# EXPLORING THE USE OF MANDARIN PRONUNCIATION LEARNING STRATEGIES AMONG MFL LEARNERS IN MALAYSIA: ANALYSIS OF GENDER DIFFERENCES

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## Abstract

Studies on mistakes in Mandarin pronunciation have proof that majority of Mandarin learners encountered problems in learning Mandarin pronunciation. Apart from that, there are limited studies concerning the Mandarin pronunciation learning strategies (MPLS) among non-native learners in Malaysia. Therefore, this study was carried out with the aim to identify the use of learning strategies of non-native Mandarin learners in terms of gender. This study also further examined whether there is any significant difference between the use of MPLS in terms of gender. A group of non-native Mandarin learners, approximately 151 non-native Mandarin learners from Universiti Teknologi MARA, Rembau campus were invited to participate in this study. A 44-item questionnaire, namely "Strategy Inventory for Mandarin Pronunciation Learning" was employed in this study. This strategy inventory was designed based on the taxonomies which were introduced by Oxford (1990) and Peterson (2000). The data collected through the questionnaire were then analyzed using SPSS to achieve the objective of this study. The study revealed that female learners are more likely to use MPLS as compared to male learners while learning Mandarin pronunciation. However, both male and female learners showed similarity in the use of MPLS as the findings demonstrated that both male and female learners tend to use social strategies while learning Mandarin pronunciation while the least used strategies are compensation strategies. T-test analysis employed in this study also portrayed that only cognitive learning strategies displayed a significant difference between male and female learners in Mandarin pronunciation learning. This study would serve as a basis for language educators and curriculum developers in knowing the learning strategies employed by non-native Mandarin learners while learning Mandarin pronunciation. It also suggests language educators and curriculum developers in conducting and planning effective teaching approaches to enhance the performance of Mandarin pronunciation among non-native Mandarin learners.

**Keywords**: Mandarin pronunciation, non-native Mandarin learners, gender, learning strategies, Mandarin as foreign language learning

## Introduction

Phonetics, lexical, and syntax are three main language elements which cannot be excluded from learning a language. As phonetics has been placed at the first among these three language elements, undoubtedly it has received several attentions from scholars. Mandarin has become an important commodity since the rapid economic development of China and the initiative of Silk Road Economics Belt and the 21st century Maritime Silk Road (Ting & Jacqueline, 2018). The number of people who are interested in Mandarin learning has increased dramatically (Ting, Ch'ng & Norseha, 2020; Ch'ng, Norseha, & Ting, 2019). However, Mandarin as a well-known tonal language is considered a challenge for learners whose mother tongue is a non-tonal language.

Numerous studies have attempted to examine the common mistakes in Mandarin pronunciation among Mandarin learners who learned Mandarin as a foreign language. According to Deng and Tang (2020), there were 690 studies related to common mistakes in Mandarin pronunciation have been conducted from 1984-2019. Deng and Tang (2020) further categorized the studies on common mistakes in Mandarin pronunciation into three categories which included mistakes in phonetic and phonology, lexical change, and sentence prosody. Ting and Ye (2023) found that plosives, fricatives, and affricates are the prominent mistakes made by Malay students. Majority of these studies found that Mandarin pronunciation mistakes are mainly due to the negative transfer of pronunciation knowledge from learners' first language (Li, 2022; Guo, 2022; Yang, 2022; Wang, 2022). Nonetheless, mistakes in Mandarin pronunciation need to be identified and rectified before it fossilizes in their subsequent level of learning. Therefore, "how to learn" needs to be considered in order to provide language educators or curriculum developers with insights to plan better strategies or techniques to improve learners' Mandarin pronunciation. Hence, Mandarin pronunciation learning strategies (MPLS) have been conducted among non-native Mandarin learners.

Based on the search result from the largest electronic databases, China National Knowledge Infrastructure (CNKI) with the keywords "汉语语音学习策略 (Mandarin pronunciation learning strategies)", 14 sample studies was found. The search findings from CNKI showed that studies related to MPLS have been conducted neither in target nor non-target environments. Studies on MPLS conducted in target environment included learners who studied Mandarin in Beijing (Liu, 2008; Cao, 2015), Shanghai (Liu, 2009; Sun, 2020), Xinjiang (Li & Yan, 2011), Liaoning (Zhang, 2019) and Nanjing (Moon, 2012) while MPLS studies that conducted in non-target environment included learners from United Kingdom (Dong, 2012), Thailand, (Wang, 2014), Indonesia (Deng, 2014), Cameroon (Yi, 2016), Hungarian (Jia, 2017), Kenya (Mei, 2019), and Peruvian (Zhou, 2021).

Among these 14 sample studies, it was found that gender differences have been one of the analyzed topics in MPLS studies except the studies carried out by Dong (2012) and Deng (2014). These sample studies found conflicting results on MPLS in terms of gender. For example, Yi (2016) investigated the relationship between gender and the use of MPLS which involved 106 Cameroon Mandarin learners from Confucius Institute at the University of Yaounde II. Results from T-test indicated that there was no statistically significant difference in the employment of MPLS across gender ($p>.05$). Similarly, Zhang (2019) surveyed 42 Russian Mandarin learners who studied Mandarin in Liaoning University indicated that the utilization of MPLS did not differ significantly across gender. Nevertheless, the mean score of MPLS in six major learning strategies displayed that female learners are higher than male learners which indicated that female learners frequently use MPLS as compared to male learners.

Findings from Cao's (2015) study also found that the use of MPLS did not differ in terms of gender. However, the mean score demonstrated in the study done by Cao (2015) indicated that the employment of MPLS among female learners is higher than male learners. T-test done by Jia (2017) also showed that there were no significant differences in the employment of MPLS across gender. Nonetheless, it was found that the mean scores of female learners were higher than male learners which indicated that female learners employed MPLS frequently than male learners. In addition, the findings done by Sun (2020) also revealed that there was no correlation between the employment of MPLS across gender in which the p value is $>.05$. However, the mean score demonstrated in the study done by Sun (2020) indicated that the employment of MPLS among female learners is higher than male learners (Female= 3.188, Male= 3.159). In another study, Moon (2012) study on 90 Korea students who studied Mandarin in Nanjing demonstrated that there was no statistically significant difference in MPLS in terms of gender. Deng (2014) surveyed Chilean learners at the beginner level and also found that the employment of MPLS did not vary significantly across gender.

Furthermore, the results of the T-test conducted by Zhou (2021) portrayed that there was a significant difference at the $p<.05$ for cognitive strategies and social strategies, while memory strategies, compensation strategies, metacognitive strategies, affective strategies did not vary significantly by

genders (p>.05). Ting and Ooi (2023) are the first who carried out MPLS studies in Malaysia. However, the topics of gender difference were not analyzed and discussed in their study. Therefore, it can be noticed that there is limited study on MPLS among Mandarin learners in Malaysia. Nonetheless, this matter is of much concern among educators since the pronunciation of Mandarin is deemed important as it is one of the main language elements that cannot be excluded from Mandarin learning. Thus, it is important to conduct the studies on MPLS across gender among non-native Mandarin learners in Malaysia to fill in the gap. The objective of this study is to identify the use of learning strategies of non-native Mandarin learners in terms of gender and examine is there any significant difference in the employment of MPLS in terms of gender.

**Methods**

This study took place at Universiti Teknologi MARA (UiTM), Negeri Sembilan, Rembau campus. A total of 151 non-native Chinese learners who enrolled in Introductory Mandarin Language classes were invited to participate in this study. They were from Faculty of Business Studies and Management, Faculty of Information Management, and School of Communication and Media. Majority of participants are female (120, 80%), while minority are male (31, 20%). They are from the age of 17 years old to 24 years old. Majority of them are Malay ethnicity (97.4%) while only 1.3% of them were Iban and Lun Bawang ethnicity.

As Mandarin pronunciation learning strategies is underscored in this study, a questionnaire, namely "Strategy Inventory for Mandarin Pronunciation Learning" was selected and distributed to this group of students. This questionnaire has been chosen as the instrument in this study due to its consistency and reliability of the questionnaire that has been proved by most of the scholars (Ting & Ooi, 2023; Cao, 2015; Zhang; 2019; Zhou, 2021). They needed to answer 44-item in the form of five-point Likert scale (1= Never or almost never true of me" to "5= Always or almost true of me") which related to how frequently they used MPLS. According to Sekaran (2005), the items show good internal consistency reliability for the scale when the Cronbach's Alpha reached 0.8. Therefore, Cronbach's Alpha Coefficient analysis was carried out to identify the reliability and validity of the instrument included in this study. The analysis of Cronbach's Alpha Coefficient indicated that the items included in this study were highly reliable as the Cronbach's Alpha Coefficient reached 0.938. SPSS 27 was utilized in this study to analyze the data obtained.

**Result and Discussion**

**MPLS utilized by non-native Mandarin learners across genders**

Findings in Table 1 show that female learners as compared to the male learners are more likely to use Mandarin pronunciation learning strategies in all six major learning strategies, that is memory strategies (Male: M= 2.91, SD= .574, Female: M= 3.07, SD= .573), cognitive strategies (Male: M= 3.26, SD= .577, Female: M= 3.47, SD= .503), compensation strategies (Male: M= 2.90, SD= .611, Female= 2.98, SD= .800), metacognitive strategies (Male: M= 2.95, SD= .469, Female: M= 3.05, SD= .624), affective strategies (Male: M= 3.31, SD= .638, Female: M= 3.38, SD= .701), and social strategies (Male: M= 3.33, SD= .751, Female: M= 3.55, SD= .818). This finding is in line with the findings from earlier studies by Sun (2020), Zhang (2019), Jia (2017), Cao (2015), Moon (2012), and Liu (2008). Nonetheless, the findings of this study are contrary to the findings by Deng (2014) which reported that male students are more likely to use MPLS compared to female students.

As shown in Table 1, among six MPLS, only cognitive learning strategies indicate that there is a statistically significant difference between male and female learners (t= -1.974, df= 149, p= .05). This finding is consistent with findings of previous studies done by Zhou (2021) that also showed that there was a significant difference between the use of cognitive learning strategies and gender. The findings further demonstrated that neither male learners nor female learners, they often employed social strategies while learning Mandarin pronunciation, as the mean of social strategies scored the highest compared to other strategies. Moreover, both male and female learners did not often use compensation strategies while learning Mandarin pronunciation, as compensation strategies had the lowest mean of

score.

**Table 1.  T-test results for MPLS and gender**

| Mandarin pronunciation learning strategies | Gender | Mean | Standard Deviation | Levene's Test for Equality of Variance | | T-test for Equality of Means | | |
|---|---|---|---|---|---|---|---|---|
| | | | | F | Sig | T | Df | Sig. (2-tailed) |
| Memory | Male | 2.91 | .574 | .000 | .989 | -1.355 | 149 | .178 |
| | Female | 3.07 | .573 | | | | | |
| Cognitive | Male | 3.26 | .577 | 1.665 | .199 | -1.974 | 149 | .050 |
| | Female | 3.47 | .503 | | | | | |
| Compensation | Male | 2.90 | .611 | 2.696 | .103 | -.546 | 149 | .586 |
| | Female | 2.98 | .800 | | | | | |
| Metacognitive | Male | 2.95 | .469 | 3.358 | .069 | -.836 | 149 | .405 |
| | Female | 3.05 | .624 | | | | | |
| Affective | Male | 3.31 | .638 | .043 | .836 | -.516 | 149 | .606 |
| | Female | 3.38 | .701 | | | | | |
| Social | Male | 3.33 | .751 | .010 | .922 | .922 | 149 | .182 |
| | Female | 3.55 | .818 | | | | | |

**$*p < 0.05$**

Although the findings of this study found that only cognitive strategies showed differ across gender, it is also important to further analyze is there any correlation on the use of other tactics included in the other major MPLS in terms of gender. Hence, the following sections were further discussed on this matter.

**Memory strategies**
Table 2 shows a deeper analysis on memory strategies employed by male learners and female learners. The findings disclosed that only the use of body movement (t= .721, df=2.562, p<.05) and copying pinyin with the aim to recall the pronunciation of Mandarin characters and words (t=2.794, df= 149, p<.05) showed statistically significant differences between male and female learners. Furthermore, findings demonstrated that the use of memory strategies while learning Mandarin pronunciation among female learners is slightly higher than male learners. On the other hand, male learners showed slightly higher in the used of tactic "recalling Mandarin pronunciation by referring to pinyin, International Phonetic Alphabet (IPA) and similar sound" (Male: M= 3.16, SD= .934 Female: M= 3.10, SD= .990; Male: M= 3.48, .889; Female: M= 3.34, SD= .845). Majority of female learners showed their preferences in copying pinyin to recall the pronunciation of Mandarin characters and words (Mean= 3.42, SD= .922). Meanwhile, male learners are more used the tactic of thinking of Mandarin sounds that share similarity with the objective to help them to recall sounds in Mandarin (Mean= 3.48, SD= .889). Nonetheless, the findings showed that both male and female learners are not likely to use flash cards to recall the pronunciation of Mandarin characters and words, as the mean scored lowest as compared to other tactics (Male: M= 2.41, SD= .764, Female: M= 2.57, SD= .922).

**Table 2.** *T-test results for memory strategies and gender*

| No | Memory strategies | Gender | Mean | Standard Deviation | Levene's Test for Equality of Variance | | T- test for Equality of Means | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | F | Sig | T | Df | Sig. (2-tailed) |
| 1 | I think of similar sounds when I recall a sound in Mandarin. | Male Female | 3.48 3.34 | 0.889 0.845 | .563 | .454 | .826 | 149 | .410 |
| 2 | I remember Mandarin initials and finals by grouping them. | Male Female | 2.90 3.01 | 0.700 0.819 | .192 | .662 | -.706 | 149 | .481 |
| 3 | I make up songs or rhythms to recall the pronunciation of Mandarin characters and words. | Male Female | 2.64 2.76 | 1.141 0.967 | 1.603 | .207 | -.600 | 149 | .549 |
| 4 | I refer to the pinyin or International Phonetic Alphabet (IPA) to recall the pronunciation of Mandarin characters and words. | Male Female | 3.16 3.10 | 0.934 0.990 | .449 | .504 | .311 | 149 | .757 |
| 5 | I use some body movements to recall the pronunciation of Mandarin characters and words. | Male Female | 2.51 3.03 | 0.961 0.011 | .128 | .721 | -2.562 | 149 | .011 |
| 6 | I copy pinyin to recall the pronunciation of Mandarin characters and words. | Male Female | 2.90 3.42 | 0.943 0.922 | .548 | .460 | 2.794 | 149 | .006 |
| 7 | I use flash cards to recall the pronunciation of Mandarin characters and words. | Male Female | 2.41 2.57 | 0.764 0.922 | 1.289 | .258 | -.865 | 149 | .388 |
| 8 | I review knowledge about Mandarin pronunciation. | Male Female | 3.29 3.31 | 0.937 0.840 | .452 | .502 | -.152 | 149 | .879 |

**Cognitive strategies**

Table 3 shows an in depth-analysis of cognitive strategies employed by male learners and female learners. Findings presented in Table 3 manifested that there is a significant difference between male and female learners while they try to recall and imitate how teachers or Chinese native speakers pronounced the words (t= -2.236, df=149, p<.05). Additionally, the tactics "trying to recall and imitate the mouth movements of teachers or Chinese native speakers" also showed significant differences between male and female (t= 1.942, df=149, p<.05). There was a significant difference between male and female in terms of tactic "talking aloud to oneself" (t= -3.226, df= 149, p<.05) and "keep practice a difficult pronunciation repetitively" (t= -2.028, df= 149, p<.05). Tactic "concentrate intensely on pronunciation while listening Mandarin pronunciation" also have a significant difference between male and female learners (t= -1.063, df= 149, p<.05).

Generally, findings in this study portrayed that female learner scored higher in most of the tactics of cognitive strategies, which indicate that females used cognitive strategies more frequently than male learners do. Nevertheless, male scored slightly higher mean in terms of the tactics "comparing the pronunciation of English, Malay language and Mandarin" (Male: M= 3.58, SD= 1.025, Female: M=

3.35, SD= .968) and the tactics "concentrate intensely on pronunciation while speaking Mandarin" (Male: M= 3.64, SD= .914, Female: M= 3.59, SD= .814). Based on the table 3, it was found that male tend to speak slowly in order to get their pronunciation correct while accounted for the highest mean score of 3.67 (SD= .871) among the cognitive strategies whereas female prefer to recall and imitate the pronunciation of teachers and native Chinese speakers with the highest mean score of 3.96 (SD= .839).

**Table 3.** *T-test results for cognitive strategies and gender*

| No | Cognitive strategies | Gender | Mean | Standard Deviation | Levene's Test for Equality of Variance | | T- test for Equality of Means | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | F | Sig | T | Df | Sig. (2-tailed) |
| 1 | I try to recall and imitate how teachers or Chinese native speakers pronounce something. | Male Female | 3.58 3.96 | .922 .839 | 2.936 | .089 | -2.236 | 149 | .027 |
| 2 | I try to recall and imitate the mouth movements of teachers or Chinese native speakers. | Male Female | 3.51 3.86 | .995 .869 | 3.539 | .062 | 1.942 | 149 | .054 |
| 3 | I concentrate intensely on pronunciation while I am speaking Mandarin. | Male Female | 3.64 3.59 | .914 .814 | 1.806 | .181 | .318 | 149 | .751 |
| 4 | I speak slowly to get the pronunciation right. | Male Female | 3.67 3.89 | .871 .886 | .717 | .399 | -1.203 | 149 | .231 |
| 5 | I mentally rehearse how to say something before speaking. | Male Female | 3.54 3.84 | .925 .879 | 1.093 | .297 | -1.638 | 149 | .104 |
| 6 | I compare the pronunciation of English, Malay language and Mandarin. | Male Female | 3.58 3.35 | 1.025 .968 | .580 | .447 | 1.126 | 149 | .262 |
| 7 | I listen to Chinese songs, News, Chinese movies and TV programs. | Male Female | 2.80 3.00 | 1.249 1.037 | 3.263 | .073 | -.887 | 149 | .377 |
| 8 | I try to talk with others in Mandarin as much as possible. | Male Female | 2.80 2.81 | .980 .879 | 1.101 | .296 | -.056 | 149 | .955 |
| 9 | I practice saying words slowly at first and then faster. | Male Female | 3.41 3.64 | .885 .857 | .083 | .773 | -1.278 | 149 | .203 |
| 10 | I talk aloud to myself. | Male Female | 2.83 3.50 | .934 1.053 | 2.182 | .142 | -3.226 | 149 | .002 |
| 11 | I talk silently to myself. | Male Female | 3.16 3.22 | 1.213 1.111 | .009 | .925 | -.279 | 149 | .780 |
| 12 | I pronounce a difficult sound over and over. | Male Female | 3.38 3.77 | .954 .947 | .000 | .988 | -2.028 | 149 | .044 |
| 13 | I try to avoid the sound that I cannot pronounce accurately. | Male Female | 2.80 2.85 | 1.046 .998 | .069 | .974 | -.255 | 149 | .799 |
| 14 | I summarize my knowledge about Mandarin pronunciation. | Male Female | 3.09 3.16 | .789 .843 | 1.257 | .264 | -.416 | 149 | .678 |
| 15 | I concentrate intensely on pronunciation while I am listening to Mandarin. | Male Female | 3.29 3.78 | .739 .811 | .150 | .699 | -3.069 | 149 | .003 |

| 16 | I practice character or a word first in isolation and then in context. | Male | 3.06 | .813 | .957 | .330 | - 1.063 | 149 | .289 |
| | | Female | 3.24 | .830 | | | | | |

## Compensation strategies

As portrayed in Table 4, in terms of all tactics associated with compensation strategies, there was no statistically significant difference between male and female learners. However, it was observed that male learners prefer to replace the pronunciation of Mandarin words or characters with similar sound from other languages when they are unable to pronounce Mandarin words accurately (Mean= 3.12, SD= .763). Meanwhile, female learners tend to avoid pronouncing sounds about which they are unsure (Mean= 2.90, SD= 1.069).

**Table 4.** *T-test results for compensation strategies and gender*

| No | Compensation strategies | Gender | Mean | Standard Deviation | Levene's Test for Equality of Variance | | T- test for Equality of Means | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | | | | | F | Sig | T | Df | Sig. (2-tailed) |
| 1 | I use a similar sound from other languages to replace the pronunciation of Mandarin words or characters which I cannot pronounce accurately. | Male | 3.12 | .763 | .412 | .522 | .362 | 149 | .718 |
| | | Female | 3.06 | .876 | | | | | |
| 2 | I avoid pronouncing a sound which I am not sure. | Male | 2.67 | .908 | .811 | .369 | - 1.103 | 149 | .272 |
| | | Female | 2.90 | 1.069 | | | | | |

## Metacognitive strategies

Table 5 manifested the use of metacognitive strategies in learning Mandarin pronunciation among MFL learners across gender. Upon a closer analysis on the employment of metacognitive strategies, it is revealed that there is a significant difference between male and female learners in terms of assessing their own pronunciation and come up with a better method (t=.010, df= 2.091, p<.05). Findings shown in Table 5 found that female learners used the tactics more frequently than male learners, as the mean scored higher in most of the tactics. However, male learners showed slightly higher than female learners in the use of tactics "reading reference materials about Mandarin phonetics" (Male: M= 2.87, SD= .618, Female: M= 2.67, SD= .871) and "acquire general knowledge of Mandarin phonetics" (Male: M= 3.09, SD= .597, Female: M= 2.90, SD= .803). From the findings shown in Table 5, both male and female learners showed their preferences in planning their pronunciation practice (Male: M= 3.29, SD= .739, Female: M= 3.35, SD= .940). However, female learners scored higher than male learners in this case. This finding indicated that female learners used this tactic more frequently than male learners. As shown in Table 5, female learners utilize the reference resources regarding Mandarin phonetics the least (Mean= 2.67, SD= .871), while male learners did not frequently record their pronunciation to identify their Mandarin pronunciation errors (Mean= 2.51, SD= .811).

**Table 5.** *T-test results for metacognitive strategies and gender*

| No | Metacognitive strategies | Gender | Mean | Standard Deviation | Levene's Test for Equality of Variance | | T- test for Equality of Means | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | | | | | F | Sig | T | Df | Sig. (2-tailed) |
| 1 | I have a plan for learning Mandarin phonetics. | Male | 2.80 | .654 | 1.651 | .201 | -.411 | 149 | .681 |
| | | Female | 2.87 | .865 | | | | | |
| 2 | I plan for pronunciation practice. | Male | 3.29 | .739 | 3.336 | .070 | -.328 | 149 | .744 |
| | | Female | 3.35 | .940 | | | | | |

| No | | Gender | Mean | SD | F | Sig | T | Df | Sig |
|---|---|---|---|---|---|---|---|---|---|
| 3 | I acquire a general knowledge of Mandarin phonetics. | Male | 3.09 | .597 | 2.526 | .114 | 1.274 | 149 | .204 |
| | | Female | 2.90 | .803 | | | | | |
| 4 | I read reference materials about Mandarin phonetics. | Male | 2.87 | .618 | 11.929 | .001 | 1.434 | 149 | .156 |
| | | Female | 2.67 | .871 | | | | | |
| 5 | I am concerned about some of the special Mandarin pronunciations. | Male | 3.00 | .930 | .257 | .613 | -1.886 | 149 | .061 |
| | | Female | 3.33 | .863 | | | | | |
| 6 | I prepare for an oral presentation by marking difficult-to-pronounce words. | Male | 3.03 | .795 | 3.498 | .063 | -.493 | 149 | .623 |
| | | Female | 3.12 | .966 | | | | | |
| 7 | I make evaluations on my own pronunciation and find improved methods. | Male | 3.00 | .683 | 6.837 | .010 | -2.091 | 149 | .041 |
| | | Female | 3.30 | .896 | | | | | |
| 8 | I record myself to find problems with my pronunciation. | Male | 2.51 | .811 | 1.962 | .163 | -1.635 | 149 | .104 |
| | | Female | 2.85 | 1.058 | | | | | |

**Affective strategies**

Table 6 demonstrates the use of affective strategies among MFL learners across genders. As presented in Table 6, there is no significant differences between male and female learners in terms of the tactics included in affective strategies. However, the findings showed that females generally used affective strategies more frequently than male learners. For example, male learners had a lower sense of humor about mispronunciation than female learners do (Male: M= 3.03, SD= .948, Female: M= 3.24, SD= .943). Male students performed better than female students in two categories: encouraging oneself to speak Mandarin (Male: M= 3.67, SD= .791, Female: M= 3.65, SD= .855) and rewarding oneself when one improves in pronunciation (Male: M= 3.19, SD= 1.222, Female: M= 3.09, SD= 1.152). According to the findings, majority of female student's support "encouraging themselves when they feel hard to acquire pronunciation" and "they commonly try to relax when they feel frightened to speak Mandarin," with these strategies displaying an equal mean score of 3.68. Nonetheless, male students frequently push themselves to speak Mandarin (Mean= 3.67, SD= .791). However, both genders are not likely to be concerned about their emotional changes when learning Mandarin pronunciation, as the mean scored the lowest (Male: M= 2.83, SD= 1.035, Female: M= 2.97, SD= .974).

**Table 6.** *T-test results for affective strategies and gender*

| No | Affective strategies | Gender | Mean | Standard Deviation | Levene's Test for Equality of Variance | | T- test for Equality of Means | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | F | Sig | T | Df | Sig. (2-tailed) |
| 1 | I have a sense of humour about mispronunciation. | Male | 3.03 | .948 | .947 | .332 | -1.100 | 149 | .273 |
| | | Female | 3.24 | .943 | | | | | |
| 2 | I try to relax when I feel nervous to speak Mandarin. | Male | 3.51 | 1.060 | .754 | .387 | -.839 | 149 | .403 |
| | | Female | 3.68 | .970 | | | | | |
| 3 | I encourage myself to speak Mandarin. | Male | 3.67 | .791 | .089 | .765 | .112 | 149 | .911 |
| | | Female | 3.65 | .855 | | | | | |
| 4 | When I learn Mandarin pronunciation, I concern about my emotional changes. | Male | 2.83 | 1.035 | 1.138 | .288 | -.685 | 149 | .494 |
| | | Female | 2.97 | .974 | | | | | |
| 5 | I encourage myself when I feel it is hard to learn | Male | 3.64 | .797 | .127 | .722 | -.218 | 149 | .828 |
| | | Female | 3.68 | .888 | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 6 | I give myself a reward when I make progress in pronunciation. | Male | 3.19 | 1.222 | .836 | .362 | .433 | 149 | .665 |
| | | Female | 3.09 | 1.152 | | | | | |

**Social strategies**

Findings shown in Table 7 displayed that in terms of social strategies, there is no significant differences between male and female. Additionally, female learners scored higher mean compared to male learners. According to findings portrayed in Table 7, female learners prefer to ask someone else to demonstrate the correct Mandarin pronunciation (Mean= 3.90, SD= .973) whereas male learners prefer to practice pronunciation with someone else (Mean= 3.64, SD= 1.050). However, both male and female learners also showed similarity in the employment of social strategies which is they did not often teach or tutor someone else (Male: M= 2.64, SD= 1.050, Female: M= 2.74, SD= 1.057). This reflects that neither male nor female learners are unconfident to assist someone in learning Mandarin pronunciation.

**Table 7.** *T-test results for social strategies and gender*

| No | Social strategies | Gender | Mean | Standard Deviation | Levene's Test for Equality of Variance | | T- test for Equality of Means | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | F | Sig | T | Df | Sig. (2-tailed) |
| 1 | I ask someone else to correct my pronunciation. | Male | 3.54 | 1.090 | 1.249 | .266 | -1.381 | 149 | .169 |
| | | Female | 3.83 | 1.006 | | | | | |
| 2 | I ask someone else to demonstrate the correct Mandarin pronunciation. | Male | 3.51 | 1.207 | 3.222 | .075 | -1.859 | 149 | .065 |
| | | Female | 3.90 | 0.973 | | | | | |
| 3 | I practice pronunciation with someone else. | Male | 3.64 | 1.050 | .022 | .882 | -.500 | 149 | .618 |
| | | Female | 3.75 | 1.039 | | | | | |
| 4 | I teach or tutor someone else. | Male | 2.64 | 1.050 | .003 | .954 | -.454 | 149 | .651 |
| | | Female | 2.74 | 1.057 | | | | | |

**Conclusion**

This study generally reported that only cognitive learning strategies and gender displayed a significant difference while other MPLS do not show significant difference in terms of gender. As mentioned in the findings, females employed MPLS more frequently as compared to male learners. This finding is supported by the study done by Oxford and Nyikos (1989) which also found that female learners are more likely to use learning strategies as compared to male learners.

An in-depth analysis on the frequency of the used on MPLS, male learners tend to use social strategies (Mean= 3.33, SD= .751), affective strategies (Mean= 3.31, SD= .638), Cognitive strategies (Mean= 3.26, SD= .577), Metacognitive strategies (Mean= 2.95, SD= .469), memory strategies (Mean= 2.91, SD= .574) and compensation strategies (Mean= 2.90, SD= .611). Meanwhile, female learners prefer using social strategies (Mean= 3.55, SD= .818), cognitive strategies (Mean= 3.47, SD= .503), affective strategies (Mean= 3.38, SD= .701), memory strategies (Mean= 3.07, SD= 573), metacognitive strategies (Mean= 3.05, SD= .624) and compensation strategies (Mean= 2.98, SD= .800). It was found that both male and female used social strategies (Male: Mean= 3.33, SD= .751, Female: Mean= 3.55, SD= .818) more frequently as compared to others learning strategies. The least used MPLS among male and female Mandarin learners is compensation strategies (Mean= 2.90, SD= .611).

The findings of this study serve as a basis for language educators and curriculum developers in conducting and planning effective teaching approaches to enhance the performance of Mandarin pronunciation among non-native Mandarin learners. Based on the study conducted by Ting and Ch'ng (2023), the acceptance of using MOOC to learn Mandarin among the non-native learners in Malaysia is at high level of acceptance. For that reason, MOOC on TMC151- Foundation Mandarin (Level II)

can be introduced to learners. According to Ting (2022), this MOOC provides audio scripts for learners in which learners can read after the recording. Apart from that, several speaking practices are also provided in the MOOC TMC151, it enables learners to practice Mandarin pronunciation repetitively yet hassle-free. Therefore, it is highly recommended that MOOC on TMC151- Foundation Mandarin (Level II) can be a better suggestion for Mandarin learners and those who are preparing for Chinese Proficiency Test (汉语水平考试 *Hanyu Shuiping Kaoshi, HSK*) nor HSK Speaking Test (汉语水平口语考试 *Hanyu Shuiping Kouyu Kaoshi, HSKK*) to learn and practice their Mandarin pronunciation.

### Author Contribution
The authors confirm contribution to the paper. Ting Hie-Ling: study conception and design, analysis and interpretation, Draft manuscript preparation; writing, review and editing; Ooi Sing Ee: Data collection; writing, review and editing.

### Conflict of Interest
The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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