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Grammatical Categories and Language Model on Code Switching: Based on Bahasa Indonesia-Chinese

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Abstract

Code-switching refers to the process of mixing two or more languages and the linguistic varieties within a single passage that may cause a contrasting effect. This study aims to reveal the grammatical constraints on intra-sentential code-switching in the case of Bahasa Indonesia-Chinese by collecting the data of code-switching of 14Indonesian students in Tianjin. The objectives of this study are to understand the grammatical categories, the language model, and the grammatical constraint. This study applies the equivalence and the free morpheme constraint, the Matrix Language Frame model. It is found that there are 159 cases of code- switching that can be viewed as grammatical categories in the case of Bahasa Indonesia-Chinese, the number including Noun, Conjunction, Verb, Adjective, Preposition, and Adverb. The rest cannot be put into grammatical categories as the switching occurs as the single clause; most of the clauses assign as complements in a sentence. The data also shows that the frequent repetition of Noun is remarkably high on code-switching in the case of Bahasa Indonesia-Chinese, which is 97 tokens. While the lowest is the switching in Adverb, which is three tokens, this study assumes that the position of Noun is free of syntactic restriction. The language model in the case of Bahasa Indonesia-Chinese code-switching shows that Bahasa Indonesia is the dominant language for most cases. However, the switching sentences that have the same order and frequent occurance of morpheme both of Bahasa Indonesia and Chinese, cannot be all assigned into the Matrix Language model, and Embedded Language Model (hereafter ML and EL), only the cases with switched code in system morphemes, and Bahasa Indonesia are the frequently used morphemes can be accounted for the ML or EL Model.

Keywords: *Code-switching; The grammatical constraints; Bahasa Indonesia- Chinese; The Matrix Language Frame model.*

Abstrak

Code-switching merujuk pada proses penggabungan dua atau lebih bahasa dan variasi linguistik dalam satu bagian teks yang dapat menyebabkan efek kontras. Penelitian ini bertujuan untuk mengungkapkan batasan-batasan gramatikal pada code-switching intra-kalimat dalam kasus Bahasa Indonesia–Mandarin dengan mengumpulkan data code-switching dari 14 mahasiswa Indonesia di Tianjin. Tujuan dari penelitian ini adalah untuk memahami kategori gramatikal, model bahasa, dan batasan gramatikal. Penelitian ini menerapkan equivalence dan free morpheme constraints, serta Matrix Language Frame model. Ditemukan bahwa terdapat 159 kasus code-switching yang dapat digolongkan ke dalam kategori gramatikal dalam kasus Bahasa Indonesia-Mandarin, yang meliputi Noun (Kata Benda), Conjunction (Kata Sambung), Verb (Kata Kerja), Adjective (Kata Sifat), Preposition (Kata Depan), dan Adverb (Kata Keterangan). Sisanya tidak dapat dimasukkan ke dalam kategori gramatikal karena code-switching terjadi dalam bentuk klausa tunggal; sebagian besar klausa tersebut berfungsi sebagai pelengkap dalam kalimat. Data juga menunjukkan bahwa pengulangan kata Noun sangat tinggi dalam code-switching antara Bahasa Indonesia dan Mandarin, yaitu sebanyak 97 token. Sementara yang terendah adalah code-switching pada Adverb, yang hanya terdiri dari tiga token. Penelitian ini berasumsi bahwa posisi Noun bebas dari pembatasan sintaksis. Model bahasa dalam code-switching Bahasa Indonesia-Mandarin menunjukkan bahwa Bahasa Indonesia adalah bahasa dominan dalam sebagian besar kasus. Namun, tidak semua kalimat yang mengalami code-switching yang memiliki urutan yang sama dan sering terjadi morfem dalam Bahasa Indonesia dan Mandarin dapat digolongkan ke dalam Matrix Language model dan Embedded Language Model (selanjutnya disingkat ML dan EL). Hanya kasus yang melibatkan code-switching pada morfem sistem, dengan Bahasa Indonesia sebagai morfem yang lebih sering digunakan, yang dapat diperhitungkan.

Kata kunci: *Code-switching; Batasan gramatikal; Bahasa Indonesia-Mandarin; Model Matrix Language Frame.*

INRODUCTION

In the midst of rapid technological and informational advancements, the education sector faces significant challenges in ensuring that the learning process remains relevant and effective. One of the most notable developments is the integration of digital technology into education, which has profoundly impacted the way teachers and students interact. Many schools have begun adopting technology to facilitate more interactive and accessible learning. However, the implementation of such technologies also presents various challenges, especially in terms of managing and executing effective assessment practices within the learning environment.Assessment plays a crucial role in education. It not only serves to measure student achievement but also provides constructive feedback that can enhance the teaching and learning process. In this context, the rise of digital technology opens up new opportunities for creating assessments that are more flexible, objective, and

efficient. Thus, it is essential for educators to understand how to incorporate technology into their assessment practices.

Technology-based assessments allow for the use of various tools that can support more holistic evaluations, including formative, summative, and authentic assessments. With digital platforms, such as learning management systems (LMS) and educational apps, teachers can track student progress more efficiently. Furthermore, technology enables teachers to provide feedback in a timely and precise manner, which can expedite the process of improvement and student development.However, despite the many benefits technology offers, there are also challenges that need to be addressed. One of the main challenges is the lack of technological skills among both educators and students, as well as the digital divide in terms of access to devices and the internet. Another challenge is ensuring that technology-based assessments remain objective and unbiased. Therefore, a deep understanding of assessment principles is required to implement technology in an effective and fair way.On the other hand, digital assessments also offer opportunities to create a more personalized learning experience. By leveraging data collected from various digital assessment tools, teachers can better understand individual student needs and provide targeted support. For example, through online assignments, teachers can pinpoint areas where students need further attention and adapt their teaching methods accordingly.

Not only in the classroom, but digital assessment also enables remote assessments, which are becoming increasingly relevant in today's online learning environment. This allows students to receive fair assessments even when they are not physically present in the classroom. Additionally, technology-based assessments make it easier to collect large amounts of data, which can be analyzed to gain deeper insights into overall student performance trends.However, while technology offers numerous advantages in assessment, it is important to strike a balance between technological use and the human aspect of education. Technology-driven assessments should not overshadow the importance of human interaction, contextual understanding, and holistic evaluation. Therefore, it is essential to explore the potential of technology while maintaining the pedagogical values that are crucial to effective learning.Overall, the integration of technology in educational assessment opens up vast opportunities for both educators and students to innovate. By understanding the challenges and opportunities it brings, we can ensure that the use of technology in assessment enhances the learning experience, delivers tangible benefits, and creates a more inclusive and relevant learning environment for the future.

The integration of digital technology in education has been a growing trend in recent years, with a particular focus on assessment practices. Several studies have highlighted the

transformative potential of technology in improving the effectiveness, efficiency, and accessibility of educational assessments (Hattie & Timperley, 2007). Digital tools such as Learning Management Systems (LMS), online quizzes, and automated grading systems have become indispensable in modern education. These technologies provide real-time feedback, allowing for continuous assessment and learning, thus supporting the shift from traditional, summative assessments to more formative, student-centered approaches.One of the key advantages of digital assessments is their ability to provide instant feedback, a feature that traditional methods often lack. According to Nicol and Macfarlane-Dick (2006), timely feedback is essential for promoting student learning as it enables learners to identify gaps in their understanding and make improvements in real-time. Digital platforms, such as automated quizzes or online discussion forums, facilitate the rapid delivery of feedback, enhancing the learning process. This shift from teacher-led assessments to student-led assessments has been seen as a step toward fostering more autonomous learners who can take greater responsibility for their learning outcomes.

Moreover, digital assessments allow for more personalized learning experiences. By analyzing data from various digital tools, educators can better understand the unique learning needs of their students. For instance, formative assessments, such as interactive activities and quizzes, can be tailored to provide customized feedback and learning paths for each student (Boud & Falchikov, 2007). This ability to personalize learning is particularly beneficial in inclusive education settings, where students have diverse learning abilities and require differentiated instruction.Despite the many benefits, challenges remain in the implementation of digital assessments. One of the most significant challenges is the issue of equity in access to technology. Research by Warschauer (2004) emphasizes that the digital divide—where some students have limited access to technology—can exacerbate existing educational inequalities. This gap not only affects access to digital assessments but also hinders the development of digital literacy skills. Addressing this challenge requires a concerted effort to ensure that all students, regardless of socio-economic background, have equal access to the necessary technological resources.

Furthermore, concerns about the validity and reliability of digital assessments have been raised in the literature. Some scholars argue that online assessments may not always accurately reflect a student's understanding or abilities (Cummings, 2011). For example, the anonymity provided by online platforms can lead to cheating, plagiarism, and other forms of academic dishonesty. To address these concerns, researchers have suggested implementing security measures, such as proctored exams or advanced plagiarism detection software, to maintain the integrity of digital assessments (McLaren, 2018).Another aspect

that has been explored is the role of teacher preparedness in implementing digital assessments. Teachers need to have the necessary skills and knowledge to effectively use digital tools in their assessment practices (Schmidt et al., 2016). Professional development programs that focus on digital literacy, assessment design, and the use of educational technologies are crucial for ensuring that educators are equipped to navigate the challenges associated with digital assessment. This support is essential not only for the successful adoption of technology but also for fostering a positive shift in assessment practices.

Additionally, digital assessments have been shown to increase student engagement and motivation. A study by DeLuca, Klinger, and Miller (2009) found that when students were given the opportunity to engage with interactive and multimodal assessments, their motivation to learn increased significantly. This is particularly important in the context of assessment, where students often perceive traditional tests as tedious or disengaging. By incorporating digital tools that offer interactive and dynamic assessment experiences, educators can encourage more active participation in the learning process. the literature reveals that digital technology has the potential to revolutionize assessment practices in education by making them more efficient, personalized, and engaging. However, the successful implementation of digital assessments requires overcoming challenges related to equity, validity, teacher readiness, and academic integrity. By addressing these challenges and leveraging the benefits of digital tools, educators can enhance the learning experience for students, ensuring that assessments are not only a measure of achievement but also a tool for fostering growth and development.

RESEARCH METHODOLOGY

The data will be presented in statistics to answer the frequencies' use of code-switching among the participants and classifying the data into grammatical categories. The data will also be analyzed using qualitative analysis to generate and examine the data by applying Poplack's (1981) grammatical constraints theory. The analysis elaborates to find the language model of Bahasa Indonesia-Chinese code-switching by using the Matrix Language Frame model of Myers-Scotton (1993).

This study investigated 30 Indonesian students in Tianjin who can speak Chinese, but only 14 of them can be counted in data analysis. All investigated participants who did not switch the languages are removed from the data. The collecting data of the participants was designed in a natural setting by recording their conversations. The participants who switched out of the recording time, the data were recorded by taking notes. The conversation was taken without noticing the participants so that the data will be natural without any

intervention. It was also done to broaden the data on code-switching in the case of Bahasa Indonesia-Chinese.

Quantitative analysis will be provided by statistical data analysis with calculating code-switched utterance in one conversation of every participant. The order will be served as follows:

1. Collecting the result of participant's recording
2. Transcribing the conversation
3. Calculating the number of code-switched utterances
4. Categorizing the data into the grammatical categories

Qualitative analysis is used to identifying and to investigate the quantitative data in grammatical constraints using the Matrix Language Frame model. The result will be descriptive data from quantitative segmentation.

RESULT AND DISCUSSION

The data were collected from 14 Indonesian students in Tianjin. The total amount of code-switching was counted by each repetition of switching during a conversation, and all switching are included of all the types of code-switching i.e., inter-sentential code-switching and intra-sentential code-switching. However, grammatical categories can only be categorized by separating intra-sentential code-switching from inter-sentential code-switching. Switching on locations' name e.g., names of stations and any particular streets' names, is deleted from the data because the location cannot be assigned any syntactic role in a sentence.

Table 1. Grammatical categories on code-switching of Bahasa Indonesia-Chinese

No	Grammatical Categories	Quantity (Tokens)
1	Total whole switching	287
2	Total switching (grammatical categories)	159
3	Noun	97
4	Conjunction	6
5	Verb	28
6	Adjective	17
7	Preposition	9
8	Adverb	3

The total switching on code-switching in the case of Bahasa Indonesia-Chinese that can be categorized into grammatical categories is 159; this number is including Noun, Conjunction, Verb, Adjective, Preposition, and Adverb. The rest of the total number cannot

be put into grammatical categories since the switching occurred as a single clause; most of the clauses are assigned as complements in a sentence. In Sciullo, Muysken, and Singh (1986), credits to Romaine (1989) state that switching is only possible between elements that are not related by the government.

The data also shows that the frequent repetition of Noun is remarkably high on code-switching in the case of Bahasa Indonesia-Chinese, which is 97 tokens. While the lowest is the switching in adverb, which is three tokens, this might be assumed that the position of Noun is free of syntactic restriction (Romaine, 1989). The rest is the switch in verb with 28 tokens, adjective 17 tokens, preposition nine tokens, and conjunction six tokens.

The Language Model of Bahasa Indonesia-Chinese Code-Switching

This part examines the language model of code-switching in the case of Bahasa Indonesia-Chinese. The language model will be drawn under the hypotheses of the Matrix Language Frame model of Myers Scotton (1993), which is described as the morpheme order principle, in that, the order of morphemes in a code switched sentence must follow the ML order of morphemes; and the system morpheme principle, in that all system morphemes in a code switched sentence will come from the ML. The hypotheses seem to work in accounting for the case of Bahasa Indonesia-Chinese code-switching, where the morpheme order and system morpheme follow the ML. However, some cases cannot be judged whether the code-switched sentences are under the control of ML or EL. Even though the frequency of the morphemes is ML, but the choice of the word literarily comes from EL, and the structure can be both assigned into ML and EL structure.

ML Negation + EL Verb

In this case, EL verb is inserted into another language structure during code switched process.

1. Aku bilang kamu jangan 打车， pasti macet

   *(*我说你别打车，肯定堵车*).*

   Don't call the taxi, you will be stuck in the traffic jam

   From the above example, Bahasa Indonesia dominates the language of code

   switching. It also shows that the morphemes in Bahasa Indonesia appear six times while Chinese has two. Moreover, the structure of the sentence also follows the structure of Bahasa Indonesia and Chinese, which negation *Jangan* 别 comes before打车 . Even though the structure of the sentence can be assigned as EL structure, but the frequent use of morphemes is under Bahasa Indonesia morphemes, so it can be summarized that the language model of the case is based on ML, Bahasa Indonesia. The code-switched sentence of the case also comes to support the grammatical constraints theory of Poplack (1981), the

equivalence constraint. The theory states that code-switching may occur at the point when the surface structure of code-switching languages meet in the same order.

In Myers Scotton (1993), it is crucial to distinguish content morpheme and

system morpheme on the cases of code-switching in order to understand the constraints. It is based on the principle that the patterns of occurrence of morphemes in bilingual code will be switched, when the speech is constrained by the status of morphemes in those languanges. In example 1, the switching occurs under content morpheme i.e., the word 打车. The verb 打 is thematic role assigner, and 车 is the receiver, and this case打车 is categorized under EL island rather than EL constituent, since it does not function as two separated words but one compound word. However, in this case, 打车cannot be 打taxi because the 打triggers the noun 车 to be activated and keep the ML word from being activated, so EL island is created under the verb phrase.

` ML Verb + EL Noun

2. Aku sudah print 票 untungnya

*(*我正好打印了票 *)*

I had printed the ticket, luckily

In this case, EL noun is inserted into ML constituent, and the sentence structure is under ML control. The adverb *untungnya* follows the structure of Bahasa Indonesia rather than Chinese, which it is put after the noun 票*.* In Chinese, the position *untungnya/*正好 should be put after subject or before subject to remaining grammaticality.

Based on the blocking hypotheses in Myers Scotton (1993), the ML blocks any EL content morphemes if its counterpart is a system morpheme in the ML. The word *untungnya/*正好 assigns the insertion of determiner inflection *–nya,* and it carries the feature [+quantification] that the order of the system morpheme follows the ML order (Myers Scotton, 1993). This status blocks any EL content morpheme to be activated, so the sentence instead occurred in ML structure than EL structure. Also, the first morphemes occurred in ML structure *Aku sudah print* 票 , which it makes the adverb *untungnya* come late, so it forces the word to be assigned in ML structure.

3. Aku naik 地铁，没有票lagi

*(*我想坐地铁，又没有票 *)*

I took the subway, but found the ticket had sold out

However, the case in 3 demonstrates that the ML hypotheses seem not to work. Bahasa Indonesia has three morphemes, and Chinese has five morphemes. Meanwhile, the sentence is under the structure of Bahasa Indonesia, in which the adjective *lagi* 又 occurs after the noun 票 . The adjective *lagi/*又 , however, cannot be placed after the noun 票， or

it will cause ungrammaticality in Chinese structure. Moreover, the content morphemes of the switched sentence fall under Chinese morphemes 没有票 , and the phrase is a maximal projection that 没有票 is under the constituent, which is projected to the highest level from the lexicon. While in ML principles, morpheme order is controlled by ML. This case shows that ML and EL cannot be decided by counting the frequent use of morphemes in one segment.

ML Negation + EL Noun

This case shows EL noun in ML, and it falls under EL constituent. The noun, however, is under ML control.

4. Kapan aku bilang kamu ga ada 前途？

*(*什么时候我说过你没有前途？*)*

When did I say that you don't have a future?

In 4, Bahasa Indonesia is the dominant language. The distribution of the morphemes in Bahasa Indonesia is more than Chinese. Bahasa Indonesia has six morphemes, and Chinese has two. The structure of the sentence falls under both the languages, which the EL noun 前途 comes before the verb phrase *ga ada/*没有 . Thus, this example satisfies the hypotheses of ML, that the surface structure of the ML+ EL constituents is based on the ML grammar (Myers Scotton, 1993).

EL Content + ML System Morpheme

5. Ga bagus-bagus amat juga 前途ku

*(*我的前途也不是那么好 *)*

My future is also not really bright

6. Yang kalah ada 惩罚nya

*(*谁输了就惩罚谁 *)*

Who lose, there will be the punishment

7. Aku lupa nomor 公交车 nya

*(*我忘了那个公交车是几路 *)*

I forgot the number of the bus

8. soalnya di kamar kita 刷nya tiga kali

*(*因为在我们的房间需要刷三次 *)*

Because you have to tap three times to enter our room

These cases describe the distinction of content morpheme and system morpheme in ML hypotheses. In 5, code-switching occurs in the Bahasa Indonesia constituent, the noun phrase 前途*ku*. The inflection *–ku* was attached to express the possession in this case. The structure of the system morpheme *–ku* should follow the structure in Bahasa Indonesia,

while it follows the noun 前途. It has been explained in chapter two that Bahasa Indonesia is a language with various affix on its noun phrase, in which the root of the word comes after another word.

Moreover, in the example Bahasa Indonesia has five morphemes that include one system morpheme, and Chinese has two morphemes. Therefore, Bahasa Indonesia is the dominant language in this case. However, the restriction falls under the noun phrase structure 前途*ku*. It assumes that the inflection *-ku* is activated in EL content morpheme, but it comes under ML grammar control because the EL content morpheme 前途 carries the feature [+quantification] that denotes possessive *-ku*. Thus, this case agrees with system morpheme hypotheses that all system morphemes in a code-switched sentence will come from the ML (Myers Scotton, 1993).

This case also appears in examples 6, 7, and 8, *yang kalah ada* 惩罚*nya* in 6 the content morpheme 惩罚 precedes the system morpheme *–nya.* The inflection – *nya,* in this case, refers to a particular punishment, that the person who loses will surely get the punishment. The morphemes of the sentence in Bahasa Indonesia are four, with two Chinese morphemes. The structure of the sentence is under Bahasa Indonesia, not Chinese, this can be seen from the system morpheme order that allows the order of Bahasa Indonesia, which *–nya* comes after the noun 惩罚. In this case *–nya* is a determiner, and the determiner in Chinese should precede the noun to remain grammatical in its noun phrase structure.

Similar to 6, the example in 7 *Aku lupa nomor* 公交车 *nya,* the system morpheme *–nya* acts as the determiner of the noun phrase 公交车 , and the inflection *–nya* carries the feature [+quantification]. The structure of the system morpheme follows Bahasa Indonesia grammar, which the inflection *–nya* that denotes a determiner should come after the noun. The noun phrase 公交车 has feature[+thematic roles receiver], in which the noun phrase receives the argument from the verb *lupa*. The noun phrase is categorized as the content morpheme that the structure is under Bahasa Indonesia structure. Therefore, the sentence takes Bahasa Indonesia as the ML.

In 8, the system morpheme of ML can be attached in EL verb 刷*nya* on code- switching of Bahasa Indonesia-Chinese case. In this case, the number of morphemes is more in Bahasa Indonesia, with seven morphemes including one system morpheme, and in Chinese only appears once. The structure of the sentence is also based on Bahasa Indonesia grammar, which the inflection of the determiner *–nya* follows the structure of Bahasa Indonesia. The inflection *–nya* is carrying the feature [+quantification], and is under Bahasa Indonesia structure. The verb 刷 , moreover, has feature [+thematic role assigner] that denotes the content morpheme of the sentence.

Code switched cases in 5, 6, 7, and 8 seem to satisfy the hypotheses of system morpheme order, that all system morphemes in a code-switched sentence will come from the ML (Myers Scotton, 1993). The constraints on the system morphemes are rather following the ML grammar because the ML blocks any EL content morphemes if its counterpart is a system morpheme in the ML. (Myers Scotton, 1993). Therefore, it predicts that 前途*ku,* 惩罚*nya,* 公交车*nya* and 刷*nya* cannot be switched as 我的前途， 它的惩罚*,* 那个公交车*,* and 它的刷 because the inflection is carrying the system morpheme in ML structure.

9. Yang kalah di 惩罚

*(*谁输了就被惩罚 *)*

There will be a punishment for those who lose

10. Oh, kartunya harus di 刷 gitu ya

*(*噢， 需要刷卡吗*)*

Oh, should we tap the card?

Nevertheless, in 9 and 10, the constraints cannot be accounted for by separating the content morpheme and the system morpheme. Both the examples in 9 *di* 惩罚 and 10 *di* 刷 *,* the passive form *–di* are activated both in the code-switched sentence in Bahasa Indonesia without carrying the feature [+quantification], while the content morpheme 惩罚 and 刷 are activated in Chinese with carrying the feature [+thematic role assigner]. However, the frequent use morphemes are in Bahasa Indonesia, and the structure of the morphemes are based on Bahasa Indonesia grammar, which the passive form *–di* precedes the verb. Thus, the language model of the code-switched sentence is under Bahasa Indonesia control.

ML Progressive + EL Verb

This case presents that EL verb is inserted in ML under EL constituent, and code switched occurs between ML auxiliary and EL verb. The structure of the code- switched sentence is under Bahasa Indonesia, and Chinese structure and the distribution of the morphemes are the same, which Bahasa Indonesia and Chinese have two morphemes, respectively.

11. Dia masih 实习

*(*他还在实习*)*

He is still doing his internship

The case above, the progressive *masih* precedes the noun phrase 实习. The

structure does not violate the structure of Bahasa Indonesia and Chinese, in which the noun phrase should be preceded by the progressive in the respective languages. In this case, ML and EL cannot be determined by counting the occurrence of the morphemes, but

by looking at the morphemes under which constituent, it demonstrates that there are two different constituents under Bahasa Indonesia morphemes, i.e., *Dia and Masih.* Meanwhile, 实习 is under one constituent, which accounts for the verb phrase. Thus, the dominant language of the case is Bahasa Indonesia.

This case also agrees with the morpheme order hypotheses in Myers Scotton (1993), that the order of morphemes in a code-switched sentence must follow the ML order of morphemes. Moreover, the code-switched sentence occurs when two languages that take part in the code-switched sentences follow the surface structure of both the languages, respectively (Poplack, 1981).

ML Intensifier + EL Adjective

12. Dapurku lebih 高级

*(*我的厨房比较高级*)*

My kitchen is more advanced

13. Karena dalam bahasa mandarin grammarnya sangat 复杂

*(*因为在中文它的语法很复杂*)*

Because in Mandarin the grammar is really complicated

Code-switching, in the case of Bahasa Indonesia-Chinese allows the switching between ML intensifier + EL adjective. In 12 and 13 sentences, Bahasa Indonesia is the dominant language that is measured by the frequent use of the morphemes, which the morphemes that are under Bahasa Indonesia occur two times more in example 13. In Chinese there are two morphemes, and they are in the form of the similar constituent struction. The case in 12 follows the surface structure of both Bahasa Indonesia and Chinese, in which an intensifier comes first before the adjective.

Besides, the example in 13 shows the same, in which the intensifier *sangat/*很 precedes the adjective 复杂 . The dominant language of the case is Bahasa Indonesia, which obtains six morphemes with five different constituents showing as complement, preposition, noun phrase, pronoun, and adjective phrase, while the Chinese term has two morphemes functions as adjective phrase. Also, the case shows that the code-switched sentence occurs when the surface structure of the respective languages is appearing in the same order. Therefore, case 12 and 13 also support Poplack's theory of equivalence constraint (1981), and the morpheme order hypotheses in Myers Scotton (1993).

ML Noun + EL Verb

14. Tapi aku 发现 ya, dia itu punya cewek

*(*但是我发现呢，他有女朋友了*)*

But I found that he has girlfriend

This case demonstrates that in the case of Bahasa Indonesia-Chinese code-switching, the switched can occur in EL verb in ML. In 14, Bahasa Indonesia is the ML because it has seven morphemes, and Chinese has two morphemes under one constituent. The verb 发现 is carrying the feature [+thematic role assigner] because it assigns the complement phrase *dia itu punya cewek/* 他有女朋友了 and the pronoun *aku/*我 . However, the role of the verb in the case does not affect the structure of Bahasa Indonesia. The structure of the switched sentence follows both Bahasa Indonesia and Chinese structure, in which a pronoun should come before the verb. This case also shows the equivalence constraint theory of Poplack's (1981) and the morpheme order hypotheses of Myers Scotton (1993) work to account for the data.

CONCLUSION

This study investigated 30 Indonesian students in Tianjin who can speak Chinese, but only 14 of them can be counted for data analysis. All investigated participants who did not switch the languages are removed from the data. During collecting the data, the recording was set in a natural setting conversation, which the participants did not know they were being investigated. There was no restriction on the topic of conversation to broaden the data of analysis. Moreover, the data were analyzed by applying Poplack's (1981) theory of grammatical constraints, language matrix frame model to account the language model on code-switching in case of Bahasa Indonesia-Chinese, and the Minimalist Program of Chomsky (1995) to examine the restrictions on code-switching of both the languages.

The result shows that the total code-switching in the case of Bahasa Indonesia-Chinese counted to 159 segments categorized as several grammatical categories, including Noun, Conjunction, Verb, Adjective, Preposition, and Adverb. The rest of segments cannot be put into grammatical categories since the switching occurred as a single clause; most of the clauses are assigned as complements in a sentence. The data also shows that the frequent repetition of Noun is remarkably high on code-switching in the case of Bahasa Indonesia-Chinese, which is 97 tokens. While the lowest is switched in adverb, which is three tokens, this might assume that the position of Noun is free of syntactic restriction (Romaine, 1989).

The language model in the case of Bahasa Indonesia-Chinese code-switching shows that Bahasa Indonesia is the dominant language for most cases. However, the codes which switched as the same structure in Chinese, and have the same frequent occurrence of morpheme cannot be assigned into the ML and EL, only in the case that the switched codes being the system morphemes and Bahasa Indonesia is the frequent morphemes functioning in ML or EL.

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