data (3 sets of picture descriptions) and their accuracy in language use were related. In other words, the question for this analysis was whether there was any difference in actual target-like use of postpositions from Task 2 between learners who chose the “action/non-action” contrast and learners who preferred the “containment/ non-containment”

contrast in Task 1. Table 12 shows the accuracy rate, as indicated by TLU, of *de* and *ni* produced by learners of both L1s along with the categorization patterns from the revised Task 1 data.

Table 12: Accuracy rate of locative postpositions produced by L1 Chinese learners and L1 English learners by their conceptual categorizations

| | Conceptualization Type | | | | | |
|------------------------------|------------------------|-------|---------|-------|-------|-------|
| | Japanese/Chinese | | English | | Other | |
| | M(%) | SD | M(%) | SD | M(%) | SD |
| English Bilinguals Beginning | 72.22 | 22.77 | 50.93 | 31.5 | 59.44 | 40.04 |
| Chinese Bilinguals Beginning | 73.74 | 18.60 | 68.25 | 44.64 | 51.94 | 40.14 |
| English Bilinguals Advanced | 100 | | 70.83 | 34.35 | 81.11 | 14.48 |
| Chinese Bilinguals Advanced | 88.52 | 15.53 | 65.08 | 4.2 | 71.91 | 36.92 |
| All learners | 80.9 | 19.4 | 63.43 | 30.86 | 66.23 | 36.35 |

Note: Based on accuracy in three sets from the revised task 1. *E.B.B.= English Bilinguals at Beginning level
 *C.B.B.= Chinese Bilinguals at Beginning level *E.B.A.= English Bilinguals at Advanced level *C.B.A.= Chinese Bilinguals at Advanced level

A parametric ANOVA test was used to evaluate differences in production accuracy between participants who preferred Japanese/Chinese categorizations versus English categorization and Other categorizations. The test revealed no significant differences in the choices of conceptual categorizations in language use by learner group, but a result that approached statistical significance among choices of categorizations in language use among all participants ($F(2,91)=2.955$ $p = .057$). This result appeared to be coming from a difference between the choices of Japanese/Chinese categorizations and English categorizations in language use (80.9% versus 63.43% respectively), which Tukey post hoc tests revealed approached statistical significance ($p = .086$). Although actual differences in mean scores between the groups were small, these results suggest that if learners identify the “action/non-action” contrast to describe the location, they are likely to use Japanese locative postpositions more accurately than those who identify a “containment/ non-containment” contrast.

5.4. Task 3 Results

In Task 3, the participants were asked to explain in writing the reasons why they considered one picture different from the other two in three of the sets in Task 1. Since each set of pictures was designed to be categorized in two different ways (containment/non-containment or action/non-action), the participants' responses were expected to be related to either categorization. As discussed in the analysis of the revised Task 1 data, the participants' Task 3 responses were categorized into three conceptualization types. If the participants' responses were related to the "action/non-action" relations, they were coded as the Japanese/Chinese categorization. If their responses were related to the "containment/non-containment" contrast, they were coded as the English categorization. If participant answers were not related to either categorization, they were classified as Other categorization. Table 13 shows the mean percentage scores of Japanese(/Chinese), English and Other categorizations of the monolingual and learner groups in Task 3.

Table 13: Participants' Conceptual Category Responses in Task 3 by Group

| | Conceptualization Type (%) | | |
|--------|----------------------------|---------|-------|
| | Japanese/Chinese | English | Other |
| E.M. | 26.67 | 50.00 | 23.33 |
| J.M. | 46.67 | 40.00 | 13.33 |
| C.M. | 23.00 | 33.33 | 43.00 |
| E.B.B. | 33.33 | 41.67 | 25.00 |
| C.B.B. | 40.91 | 25.76 | 33.33 |
| E.B.A. | 6.67 | 33.33 | 60.00 |
| C.B.A. | 36.23 | 15.94 | 47.83 |

As discussed in the analysis of the revised Task 1 data, the data failed to yield a statistically significant difference for spatial conceptualization among participant groups.

Descriptively, English and Japanese monolinguals following predictions for conceptualization of spatial relations, but Chinese monolinguals made their classification based on unrelated factors. L1 English learners of L2 Japanese appeared to use their L1 English-based conceptualizations, except in the cases of advanced learners. Beginning level L1 Chinese learners appeared to use the English categorization whereas advanced Chinese learners of Japanese seemed to rely more on unrelated factors rather than the “action/non-action” contrast or “containment/non-containment” classification.

The participants’ responses indicating each predicted conceptualization pattern were similar among all groups. Examples of the participants’ responses are given below.

Participants’ responses indicating “containment-non-containment” contrast:

- She is sitting outside in A, but inside in B and C. (English Monolingual)
- A is outside. (Japanese monolingual) (translation)
- A is outdoors, BC are indoors. (Chinese monolingual) (translation)
- B is outside, A and C are inside. (Chinese bilinguals at advanced level)
- In A, she is eating outside while the others are sitting inside. (English bilinguals at advanced level)
- Inside. (Chinese bilinguals at beginning level)
- She is outside in B inside in A and C. (English bilinguals at beginning level)

Participants’ responses for “action/non-action” contrast:

- She's not doing anything, she's sitting still. (English Monolingual)
- ‘She's not doing anything.’ (Japanese monolingual) (translation)

- C doesn't do anything, but AB is busy. (Chinese monolingual) (translation)
- In C, Sensei is not doing anything. (Chinese bilinguals at advanced level)
- She wasn't doing anything in C. (English bilinguals at advanced level)
- C is doing nothing. (Chinese bilinguals at beginning level)
- C was different she is reading whereas A and B are just standing. (English bilinguals at beginning level)

Although some participants were clearly aware of either “action/non-action” contrasts or “containment/non-containment” classifications in this task, there were many participants who provided various reasons based on different factors that were not relevant to the current study or its hypotheses rather than the predicted conceptualization types. Among such responses, there were some cases where the pictures were classified based on a “learning versus relaxing” contrast across the participant groups. In these cases, the participants described the pictures representing a “non-action” concept and where the figure is eating as “relaxing”. On the other hand, the pictures where the figure is doing homework or reading were described as “learning, studying or working”. There were some cases where the participants cared whether one particular activity was involved or not. For example, some participants said, “Only A is eating” for picture set 2 where the pictures showed the figure “eating”, “reading” and “non-action”. This indicates that they differentiated the pictures based on whether the action of eating was involved or not. In other words, they did not recognize “eating” and “reading” as a category of “action”. In another case, the participants focused on one body part of the figure rather than whether the figure was involved in activities or not. For example, some participants described the picture representing “non-action” concept as “she is not looking at a target” or “she has nothing in her

hands”. In this case, the participants did not recognize an absence of “action” in the picture representing “non-action”.

Although the stimulus materials were inspired by Park and Ziegler (2014) and were carefully designed to be nearly identical except for whether the figure was inside/outside and whether any action was involved in the picture, the participants identified various differences including facial expressions, weather or angles of the shots to describe how they differentiated the pictures from one another. Examples are given below.

Participants’ responses for unrelated contrast other than the predicted categorizations:

- The angles of the shot taken in A and B are similar. (Chinese bilinguals at advanced level)
- B is in spring. (Japanese monolingual) (translation)
- B wears summer clothes, AC winter. (Chinese monolingual) (translation)
- A is more relaxed, BC more serious. (Chinese monolingual) (translation)
- Only A shows a half of body. (Chinese bilinguals at advanced level)
- The person in A appears closer to the camera than in B and C. (English monolinguals)
- C is not looking at the camera. (Chinese bilinguals at beginning level)
- B is only one that is reading. (Chinese bilinguals at beginning level)
- A is eating the others are not. (English bilinguals at beginning level)
- She is reading not relaxing. (English bilinguals at beginning level)
- I chose B because A and C were food-related. (English bilinguals at beginning level)
- C is taken from a different angle. (Chinese bilinguals at beginning level)

CHAPTER 6: DISCUSSION

The current study analyzed data of learners from two different L1s and their corresponding source and target language monolinguals to investigate how learners' spatial conceptualizations in L2 are influenced by their L1. In order to examine both participants' conceptualizations and their verbal descriptions, the study conducted a triad matching task, a picture description task, and a survey. The analyses of the triad matching task revealed clear linguistic differences in spatial concepts underlying each spatial expression but failed to yield statistically significant differences between the groups in conceptualization. However, relationships appeared to be seen spatial categorization and learners' accuracy in use of L2 Japanese postpositions. We now deal with each research question in turn.

6.1. Research Question 1

The first research question in this study was whether inter-language similarities and differences exist among English, Japanese and Chinese monolinguals' spatial categorization systems. The results of the picture triad matching task (Task 1 and revised Task 1) in the current study did not reveal statistically different tendencies among monolinguals of different languages. However, the results of the picture description task (Task 2) suggested that monolinguals did appear to rely on different linguistic concepts in the use of spatial expressions in their languages. As opposed to the previous research in the spatial domain (Ahlberg et al 2018; Bowerman & Choi 2001; Choi et al 1999; Jarvis 2016; Majid et al 2004; Park & Ziegler 2014), the result of the current study failed to provide support for the 'relativity hypothesis' framework that languages influence a person's thinking and nonverbal behavior. Instead, the results might support Slobin's

thinking-for-speaking theory (1996). According to the thinking-for-speaking framework, speakers of different languages organize and structure their thoughts before they verbalize them using linguistic tools offered by that language. The result of this study might indicate that monolinguals of different languages might initially have conceptualized spaces not in a language specific way. However, when they engaged with their languages in Task 2, they might have restructured their conceptualizations to fit their language structure. Indeed, this might have explained their revised responses in Task 3, where they reported preferences other than what they actually selected in Task 1. Still, given that previous studies (Ahlberg et al 2018; Bowerman & Choi 2001; Choi et al 1999; Jarvis 2016; Park & Ziegler 2014) found evidence to support a strong influence of linguistic structure on the speakers' spatial conceptualization during nonverbal tasks, further investigations are necessary to understand why this study did not find such effects and potentially which linguistic features affect which cognitive processes in the spatial domain. (see below also for weaknesses in the study that potentially affected results.)

6.2. Research Question 2 and 3

The second and third questions focused on the similarities and differences in conceptualization patterns and L2 spatial expressions between L1 Chinese and L1 English learners of L2 Japanese.

The present study predicted that L1 Chinese learners would have more advantages in choosing correct postpositions than L1 English learners of Japanese because the Chinese language is more sensitive to a distinction between “action” and “non-action” than “containment/non-containment”. As opposed to the predictions in the current study, the nonverbal task (Task1) did not confirm that L1 Chinese learners made task selections based on an “action/non-action”

contrast and the verbal performance in Task 2 did not clearly identify positive crosslinguistic transfer by L1 Chinese learners. One possible reason for this result is that the differentiated “action/non-action” contrast in the Chinese language might not have provided a strong enough advantage for learning Japanese locative postpositions. Although the Chinese language changes sentence compositions of prepositional phrase based on “action/non-action” concepts, the Chinese language still uses the same preposition to describe both concepts. Further investigations are necessary to determine which types of linguistic similarities facilitate positive L1 transfer, especially in the spatial domain.

Additional results suggested that there might be a relationship between conceptual categorizations and learners’ accurate use of L2 spatial expressions, with analyses showing that learners who identified “action/non-action” concepts achieved higher scores in language use than ones who chose the other categorizations. In other words, target-like conceptualization can be a predictor for learners’ accurate use of L2 spatial expressions. The finding suggests that identifying the linguistic concepts in L2 spatial expressions might facilitate learners’ accuracy regardless of their L1 and their proficiency. This finding raises further questions. Is it possible for bilinguals to identify L2 spatial expressions while maintaining their L1 spatial conceptualization systems? Does identifying L2 linguistic concepts affect bilinguals’ L1 spatial conceptualization? Is it possible to develop an L2 conceptualization system separately from the L1 spatial conceptualization system in a bilingual’s mind? Some studies indicated that bilinguals maintain two separate conceptual systems for both L1 and L2 and they can access either conceptualization system according to the language they engage in (Sachs & Coely 2006), whereas others (Anthanasopoulos & Kasai 2008; Park & Zingler 2014) showed that bilinguals’ categorization systems were restructured as a result of acquiring new concepts in their L2. The current study

suggests that an awareness of L2 linguistic concepts might lead to higher accuracy in their language use of L2 expressions; however, it is not clear whether L2 learners restructure their established L1 spatial conceptualization systems after learning new L2 spatial concepts. Further investigation is necessary to determine to what extent the learners' conceptualization patterns are affected by learning new L2 concepts, which conceptualization patterns might not be affected, and how the conceptualization systems are structured in bilinguals' minds.

6.3. Research Question 4

The final research question examined whether there was any relationship between learners' L2 proficiency level and acquisition of L2 spatial conceptualization. The results in this study showed that beginning level learners and advanced level learners behaved differently in both non-verbal and verbal tasks. However, the current study failed to show that advanced level learners restructured towards the L2 spatial conceptualization pattern in contrast to previous studies in the spatial domain (Ahlberg et al 2018; Park & Ziegler 2014), which confirmed that L2 proficiency plays an important role in the cognitive shift to the L2 system. Previous studies (Ahlberg et al 2018; Hasuike 2014) showed that advanced level learners' language uses were more target-like than beginning level learners. In the current study, the accuracy rate for using *de* improved as learners achieved higher proficiency regardless of their L1; however, the accuracy rate in using *ni* declined from beginning level learners regardless of their L1. In other words, L2 proficiency in this study did not predict bilinguals' conceptual change and also accurate language use for *ni*. In line with the previous studies (Hasuike 2007, 2012), the results of current study also demonstrated the strong tendency to overuse *ni* to describe spatial relations among Chinese learners of Japanese but also among English learners of Japanese.

One possible reason for this result is that L1 Chinese and L1 English learners might believe that the locative postposition *ni* is a translation equivalent of their locative prepositions (*zai* and *in/on/at*). As Jiang (2004) pointed out, learners tend to map L2 words onto L1 translations during the initial learning stage. Since the Chinese locative preposition *zai* and English locative prepositions can be used to describe the location of “action” and “non-action”, learners might simply have mapped the meaning of their L1 prepositions onto the Japanese locative postposition *ni*, which is termed semantic transfer (Jiang 2004). As Stockwell, Bowen and Martin (1965) argued, L2 learners experience great difficulties in cases of “Differentiation”, where learners have to move from one category in their L1 to multiple categories in the L2.

The current study also suggests that regardless of proficiency, L2 conceptualizations can be a predictor of accurate L2 language use. This finding raises the important question of whether L2 conceptualization patterns affect L2 language use more than general L2 proficiency. In other words, is it possible to build L2 categorization systems without general L2 proficiency? And how are L2 proficiency and L2 conceptualizations related to each other?

Some previous studies in the cognitive domain (Athanasopoulos 2009; Cook et al 2006) also failed to show proficiency effects on nonverbal cognition. Bylund and Athanasopoulos (2011) mentioned that language proficiency is a complex factor and it is important to assess proficiency through standardized tests. Given that there were some beginning level learners who achieved higher accuracy rates than some of the advanced level learners in the current study, a future study may consider using an objective standardized proficiency test to examine how proficiency affects conceptualization patterns in the spatial domain.

6.4. Pedagogical Implications

The current study suggests some implications for language teaching. As the result in this study demonstrated, the learners who identified “action/non-action” contrast were able to achieve higher accuracy in Japanese locative postpositional use. Therefore, teaching the concepts underlying each particle seems to be necessary in classrooms. Although these locative postpositions are introduced in separate chapters in Japanese textbooks that are commonly used in Japanese course at universities, contrasting the locative postpositions and teaching them together might facilitate learners’ acquisition. The study also showed that acquisition of the particle *ni* was not linear among learners of both L1s, whereas *de* was acquired well among advanced level learners. This implies that the acquisition of the particle *ni* was not necessarily improved as the learners achieved higher proficiency. Therefore, it is important to remind learners the contrastive meaning of *ni* and *de* in their use of locative phrases regardless of their L1 and proficiency. Previous studies have suggested how cognitive based teaching could support learners’ acquisition of locative prepositions and postpositions (Lam 2009; Masuda & Labarca 2018; Tyler 2012). In cognitive linguistics-based teaching, the meanings of polysemous words are explicitly taught as a network so learners can see how they are related to each other. For example, Masuda and Labarca (2018) examined the effect of usage-based instruction using schematic diagrams when teaching Japanese locative postpositions *ni* and *de* to twelve English learners of Japanese. The learners were presented with schematic diagrams and an explanation of conceptual differences between *ni* and *de* followed by examples where the target locative postpositions were to be used. Their focus was not limited to the locative meaning of these postpositions. Following the instructions, the learners working in pairs were asked to label locative postpositions in the story and identified their functions matching each particle with

schematic diagram cards. The learners' performances were assessed by fill-in-the-blank tests and story-writing tasks. Their study demonstrated that with cognitive language instruction and the use of schematic diagrams, the learners showed more accurate identification of the function and deeper understanding of the locative postpositions. The study concluded that schematic tools seemed to work by focusing attention on the complicated concepts. Since Masuda and Labarca's study investigated only English learners of Japanese, their study did not show that the cognitive teaching approach would be useful regardless of learners' L1. The finding in the current study is in line with Masuda and Labarca's study and suggests that teaching L2 specific linguistic concepts underlying each word might facilitate L2 learning regardless of their learners' L1. It is also important to investigate what type of knowledge learners can develop through a cognitive approach to teaching. According to Ellis (2015: 200), learners develop two separate linguistic systems within their minds - explicit/declarative and implicit/procedural - through L2 learning. Explicit knowledge is a meta-linguistic understanding of L2 features, which the learners are aware of, whereas implicit knowledge is integrated into their way of thinking and the speakers are not aware of what they know. In order to examine how implicit knowledge is acquired in L2 learning, it is important to consider which instructions enhance implicit knowledge and how instruction can transform explicit knowledge into implicit knowledge. The traditional style of teaching L2 concepts might be using words and explanations. This might result in only development of learners' explicit knowledge but using schematic diagrams to explain semantic networks might allow the learners to internalize L2 linguistic concepts and enhance implicit knowledge. In line with Masuda and Labarca's study, the current study considers that further research focusing on instruction should be conducted from a cognitive linguistics approach.

6.5. Limitations and additional implications for future study

The current study was originally designed to provide non-verbal evidence (Task 1) and verbal evidence (Tasks 2 and 3) to understand how speakers of different languages conceptualize spatial relations differently. However, the results indicated that there were some limitations of this study and suggest that future study of conceptual transfer would require modifications of the methodology from the current study.

For the picture triad-task (Task 1), the current study intended to measure participants' intuitions other than prepared responses by limiting the time for participants to make their decisions. However, given that many participants provided different responses in Task 3 from Task 1, it might have been difficult to identify only targeted concepts within a limit of 10 seconds. If learners had had longer than 10 seconds to make decisions, the results could have been different. The current study reanalyzed Task 1 data using the participants' responses from Task 3. However, one might argue whether the revised Task 1 data really represent the participants' cognitive responses. This is because participants were able to spend as much time as they wanted to prepare their Task 3 responses. Additionally, the participants' Task 3 responses might have been affected by their verbal performances for Task 2 (picture description task). One might also argue whether responses in Task 1 purely reflected the participants' conceptual representations as the participants in this study might have described pictures verbally in their minds. It is difficult to completely separate non-verbal tasks from verbal tasks, but it is important that the non-verbal tasks represent underlying cross-linguistic concepts clearly. However, the pictures in the non-verbal task in this study failed to do so; therefore, the study limited the validity of the participants responses.

Given that many participants did not recognize either “containment/non-containment” contrast or “action/non-action” relations, the picture sets in this study were too ambiguous and did not represent the targeted concepts clearly. First, the responses in Task 3 revealed that there were many distracting elements in the pictures and the learners interpreted pictures differently. Some participants did not recognize “eating” and “studying” to be within the same “action” category and instead categorized them as different concepts. If the two verbs representing the “action” concept had been more similar in the picture sets (e.g. “studying”, “reading”, “non-action”), the results for Task 1 could have been different. Second, the existence of the option for the Other categorization choice might have presented difficulties for the participants to identify the targeted concepts as intended. A future study should consider a different categorization task. Instead of having the Other categorization choice, the future study could ask participants which one of two items represent a similar concept to the target item to measure their preference of categorizations (Athanasopoulos, 2006; Athanasopoulos & Kasai, 2008; Cook, 2006). For example, participants could be presented with a target item where a figure is reading in a café. Next, two alternates (one where the same figure is reading on the grass and another where the figure is not doing anything in the same café) will be shown underneath a target item. Then the participants would be instructed to choose which one of two alternate pictures has the same concept as the target item that was presented first. This type of categorization task might be able to provide a clearer picture of the targeted spatial concepts because the participants will have to choose one of the targeted categorizations. Another categorization task could be a free categorization task (Park & Ziegler, 2014). Participants will be given the pictures that were used in Task 1 and will be asked to arrange them into whatever categories make the most sense to them. Although this task might be more challenging as the participants will have to organize and

create their own categories, the task might be able to show clear evidence for learners' motivations for categorization. A future study could also consider technology such as eye-tracking equipment to provide non-verbal evidence (Jarvis, 2006). By monitoring and measuring the participants' patterns of eye movement, the equipment can examine what they look at while they are engaged in comparing pictures such as in Task 1.

The picture description task in this study could be improved by giving the participants different instructions. Because of the absence of a native-language speaking facilitator, the instructions were given in English to Chinese learners in this study. This might affect their language use. The task in the current study asked bilingual participants to describe pictures in both their native languages and Japanese. Although the intention was to understand how their L1 language uses were affected by L2 in separate study, this might have increased the likelihood of translation either from L1 to L2 or from L2 to L1. Since learners' L1 data was not used in this study, the instruction of Task 2 should have asked learners only for their L2 descriptions.

In the current study, the participants were instructed to describe each picture using sentences that included the location of any actions. This instruction was designed to prevent participants from using unrelated factors in pictures. However, this instruction might have been the main reason why many participants described "non-action" pictures using action verbs in Task 2. Additionally, it might have been difficult to show "existence" concept as "non-action" concept in still pictures since many Japanese monolinguals did not use *ni* to describe pictures representing the "non-action" concept. According to Jarvis (2016), patterns in narrative tasks and free-style description tasks can provide evidence on how a person categorizes experiences. A future study might consider a video description task to investigate how participants use Japanese postpositions *ni* and *de* to describe scenes differently.

Given that there were many participants who identified categorization factors that were not relevant to the current study regardless of their L1 and proficiency levels, the participants might have preferred different categorization typologies rather than the spatial categorization typology. Previous studies suggested that people from different cultures might not perceive the world in the same way because of the differences in culture and social structures (Chua et al., 2005; Masuda & Nisbett, 2001). These studies demonstrated that East Asians tended to pay attention to the relationship between the focal object and the background context whereas Westerners focused on focal objects independently without context of the situation. The studies suggested that this attentional difference might come from the cultural differences in socialization patterns. Therefore, it would be interesting in future work to investigate whether some of the categorization choices made in this study relate to other known typologies in social and psychological domains.

Future research also requires a sufficient number of samples for each L1. There were only 17 L1 English learners of L2 Japanese total whereas there were 45 L1 Chinese learners of L2 Japanese. Because there were only five advanced L1 English learners of L2 Japanese, it was difficult to compare and contrast their performances with those of other participant groups. In order to analyze L1 influence on learners' language use, each group should have an equal number of participants. Future research also needs to consider using objective standardized proficiency tests for better analysis of the impact of proficiency on bilinguals' conceptualization patterns.

A final weakness of the study is that L1 Chinese learners had studied Japanese as their third language (L3) as they had already acquired English as an L2. Previous studies have demonstrated that L3 acquisition is influenced dominantly by L2 especially in the initial stage

(Bardel & Falk, 2007; Flynn et al., 2004). These studies have claimed that learners tend to suppress activation of L1, and the L2 might function as a filter, blocking L1 transfer. Although these studies focus on L2 transfer in syntactic structures, the L1 Chinese participants' L2 English knowledge might have played a role in this study as they were allowed to use English for the vocabulary that they did not know in Japanese. Thus, since the learner groups in this study were all foreign language learners who studied Japanese in the US, a future study may consider investigating second language learners who live in Japan to see how different their spatial conceptualizations are structured.

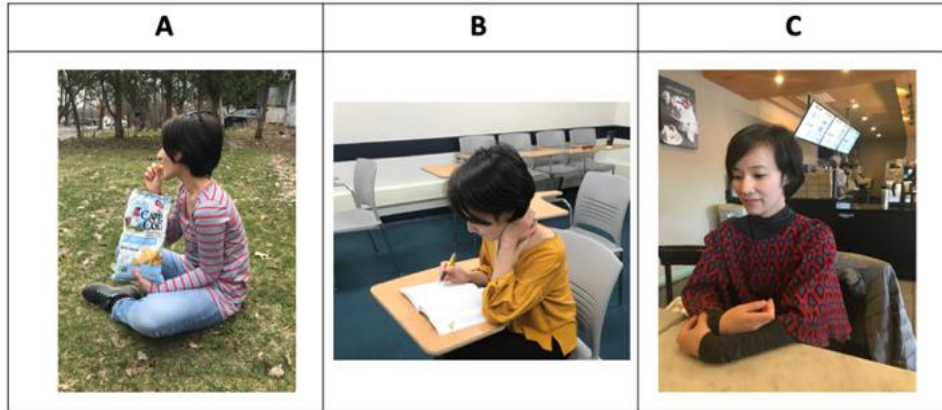
6.6. Conclusion

The current study examined whether learners' spatial conceptualization systems affect their L2 learning of spatial expressions. The result of this study demonstrated that learners of different L1s might have different tendencies in L2 use of spatial expressions, though it is not clear to what extent this difference extends to the cognitive level. The study also showed that negative transfer in language use might have been reduced as learners achieved higher L2 proficiency. The current study also suggested that conceptualization patterns can predict learners' accuracy in use of L2 spatial expressions regardless of L1 and proficiency levels. In other words, analyses revealed that if learners can identify linguistic concepts underlying L2 spatial expressions, they may be more likely to use the expressions correctly. Further investigations are necessary in order to examine how learners' spatial categorizations are affected by learning new concepts in L2 and how L2 proficiency plays a role in learners' cognitive shift.

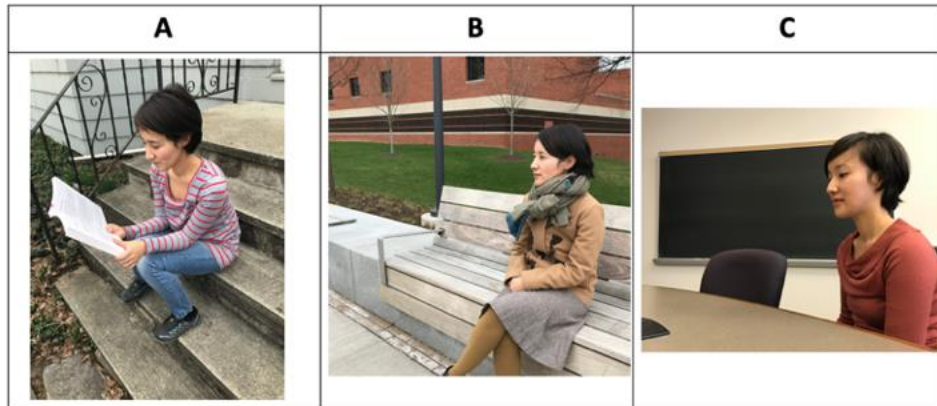
APPENDICES

Appendix 1: Task 1 stimulus picture set

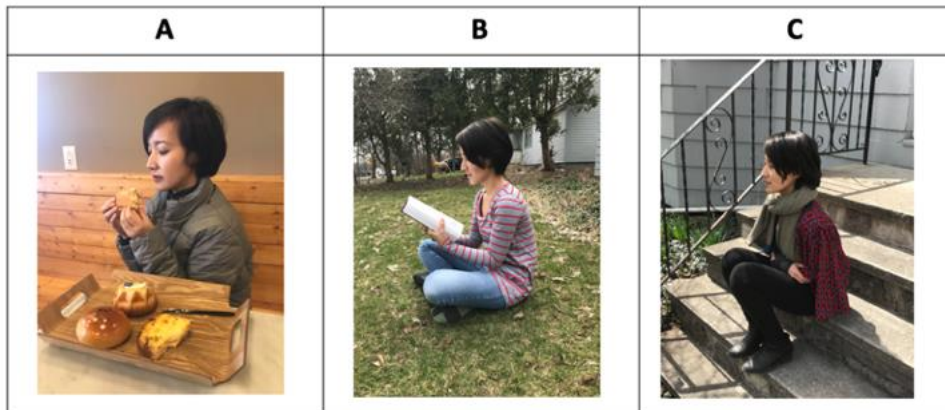
1



2



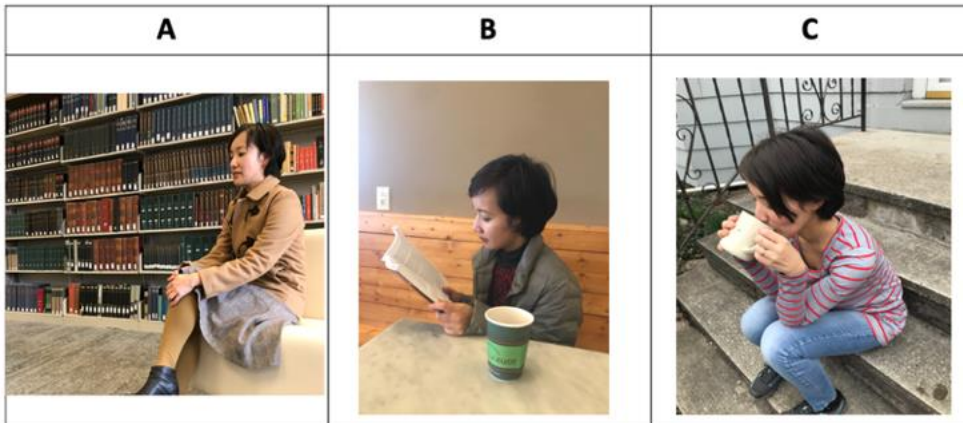
3



4



5



Appendix 2: Answer sheet for learner groups and English monolinguals

Native language ()

Age () Gender ()

Task 1: Instruction

- You will see five sets of pictures on the screen.
- Each set will have three pictures: two pictures are similar, and one is different.
- Using your intuition, please choose a picture that does not match the other two.
- To indicate your answer, circle the corresponding number on the answer sheet.
- You will have ten seconds (per set) to make your decision.

1: A B C

2: A B C




3: A B C


4: A B C



5: A B C


Task 2 Instruction




In Japanese and in your native language, please describe each picture using sentences that include **the location** of any actions.

| | Japanese | Your native language |
|---|----------|----------------------|
|  | | |
|  | | |
|  | | |

| | Japanese | Your native language |
|---|----------|----------------------|
|  | | |

| | | |
|---|--|--|
|  | | |
|  | | |

| | Japanese | Your native language |
|---|----------|----------------------|
|  | | |
|  | | |
|  | | |

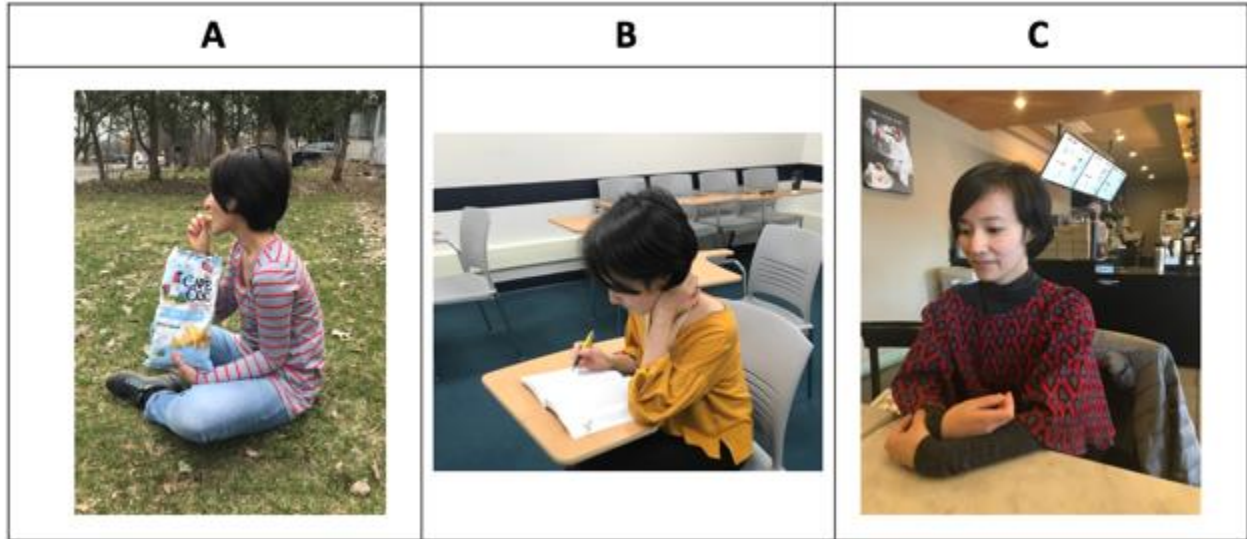
| | Japanese | Your native language |
|---|----------|----------------------|
|  | | |
|  | | |
|  | | |

Task 3:

Please explain the reason in writing for your choice of each set in Task 1.

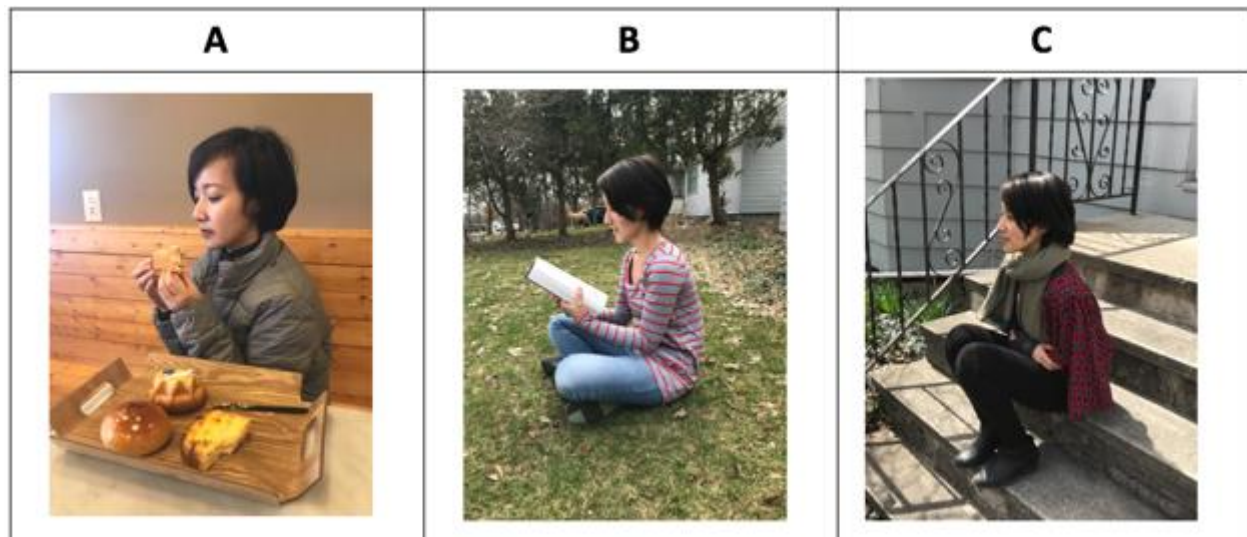
i.e. Why did you think one picture was different from the other two pictures? Please write your explanation in **English**.

1.



Write your reason here:

2.



Write your reason here:

3

A



B



C



Write your reason here:

Appendix 3: Task 2 picture descriptions

| | | |
|---|---|---|
| <p>2-1</p>  | <p>2-2</p>  | <p>2-3</p>  |
| <p>2-4</p>  | <p>2-5</p>  | <p>2-6</p>  |
| <p>2-7</p>  | <p>2-8</p>  | <p>2-9</p>  |
| <p>2-10</p>  | <p>2-11</p>  | <p>2-12</p>  |

Monolinguals:

| | | 2-1 English translation | 2-2 English translation | 2-3 English translation |
|----|----------|---|---|---|
| 1 | Japanese | Eating snacks 'de' plaza park | Studying 'de' library | Waiting 'de' café |
| 2 | Japanese | Eating snacks 'de' outside | Studying 'de' inside | Daydreaming 'de' café |
| 3 | Japanese | Eating snacks 'de' park | Studying 'de' classroom | Thinking about something 'de' café |
| 4 | Japanese | Eating snacks 'de' park | Studying 'de' university | Having coffee 'de' starbucks |
| 5 | Japanese | Eating snacks 'de' park | Studying 'de' free space | Having tea with a friend 'de' café |
| 6 | Japanese | Eating snacks 'de' lawn | Studying 'de' inside | Relaxing 'de' café |
| 7 | Japanese | Eating food 'de' outside | Studying 'de' library | Waiting for food 'de' cafeteria |
| 8 | Japanese | Eating snacks 'de' park | Studying 'de' classroom | Being 'ni' store waiting for food to come |
| 9 | Japanese | Eating snack | Studying | Daydreaming |
| 10 | Japanese | Eating snacks 'de' field | Studying 'de' inside | Waiting 'de' café |
| 11 | English | Eating chips outside while sitting down on lawn | Doing work at a desk in a classroom | Sitting at a table in a restaurant |
| 12 | English | She is sitting on the ground outside, eating chips | She is inside a classroom reading | She is sitting at a table in a restaurant |
| 13 | English | Sitting on the ground in the yard eating chips | Studying in a classroom | Sitting in a restaurant |
| 14 | English | She is eating chips outside | She is studying at a desk inside | She is sitting at a table inside |
| 15 | English | Sitting outside in a park | Doing work in a classroom | Sitting in a café |
| 16 | English | She is outside on the grass while eating chips | She is inside a classroom reading | She is in a coffee shop sitting at a table |
| 17 | English | She is outside on the grass sitting down eating chips | She is inside at a desk writing in a notebook | She is sitting down in a coffee shop |
| 18 | English | Eating chips outside of a house | She is inside of a classroom studying a book | She is inside of a café getting ready to eat |
| 19 | English | Sitting on the ground in the yard eating chips | Doing work in a classroom | Sitting at a table in a restaurant |
| 20 | English | Eating chips while sitting on lawn | She is inside a classroom reading | She is sitting at a table in a restaurant |
| 21 | Chinese | eating snacks 'zai' the grass | Sitting and reading 'zai' the office | Sit 'zai' a restaurant |
| 22 | Chinese | a beautiful woman sits 'zai' the grass and eats chips | A beautiful woman is doing a difficult problem 'zai' the classroom. | A beautiful woman is being taken a picture 'zai' a bakery |
| 23 | Chinese | eating snacks 'zai' the grass | Reading 'zai' the classroom | Sitting 'zai' a cake shop waiting |
| 24 | Chinese | eating snacks 'zai' the grass | studying by herself 'zai' the classroom | Sit 'zai' a restaurant |
| 25 | Chinese | eating snacks 'zai' the grass | Sitting at desk 'zai' the classroom and reading a book | Sitting 'zai' the table waiting |
| 26 | Chinese | Sitting 'zai' the lawn, resting and eating snacks | Reading 'zai' the classroom | Sitting 'zai' the table waiting |
| 27 | Chinese | eating snacks 'zai' the grass | Study 'zai' the classroom | Waiting Sitting 'zai' the coffee shop |
| 28 | Chinese | Sitting 'zai' the lawn, eating snacks | Study 'zai' the classroom | Daydreaming 'zai' the café |
| 29 | Chinese | eating snacks 'zai' the grass | Reading 'zai' the classroom | Sitting 'zai' the store thinking about something |
| 30 | Chinese | Sitting eating chips | reading | Waiting for something |

| | | 2-4 English translation | 2-5 English translation | 2-6 English translation |
|----|----------|--|--|---|
| 1 | Japanese | Sitting 'ni' steps reading a book | Sitting 'ni' bench relaxing | Taking with someone 'de' classroom |
| 2 | Japanese | Reading a book 'de' outside | Looking at something sitting 'de' outside | Looking at something 'de' inside. |
| 3 | Japanese | Reading a book 'de' steps | Looking at scenery 'de' outside bench | Talking with someone 'de' inside |
| 4 | Japanese | Reading a book 'de' front steps of a house | Waiting for a friend 'de' bench | Talking with a teacher 'de' classroom |
| 5 | Japanese | Reading a book 'de' front steps of a house | Daydreaming 'de' bench outside | Waiting for someone 'de' classroom |
| 6 | Japanese | Sitting 'ni' steps reading a book | Sitting 'ni' bench relaxing | Being nervous 'de' classroom |
| 7 | Japanese | Reading a book 'de' outside | Sitting 'ni' bench relaxing | Waiting for something 'de' classroom |
| 8 | Japanese | Reading a book 'de' steps | Daydreaming 'de' bench | Waiting for class to start 'de' classroom |
| 9 | Japanese | reading | resting | waiting |
| 10 | Japanese | Sitting 'ni' steps reading a book | Sitting 'ni' outside bench relaxing | Sitting 'de' inside thinking something |
| 11 | English | reading a book on the front steps of a house | Sitting on a bench outside | Sitting at a table in a classroom |
| 12 | English | She is sitting on steps outside a house reading a book | She is sitting on a bench outside possibly in a park | She is sitting alone at a table in a classroom |
| 13 | English | Sitting on the front steps of a house reading a book | Sitting on a park bench outside | Sitting in a classroom |
| 14 | English | She is reading a book outside | She is sitting on a bench outside | She is sitting at a table inside |
| 15 | English | Reading on the steps outside a house | Sitting on a bench on campus | Sitting in a classroom |
| 16 | English | She is outside on porch steps reading a book | She is outside on a bench and looking out to somewhere | She is in a classroom, just looking at the table |
| 17 | English | She is outside sitting down reading a book | She is sitting on a bench outside | She is sitting inside at a conference table |
| 18 | English | she is outside of her house on the stairs reading a book | she is outside on a bench watching other people | she is inside a conference room getting ready for a meeting |
| 19 | English | She is outside on porch steps reading a book | Sitting on a bench outside | Sitting in a classroom |
| 20 | English | She is reading a book outside | She is sitting on a bench outside | She is sitting at a table in a classroom |
| 21 | Chinese | Sitting on the stairs and reading a book. | Sitting 'zai' a bench by the street | Sitting 'zai' a chair in the classroom meditating |
| 22 | Chinese | A beautiful woman is sitting on the steps of the house and reading a book. | A beautiful woman sits 'zai' a bench on campus and looks somewhere farther to meditate | A beautiful woman is sitting 'zai' the office |
| 23 | Chinese | Sitting on the steps outdoors reading a book | Sitting 'zai' an outdoor bench looking far away | Sitting 'zai' the classroom waiting |
| 24 | Chinese | Sitting on the roadside stairs reading a book | Sitting 'zai' a bench by sidewalk | Sitting 'zai' the classroom |
| 25 | Chinese | Sitting on the stairs reading a book | Sitting 'zai' a bench and watching the scenery | Sitting 'zai' the classroom, ready for the class |
| 26 | Chinese | Reading on the stairs | Sitting 'zai' the bench on campus to enjoy the scenery | day dreaming 'zai' the classroom |
| 27 | Chinese | Sitting on the stairs reading | Sitting 'zai' a bench looking somewhere far | Thinking 'zai' the room |
| 28 | Chinese | Reading on the steps | Being 'zai' a chair in the park | Talking 'zai' the classroom |
| 29 | Chinese | Sitting on the steps and reading a book | Being 'zai' bench | Sitting 'zai' the classroom |
| 30 | Chinese | reading a book | Sitting 'zai' a park bench | Sitting 'zai' the classroom |

| | | 2-7 English translation | 2-8 English translation | 2-9 English translation |
|----|----------|---|--|---|
| 1 | Japanese | Eating bread 'de' a bakery | Sitting 'de' park reading a book | Resting 'de' outside steps |
| 2 | Japanese | Eating bread 'de' inside | Reading a book 'de' outside | Looking at something 'de' outside |
| 3 | Japanese | Eating bread 'de' a bakery | Reading a book 'de' plaza park | Resting 'de' outside steps |
| 4 | Japanese | Eating bread 'de' a bakery | Reading a book 'de' yard | Waiting for someone 'de' front steps |
| 5 | Japanese | Eating bread 'de' a bakery | Reading a book 'de' park | Waiting for a friend to get a ride 'de' front steps |
| 6 | Japanese | Eating bread 'de' a bakery | Reading a book 'de' lawn | Being cold 'de' steps |
| 7 | Japanese | Eating bread 'de' a café | Reading a book 'de' outside | Thinking something 'de' outside steps |
| 8 | Japanese | Eating bread 'de' a café | Reading a book 'de' yard | Waiting for someone 'de' front of a house |
| 9 | Japanese | eating bread | reading a book | resting |
| 10 | Japanese | Eating bread 'de' room | Sitting 'ni' field reading a book | Sitting 'ni' steps |
| 11 | English | Eating bread at a restaurant | Reading a book outside while sitting down on the grass | Sitting on the front steps of a house outside |
| 12 | English | She is sitting at a table inside eating a pastry | She is sitting on the ground outside reading | She is sitting on the steps outside a house |
| 13 | English | She is eating inside | She is outside on the grass reading a book | Sitting on the steps of a house |
| 14 | English | She is eating inside | She is reading a book outside | She is sitting on the steps outside |
| 15 | English | Eating at a restaurant | Reading on a lawn | Sitting on the steps of a house |
| 16 | English | She is in a doughnut shop and eating a donut | She is outside on the grass reading a book | She is outside on the porch steps looking off into the world |
| 17 | English | She is sitting down boring at the food in her hands | She is sitting on the grass reading a book | She is sitting on the porch steps outside |
| 18 | English | She is inside a restaurant eating bread | She is outside on the grass of her house reading a book | She is outside her house on the stairs waiting for someone come back |
| 19 | English | Eating at a restaurant | She is sitting on the ground outside reading | Sitting on the steps of a house |
| 20 | English | She is inside a restaurant eating bread | She is outside on the grass of her house reading a book | She is sitting on the porch steps outside |
| 21 | Chinese | eating bread 'zai' inside café | Sitting 'zai' the grass reading a book | Sitting 'zai' the steps |
| 22 | Chinese | A beautiful woman 'zai' eating bread at the bakery | A beautiful woman sitting cross-legged 'zai' the grass reading | A beautiful woman is sitting 'zai' the steps in front of the house |
| 23 | Chinese | Sit and taste dessert 'zai' the cake shop | Sitting 'zai' the outdoor lawn reading a book | Sitting 'zai' the steps outdoors thinking |
| 24 | Chinese | Eating bread 'zai' the bakery | Reading 'zai' the lawn | Sitting 'zai' the side of the road |
| 25 | Chinese | Sitting 'zai' the table eating bread | Sitting 'zai' the lawn reading a book | Sitting 'zai' the stairs, hugging yourself to keep out the cold |
| 26 | Chinese | Enjoy food 'zai' the restaurant, but it seems a bit sad | Sitting 'zai' the lawn on campus reading a book in the sun | She may forget to bring the key, wait 'zai' the step for someone to open the door |
| 27 | Chinese | Sitting 'zai' a cake shop eating a cake | Sitting 'zai' the lawn reading a book | Sitting on the stairs waiting |
| 28 | Chinese | Eating dessert 'zai' a dessert shop | Reading 'zai' the lawn | Daze 'zai' the steps |
| 29 | Chinese | Sitting 'zai' the bakery eating bread | Sitting 'zai' the lawn reading a book | Sitting 'zai' steps |
| 30 | Chinese | Eating | Sitting 'zai' the floor reading a book | Sitting 'zai' the steps |

| | | 2-10 English translation | 2-11 English translation | 2-12 English translation |
|----|----------|---|---|--|
| 1 | Japanese | Selling a cake 'de' store | Waiting for someone 'de' yard | Reading 'de' library |
| 2 | Japanese | Selling a cake 'de' inside | Daydreaming 'de' yard | Standing and reading 'de' library |
| 3 | Japanese | Selling a cake 'de' store | Standing 'ni' outside | Reading 'de' library |
| 4 | Japanese | Working 'de' bakery | Playing 'de' yard | Reading 'de' library |
| 5 | Japanese | Taking a picture 'de' bakery | Taking a picture 'de' front of house | Reading 'de' library |
| 6 | Japanese | Selling food 'de' in the cold store | Waiting for someone 'de' lawn | Reading 'de' library |
| 7 | Japanese | Choosing a bread 'de' bakery | Waiting for someone 'de' front of house | Reading 'de' library |
| 8 | Japanese | Being 'ni' bakery waiting for a friend | Being 'ni' yard daydreaming | Standing reading 'de' library |
| 9 | Japanese | Selling bread | daydreaming | reading a book |
| 10 | Japanese | Being 'ni' bakery | only being 'ni' yard | Reading 'de' library |
| 11 | English | Standing in a bakery | Standing outside on a lawn | Standing in a library reading |
| 12 | English | She is standing behind a counter inside a pastry shop | She is standing outside on the grass | She is standing in a library, reading a book |
| 13 | English | Standing in a bakery | Standing outside | Standing in a library reading |
| 14 | English | She is waiting behind the counter inside | She is standing outside | She is reading a book inside |
| 15 | English | Standing in a bakery or café | Standing outside on a lawn | Reading in a library |
| 16 | English | She is inside a store looking to order | She is standing outside on the grass posing for a picture | She is in a library reading a book |
| 17 | English | She is standing in a coffee shop | She is standing outside | She is standing reading book inside |
| 18 | English | She is inside a grocery store looking for food to buy | She is outside on her lawn standing waiting for something | She is inside a library reading a book |
| 19 | English | She is standing behind a counter inside a pastry shop | She is standing outside on the grass | She is inside a library reading a book |
| 20 | English | Standing in a bakery | Standing outside on a lawn | She is standing reading book in a library |
| 21 | Chinese | being 'zai' the bakery | Being 'zai' the grass | Standing 'zai' the library and holding the book with your hand |
| 22 | Chinese | A beautiful woman sells bread 'zai' the counter of the bakery | A beautiful woman is standing 'zai' the lawn and smiling at the camera. | A beautiful woman is standing 'zai' the bookshelf in the library and reading a book. |
| 23 | Chinese | Happily stand 'zai' the cake shop | Standing 'zai' the outdoor lawn | reading a book 'zai' the library |
| 24 | Chinese | Standing 'zai' the cake shop | Standing 'zai' the lawn | Standing 'zai' the bookstore and reading a book |
| 25 | Chinese | Standing 'zai' the bakery ready to take a photo | Standing 'zai' the lawn ready to take a photo | Standing 'zai' the library reading a book |
| 26 | Chinese | Selling cakes 'zai' the cake shop | Standing 'zai' outside on the lawn | Study 'zai' the library |
| 27 | Chinese | Entertaining guests 'zai' the dessert store | Standing 'zai' the lawn and smiling | Standing 'zai' the library reading |
| 28 | Chinese | Standing behind the counter selling bread in the bakery | Standing 'zai' the lawn of the park | Reading 'zai' the library |
| 29 | Chinese | being 'zai' the pastry store | being 'zai' the lawn of the park | Standing 'zai' the library reading a book |
| 30 | Chinese | working | Standing on the lawn | Reading |

Bilinguals:

| | proficiency | L1 | 2-1 English translation | 2-2 English translation | 2-3 English translation |
|----|-------------|---------|---|---|--|
| 1 | Advanced | English | Eating chips 'de' outside | Writing something in notebook 'de' classroom | Waiting 'de' café |
| 2 | Advanced | English | Eating chips 'de' park | Studying 'de' classroom | Waiting 'de' restaurant |
| 3 | Advanced | English | The woman is sitting 'ni' lawn in the park and eating chips. | A student is studying 'de' classroom | The woman ordered something and is waiting 'ni' café |
| 4 | Advanced | English | Eating food 'de' park | Studying 'de' classroom | Sitting 'de' restaurant quietly |
| 5 | Advanced | English | Tojo sensei is eating chips while she is sitting 'de' park | Tojo sensei is writing something 'ni' classroom | Tojo sensei is waiting 'ni' café |
| 6 | Advanced | Chinese | Eating 'de' park | Studying 'de' classroom | Waiting 'ni' restaurant |
| 7 | Advanced | Chinese | Having a picnic 'de' park | Studying 'de' classroom | Waitin 'ni' the café |
| 8 | Advanced | Chinese | Eating a chips 'de' park | Studying 'de' classroom | Being 'ni' café |
| 9 | Advanced | Chinese | Eating a chips 'de' park | Writing something 'de' inside of classroom | waitingg 'de' café |
| 10 | Advanced | Chinese | Eating a chips 'de' park | Studying 'de' classroom | Sitting 'de' seat in café |
| 11 | Advanced | Chinese | Eating a chips 'de' park | Studying 'de' classroom | Meeting up 'de' café |
| 12 | Advanced | Chinese | Eating chips 'de' lawn | studying 'de' classroom | Waiting 'de' cafe |
| 13 | Advanced | Chinese | eating snack while sitting 'ni' lawn | Writing notebook 'ni' inside of classroom | Being 'de' inside of cafeteria |
| 14 | Advanced | Chinese | eating chips while sitting 'ni' lawn | Writing something 'de' in classroom | Waiting for something 'ni' café |
| 15 | Advanced | Chinese | eating food while sitting 'ni' park | Writing somethig 'ni' restaurant | Thinking something 'ni' coffee shop |
| 16 | Advanced | Chinese | Eating snack while sitting 'de' park | Studying 'de' classroom | sitting 'de' restaurant |
| 17 | Advanced | Chinese | Tojo is eating snack 'de' park | Tojo is studying 'de' classroom | Sensei is sitting 'de' the café |
| 18 | Advanced | Chinese | eating chips while sitting 'de' park | Teacher is studying 'de' classroom | Teacher is waiting for food while witting 'de' restaurant |
| 19 | Advanced | Chinese | No description | No description | No description |
| 20 | Advanced | Chinese | Eating snack 'de' park | Studying 'de' classroom | Waiting for someone 'de' restaurant |
| 21 | Advanced | Chinese | Eating 'de' park | Studying 'de' classroom | Having a meal 'de' restaurant |
| 22 | Advanced | Chinese | Eating chips 'de' the lawn in the park | Doing homework 'de' classroom | Relaxing 'de' cafeteria |
| 23 | Advanced | Chinese | Eating chips while sitting 'de' the lawn in the park | Reading a book 'ni' seat | Sitting 'ni' seat in the café |
| 24 | Advanced | Chinese | Eating snack sitting 'ni' park | Taking notes 'de' classroom | sitting 'de' café |
| 25 | Advanced | Chinese | Doing something 'de' outside | Doing something 'de' inside of classroom | Doesn't do anything 'de' restaurant |
| 26 | Advanced | Chinese | Eating snack 'de' park | Studying 'de' library | Waiting for coffee 'de' café |
| 27 | Advanced | Chinese | Sitting 'ni' the lawn eating snack | Doing homework 'de' inside of classroom | Waiting for food that she ordered 'de' restaurant or somewhere |
| 28 | Advanced | Chinese | Resting 'de' park | Studying 'de' classroom | No description |
| 29 | Beginner | English | Eating 'ni' outside building | Study 'ni' inside classroom | Being 'ni' Café |
| 30 | Beginner | English | Eating chips 'de' park | Study 'de' university | Café |
| 31 | Beginner | English | Sitting 'ni' park or yard while eating chips | Study 'de' lounge | Being quietly 'de' café |
| 32 | Beginner | English | Eating chips 'de' park | Studying 'ni' desk | Being 'ni' Café |
| 33 | Beginner | English | Eating 'de' park | Writing 'de' university | Quiet |
| 34 | Beginner | English | Eating 'de' park | Studying 'de' classroom | Being 'ni' Café |
| 35 | Beginner | English | Eating chips 'de' park | Reading a book 'de' school | Being 'ni' Café |
| 36 | Beginner | English | Outside Eat | Studying 'de' desk | Being 'de' Café |
| 37 | Beginner | English | Eat chips | Study 'de' class | No description |
| 38 | Beginner | English | No description | No description | No description |
| 39 | Beginner | English | Eating 'de' grass | Study 'de' classroom | Being 'de' Café |
| 40 | Beginner | English | Outside | Dinner inside | No description |
| 41 | Beginner | Chinese | Eat snack | Read a book | Being 'ni' coffee store |
| 42 | Beginner | Chinese | eating chips on the ground (english) | Study 'de' class | thinking at café (english) |
| 43 | Beginner | Chinese | Eating snacks 'de' park | Study 'de' classroom | Being 'ni' Café |
| 44 | Beginner | Chinese | Girl eating snacks 'de' forest | Reading a book 'de' classroom | Sitting 'de' café |
| 45 | Beginner | Chinese | She is eating the chips while sitting on the ground (english) | She is doing her homework (english) | She is waiting for her order (english) |
| 46 | Beginner | Chinese | Eat chips | do HW (english) | sit (english) |
| 47 | Beginner | Chinese | Eating chips 'de' park | Studying 'de' classroom | Being 'ni' Café |
| 48 | Beginner | Chinese | This person is eating 'de' park | Studying 'de' library | Sitting in (english) |
| 49 | Beginner | Chinese | eat | Studying | drink coffee |
| 50 | Beginner | Chinese | Drink 'de' park | Doing homework 'de' library | Eating 'de' café |
| 51 | Beginner | Chinese | Tojo is eating 'nai' 'ni' park | Reading a book 'ni' classroom | Doing nothing 'ni' school cafeteria |
| 52 | Beginner | Chinese | Eating 'ni' park | Reading 'ni' library | No description |
| 53 | Beginner | Chinese | Drink chips 'de' park | Studying 'de' classroom | Sitting 'de' café |
| 54 | Beginner | Chinese | Eating 'ni' park | Study 'ni' iclassroom | No description |
| 55 | Beginner | Chinese | Eating 'de' park | Study 'de' classroom | Thinking 'ni' school cafeteria |
| 56 | Beginner | Chinese | Eating potato chips 'de' lawn | Study 'de' classroom | Being 'ni' Café |
| 57 | Beginner | Chinese | Eat | A girl is writing | Thinking |
| 58 | Beginner | Chinese | Eating 'de' park | Reading a book classroom | Being 'ni' Café |
| 59 | Beginner | Chinese | Eating 'ni' glassland | Reading library | Eating 'ni' cafeteria |
| 60 | Beginner | Chinese | Eating chips 'ni' park | Doing homework 'de' classroom | Sitting 'ni' room |
| 61 | Beginner | Chinese | Eating chips 'ni' park | Studying 'de' library | Sitting 'ni' cafeteria |
| 62 | Beginner | Chinese | Eating park | Study quietly | No description |

| | proficiency | L1 | 2-4 English translation | 2-5 English translation | 2-6 English translation |
|----|-------------|---------|--|---|--|
| 1 | Advanced | English | Reading a book while sitting 'ni' the steps | Waiting while sitting 'ni' outside bench | Being 'ni' classroom |
| 2 | Advanced | English | Reading a book 'ni' front of house | | Waiting 'de' classroom |
| 3 | Advanced | English | A woman is reading a book while sitting 'ni' steps | Woman sitting 'ni' bench on campus | Woman having meeting |
| 4 | Advanced | English | Reading a book while sitting 'ni' the steps | sitting 'de' outside bench | Looks bored 'de' classroom |
| 5 | Advanced | English | Tojo sensei is reading a book 'ni' steps outside | Tojo sensei is sitting 'ni' bench 'de' campus | Tojo is looking at computer 'ni' classroom while sitting |
| 6 | Advanced | Chinese | Reading a book while sitting 'ni' the steps | Sitting 'de' bench | Waiting 'de' inside of classroom |
| 7 | Advanced | Chinese | Reading a book while sitting 'ni' the steps | Resting while sitting 'de' bench outside | waiting 'de' classroom |
| 8 | Advanced | Chinese | Reading a book while sitting 'ni' the steps | Sitting 'ni' bench | Being 'ni' classroom |
| 9 | Advanced | Chinese | Reading a book 'de' the steps | Looking at something 'de' bench | Thinking 'de' conference room |
| 10 | Advanced | Chinese | Read a book 'de' the steps | Sitting 'de' bench on campus | Being 'ni' classroom |
| 11 | Advanced | Chinese | Reading a book while sitting 'ni' the steps | Sitting 'ni' bench | Being quiet 'de' meeting room |
| 12 | Advanced | Chinese | Read a book 'de' the steps | Waiting 'de' bench | Waiting 'de' classroom |
| 13 | Advanced | Chinese | Reading a book while sitting 'ni' the steps | No description | Sitting 'de' inside |
| 14 | Advanced | Chinese | Reading a book 'de' outside | Looking at something while sitting 'ni' bench outside | Getting interview 'de' conference room |
| 15 | Advanced | Chinese | Reading a book while sitting 'de' front of house | Sitting 'ni' chair at school | sitting 'ni' classroom |
| 16 | Advanced | Chinese | Reading a book while sitting 'ni' the steps | Sitting 'de' bench | sitting 'ni' classroom |
| 17 | Advanced | Chinese | Reading a book 'de' steps | Sitting 'de' bench on campus | sitting 'de' classroom |
| 18 | Advanced | Chinese | Teacher is reading a book "de" step | Teacher is sitting 'de' bench on campus | Being 'ni' classroom |
| 19 | Advanced | Chinese | No description | No description | |
| 20 | Advanced | Chinese | Reading a book 'de' steps | Waiting for someone 'de' chair | Being ni' classroom |
| 21 | Advanced | Chinese | Reading a 'book' 'ni' front of her house | Sitting 'ni' chair on campus | Waiting for someone 'de' classroom |
| 22 | Advanced | Chinese | Reading a book 'ni' outside of the steps in the building | Sitting 'ni' bench | Listening someone's talk 'de' meeting room |
| 23 | Advanced | Chinese | Reading a book while sitting 'ni' top of the steps | Sitting 'ni' bench | Sitting 'ni' seat at conference room |
| 24 | Advanced | Chinese | Reading a book 'ni' top of the steps | No description | ni' classroom |
| 25 | Advanced | Chinese | Reading a book 'de' outside | Looking at something 'de' outside | Looking at something 'de' inside of room |
| 26 | Advanced | Chinese | Reading a book 'de' steps | Waiting 'de' chair | Waiting 'de' classroom |
| 27 | Advanced | Chinese | Reading a book while sitting 'ni' top of the steps | Looking at something while sitting 'ni' wooden chair | thinking something 'de' classroom |
| 28 | Advanced | Chinese | Reading a book 'de' outside | Resting 'de' bench | Waiting 'ni' classroom |
| 29 | Beginner | English | Reading 'ni' outside house | Being 'ni' top of table 'ni' inside classroom | Eating 'ni' inside building |
| 30 | Beginner | English | Reading 'de' outside | classroom | Classroom |
| 31 | Beginner | English | Reading 'ni' stairs | Sitting 'ni' classroom | Trying different bread |
| 32 | Beginner | English | Reading 'de' front of building | Being 'ni' classroom | Eating food 'de' restaurant |
| 33 | Beginner | English | Reading a book | Quietly | Eating |
| 34 | Beginner | English | Reading a book 'de' home | Being next to table | Eating 'de' café |
| 35 | Beginner | English | Studying 'ni' outside of room | Being at school | Eating pastry 'de' café |
| 36 | Beginner | English | Reading outside | Being 'ni' chair | Eating |
| 37 | Beginner | English | Reading a book | No description | No description |
| 38 | Beginner | English | No description | No description | No description |
| 39 | Beginner | English | Reading 'ni' stairs | Sitting 'de' classroom | Eating |
| 40 | Beginner | English | Reading a book | No description | No description |
| 41 | Beginner | Chinese | Reading a book 'de' home | No description | Eating bread |
| 42 | Beginner | Chinese | Reading on the stairs (english) | Looking at computer | eating at the coffee (english) |
| 43 | Beginner | Chinese | Reading a book 'de' steps | Being 'ni' classroom | Eating bakery |
| 44 | Beginner | Chinese | Reading a book 'de' steps | Person who is daydreaming 'de' classroom | Eating bread 'de' cafeteria |
| 45 | Beginner | Chinese | Sitting and readin (english) | she's waiting for the class (english) | she's eating (english) |
| 46 | Beginner | Chinese | Reading a book | in the classroom (english) | eating donuts (english) |
| 47 | Beginner | Chinese | Reading a book 'de' stair | Being 'de' classroom | Eating bread 'de' café |
| 48 | Beginner | Chinese | This person is reading a book | This person is sitting | Eating with this paerson |
| 49 | Beginner | Chinese | Reading a book | No description | Eating bread |
| 50 | Beginner | Chinese | Reading a book | de' classroom | Having a breakfast |
| 51 | Beginner | Chinese | Tojo is reading a book 'ni' steps | Being 'ni' classroom | Eating cake 'ni' store |
| 52 | Beginner | Chinese | Reading a book | Being 'ni' classroom | Eating 'ni' school cafeteria |
| 53 | Beginner | Chinese | Reading a book 'de' steps | Sitting 'de' home | Having dinner 'de' home |
| 54 | Beginner | Chinese | sitting on the stairs. (english) | Sitting 'ni' classroom | Eating bread |
| 55 | Beginner | Chinese | Reading a book | Thinking 'ni' classroom | Eating bread 'ni' shool |
| 56 | Beginner | Chinese | Reading a book 'de' steps | Being 'ni' classroom | Eating 'de' cafeteria |
| 57 | Beginner | Chinese | Reading a book | female student is 'ni' classroom | Having lunch |
| 58 | Beginner | Chinese | Reading a book | Spacing out 'ni' classroom | Eating 'ni' restaurant |
| 59 | Beginner | Chinese | Reading 'ni' university | Watching classroom | Eating 'ni' restaurant |
| 60 | Beginner | Chinese | Read (english) | Sittin 'ni' classroom | Eating bread |
| 61 | Beginner | Chinese | Reading a book 'ni' university | Being 'ni' classroom | Eating 'ni' cafeteria |
| 62 | Beginner | Chinese | Reading a book | No description | Eating breakfast |

| | proficiency | L1 | 2-7 'English translation | 2-8 English translation | 2-9 'English translation |
|----|-------------|---------|--|--|--|
| 1 | Advanced | English | Eating different kinds of bread 'de' table | Reading a book 'de' outside | Waiting while sitting 'ni' steps |
| 2 | Advanced | English | Having a lunch 'at' café | Reading a book 'de' lawn | Sitting 'ni' steps |
| 3 | Advanced | English | Eating different kinds of bread 'de' café | Reading a book 'de' lawn in the park | Sitting 'ni' steps in front of house |
| 4 | Advanced | English | Eating different types of sweets 'de' restaurant | Reading a book 'de' the park | Sitting 'ni' steps 'de' outside and she looks cold |
| 5 | Advanced | English | Tojo is eating breakfast 'ni' cafe | Tojo sensei sitting 'ni' lawn reading a book | Tojo sensei is looking at something and sitting 'de' outside |
| 6 | Advanced | Chinese | Eating a bread 'de' bakery | Reading book 'de' lawn | She is 'ni' steps |
| 7 | Advanced | Chinese | Eating a bread 'de' café | Reading book 'de' park | Resting while sitting 'ni' steps |
| 8 | Advanced | Chinese | Eating a bread 'ni' bakery | Reading a book 'ni' outside | She is 'ni' top of steps |
| 9 | Advanced | Chinese | Eating bread 'de' inside of bakery store | Reading a book while sitting 'de' lawn | Sitting 'de' on top of steps |
| 10 | Advanced | Chinese | Having dessert 'ni' café | Reading book 'de' lawn | Sitting 'de' steps |
| 11 | Advanced | Chinese | Eating bread 'de' bakery | Reading book 'de' park | Sitting 'ni' steps |
| 12 | Advanced | Chinese | Eating bread 'ni' café | Reading book 'ni' lawn | Laughing 'de' steps |
| 13 | Advanced | Chinese | Eating something 'de' store | Reading book while sitting 'ni' lawn | Sitting 'ni' steps |
| 14 | Advanced | Chinese | Eating bread 'ni' inside of bakery | Reading book while sitting 'de' park | Looking at something while sitting 'ni' steps |
| 15 | Advanced | Chinese | Eating bread 'de' bakery | Reading book 'de' park | Sitting 'ni' front of house |
| 16 | Advanced | Chinese | Eating bread while sitting 'de' bakery | Reading book while sitting 'ni' lawn | Sitting 'ni' steps |
| 17 | Advanced | Chinese | Eating bread 'de' café | Reading book 'de' lawn | Sitting 'ni' steps |
| 18 | Advanced | Chinese | Teacher is eating sweets 'de' café | Teacher is reading book 'de' lawn | Teacher is sitting 'de' steps |
| 19 | Advanced | Chinese | No description | Reading book | No description |
| 20 | Advanced | Chinese | Having a meal 'de' restaurant | Reading book 'de' park | Waiting for someone 'de' steps |
| 21 | Advanced | Chinese | Eating dessert 'ni' café | Reading book while sitting 'ni' lawn | Sitting 'ni' top of steps |
| 22 | Advanced | Chinese | Eating a cake 'ni' café | Reading book 'de' park | Sitting 'ni' steps outside of the building |
| 23 | Advanced | Chinese | Eating bread 'de' seat | Reading book while sitting 'de' lawn | Sitting 'ni' top of steps |
| 24 | Advanced | Chinese | Eating bread | Reading a book 'de' inside park | Sitting 'ni' top of steps |
| 25 | Advanced | Chinese | Eating something 'de' inside of room | Reading a book 'de' outside | Sitting 'ni' top of steps |
| 26 | Advanced | Chinese | Eating bread 'ni' store | Reading a book 'de' lawn | Sitting 'de' steps |
| 27 | Advanced | Chinese | Eating dessert 'de' somewhere like café | Reading a book 'ni' top of lawn | Looking at something while sitting 'ni' steps |
| 28 | Advanced | Chinese | Having dinner 'de' café | Reading a book 'de' park | Resting 'de' steps |
| 29 | Beginner | English | Eating 'ni' inside building | Reading 'ni' outside building | Being 'ni' stairs outside 'ni' building |
| 30 | Beginner | English | Classroom | Reading 'de' park | Being 'ni' outside |
| 31 | Beginner | English | Trying different bread | Reading 'de' park | Being 'de' steps |
| 32 | Beginner | English | Eating food 'de' restaurant | Reading 'de' park | Being 'ni' outside |
| 33 | Beginner | English | Eating | Looking a book | quietly |
| 34 | Beginner | English | Eating 'de' café | Reading 'ni' outside | Being 'ni' outside |
| 35 | Beginner | English | Eating pastry 'de' café | Reading 'de' park | Being 'ni' outside home |
| 36 | Beginner | English | Eating | reading outside | Being outside |
| 37 | Beginner | English | No description | reading a book | No description |
| 38 | Beginner | English | No description | No description | No description |
| 39 | Beginner | English | Eating | Reading 'de' park | Being 'ni' top of steps |
| 40 | Beginner | English | No description | No description | No description |
| 41 | Beginner | Chinese | Eating bread | Reading a book | NO description |
| 42 | Beginner | Chinese | eating at the coffee (english) | Studying 'ni' outside | sitting on stairs (english) |
| 43 | Beginner | Chinese | Eating bakery | Reading a book 'de' park | Being 'ni' stairs |
| 44 | Beginner | Chinese | Eating bread 'de' cafeteria | outdoor reading a book | Thinking 'de' stairs |
| 45 | Beginner | Chinese | she's eating (english) | she is reading while sitting (English) | shes sitting on the stairs (english) |
| 46 | Beginner | Chinese | eating donuts (english) | Reading a book | sitting on stairs (english) |
| 47 | Beginner | Chinese | Eating bread 'de' café | Reading a book 'de' park | sitting 'de' stairs |
| 48 | Beginner | Chinese | Eating with this paerson | This person is readin | Sitting there (english) |
| 49 | Beginner | Chinese | Eating bread | Reading on the grass (english) | No description |
| 50 | Beginner | Chinese | Having a breakfast | Reading a book 'de' park | outside home |
| 51 | Beginner | Chinese | Eating cake 'ni' store | Reading a book 'ni' park | sitting 'ni' outside |
| 52 | Beginner | Chinese | Eating 'ni' school cafeteria | Reading 'ni' park | being 'ni' school |
| 53 | Beginner | Chinese | Having dinner 'de' home | Reading a book 'de' park | Sitting 'de' stairs |
| 54 | Beginner | Chinese | Eating bread | Reading 'ni' park | sitting |
| 55 | Beginner | Chinese | Eating bread 'ni' shool | Reading a book | thinking on the steps (english) |
| 56 | Beginner | Chinese | Eating 'de' cafeteria | Being 'ni' lawn | being (ni) steps |
| 57 | Beginner | Chinese | Having lunch | Reading a book | being (ni) steps |
| 58 | Beginner | Chinese | Eating 'ni' restaurant | Reading a book 'Ni' park | spacing out (english) |
| 59 | Beginner | Chinese | Eating 'ni' restaurant | Reading a book 'ni' glassland | sitting down (english) |
| 60 | Beginner | Chinese | Eating bread | reading | no description |
| 61 | Beginner | Chinese | Eating 'ni' cafeteria | reading a book 'ni' park | being 'ni' steps |
| 62 | Beginner | Chinese | Eating breakfast | Reading a book park | No description |

| | proficiency | L1 | 2-10 'English translation | 2-11 'English translation | 2-12 'English translation |
|----|-------------|---------|---|--|--|
| 1 | Advanced | English | She is about to sell bread | Standing 'de' outside | Reading a book 'de' the library |
| 2 | Advanced | English | Someone is taking a picture 'de' café | Someone can take a picture 'de' lawn | Reading a book 'de' the library |
| 3 | Advanced | English | Clerk of bread shop | Woman standing 'ni' yard | Woman reading a book 'de' the library |
| 4 | Advanced | English | Being 'ni' behind counter | being 'de' outside | Reading a book 'de' the library while not sitting |
| 5 | Advanced | English | Tojo exists 'ni' café | Someone is taking a picture of Tojo 'de' outside | Tojo is reading a book 'ni' library |
| 6 | Advanced | Chinese | Buying a cake 'de' bakery | standing 'de' lawn | Reading a book 'de' library |
| 7 | Advanced | Chinese | Working 'ni' café | Waiting for someone 'de' park | Reading a book 'de' library |
| 8 | Advanced | Chinese | having her picture taken while standing 'de' bakery | her picture was being taken 'ni' outside | Reading a book while standing 'ni' front of book shelf |
| 9 | Advanced | Chinese | Taking pictures 'de' inside of bakery store | being 'ni' lawn | Reading a book 'de' library |
| 10 | Advanced | Chinese | Selling snacks 'de' bakery | Standing 'de' park | Reading a book 'de' library |
| 11 | Advanced | Chinese | Working 'de' café | standing 'ni' park | Reading a book 'de' library |
| 12 | Advanced | Chinese | being 'ni' bakery | Standing 'de' lawn | Standing and reading a book 'de' library |
| 13 | Advanced | Chinese | standing 'ni' bakery store | Standing 'ni' lawn | Reading a book 'ni' library |
| 14 | Advanced | Chinese | Working 'ni' café | Waiting 'de' lawn | Standing and reading a book 'de' library |
| 15 | Advanced | Chinese | standing 'de' bakery store | Standing 'de' outside of house | Reading a book 'de' library |
| 16 | Advanced | Chinese | standing 'de' bakery shop | Standing 'de' lawn | Standing and reading a book 'de' library |
| 17 | Advanced | Chinese | Working 'de' bakery shop | Standing 'ni' lawn | Standing and reading a book 'de' library |
| 18 | Advanced | Chinese | Teacher is working 'de' bakery store | Teacher is standing 'de' park | Standing and reading a book 'de' library |
| 19 | Advanced | Chinese | No description | No description | No description |
| 20 | Advanced | Chinese | Working 'de' bakery shop | Standing 'de' park | Standing and reading a book 'ni' bookstore |
| 21 | Advanced | Chinese | Working 'ni' café | Working 'de' park | Reading a book 'ni' inside library |
| 22 | Advanced | Chinese | Working 'de' café | Standing 'de' lawn | Reading a book 'de' library |
| 23 | Advanced | Chinese | Working 'ni' bakery | Standing 'ni' lawn | Standing 'de' library and reading a book 'de' library |
| 24 | Advanced | Chinese | No description | Being 'ni' park | Reading a book 'de' library |
| 25 | Advanced | Chinese | Working 'de' bakery shop | Standing 'de' outside | Reading a book 'de' library |
| 26 | Advanced | Chinese | Selling bread | being 'de' lawn | Reading a book 'ni' front of the shelf |
| 27 | Advanced | Chinese | Looking at the customers while being 'ni' bakery | Standing | Reading a book 'de' library |
| 28 | Advanced | Chinese | Working 'de' bakery shop | Being 'ni' outside | Reading a book |
| 29 | Beginner | English | Being behind 'ni' counter | Being outside 'ni' home | Reading inside 'ni' library |
| 30 | Beginner | English | Café | No description | Reading a book 'de' library |
| 31 | Beginner | English | Standing behind 'ni' case | Standing 'ni' park | Reading a book 'de' bookstore |
| 32 | Beginner | English | Being 'ni' behind table | Being 'ni' here | reading a book 'de' library |
| 33 | Beginner | English | Standing 'de' café | Standing | Reading 'de' library |
| 34 | Beginner | English | Shopping | Being 'ni' outside | Reading 'de' library |
| 35 | Beginner | English | She is 'de' café | Being 'ni' outside house | Reading a book 'de' library |
| 36 | Beginner | English | Being 'de' café | Being outside | inside 'ni' reading |
| 37 | Beginner | English | No description | NO description | reading a book |
| 38 | Beginner | English | No description | NO description | Reading a book 'de' library |
| 39 | Beginner | English | Being behind 'ni' counter | Playing 'ni' park | Reading a book 'de' library |
| 40 | Beginner | English | Being behind 'ni' counter | Being 'ni' outside | reading 'ni' library |
| 41 | Beginner | Chinese | No description | No description | Reading a book 'de' library |
| 42 | Beginner | Chinese | Being 'ni' front of stand coffee shop | No description | Reading a book 'de' library |
| 43 | Beginner | Chinese | Being 'ni' bakery | Being 'ni' park | Reading a book 'de' library |
| 44 | Beginner | Chinese | Shopping 'de' bakery | stand in outside (english) | Reading a book 'de' library |
| 45 | Beginner | Chinese | She is standing behind bakery (english) | taking the picture (english) | reading in the library (english) |
| 46 | Beginner | Chinese | sell cookies (english) | standing (english) | reading a book |
| 47 | Beginner | Chinese | Standing 'de' café | standing 'de' park | Reading a book 'de' library |
| 48 | Beginner | Chinese | Stained in the bread shop (english) | standing in the park (english) | Reading 'de' library |
| 49 | Beginner | Chinese | sitting. Bored in market (english) | no description | reading in library (english) |
| 50 | Beginner | Chinese | Café 'de' | de' park | Reading a book 'de' library |
| 51 | Beginner | Chinese | Being 'ni' store | Standing 'ni' park | standing 'ni' library |
| 52 | Beginner | Chinese | Being 'ni' store | Being 'ni' home | reading 'ni' library |
| 53 | Beginner | Chinese | Sit 'de' store | Being 'ni' park | Reading a book 'de' library |
| 54 | Beginner | Chinese | Eating 'ni' coffee shop | Being 'ni' park | Reading a book 'de' library |
| 55 | Beginner | Chinese | Selling 'ni' café | no description | Reading a book 'ni' library |
| 56 | Beginner | Chinese | Selling 'de' sweets shop | standing 'de' lawn | Reading 'de' library |
| 57 | Beginner | Chinese | Being 'ni' front of counter | No description | reading a book |
| 58 | Beginner | Chinese | Café | Being 'ni' park | Reading a book 'de' library |
| 59 | Beginner | Chinese | standup (english) | stand up in the middle of glassland (english) | reading book 'ni' library |
| 60 | Beginner | Chinese | standing 'ni' café | Being 'ni' outside | Reading a book 'de' library |
| 61 | Beginner | Chinese | Standing | Standing 'ni' park | standing 'ni' library |
| 62 | Beginner | Chinese | Café | tree | reading book |

REFERENCES

- Ahlberg, D. K., Bischoff, H., Strozyk, J. V., Bryant, D., and Kaup, B. (2018). Grounded cognition: Comparing language × Space interactions in first language and second language. *Applied Psycholinguistics*, 39(2), 437-459. <https://doi.org/10.1017/S014271641700042X>
- Athanasopoulos, P. (2007). Interaction between grammatical categories and cognition in bilinguals: The role of proficiency, cultural immersion, and language of instruction. *Language and Cognitive Process*, 22(5), 689-699. <https://doi.org/10.1080/01690960601049347>
- Athanasopoulos, P., and Kasai, C. (2008). Language and thoughts in bilinguals: The case of grammatical number and nonverbal classification preferences. *Applied Psycholinguistics*, 29(1), 105–123. <https://doi.org/10.1017/S0142716408080053>
- Bylund, E., and Athanasopoulos, P. (2014). Linguistic relativity in SLA: Toward a new research program. *Language learning*, 64(4), 952-985. <https://doi.org/10.1111/lang.12080>
- Bowerman, M., and Choi, S. (2001). Shaping meanings for language: Universal and language-specific in the acquisition of spatial semantic categories. In: M. Bowerman & S. Levinson (Eds.), *Language Acquisition and Conceptual Development* (pp.465-511). Cambridge University Press.
- Choi, S., McDonough, L., Bowerman, M., and Mandler, J.M. (1999). Early sensitivity to language-specific spatial categories in English and Korean. *Cognitive Development*, 14(2), 241-268. [https://doi.org/10.1016/S0885-2014\(99\)00004-0](https://doi.org/10.1016/S0885-2014(99)00004-0)
- Chua, H., Boland, J., & Nisbett, R. (2005). Cultural variation in eye movements during scene perception. *Proceedings of the National Academy of Sciences of the United States of America*, 102(35), 12629-12633. <https://doi.org/10.1073/pnas.0506162102>
- Cook, V., Bassetti, B., Kasai, C., Sasaki, M., and Takahashi, J. A. (2006). Do bilinguals have different concepts? The case of shape and material in Japanese L2 users of English. *International Journal of Bilingualism*, 10(2), 137–152. <https://doi.org/10.1177/13670069060100020201>
- Coventry, K., Guijarro-Fuentes, P. and Valdés, B. (2012) On the first and second language acquisition of spatial language. *Spatial Cognition & Computation*, 12(4), 219-230. <https://doi.org/10.1080/13875868.2012.713058>
- Coventry, K. R., and Garrod, S. C. (2004). *Essays in cognitive psychology. Saying, seeing, and acting: The psychological semantics of spatial prepositions*. Psychology Press.
- Ellis, R. (2015). The role of the first language. In: R. Ellis (Ed), *Understanding second language acquisition* (pp. 117-141). Oxford University Press.

Falk, Y., and Bardel, C. (2011). Object pronouns in German L3 syntax: Evidence for the L2 status factor. *Second Language Research*, 27(1), 59-82. <https://doi.org/10.1177/0267658310386647>

Flynn, S., Foley, C., and Vinnitskaya, I. (2004). The cumulative enhancement model for language acquisition: Comparing adults' and children's patterns of development in first, second and third language acquisition of relative clauses. *International Journal of Multilingualism*, 1(1), 3-16. <https://doi.org/10.1080/14790710408668175>

Hasuike, I. (2007). *Nihongo no kukan hyogen shiyo ni mirareru bogo no ekyo ni tsuite: Kankokugo, chugokugo, ego bogowasha o taisho ni* [L1 influence in the choice between spatial expression *ni* and *de* in Japanese]. *Daini Gengo to Shite no Nihongo Syutoku Kenkyu* [Acquisition of Japanese as a second language], 10, 68-86.

Hasuike, I. (2012). *Nihongo no kukan hyogen ni to de no sentaku ni mirareru bogo no ekyo: Joshi sentataku tesuto no kekka bunseki* [Influence of a first language observed in the choice between spatial expressions *ni* and *de* in Japanese]. *Kotoba to Bunka* [Language and Culture], 13, 59-76. Retrieved from <https://www.lang.nagoya-u.ac.jp/nichigen/issue/pdf/13/13-05.pdf>

Huddleston R. (1984) *Introduction to the Grammar of English*. Cambridge University Press.

Ijaz, I. H. (1986). Linguistic and cognitive determinants of lexical acquisition in a second language. *Language Learning*, 36(4), 401–451. <https://doi.org/10.1111/j.1467-1770.1986.tb01034.x>

Jiang, N. (2004) Semantic transfer and its implications for vocabulary teaching in a second language. *Modern Language Journal*, 88(3), 416–432. <https://doi.org/10.1111/j.0026-7902.2004.00238.x>

Jarvis, S., and Odlin, T. (2000). Morphological type, spatial reference, and language transfer. *Studies in Second Language Acquisition*, 22(4), 535-556. <https://doi.org/10.1017/S0272263100004034>

Jarvis, S. (2000), Methodological rigor in the study of transfer: Identifying L1 influence in them Interlanguage Lexicon. *Language Learning*, 50(2), 245-309. <https://doi.org/10.1111/0023-8333.00118>

Jarvis, S. (2009). Lexical Transfer. In: A. Pavlenko (Ed.), *The Bilingual Mental Lexicon: Interdisciplinary Approaches* (pp.68-81). Multilingual Matters.

Jarvis, S. (2011). Conceptual transfer: Crosslinguistic effects in categorization and construal. *Bilingualism: Language and Cognition*, 14(1), 1-8. <https://doi.org/10.1017/S1366728910000155>

Jarvis, S. (2016). Clarifying the scope of conceptual transfer. *Language Learning*, 66(3), 608–635. <https://doi.org/10.1111/lang.12154>

Kabata, K. (2016). A usage account of learners of Japanese Particles *ni* and *de*. In: K. Kabata & K. Toratani (Eds.) *Cognitive-Functional Approaches to the Study of Japanese as a Second Language* (pp. 89-112). Mouton de Gruyter

Kabata, K. (2018). Item-based patterns in second vs. first language learners' use of Japanese polysemous particles, *ni*, *de* and *kara*. In: K. Masuda (Ed.), *Cognitive Linguistics and Japanese Pedagogy* (pp. 31-62). Walter de Gruyter.

Krashen, S., and Tracy, D. (1983). *The Natural Approach: Language Acquisition in the Classroom*. Alemany Press.

Li, C. and Thompson, S. (1989). *Mandarin Chinese: A Functional Reference Grammar*. University of California Press.

Liu, F.-H. (2009). Aspect and the Post-Verbal *Zài* Phrase in Mandarin Chinese. In: J. Z. Xing (Ed.), *Studies of Chinese Linguistics: Functional Approaches* (pp. 103-129). Hong Kong University Press.

Majid, A., Bowerman, M., Kita, S., Haun, D.B.M., and Levinson, S.C. (2004). Can language restructure cognition? The case for space. *Trends in Cognitive Science*, 8(3), 108-114. <https://doi.org/10.1016/j.tics.2004.01.003>

Masuda, K. and Labarca, A. (2018). Student perception and different performance in a combined usage-based and sociocultural theory approach to learning Japanese polysemous particles. In: A. E. Tyler, L. Ortega, M. Uno & H. I. Park (Eds.), *Usage-Inspired L2 Instruction: Researched Pedagogy* (pp. 117-142). John Benjamins Publishing Company

Masuda, K. (2018). The second language acquisition of challenging Japanese locative particles, *ni* and *de*: A usage-based and discourse approach. In: K. Masuda (Ed.), *Cognitive Linguistics and Japanese Pedagogy* (pp. 63-98). Walter de Gruyter GmbH & Co KG

Masuda, T., and Nisbett, R. (2001). Attending holistically versus analytically: Comparing the context sensitivity of Japanese and Americans. *Journal of personality and social psychology*, 81 (5), 922-934. <https://doi.org/10.1037/00223514815922>

Moriyama, S. (2008). *Ninchi Gengogaku kara Mita Nihongo Kakujoshi no Imi Kozo to Shutoku* [A cognitive linguistic viewpoint of semantic construction and acquisition for Japanese case particles]. Hitsuzi Syobo.

Mukattash, L. (1984). Errors made by Arab university students in the use of English prepositions. *Glottodidactica*, 17, 47-64.

Munnich, E., and Landau, B. (2010). Developmental decline in the acquisition of spatial language. *Language Learning and Development*, 6(1), 32-59. <https://doi.org/10.1080/15475440903249979>

Okada, M. and Hayashida, M. (n.d.). *Dousa ya kouji no basho ni tsuku de to idousaki ya chakuten ni tsuku ni no kondou* [Japanese postpositions: *de* for actions and *ni* used for goal]. The Society for Economic Studies, Working paper series No.2012-7. Retrieved from https://www.kitakyu-u.ac.jp/economy/study/pdf/2012/2012_07.pdf

Park, H. I., and Ziegler, N. (2014). Cognitive shift in the bilingual mind: Spatial concepts in Korean–English bilinguals. *Bilingualism: Language and Cognition*, 17(2), 410–430. <https://doi.org/10.1017/S1366728913000400>

Pica, T. (1983). Methods of morpheme quantification: Their effect on the interpretation of second language data. *Studies in Second Language Acquisition*, 6(1), 69-78. <https://doi.org/10.1017/S0272263100000309>

Ryo, I. (2011). Nihongo no basho wo arawasu [de] to Chugokugo no basho wo arawasu [zai] ni tsuite [Japanese postposition *de* and Chinese preposition *zai*]. Chiba daigaku Nihon bunka ronsou, 12, 30-46. Retrieved from https://opac.ll.chiba-u.jp/da/curator/900067277/nihonbunka12_Ryo.pdf

Sakoda, K. (2001). *Gakusyusha no bumpo shori hoho: Gakusyusha wa chikaku o mite shori o suru* [Learners' grammar learning strategies: Learners tend to rely on nearby context]. In: H. Noda, K. Sakoda, K. Shibuya, & N. Kobayashi, (Eds), *Nihongo Gakushusya no Bumpo Shutoku* [Learners' grammar acquisitions] (pp. 25-43). Taishukan

Sachs, O. S., and Coley, J. D. (2006). Envy and jealousy in Russian and English: Labeling and conceptualization of emotions by monolinguals and bilinguals. In: A. Pavlenko (Eds), *Bilingual minds: Emotional Experience, Expression, and Representation* (pp. 209-231). Multilingual Matters.

Slobin, D. I. (1996). From “thought and language” to “thinking for speaking”. In: J. J. Gumperz & S. C. Levinson (Eds), *Rethinking Linguistic Relativity* (pp.70-96). Cambridge University Press.

Tsujimura, N. (1996). *An Introduction to Japanese Linguistics*. Blackwell Publishers Inc.

Yvonne, L. (2018). The acquisition of prepositional meanings in L2 Spanish. *Canadian Journal of Applied Linguistics*, 21(1), 1-22. Retrieved from <https://journals.lib.unb.ca/index.php/CJAL/article/view/24600>

Zhang, H. (2007). Numeral classifiers in Mandarin Chinese. *Journal of East Asian Linguistics*, 16, 43–59. <https://doi.org/10.1007/s10831-006-9006-9>

VITA

Azusa Tojo, a native of Tokyo, Japan, graduated with a Bachelor of Arts in Sociology from Sophia University, Japan in 2005. She enrolled in the linguistics M.A. program at Syracuse University in the fall of 2017, with a concentration in Teaching Languages (TESOL/TLOTE). Her research interests include second language acquisition and pedagogy.