

Cross-Linguistic Influence in an English-Japanese-Mandarin Trilingual Child's Verb and Prepositional Phrase Constructions

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This paper deals with cross-linguistic influence (CLI) in an English-Japanese-Mandarin three-year-old's production of verb (V) and prepositional phrase (PP) constructions in Mandarin. The word order of V and PP in Mandarin is variable and linked to the pragmatics/syntax interface of the grammar. The data reveal that the child was dominant in the V PP order—a constant feature of English—even when PP V was the correct form. This is despite the fact that the community language, Japanese, shares the PP V word order feature. This paper suggests that CLI is determined by both linguistic and cognitive factors. While the overlapped V PP structure in English and Mandarin (the home languages) suggests why PP V in Mandarin is vulnerable to the invariable V PP English ordering, the child's cognitive tendency towards iconicity, as well as the home language mode, would seem to explain her acceptance or avoidance of different word orders.

本研究は、英語、日本語、中国語の3ヶ国語を第一言語としながら育ったトライリンガルの3歳児が話す中国語の動詞(V)と前置詞句(PP)構成における言語間の影響(CLI)に焦点を当てた事例研究である。中国語では、VとPPの語順が、語用や構文に応じて変化する。本研究のデータによれば、コミュニティー言語の日本語もPP Vの語順を有しているにもかかわらず、中国語においてPP Vが正しい語順の場合でさえ、子供はV PPを偏好する。本研究では、CLIが言語および認知における要因によって決定されることを明らかにする。英語と中国語のV PP構造の一致は、中国語のPP V構造が英語の決まったV PP語順に影響を受けていることを示す。他方、家庭内言語モードや子供の類像性に対する認知傾向は、異なる語順の受容や回避を示していると考えられる。

Cross-linguistic influence (CLI) is a well-known phenomenon in second and third language learning and has also received increasing attention in early bilingual and trilingual acquisition (Barnes, 2006; Devlin, 2014; Genesee, Nicoladis, & Paradis, 1995;

Hoffmann & Stavans, 2007; Hulk & Müller, 2000). The current paper examines the extent to which a young trilingual's Mandarin production is influenced by her other two languages, namely, English and Japanese. More specifically, it investigates the possible sources of a deviant V PP form in her Mandarin speech from different dimensions of language. It particularly focuses on the language-internal factors (e.g. language dominance and structural overlapping) and language-external factors (e.g. iconicity preference and language mode) that are relevant to CLI.

Literature Review

Language Dominance

Language dominance in multilingualism, defined as the language that a speaker knows the best or uses the most, is subject to various types of measurement. It is measured most objectively by the value of Mean Length of Utterance (MLU), a higher MLU indicating a higher level of language proficiency in the child (De Houwer, 2009). Language preference is another indication of language dominance, but a lesser and more indirect one (Saunders, 1988). Baker and Wright (2017) believe that bilinguals rarely show equal ability in each of their languages and that they use them in different contexts. By and large, one language is always dominant in any given context. In early multilingualism, language dominance is seen as an important factor in relation to CLI. The dominant language may play a role in determining the extent of transfer effects in certain domains of grammar on the non-dominant language (Yip & Matthews, 2007). Quay (2001) suggests that the directionality of influence tends to be from the community language to the home language(s).

However, it is argued that this “dominant language hypothesis” (Petersen, 1988) deals only with “overt phenomena such as lexical insertion,” and does not explain the influence of “structural properties of covert phenomena such as syntactic borrowing,” nor does it cover “conceptual influences which are more difficult to detect” (Kazzazi, 2011, p. 64). Paradis and Genesee (1996, p. 3) suggest that transfer, whether or not it is an indication of dominance, is more likely to occur “if the child has reached a more advanced level of syntactic complexity in one language than the other.” In an early stage of language acquisition, when utterances consist only of two or three morphemes, the essential problem appears to be how to determine the matrix language or the directionality of mixing (Kazzazi, 2011). In other case studies, researchers (Hulk & Müller, 2000; Nicoladis, 2002) have found that language dominance does not provide a plausible account of CLI in every bilingual child who is dominant in one of the two languages and thus recommend that internal grammatical phenomena should be considered as the focus in CLI.

Structural Overlapping

Repetto and Müller (2010) propose that some grammatical structures appear vulnerable to deviations across both monolingual and bilingual learners. In bilinguals, the transfer is apt to happen in the presence of an overlapping structure found in their languages (Paradis & Navarro, 2003). Structural overlap is central to Hulk and Müller's (2000) account of CLI. Hulk and Müller (p. 228) posit two "sufficient but not necessary" conditions for CLI to occur: in one, the domain involves an interface level between syntax and pragmatics, and in the other, there has to be "a certain overlap of the two systems at the surface level" in this shared domain. Specifically, if language A allows more than one option for a structure, and language B overlaps with one of those options, the presence of the option in language B suggests that there may be some ambiguity about the appropriate structure in language A.

A number of multilingual acquisition studies have provided insights into the structural overlap approach to CLI. For example, considering the condition where English permits only an overt subject while languages such as Spanish, Italian, and Hebrew accept both null and overt subjects, the transfer of overt subjects occurs from English to other languages (Paradis & Navarro, 2003). The placement of verbs and prepositional phrases in Cantonese¹ is another source of vulnerability across the Cantonese-English learners' contexts (Yip & Matthews, 2007). When prepositional phrases (PPs) invariably follow a main verb in English, they are located either before or after a main verb in Cantonese. Yip and Matthews explain that the English-type option (V PP) in Cantonese is favored by bilingual children over the option that does not overlap with English (PP V). As a result, the bilinguals produce Cantonese in the invariable English V PP order for the target PP V structure more often than the Cantonese monolinguals would do (Yip & Matthews, 2007).

However, Sorace, Serratrice, Filiaci, and Baldo (2009) suggest that, although structural overlap tends to play a greater role in grammar-internal phenomena than grammar-external phenomena, by itself, it is not an adequate factor for predicting CLI. Different dimensions of language that are relevant to CLI should thus be considered.

Cognitive Tendencies

CLI may not always be identified by the presence of non-target linguistic information in production as a "you-know-it-when-you-see-it phenomenon" (Jarvis, 2000, p. 246). Covert instances of CLI that reflect cognitive operations may also govern the interaction between different languages (De Angelis, 2005). In the case of multilingual

¹ Cantonese and Mandarin are two different Chinese dialects but share a coherent grammatical structure in the use of PPs.

speakers, how “the mind treats and associates linguistic information from three or more languages at a single point in time as well as over time” is unclear, but one can assume that multilinguals’ cognitive operations are likely to be more complex and may give rise to unusual language processing (De Angelis, 2005, p. 2).

Preference for iconicity

General cognitive tendencies are important in explaining certain types of CLI in multilingual acquisition. One such tendency seems to be the preference for iconicity in language typology (Slobin, 1985). In multilingual acquisition, the presence of two or more languages indicates more complexity and some specific characteristics in the activation of languages in language perception and production (Cenoz, 2003). Cenoz regards typological distance as an important predictor of CLI. She points out that languages which are relatively closer in terms of lexeme (form) and lemma (frame) are more likely to be activated at the same time because similar procedural or lexical knowledge is used. For example, L3 learners of an Indo-European language (French or German) who are native speakers of a non-Indo-European language (Chinese or Japanese) are inclined to transfer words and expressions from the other Indo-European language (English or Spanish) that they know in preference to their first language.

One more cognitive tendency appears to be the preference for iconicity in language structure. Clyne (1997) claims a constellation of two languages sharing a linguistic feature that is not found in the third language may transfer that feature to the third language and may prevent the transfer of a new feature from the third language, namely, majority influence. However, in a trilingual case study on the production of compound nouns in English, German, and Farsi, Kazzazi (2011) describes how the post-modification (“apple red” or “apple my”) of the non-dominant language, Farsi, is preferred and overrode the more salient pre-modification (“red apple” or “my apple”) of both the dominant language, German, and the lesser-dominant language, English. Kazzazi refers to this new type of CLI as minority influence - that is, a feature used only in the third language triggers a different but shared feature in the other two languages. According to Kazzazi (2011), this favoured post-modification order (noun-adjective/determiner) appears to represent the logical iconicity of topic-comment ordering. More accurately, first you mention the topic that you want to talk about and then you give a comment on it. Iconicity is reported to be more influential in child language than in adult language. It is suggested that children “look for iconic structure in languages relying much more on the natural aspects of language than on its arbitrariness” (Kazzazi, 2001, p. 65). In their acquisition of language,

children “strive for transparency of meaning-form correspondences” and often reshape their parents’ language “to make it more iconic” (Slobin, 1985, p. 221).

Language processing mode in a specific context

CLI has been related to several language functions, different language modes, and different levels of intentionality and automaticity (Cenoz, 2003, p. 107). Grosjean (1998) considers the relation between CLI and language mode in a specific context. He proposes that depending on the variables related to the quantity and, more importantly, quality of language input, a conversation may take place closer to a monolingual or a bilingual mode. With the speaker’s desire to use a target language in a particular mode, lexical items associated with that language will usually be selected over non-target language items (Finkbeiner, Gollan, & Caramazza, 2006).

In their study of language mode, De Angelis and Selinker (2001, p. 56) describe how a language may be selected because it is tagged as “foreign” or “non-foreign” when a speaker stays in a foreign language mode. Multilingual speakers may perceive and “assign non-native languages to the status of foreign languages” and formulate a cognitive association among the foreign languages while a similar connection is not established between the native language and a foreign language (De Angelis, 2005, p. 12). “Association of foreignness” is interpreted by De Angelis (2005) as one major factor that blocks transfer from the native language and favours transfer from non-native languages. For example, a French L1 learner of Italian (L3) with prior knowledge of Spanish (L2) may incorporate the Spanish word “mesa” (English: table; French: table; Italian: tavolo) into their Italian production rather than referring to his/her native French vocabulary (De Angelis, 2005, p. 3).

In the case of trilingual first language acquisition, each of a speaker’s three languages is tagged as his/her first language, regardless of being a mother tongue or not. However, the value and function of each first language can be seen as different and each is usually assigned a different tag, such as “home language” or “community language.” CLI that occurs in the home context may differ from that occurring outside the home context, if indeed there is any CLI.

Prediction of the Production of V PP and PP V in English, Mandarin, and Japanese

English, Mandarin, and Japanese are from different language families and have radically different typologies: English from the Indo-European family, Mandarin from the Sino-Tibetan family, and Japanese, a language isolate. Although Japanese employs Chinese characters in its writing system, the pronunciation of a character in Chinese

and Japanese is different, the meaning often varies, and the form is sometimes simplified to different extents. In modern times, the majority of Japanese loanwords are from English and are written in the *katakana* phonetic script.

In Mandarin, depending on the pragmatic function of a verb or a sentence, a PP may appear in either preverbal (PP V) or postverbal (V PP) position. For example, with a verb such as *sit*, either order is possible, as shown in Examples (1) and (2). However, when an action verb such as “eat” is involved, only the PP V form is grammatically acceptable, as shown in Example (3).

(1) wǒ (NP) zài zhè lǐ (PP) zuò (V).

I at here sit. (I sit here.)

(2) wǒ (NP) zuò (V) zài zhè lǐ (PP).

I sit at here. (I sit here.)

(3) wǒ (NP) zài zhè lǐ (PP) chī (V)².

I at here eat. (I eat here.)

In English a PP invariably follows a verb (V PP), such as “play in the park” and “talk at home.” It corresponds with the V PP ordering in Mandarin shown in Example (2): “I (NP) sit (V) at here (PP).” On the other hand, the Japanese ordering of these elements is always PP V, such as “*uchi de³ asobu*” (home at play) and “*isu ni⁴ suwaru*” (a chair on sit). It corresponds to the Mandarin order in Example (1), “*watashi (NP) wa⁵ koko ni⁶ (PP) suwaru (V)*” (I here at sit.), and Example (3), “*watashi (NP) wa koko ni (PP) taberu (V)*” (I here at eat).

The Study

The present study investigates the word order of verbs and prepositional phrases in a young trilingual’s Mandarin production in relation to her other two languages, English and Japanese. Following majority influence theory (Clyne, 1997), if a PP generally appears before certain verbs (PP V) in Mandarin and this feature is constantly found in Japanese, a different order V PP, in the same domain in a third language, English, would seem unlikely to exert influence on the Mandarin form. Following minority influence

² The incorrect VPP form is: wǒ (NP) chī (V) zài zhè lǐ (PP).

³ *uchi de*: Japanese has postpositions rather than prepositions.

⁴ *isu ni*: another postposition

⁵ *wa*: a topic marking particle.

⁶ *koko ni*: another postposition.

theory (Kazazzi, 2011), the shared target form (PP V) in both Mandarin and Japanese is likely to be triggered by certain cognitive tendencies and to be replaced by the non-target form (V PP), a feature only found in English. However, the data from the present study show that only the Mandarin deviants correspond to the English V PP ordering while the Japanese structures remain in the correct PP V form. This raises a number of questions. For example, are there any effects of language dominance on the language structure? How does the structural overlap affect grammatical deviation? How do cognitive tendencies affect the preference for a structure? With these questions in mind, language-internal and language-external factors will be investigated as predictors of the activation of English in the child's Mandarin.

Participants

The trilingual girl, Yu, was born in 2014 in Japan to a native Mandarin speaking mother, who was also the researcher of this study, and a Japanese father. The mother had worked as a primary school teacher for some years before the child was born. The father regularly read and wrote in English for his job as a university researcher. English was the lingua franca between the parents. Since Yu was born, she had heard and been spoken to in three languages: Mandarin, from the mother when the father was absent; English, from the father and in family conversations; and Japanese for reading and playing activities related to that language. Yu was attending a full-time bilingual nursery⁷ during the present research period (3;0 - 3;10, she stopped going to the nursery one month before the end of the research period). During the total of 12 hours of her time awake every day, Yu's language exposure was roughly: English 4 hours (3 hours at home and 1 hour in the nursery), Japanese 5 hours (1 hour at home and 4 hours in the nursery), and Mandarin 3 hours (at home).

Data Collection and Transcription

In the present study, two methods were used to collect the data between the child's ages of 3;0 and 3;11. The first one was diary entries. The mother/researcher kept a diary handy and jotted down the utterances in Mandarin which contained PP structures the child produced in her daily life. The second method was audio-recording. One Mandarin conversation between Yu and the mother was recorded every two weeks when the father was not at home.

As a matter of fact, the mother also prepared specific tasks and tried several times to elicit more of the target constructions from the child. However, the result was

⁷ Although English was used in some activities, Japanese was the only language spoken by the children among themselves and with the staff.

unsatisfactory due to the following considerations: (1) the child was able to correct all mistakes in the tasks, changing from the deviant V PP to the target PP V, with the mother's verbal or non-verbal prompts. However, she would repeat the same mistakes in her daily speech; (2) the child appeared to be sensitive to the language practice and parental input styles. Although she performed well in the tasks, the way she spoke seemed unnatural and different from her usual self; and (3) according to the mother's primary school teaching experience, in order to elicit more target structures, more time in doing the tasks as well as a more detailed explanation of the grammatical point would be desirable. However, seeing Yu's young age and the features of her language acquisition in a natural context, the mother chose not to adopt more tasks at this stage. To sum up, considering the above reasons, an experimental method was not used in the present study.

There were, in total, 26 recordings, each recording lasting for approximately 30 minutes. The mother/researcher listened to all of the files and identified both the target and non-target PP structures. V PP and PP V structures documented in the diaries and the recordings were coded in Chinese Pīnyīn (a romanization system with four diacritics denoting tones), Japanese *Romaji* (in roman letters and *italics*), and standard British English orthography. A Mandarin utterance containing non-target V PP structures was marked with an asterisk (*) at the beginning of a sentence, and it was immediately followed by a correction, which was underlined. A non-English utterance was provided with a literal English translation, as well as a natural English translation (in parentheses) if necessary. Examples of coded transcripts and abbreviations are shown in Appendices A and B, respectively.

Transcripts were checked by a native Chinese speaker (other than the researcher) who knew English and Japanese as well as her native language. She was also the mother of two children who were trilingual in the same three languages.

Limitations of Methodology

The two methods used in the present study have some limitations. As for the diary entries, even though the mother had written down the PP forms heard from the child as often as possible, these were probably only a part of the child's total production. As for the audio recordings, they did not yield a large number of PP structures, because they were made in a natural language environment rather than an experimental one where structures are intentionally elicited. The frequency of appearance of the target grammatical items may heavily depend on the child's way of speaking, and sometimes the topic or activities. For example, Yu used more PPs when she was building a Lego model where location indicative words were needed. For this reason, it is not easy to quantify

(5) at 3;4

* mama (Ind), nǐ (N) quán bù (Adv) chī wán (VC) le (Par), nǐ (N) hái (Adv)

• Mum, you all eat up, you still

wán (V) zài zhè biān (PP), hǎo ma (Par)?

play at here, ok?

(Mum, after you finish eating, can you still play here?)

Correction:

mama (Ind), nǐ (N) quán bù (Adv) chī wán (VC) le (Par), nǐ (N) hái (Adv)

• Mum, you all eat up, you still

zài zhè biān (PP) wán (V), hǎo ma (Par)?

at here play, ok?

(Mum, after you finish eating, can you still play here?)

The relationship between the level of complication of a PP structure and the non-target V PP order was another phenomenon that was studied. Three types of PP were observed in 47 examples from the recordings and the diary, which were: preposition + pronoun (28 examples, e.g. “zài zhè biān”- in here), preposition + adverb (1 example, e.g. “zài nǎ lǐ”- in where), and preposition + noun/noun phrase (18 examples, e.g. “zài D jiā”- at D’s home). The results suggested that the child’s displacement of verb items and PP structures, regardless of the levels of complexity of one or both parts, might not be developmental errors.

Language Dominance

When examining the grammatical elements such as “*Wh*” interrogatives, null-objects, and relative clauses produced by bilingual children who are dominant in Cantonese, Yip and Matthews (2007) emphasize the role of language dominance in CLI. However, the two authors regard the transfer of V PP with “hai2” (at) as an exception, as *the directionality of influence is from the relatively weaker language, English, to the relatively stronger language, Cantonese.*

The data in the present study suggested that Yu made appropriate language choices and had a good knowledge of Mandarin grammar. For example, of the total 24 videos of Mandarin conversations between Yu and her mother, no interference from English or Japanese was noticed in 7 videos. 23 English and Japanese items were mixed into the Mandarin speech in 17 videos. In other words, 1.35 non-Mandarin words on average were found in each video. Moreover, the mixing uniformly occurred at the lexical level, either due to the unavailability of a commonly known equivalent in Mandarin (e.g. “*karintou*” - a traditional Japanese snack) or a high-frequency word in English (e.g. “iPad”)

or Japanese (e.g. “*mochi*”- rice cake) that triggered language borrowing. The data also show that in addition to producing a basic SVO structure in Mandarin, Yu combined adjectives (Adj), auxiliaries (Aux), adverbs (Adv), or particles (Par) with nouns (N) and verbs (V) to form complex noun phrases (NP), verb phrases (VP), adverb phrases (AC), and verb-complement structures (VC) for different functions in an utterance. Example (6) would seem to be an indication of the complexity of the child’s Mandarin grammar.

(6) at 3;2

děng yī xià (Ind), fàng (V) zài wǎn wǎn lǐ (PP), xiān bú yào hē (Ind), Yōuyōu (N)

• Wait, put in bowl inside, first do not drink, Yu
guò lái(V) yī qǐ (Adv) hē (V).
comes together drink.

(Wait, put it in the bowl, do not drink first. Wait till I come and we drink together.)

It appeared that Yu’s development of Mandarin had occurred systematically. At the time of the present study, no particular developmental problems were observed in her command of this language. The transfer of certain non-target VPP forms in Mandarin might therefore be accounted for by CLI from one of her other two languages.

Structural Overlapping in English and Chinese

As shown earlier in Appendix C, the percentage of the target V PP structures (71%) in Yu’s recordings greatly exceeded that of PP V (23%). Of the total 49 target V PP structures, verbs/verb phrases which can be placed either before or after a PP, all appeared before a PP (V PP). Verbs/verb phrases which should be placed only after a PP (PP V) were primarily correctly used, but with some mistakes. In particular, three ending-placement verbs, “read,” “wear,” and “play,” as shown in Appendix D (Examples 7-9), were repeatedly misplaced before a PP, to form non-target PP V structures.

Yu’s preference for the V PP ordering and the high proportion of non-target V PPs resembled the result found by Yip and Matthews (2007) in a case study on the placement of verbs and prepositional phrases with the verb “hai2” (at) in six English-Cantonese bilingual children’s Cantonese. Verbs, such as “stick,” “put,” “hang,” “sit,” “eat,” “play,” “see,” “go down,” “make,” and “live,” used in the non-target V PPs by Yu were also mistakenly used by English-Cantonese bilinguals. From Yu’s data, it was seen that the V PP ordering with “zài” (at) accounted for a high proportion (75%) of the total PP structures, as shown in Appendix E. This finding was in agreement with the

results recorded by Yip and Matthews (p. 194) - that is, the six bilinguals primarily chose the V PP forms (82%, 79%, 75%, 62%, and 58%)⁸ which greatly exceeded the number of their PP V forms. Meanwhile, the rate of non-target V PP forms with “hai2” (at) in Yu’s Mandarin (6%) was also within Yip and Matthews’s (p. 196) range of rates of wrong locative PPs with “hai2” in the six bilinguals’ Cantonese (22.2%, 15.4%, 13.3%, 8.9%, and 3.4%)⁹.

Yip and Matthews also examine the data proposed by Lee, Vakoch, and Wurm (1996) regarding the production of the same grammar domain in eight monolinguals’ Cantonese. The two researchers compare the statistics from the monolinguals with those from the bilinguals. They notice that the monolinguals employ the PP V (53%) and V PP (47%) ordering with approximately equal frequency and choose a V PP form only “when it is well-formed” while the V PP ordering in Cantonese is favored by the bilinguals. The non-target V PP structures produced by bilinguals do not appear in monolinguals’ production.

CLI is considered to be a major explanation for the deviations in Chinese (Cantonese or Mandarin). The placement of Vs and PPs in Chinese is a source of vulnerability across Chinese-English learners’ contexts. While PPs invariably follow a main verb in English, PPs are located either before or after a main verb in Chinese. The English-type option (V PP) in Cantonese is favored over the option that does not overlap with English (PP V) by the bilinguals in Yip and Matthews’s study. As a result, the bilinguals produce Cantonese in the invariable English V PP order for the target PP V structure more often than Cantonese monolinguals would do. Yu’s data showed that Yu and Yip and Matthews’s bilinguals had some similarities. The overlapping structure in English and Chinese was also seen as for a cause of the language transfer in trilingual production.

Cognitive Tendencies

Preference for iconicity

In the present study, the grammar features of Yu’s three languages and the relationships within the constellation were examined. In total, five non-target V PP structures in Mandarin whose equivalents in either English (V PP) or Japanese (PP V) were produced at some point are shown in Appendix F. These examples (10-14) show that all of the V PP structures in English as well as the PP V structures in Japanese were accurately produced. However, the non-target V PP structures in Mandarin appeared to have followed the English invariant V PP form. Although English has only one rigid

⁸ Data from one child is unavailable.

⁹ Data from one child is unavailable.

postverbal PP distribution and Japanese only one preverbal PP distribution, Mandarin has both of the PP options. Hence it is possible to consider either V PP or PP V as the majority factor 2:1, making it unclear which theory, majority influence or minority influence, is more applicable to the transfer in Yu's case.

In explaining the occurrence of minority influence, Kazzazi (2011) suggests that topic-comment structure represents a cognitive tendency in CLI. In Yu's study, Mandarin is a topic-oriented language. A topic in Mandarin is a sentence-initial NP which is not determined by the syntactic structure, but instead by its semantic relation with the predicate and the context (Chien, 1983). Adverbial phrases (as in PP V) which serve as the semantic frame and provide the temporal or location information for the comment clause, although less common, are one type of topic (Li & Thompson, 1981). However, the data did not include evidence that Yu's production of Mandarin was influenced by the topic-comment rule.

Tai (1973) explains that Mandarin has a canonical SVO word order and, in a SVO sentence, the ending position of PP indicates the end of an event. Yu's preference for V PP in Mandarin might be presumed to be related to the preference for this iconicity of ending. As a result, all of the four non-target PPs in the recordings and the 43 non-target PPs in the diary were placed at the end of the clause describing the goal or result of an action.

Furthermore, Hawkins (1994) regards V PP as a universal word order from the language processing perspective. The PP V order is regarded as a rarity among the world's SVO languages; only a few Chinese dialects, including Cantonese and Mandarin, possess PP V structures (Hawkins). In SVO languages, the combinations of V O (head-initial) and V PP (head-initial) show a consistency in ordering, while the combinations of V O (head-initial) and PP V (head-final) are less efficient for parsing (Hawkins).

Home language mode

CLI is said to be related to the specific context in which communication takes place. Among the 43 non-target V PP structures in the mother's diary, ten examples were related to the verb "play," four were related to "wear," and three were related to "read." Target PP V structures with these three verbs were not found in any of the data. However, the child seemed to fluctuate between the target PP V and the non-target V PP forms regarding the other two high-frequency verbs, "eat" and "run." In Yu's family the location of the action "play," "read," or "wear" was always negotiated between the child and her parent(s), thus a complete structure comprising one of the three verbs and a PP was frequently modelled by the parent(s) in their English speech. However, the location

of the action “eat” or “run” was previously established (“eat” at the table, “run” outside), thus a PP part was often omitted in the adult’s English modelling of V PP. The parents’ tendency to model the form of some structures but not others in the home mode seems to have indicated whether or not the transfer from English to Mandarin occurred. The English V PP forms were more likely to be activated when PP Vs with the verb “play,” “read,” or “wear” were produced in Mandarin, while the English style was more likely to be deactivated when PP Vs with “eat” or “run” were produced.

English being chosen in preference to Japanese could also be perceived as a result of Yu’s desire to use the home languages in the “home language mode.” She was likely to activate the grammatical structures from English which was tagged as “home language,” and exclude the structures from Japanese which was tagged as “non-home language.” The presence of the English-Mandarin mother and her interactional strategies further caused the Mandarin processing to occur in an English-Mandarin mode. In Yu’s family, English and Mandarin were used for home communication, while Japanese was for outside socializing. Using Japanese in conversations with a parent often resulted in a request for a language change. These language practices encouraged the child to choose either Mandarin or English in talks carried out in the home environment. In a Mandarin context, English was probably assumed to be a “default supplier” language, the language used to supply material for word production (Williams & Hammarberg, 1998).

Discussion

CLI is a systematic and norm-controlled phenomenon found in a variety of related conditions (Paradis & Genesee, 1996). In research on CLI, there is always an inclination to apply theories of bilingual production to explain the source of the overt manifestation of transfer in multilingual production. However, CLI in multilingual production displays unique characteristics that differ from bilingual production. The non-target deviant, V PP, produced by Yu provided further evidence for CLI arising due to language-internal factors (e.g. overlapping structures) in multilingual production. Meanwhile, language-external factors (e.g. cognitive tendencies), which have not been considered much in previous research, turned out also to be significant.

Traditionally, language dominance is regarded as a significant factor in language transfer. While Yu was considered to be a fluent Mandarin speaker in the Mandarin context, her production of PP structures in this language was greatly influenced by English even in this context. In Yip and Matthews’s study, the transfer of PPs with “zai2” in bilinguals who are dominant in Cantonese is seen from English to Cantonese even though more grammatical points are found to be transferred from Cantonese to English. Their data suggested that under one condition, such as language dominance,

cross-linguistic transfer did not occur in all domains in light of the child's whole language repertoire.

Typological distance is another important factor explaining the occurrence of CLI. However, in Yu's case, even though Mandarin and Japanese coincided in the PP V domain, which was different from the English V PP ordering, the non-target V PP in Mandarin reflected the feature of English while the target PP V in Japanese remained the correct form. Neither the majority influence theory nor the minority theory may accurately explain the situation of the transfer.

The overlapping V PP structure in English and in Mandarin was considered as a critical language-related factor explaining the transfer across languages in this study. When the Mandarin input was somehow sufficient to introduce the correct use of PP V, the structure was left open to the influence of the invariable V PP form from English. In addition, an underlying assumption in Japanese is that either a verb or a PP can be omitted, leaving the sentence grammatically unstated but pragmatically functional. The frequent omission of a part of PP V was likely to have lessened the influence of the shared PP V structure from Japanese.

The child's judgement of the distance between the three languages (psychotypology) was equally influential when considering the contextually related factors, and it was reflected in language activation. The English-Mandarin home environment, where bilingual modelling in these two languages was common, led to the child's perception of the closeness between the two. English, tagged as "home language," was perceived as closer to Mandarin while Japanese, tagged as "non-home language," was psychotypologically distant. English seemed to be considered to be the language of reference in her Mandarin speech, and in turn more elements from English than from Japanese were transferred.

The present research attempted to show some features of early language acquisition occurring in a natural non-learning environment. However, the data set, based on one single case, is relatively small. In this way, some of the findings and claims may be in need of further verification in other, similar bi- and trilingual settings, or in an age-appropriate experimental (rather than natural) setting.

Conclusion

The present study of CLI in a young trilingual's Mandarin was concerned with what is transferred from one language to another, as well as with how transferred information is treated and organized in the mind. It suggested that there was no single, overriding factor that could explain the complexity of CLI in trilingual production. Trilingual children may use various processing and acquisition mechanisms for their three

first languages. This paper illustrated the role of two different dimensions of language related to CLI: linguistic-related elements and cognitive tendencies. As the child grows and her contact with the community broadens, the patterns and directionality of CLI may change and vary accordingly. The socially dominant community languages may then come to undermine the family support that is given to the home languages. The way the trilingual mind treats information that is transferred from one language to another needs to be further understood and investigated in both a natural and an experimental setting.

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Appendix A

Examples of Coded Transcripts in English, Japanese and Mandarin

English: Yu (N) play (V) here (PP).

Yu wants to play here. (This is the mother's interpretation of Yu's speech)

Japanese: (*Yu wa*) *koko ni* (PP) *asobu* (V)

- (Omitted N) here at play. (Play here.)

Mandarin: * Yōuyōu (N) wán (V) zài zhè lǐ (PP)。

- Yu plays at here. (Yu plays here.)

Correction:

Yōuyōu (N) zài zhè lǐ (PP) wán (V)。

- Yu at here play. (Yu plays here.)

1. Mandarin: coded in Pīnyīn with four diacritics denoting tones
2. Japanese: coded in *Romaji* in italics
3. English: coded in standard British orthography
4. * Non-target form
5. A correction to a non-target form
6. • Literal translation in English (A natural English translation)

Appendix B

Abbreviations

AC (adverb phrases)

Aux (auxiliary)

Adv (adverb)

Ind (independent phrase)

N (noun)

NP (noun phrase)

Par (particle)

PP (prepositional phrase)

PPV (prepositional phrase verb)

SVO (subject verb object)

V (verb)

VO (verb object)

VP (verb phrase)

VPP (verb prepositional phrase)

VC (verb-complement structure)

Appendix C
V PP and PP V Structures in the Recordings

	Target VPP	Non-target VPP	Target PPV	Non-target PPV	Total
No.	49	4	16	0	69
%	71	6	23	0	100

Appendix D

Non-target PP V Structures with the Verbs “Read,” “Wear,” and “Play”

(7) at 3;1

* bà bà lái le yǐ hòu (AC) yě yào (Adv) wán (V) zài gōng yuán (PP)。

- Dad came after still want to play in park.

(After dad comes, I still want to play in the park.)

Correction:

bà bà lái le yǐ hòu (AC) yě yào (Adv) zài gōng yuán (PP) wán (V)。

- Dad come after still want to in park play.

(After dad comes, I still want to play in the park.)

(8) at 3;8

* wǒ (N) yào (Aux) dú (V) zài zhè lǐ (PP)。

- I want to read in here. (I want to read here.)

Correction:

wǒ (N) yào (Aux) zài zhè lǐ (PP) dú (V)。

- I want to at here read. (I want to read here.)

(9) at 3;2

* zhè gè (N) chuān (V) zài wài miàn (PP)。

- This wears at outside. (You wear this outside.)

Correction:

zhè gè (N) zài wài miàn (PP) chuān (V)。

- This at outside wear. (You wear this outside.)

Appendix E
Placement of Locative PPs with “zài” in the Recordings

	Target V PP	Non-target V PP	Target PP V	Non-target PP V	Total
No.	49	4	12	0	65
%	75.4	6.2	18.4	0	100

Appendix F

Five Non-target V PP Structures in Mandarin with Target Equivalents Produced in English (V PP) and Japanese (PP V)

(10) at 3;2

Mandarin: * Yōuyōu (N) xǐ shǒu (VP) zài nà biān (PP)。

- Yu washes hands at there. (Yu washes hands there.)

Correction:

Yōuyōu (N) zài nà biān (PP) xǐ shǒu (VP)。

- Yu at there wash hands. (Yu washes hands there.)

English: Yu (N) washes hands (VP) there (PP).

Yu wants to wash hands there.

(This is the mother's interpretation of Yu's speech.)

Japanese: *soko de*¹⁰(PP) *arawu* (V).

There at wash. (Wash there.)

(11) at 3;2

Mandarin: * Yōuyōu (N) wán (V) zài zhè lǐ (PP)。

- Yu plays at here. (Yu plays here.)

Correction:

Yōuyōu (N) zài zhè lǐ (PP) wán (V)。

- Yu at here play. (Yu plays here.)

English: Yu (N) plays (V) here (PP).

Yu wants to play here. (This is the mother's interpretation of Yu's speech.)

Japanese: *koko de* (PP) *asobu* (V).

Here at play. (Play here.)

¹⁰ Japanese has post-positions rather than prepositions.

(12) at 3;7

Mandarin: * wǒ (N) yào (Aux) dú (V) zài zhè lǐ (PP)。

- I want to read at here. (I want to read here.)

Correction:wǒ (N) yào (Aux) zài zhè lǐ (PP) dú (V)。

- I want to at here read. (I want to read here.)

English: I (N) want to (Aux) read (V) here (PP).

Japanese: *koko de (PP) yomu (V)*.

Here at read. (Read here.)

(13) at 3;8

Mandarin: * wǒ (N) yào (Aux) chī (V) zài zhè lǐ (PP)。

- I want to eat at here. (I want to eat here.)

Correction:wǒ (N) yào (Aux) zài zhè lǐ (PP) chī (V)。

- I want to at here eat. (I want to eat here.)

English: I (N) want to (Aux) eat (V) here (PP).

Japanese: *koko de (PP) taberu (V)*.

Here at eat. (Eat here.)

(14) at 3;11

Mandarin: * wǒ (N) wán (V) zài yī gè gōng yuán (PP)。

- I played in a park. (I played in a park.)

Correction:wǒ (N) zài yī gè gōng yuán (PP) wán (V)。

- I in a park played. (I played in a park.)

English: I (N) played (V) in a park (PP).

Japanese: *koen de (PP) asonda (V)*.

Park in played. (Played in a park.)