香港教育大學
The Education University of Hong Kong

A project entitled

The differences in use of code mixing in messaging between spoken and written context

Submitted by

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1 The aims of the project

This project aims to investigate the difference in usage of code mixing in messaging. It aims to find the differences in the use of code mixing in messaging through typing and recording among people from different background. It also aims to compare the differences in the use of code-mixing between technology-mediated communication and face to face communication. The result of this project could be used to investigate the influence of technology to the usage of code-mixing in our conversation.

2 Literature review

As Hong Kong was once a colonial of the British government for 153 years. English without a doubt has become one of the medium of communication in Hong Kong. Although Cantonese is the mother tongue of Hong Kong people, English has also been important in government, education and employment (Li, 1999). As English is being commonly used in Hong Kong, it also starts to mix with the use of Cantonese in Hong Kong. People tend to use both languages to communicate instead of using one language only. This phenomenon not only appears in daily life conversations, but also spreads to social media. According to Das & Gambäck (2015), most “non-English speakers use phonetic typing, insert English elements, and mix multiple languages to express their thoughts.” People tend to mix the use of Cantonese and English to communicate with others. As a result, code switching and code mixing is common in Hong Kong.

Motivations of using code mixing

According to Li (2000), there are four types of motivation for Hong Kong people to use code mixing in their daily conversation. They are euphemism, specificity, bilingual punning, and

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the principle of economy. Euphemism means speakers may use an English word to substitute a Chinese word that may explicitly describe something that is embarrassing in Chinese. For instance, Cantonese speaker would use the word “bra” in English to substitute the word “胸圍“ [hung1 wai4] as they think the word in Cantonese is too embarrassing. Therefore, using the word “bra” in English will be more subtle. Specificity means speakers may use words that are more specific or more general compare the same word in the original language. For example, the verb “book” is often used to replace the Chinese word “訂” [deng6] as the Chinese word carries several meanings. Apart from the meaning of “making a reservation”, “訂” can also mean “ordering something”. In this case, people may prefer to use the English word “book” more as it is more specific about the action. As for bilingual punning, it is used to create double meanings. People are code-mixing words that have similar pronunciation in Cantonese and English on purpose to create a double meaning. This motivation is more commonly seen in commercials or advertisement. Take a TVB new year show as an example. The show is called “全城捉福fun fun賞”. This word “fun” carries two meaning. If we analyse it in English, it means interesting. Nevertheless, it has the same pronunciation as the word “分” [fan1] in Cantonese, which means points. The shows is about collecting points and exchange for prizes. Therefore, the creator makes use of code-mixing so as to make the title more attractive to audience. Based on the principle of economy suggested by Dr Li in 2000, some words or phrases might be expressed in English instead of in Chinese, the reason why they would choose English over Chinese is that the expression in English is shorter than that of in Chinese. For example, the expression of “辦理入住手續” [baan6 lei5 yap6 jyu6 sau2 juk6] can be replaced by “check in” in English. It is because, during communication, the main purpose would be to communicate efficiently. As a result, English is used in code mixing very frequently to conduct more effective

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communication. Based on this principle, Tsang (2006) has investigated on code-mixing on an internet forum. She found the words and phrases where code mixing occurred by analyzing the keystrokes for each word with different input method in Chinese and English to see whether the words that are replaced by English are more efficient or not. She discovered that code-mixing is an efficient way to lower the cost when communicating online. Code mixing has been widely used not simply in face to face conversations, it is also used on the online platform in order to express themselves. However, according to the research done by Carrier & Benitez (2010), not every code switching and code mixing is efficient. In their study, they investigated the effect of bilingualism on texting. The result indicates there are no significant differences between the use of code mixing and not-use.

Apart from the principle of economy, there are some other research about code mixing from other areas. Leung & Chan (2016) have done research on the use of code mixing from the marketing aspect. In the research, they indicated that awareness is the major reason for using code mixing. They found out that the use of English is able to arouse the audience's' attention and awareness over a long period of time. For instance, some simple English words like more, new, best and now would be used in advertising. These words can be easily comprehended by audiences. The audiences can easily and quickly pay attention to the special feature of the products. This reason might also be able to explain the use of code mixing in texting as well. At some point, when people have been talking for a period of time, they might use English to arouse the attention of the message receiver as they can easily distinguish that a different language is being used. As a result, they might pay extra attention to that particular word so that the purpose of the message sender has been achieved.

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Another purpose of code mixing suggested by Ho (2007) is that the use of code mixing might give people a sense of having a higher social status. In the study, many participants might avoid using code-mixing or English because they do not want to be treated as showing off. English is treated as a prestigious language in Hong Kong. Therefore, people might want to show a higher social status by using code mixing in their conversation. Myers-Scotton (1993) believes that social identities of people influence people's code-mixing behaviour. In fact, Wong (2016) suggested that different languages used in their communication may symbolize different meaning. For example, in Hong Kong, speaking in Cantonese symbolizes the Hong Kong identity while speaking in English may indicate the speaker receive a good education.

Factors affecting the degree of code mixing

Family background can also be used when explaining the usage of code-mixing. Yip and Matthews (2016) had done research on what influences children's code-mixing pattern. They found that parental language input can bring tremendous influence to children's code-mixing practice. The frequency of code-mixing is higher for children whose parents are native speakers of Cantonese and English respectively than children whose parents are both native speakers of Cantonese. This shows that if the language input to children is large then it will affect the usage of code-mixing of children.

Gender is also a factor that could affect the use of code-mixing. According to Ahmed & Xiang (2015), they did research on the text messages in the Pakistani society to observe if there is a gender difference in code-mixing. They concluded that females used code-mixing more often than males when discussing education, entertainment and personal matters.

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Wong (2016) agrees that code-mixing “carry some meaning or value” for young women in Hong Kong as higher use of code-mixing was found in her research. However, she argues that the differences in the usage of code-mixing between women and men in Hong Kong are not simply linguistic in gender. Differences between the cultural and social background of both genders should also be considered when comparing the code-mixing behaviours between male and female. In other words, she believes gender cannot be a factor causes the differences in code-mixing behaviours unless we take other social and cultural background of the participants into account. She also thinks that the usage of code-mixing is a strategy of self-representation. She believes that code-mixing by the speaker can enable them to achieve a certain level of social status.

The above factors can all be used to explain the use of code mixing if they are used under the spoken context. Nevertheless, some of the factors might sometimes be contradicted to each other in a written context, for instant, messaging.

The Internet is developed as a social environment where people can meet and talk with each other every day. It has become a part of everyone’s lifestyle (Crystal, 2001). Whatsapp is one of the products of this social environment. People in Hong Kong rely on apps like Whatsapp to communicate with their family and friends. These tools “take place in real time or in postponed time” (Crystal, 2004). One of the reasons why Whatsapp is popular in society is because it allows people to have time to think about what to reply. When people are having face to face conversation, they would not have enough time to plan what they are going to say next. Whatsapp allows them to think what to reply. Moreover, even if they have recorded or typed a message or even sent to someone, they can amend or delete it.

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Similarly, the choice of code mixing would no longer be as immediate as face to face conversation. There is research showing that bilinguals would continue their code-switching behaviours when sending text messages (Deumert & Masinyana, 2008). They have found that 61% of the SMS corpus was comprised of messages written in English. 23% of the messages are mixed the two languages.

When we go back to the factors mentioned above, we would be able to find out some factors cannot explain the use of code mixing in messaging. For instant, the principle of the economy might or might not be applicable under the setting of Whatsapp. If a sender would like to send a message through Whatsapp by typing messaging, he might be less willing to use code mixing as he might need to switch a different input method between Chinese and English. However, to some extent, he might willing to use code-switching even he has to swap the input methods. The phenomenon behind is worth investigating. However, not many scholars have compared the data produced from written and spoken context related to this topic. Therefore, in the following project, a comparison would be conducted to investigate this phenomenon of this code mixing in Whatsapp.

3 Research questions of this project

1. In terms of the usage of code mixing, what are the differences between messaging through text and messaging through recording?
2. What are the differences in the use of code-mixing between technology-mediated communication and face to face communication among people from a different background?

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4 The hypothesis of this project

1. The frequency of code mixing in messaging through audio will be higher than that of messaging through text.
2. Gender will be one of the factors affecting the frequency of code-mixing.
3. Participants who major in English will have a higher percentage of code-mixing in their communication than participants who major in Chinese.

5 Data collection

Two experiments were conducted with people through WhatsApp and a face to face meeting to observe their use of code mixing under different scenarios. The experiment observed how people from a different background would use code mixing in Whatsapp and face to face conversations differently. The reason why Whatsapp is chosen to be the tool of this experiment is that it is the most popular communication application that Hong Kong people will use on a daily basis. Furthermore, it has the function of sending both text messages and audio messages, which fits the research requirements of this project. Therefore, Whatsapp is chosen to be the tool of this experiment.

Both experiments were conducted with 4 participants. This study focuses on two areas with regards to the background information of the participants - gender and academic major. The target participants of this experiment were a boy and a girl who is or was a Chinese major undergraduate student and a boy and a girl who is or was an English major undergraduate student.

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The first experiment was conducted in a casual way through Whatsapp. Participants chatted on Whatsapp as they do daily. The experiment asked participants for a piece of advice about job seeking or about a relationship. The topics chosen for the conversation must be realistic to collect accurate data from the participants and without arousing their suspicions. The topics should be able to last for a long conversation for adequate data collection. They should be enough for target participants to have longer responses for data collection. Therefore, asking advice for job seeking or a relationship would fit the requirements of the topic chosen for the experiment. Both text messages and audio messages would be sent to participants during the conversation to encourage their use of the two communication methods. During the conversation, their usages of code mixing were recorded and used to build a corpus later on. Participants were notified of the existence of this experiment to seek approval for the recording. However, the focus of the experiments was not disclosed to the participants until the end of the experiment. All messages collected were only used with the consent of all participants.

The second experiment was conducted in a face to face communication occasion. The data collected will be compared with that collected in the first experiment. A complete transcript of the conversations was sent to participants to make sure there is no information that they are not willing to disclose in the study.

After collecting data from the experiment, a corpus was built to compare the frequencies of code mixing through text messaging, audio messaging and face to face communication. First of all, a detailed analysis of the differences between the usage of code mixing in texting and audio messaging were compared for each participant. Secondly, the differences in the

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use of code mixing were also compared between technology-mediated communication and non-technology-mediated communication. The data collected were compared within each participant to observe the differences. Last but not least, a cross-comparison was done among the participants to see if gender and academic major are factors to affect the usage of code mixing.

5.1 Result

A total of 19159 words were collected from both messages and face to face conversations of the 4 participants. After translating the words that were code mixed into Chinese there were 19421 words in total. Overall, the differences in the frequency of code mixing between texting and audio messaging are not significant. The average percentage of code mixing in audio messaging among the 4 participants is 3.57% (2.57% before translation) as shown in Table 1 while that of texting is 6.88% (4.02% before translation) as shown in Table 2. All 4 participants have higher percentage of code mixing in their written text instead of their audio messages. It shows that participants tend to have more code mixing in text messages than that of audio messages.

As we can see the data shown from Table 3, the differences between the frequency of code mixing in audio messages and face to face conversation are not significant as well. The average percentage of code mixing in face to face conversation among the 4 participants is 3.30% (2.18% before translation). We could see that the percentage of code mixing in both technology-mediated and non-technology-mediated communication are similar.

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The number of code mixing through Whatsapp audio message		
Participant	percentage of code mixing	percentage of code mixing (translated to Chinese)
Participant FC	3.51%	3.41%
Participant ME	2.97%	5.66%
Participant FE	2.63%	3.97%
Participant MC	1.15%	1.25%
Average	2.57%	3.57%

Table 1: The number of code mixing through Whatsapp audio messages

The number of code mixing through Whatsapp text message		
Participant	percentage of code mixing	percentage of code mixing (translated to Chinese)
Participant FC	4.47%	7.59%
Participant ME	5.42%	7.82%
Participant FE	3.97%	8.26%
Participant MC	2.23%	3.84%
Average	4.02%	6.88%

Table 2: The number of code mixing through Whatsapp text messages

The number of code mixing through face to face conversation		
Participant	% of code mixing	% of code mixing (in Chinese
Participant FC	1.27%	2.10%
Participant ME	3.70%	5.36%
Participant FE	2.63%	3.94%
Participant MC	1.12%	1.78%
Average	2.18%	3.30%

Table 3: The number of code mixing through face to face conversation

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A cross comparison should be done to check if gender and academic major would be factors affecting the frequency of using code mixing in conversation. First of all, we could observe whether gender would affect the usage of code mixing. Based on the tables above, we could see that there is no obvious sign that either male or female tend to have code mixing more often in their conversation. There are both 1 male and 1 female under the category of Whatsapp audio messages and face to face conversation that has a higher average percentage in the usage of code mixing. As for text messages through Whatsapp, 2 females and 1 male have a percentage of code mixing higher than average. So we could not find a pattern in the data collected.

Nevertheless, when it comes to the factor of academic major, a significant difference can be spotted from the data. We could see that in face to face communication, the participants who major in English have a higher percentage in the usage of code mixing. They have 5.36% and 3.94% of code mixing respectively compared to that of the participants who major in Chinese with 1.78% and 2.10% respectively. The same situation applies to Whatsapp conversation both in text messages and audio messages. The percentage of using code mixing from the two participants who major in English has a relatively higher percentage of using code mixing than that of the other two participants.

After analysing the percentage of using code mixing, an analysis of the content produced by each of the participants was conducted through AntConc. Word lists were made for each transcript created by each participant. There are some words that all four of them used in no matter Whatsapp conversation of face to face conversation. The word “okay” and “friend” appear the most in their transcript with the frequency of 16 and 13 times respectively. I also

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find words like “anyway”, “Whatsapp” or “grad” (which is the short form for “graduation”) are used within the 4 participants. Apart from frequently used words, there are some common abbreviations that the 4 of them used when they are texting such as “LOL” (which stands for “Laugh Out Loud) and “BTW” (which stands for “By The Way”) were used often in their conversation.

A deeper look was taken into the distribution of the parts of speech of the words that are code mixed. Generally speaking, the most frequently code mixed parts of speech is nouns. About 57.7% of the code mixed words are nouns in this experiment. This is followed by verbs with a percentage of 27.5% among all the words that are code mixed. Some differences in the words that are used for code-mixing can be found among these 4 participants with different ways of communication.

We found that participants who major in Chinese have a more balanced usage of both nouns and verbs when it comes to code mixing. Averagely speaking, the differences between the percentage of the usage of nouns and verbs in code mixing is 19% for participants who major in Chinese while that of 39.4% for participants who major in English. For participants that major in English, they code mixed with nouns more than they code mixed with verbs in their conversations, regardless of technology-mediated communications or in spoken or written form.

An analysis was also made on the number of sounds that each code-mixed words create. The number of syllables was counted for every code-mixed words. Then it was used to compare with the number of sounds made from the Chinese words which have the same

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meaning. The data collected from face to face communication was first compared with the data collected from Whatsapp audio messages. Under the principle of economy suggested by Dr Li in 2000, all 4 participants used words that are shorter in English more often when they are sending audio messages than that of having a face to face conversation. However, a significant difference was found between participants who major in Chinese and participants who major in English when comparing the number of words that are shorter in English than in Chinese. For participants who major in English, words or expressions that are shorter in Chinese than in English are found more often in their conversations, especially in face to face conversations. For example, English words like “ridiculous” (荒謬 [fong1 mau6] in Cantonese) which create shorter sound in Chinese were used in the conversations. 26.6% and 11.6% of the code-mixed words that participants who major in English used in their conversations create shorter sounds if it is expressed in Chinese. On the other hand, it was 6% and 0% of the code-mixed words that participants who major in Chinese used create shorter sounds in Chinese. This probably indicates that the motivation of code-mixing in the conversation of participants who major in Chinese is more likely to be the principle of economy than that of participants who major in English.

6 Discussion

6.1 Percentage of the use of code-mixing

The first result that can be drawn is that participates tend to use more code-mixing when sending text messages rather than sending voice messages. My hypothesis assumed that the percentage of code-mixing in voice messages should be larger than the percentage of code-mixing in text messages. It is because when the sender is typing a message with a device, they would need to change the method of input so as to perform. Under the principle

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of economy, participants should be less willing to code-switch in their text messages. Nevertheless, the result shows that the percentage of code-mixing in text messages are higher than in audio messages, and in the face to face communication. It may be due to the fact that people do not rethink when they are typing the messages. My hypothesis previously believed that the frequency of code-mixing in audio messages may be higher than that of text messages is because of the property of text messages. Comparing to audio messages, people are given more time to think when they type. They can rethink of what to type during their typing process. As a result, people would pay more attention to the language and word choice they used. However, the result shows that my hypothesis is rejected. As the conversations take place through Whatsapp, they were conducted in a casual as they were talking to a friend. Instead of thinking carefully about what to say, they typed the things they have in their mind. The feature of Whatsapp is about sending and receiving instant messages. In order words, time efficient is the main point in this way of conversation. Therefore, when it comes to some English words that they have in mind, they would rather change their input method to type the words instead rethinking the words in Chinese. Another possible explanation for this is because text messages are more precise. In face to face conversation and voice messages, they are both in spoken form. Therefore, it is more often for people to have pleonasme in their speech. However, in text messages, people tend to keep messages precise and clear in order to spend less time on typing the messages. They will filter unnecessary wordings from the text they type. If they have the same rate of code-mixing as they have in audio messages and face to face conversation, the percentage will be larger as there are less in text messages than the other two communication channels.

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From the data collected, there is no frequency pattern can be found to prove that gender has an impact on the frequency of the using code-mixing. When the two boys or two girls are from the same major, they have similar percentages of code-mixing in all three ways of communication ways. According to Mushtaq (2012), he did a similar research focusing on whether gender affects the frequency of code-mixing in text messages. He also found boys and girls have similar code-mixing scores in his experiment. Therefore, my hypothesis on gender affecting the frequency of code-mixing is rejected.

As for the other factor, academic major. There is a relatively more significant pattern comparing with the factor of gender. A relatively higher percentage in the use of code-mixing was found from the data for participants who major in English. The reason behind this phenomenon possibly corresponds to the frequency of exposing to a bilingual environment. As mentioned previously in the literature review, Yip and Matthews (2016) had done research on the factors affecting children's code-mixing practice. They found that language input from parents largely influences the rates of code-mixing in children. It is more likely for children in the one-parent-two-language environment to code-mixed more than those in one-parent-one-language environment. The same situation can be applied in this experiment. For participants who major in English, they have more chance to be exposed to an English speaking environment when they are having lessons in the university. They are more comfortable with communicating in English. As a result of being exposed to an English speaking environment, there are some words that they use more often in English rather than in Chinese. While on the other hand, participants who major in Chinese have fewer opportunities to be exposed to an English speaking environment. They have fewer opportunities to speak or think in English. They will have fewer code-mixing in their

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conversation because they are not using English very often and frequently. Therefore, when they are speaking or typing messages, they will have a relatively lower percentage of code-mixing in their conversations than that of those who major in English.

6.2 Word choice of code-mixing

When analyzing the word choice of code-mixing among the 4 participants. There is a common phenomenon that happens under both spoken and written context. When participants are code-mixing words, instead of code-mixing the whole English words, they are more likely to code-mix part of the words. For example, instead of saying “delete”, they used “del” to replace “delete”. The same situation applies to the word “graduate”. They used “grad” to replace the word “graduate”. The reason why this may come up can be explained by the principle of economy. Take the word “graduate” as an example. This word consists of three syllables. In Chinese, it consists of two syllables - “畢業”. Technically speaking, no code-mixing is needed as the word in Chinese makes fewer number of sounds than in English under the principle of economy. However, they still want to perform code-mixing while not using the 3-syllable word. They chunked the word and only take the first syllable of the word to represent the whole word. This is convenient when it comes to text messages as they can type fewer letters while it would not affect conveying meaning when communication is among peers.

Apart from shortening the length of a word, initialisms is a unique phenomenon that only appears in text messages. Initialisms like “LOL” or “BTW” were used by the participants in the experiment. A reason why participants make use of initialisms may be due to the influence of western culture. Initialisms are common in the western countries as people do

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no want to type the whole phrase out through text messages. Therefore, in order to shorten the typing time, people use initialisms to represent a phrase in text messages. This phenomenon is more common in Hong Kong now. For instance, if we translate the initialism “LOL” in cantonese, it would become “笑出聲” [siu3 ceot1 seng1]. Comparing this to English, it is clear that the strokes needed for “LOL” is so much less than “笑出聲”. Based on the principle of economy, people would code-mix it in text messages. Apart from that, “LOL” is slowly turning in a word but not simply a initialism. People are using it to represent something that is extremely hilarious. If we translate it into Cantonese, it might not seem to be exactly the same as what “LOL” originally represent. Therefore, participants would use “LOL” rather than “笑出聲” so as to be more precise on the meaning that they are trying to convey.

Another phenomenon that we can observe on the word choice of code-mixing is the use of injections. It is more often to find participants code-mixed injections like “well” or “anyway” in face to face conversation than in Whatsapp audio and text messages. This is a matter of whether the conversation is technological-mediated. Although both Whatsapp audio messages and face to face communication are conducted verbally, there are differences when it comes to word choice for code-mixing. When participants are having a face to face conversation, every word they used were instant. There was no time for them to think. They would say the things that they were thinking about directly. So if they need some time to think about what are they going to say next in a very period of time, they often use some injections as filler words to get more time for thinking. Most of the time, they use filler word in Chinese like “即係” [zik1 hai6]. Nevertheless, they sometimes use some English words like “well” as a short gap filler. This kind of code-mixing is spontaneous.

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6.3 Word class of the code-mixed words

In this experiment, we found that noun are more frequently code-mixed. Verbs and adjectives were often code-mixed in the 4 participants' conversation. This result was also discovered in Huang and Zhang's research in 2018, which they mentioned about the "noun > verbs > adjectives" pattern in bilingual children in Singapore. One of the possible reasons is that nouns make up the largest percentage of the word class in English and Cantonese.

A small difference between the percentage of the usage of nouns and verbs in code-mixing for participants who major in Chinese was found in this experiment. One of the possible explanation for this phenomenon is due to the large proportion of nouns in the word class. As mentioned above, nouns contribute to the largest percentage of the word class in both English and Chinese. Participants who major in Chinese have a lower frequency in code-mixing. Thus, the number of nouns that are code-mixed in their conversations are significantly lower than that of in participants who major in English's conversations. As a result, the difference between the percentage of the usage of nouns and verbs in code-mixing for participants who major in Chinese would be relatively lower than that of participants who major in English.

Participant FC

	Face-to-face communication	Audio messages	Text messages
exclamation	7.41%	9.09%	7.14%
noun	33.33%	27.27%	64.29%
verb	37.04%	36.36%	25.00%
adj	18.52%	18.18%	0.00%
adv	3.70%	9.09%	3.57%

Table 4: Distribution of the word class of the code-mixed words of participant FC

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Participant MC

	Face-to-face communication	Audio messages	Text messages
exclamation	4.17%	0.00%	0.00%
noun	54.17%	28.57%	41.67%
verb	29.17%	57.14%	33.33%
adj	12.50%	14.29%	16.67%
adv	0.00%	0.00%	8.33%

Table 5: Distribution of the word class of the code-mixed words of participant MC

Participant ME

	Face-to-face communication	Audio messages	Text messages
exclamation	1.96%	0.00%	3.13%
noun	66.67%	73.68%	65.63%
verb	25.49%	21.05%	18.75%
adj	3.92%	5.26%	12.50%
adv	1.96%	0.00%	0.00%

Table 6: Distribution of the word class of the code-mixed words of participant ME

Participant FE

	Face-to-face communication	Audio messages	Text messages
exclamation	2.56%	0.00%	3.85%
noun	66.67%	59.09%	53.85%
verb	20.51%	36.36%	26.92%
adj	7.69%	4.55%	15.38%
adv	2.56%	0.00%	0.00%

Table 7: Distribution of the word class of the code-mixed words of participant FE

Analysis has been done on the number of syllables of the code-mixed words comparing in Chinese and English. Participants who major in English were found that they are more often to code-mix words that do not fulfil the principle of economy. This phenomenon happens

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significantly in face to face communication. We can see that over 90% of the words which do not follow the principle of economy are nouns. However, it is still unclear whether this phenomenon has a relationship with the academic background of the speaker. Take the noun phrase “rope skipping” as an example. In Chines “rope skipping” is “跳繩” [tiu3 sing2]. It should be easier for us to use the Chinese word instead of saying it in English according to the principle of economy. Nevertheless, the participant chose to use the phrase “rope skipping” instead of “跳繩”. One of the biggest reasons behind this is that the participant is currently working in an EMI school which held a rope skipping competition. The phrase “rope skipping” are frequently used in her working environment. As a result, instead of translating Chinese, she instinctively chose to code-mix the phrase “rope skipping” in English. The same situation happens to the other participant who majors in English. He is currently looking for jobs and he writes a resume and cover letter in English. Therefore, when he mentioned about these, he naturally code-mixed the nouns in English without any extra thoughts as he does it in his daily life. These words are used more often in English than in Chinese. Thus, it is natural for them to do the same thing in their face to face conversations, especially there is no time allowed for them to organise what word to choose during a face to face conversations. Another reason to explain this phenomenon is because speakers are not able to find any equivalent “low Cantonese” words. Nonetheless, it would be strange to use a more formal “high Cantonese” words. Therefore, speakers have no choice but to code-mix the words in English. (Lee, 2012) Take the word “aspiration” from the experiment as an example. The word “aspiration” means something that you hope to achieve. However, the Chinese word is used in the conversation, it seems a bit awkward if we use the word “抱負“ [pou5 fu6] as the whole word become more formal which does not fit the atmosphere of the where the conversation takes place. As a result, it would be better to code-mix the word

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in English instead. This motivation is called register. In fact, in Lee's research (2012), he mentioned that register is the biggest motivation of code-mixing, regardless of the influence of genre, gender or age. This can also prove that under some circumstances, the motivation of register overrides the principle of economy. However, we could not neglect the influence of their academic majors as it may contribute partly to the code-mixing practice they have at this moment. Furthermore, investigations are needed to observe the connection between academic background and code-mixing.

7 Limitation and further research

One major limitation of this study is that the sample size of participants is are not adequate to generate a more accurate database. The data collected will be more accurate if the sample size of the participants from this study can increase to 8 or 12 pairs so that more data can be collected and hence more patterns can be observed in the experiment. Second of all, the social background of all the participants should also be taken into account. As mentioned above, some of the data collected may be affected by their workplace, which affected the accuracy of the data collected. Therefore, researchers should check the social background of participants and make sure that they have similar social backgrounds if further research would be done based on this topic. Another major limitation is that all four participants know that researcher is a student who majors in English. Participants may be affected by the background of the researcher as they are aware that the English proficiency of the researcher allows them to have more code-mixing. A comparison can also be formed to see if the rate of code-mixing would still be similar when they are facing a person who has lower English proficiency level.

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For further studies, research can be done on the relationship between code-mixing between gender and workplace environment of participants as no connection were found in this study between gender and the frequency of code-mixing. However, a connection between the code-mixing behaviour and their workplace environment may be discovered in this study. Hence, deeper research can be done to observe if participants from different gender and different workplace environment would contribute to different levels of code-mixing practice.

8 Conclusion

This study has analysed participants from different gender and academic background in relation to their adoption of code-mixing in technologically-mediated communication and non-technological-mediated communication. It has shown that participants have a higher percentage of code-mixing through text messages than audio messages and face to face conversation. The possible reason behind is because the feature of text messages are precise. There will be fewer gap fillers or unnecessary words in text messages than in audio messages or face to face conversation. The percentage of code-mixed words are higher in text messages than in the other two categories. Hence, the first hypothesis was rejected.

The second hypothesis suggested in this study was also rejected. Throughout the data analysis process, no significant difference was found that gender affects the frequency of code-mixing. However, given that the number of participants is insufficient to look for a consistent pattern, a further study with a larger number of participants can be done in the future to look for a consistent pattern between gender and code-mixing frequency.

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This study has also presented the differences in the usage of code-mixing among participants from different academic majors. The result shows that participants who major in English have a higher percentage of code-mixing in their communication than participants who major in Chinese. This phenomenon could be explained by the length of time that they are exposed to an English-speaking environment. If they use English more often in their daily lives, it is more often for them in include some code-mixed words in English as these words are used instinctively. This research could provide reference for future research as significant differences were found. Researchers could based on this research and further explore on to what extent does academic majors affect a person's daily conversation with a larger group of sample size

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