"My Ears Are Smarter Than My Mouth":

The Effects of Peer Feedback on Pronunciation by Second Language Learners in Mobile-assisted Language Learning Context

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A thesis submitted to McGill University in partial fulfillment of the requirements of the degree of M.A. in Second Language Education

Abstract

Previous studies have found that during peer interaction, learners are able to help their peers produce accurate language through feedback and to spontaneously self-correct their own errors more often than when interacting with teachers (Sato & Lyster, 2012). However, few studies have focused on the integration of peer feedback in pronunciation teaching and learning. In order to fill this gap and investigate the effects of peer feedback on improving learners' pronunciation, the present study used a popular instant messaging application in China, WeChat, to build a supportive learning community in which Chinese English learners can feel comfortable giving and receiving feedback to each other.

Thirty-two participants were recruited and randomly assigned to three different groups: a control group (no feedback; $n = 10$), a teacher feedback group ($n = 11$), and a peer feedback group ($n = 11$). Each day during five consecutive days, all L2 learners read aloud a paragraph using voice messages in their corresponding groups, after which learners in the two treatment groups received feedback targeting their mispronunciation either from an ESL teacher or from their peers.

A pretest, an immediate post-test and a delayed post-test were conducted in terms of controlled reading. The audio-recorded speech samples were rated by six native English speakers for analyses. The two treatment groups also completed online questionnaires regarding their perceptions of and affective responses to providing and receiving feedback.

Results revealed that both treatment groups significantly outperformed the control group on comprehensibility at the immediate post-test, but not on the delayed post-test. The same treatment effect was not detected in their accentedness. L2 learners in the peer feedback group reported positive attitude and beliefs regarding providing feedback to and receiving feedback from other learners.

Résumé

Il est ressorti de l'étude précédente que pendant l'interaction avec les pairs, les apprenants étaient étonnamment capables d'aider les autres à produire un langage précis grâce à la rétroaction et corrigeaient spontanément leurs propres erreurs plus souvent que lorsqu'ils interagissaient avec les enseignants (Sato & Lyster, 2012). Cependant, peu d'études se sont concentrées sur l'intégration de la rétroaction des pairs dans l'enseignement et l'apprentissage de la prononciation. Afin de combler cette lacune et d'étudier les effets de la rétroaction des pairs sur l'amélioration de la prononciation des apprenants, la présente étude a utilisé une application populaire de messagerie instantanée en Chine, WeChat, pour bâtir une communauté d'apprentissage solidaire dans laquelle les apprenants d'anglais chinois peuvent se sentir à l'aise pour donner et recevoir des commentaires entre eux.

Trente-deux participants ont été recrutés et répartis au hasard dans trois groupes différents: un groupe témoin (aucune rétroaction; $n = 10$), un groupe d'enseignants ($n = 11$) et un groupe de pairs ($n = 11$). Chaque jour pendant cinq jours consécutifs, les apprenants de langue seconde (L2) des deux groupes de traitement ont reçu une rétroaction ciblant leur mauvaise prononciation de la part d'un enseignant d'anglais langue seconde ou de leurs pairs après avoir lu à haute voix un paragraphe en utilisant des messages vocaux dans leur groupe correspondant.

Un pré-test, un post-test immédiat et un post-test retardé ont été effectués en termes de lecture contrôlée. Les échantillons de discours enregistrés ont été évalués par six locuteurs de langue maternelle anglaise pour analyse. Les deux groupes de traitement ont également rempli des questionnaires en ligne concernant leurs perceptions et leurs réponses affectives à fournir et à recevoir de la rétroaction.

Les résultats ont révélé que, dans l'ensemble, les groupes de traitement ont obtenu des résultats nettement supérieurs à ceux du groupe témoin sur le plan de la compréhension

immédiatement après le test, mais pas après le test tardif. Le même effet n'a pas été détecté dans leur accentuation. Les apprenants L2 du groupe de rétroaction des pairs ont montré une attitude et des croyances positives à l'égard de la rétroaction fournie aux autres apprenants et de la rétroaction reçue de ces derniers.

Acknowledgements

This study has been helped by many people. Without their support and encouragement, this research would never have been completed. Firstly, I would like to thank my supervisor, Dr. Susan Ballinger. Her published paper has motivated me to conduct the current research. Susan, thank you for your patience, inspiration and knowledge. Thank you for your continuous support with my thesis, presentations and awards applications. Doing research is not easy, but you gave me courage to face the challenge.

My sincere thanks also go to Dr. Andrew Lee. I was lucky enough to take his course on Instructed Second Language Acquisition Research. He has inspired me a lot as a teacher and SLE researcher. I also want to thank him for agreeing to be my external examiner.

I want to extend my deep appreciation to all the participants and the EFL teacher. Their support and insights made the research enjoyable. I would like to express my gratitude to Dr. Jose Correa, Dr. Stephen Bodnar, Dr. Aparna Nadig, Nadia, Alex, Shayne, Lauren, Ali, Amelia, Philip, Xinyue for helping me with data analysis, to Serge for his help with my French abstract, and for their suggestions on my research. I also want to thank them for helping me explore new possibilities in doing research.

Special thanks go to Dr. Teresa Strong-Wilson. I'm grateful to her for trusting me and giving me the opportunity to join her research project. She is a wise mentor and friend. I was inspired greatly by our weekly bus conversations. I am appreciative of all the opportunities that she has opened to me. The lovely teachers and students in her project brought me back to the rosy childhood years. They led me to a world of fantastic children's literature. I also want to express my gratitude to the friendly and supportive colleagues I worked with in the past two years at McGill, in South Shore and West Island. I learned a lot from them.

Thank you, my lovely friends in China and in Canada. Without you, my adventure can be lonely and miserable. Thank you for making me who I am today. I can write this paragraph into an essay, so I decided to thank you all in person.

Last but not least, I would like to express my deepest love to my family. They always showed me unconditional support and love. Dear Grandpa, thank you for letting me know how cool knowledge is. I wish, and I am sure you can see your happy and grateful girl. Love you.

This thesis was financially supported by an International Students Research Award granted by the Department of Integrated Studies in Education and a Graduate Student Enhancement Award granted by Education Graduate Students' Society.

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Chapter 1

Introduction

1.1. Background of the study

English education in China has long been known as efficient at delivering grammar instruction and training students to pass written exams (e.g., He, 2015; Zhang, 2009). In a typical English class in China, teachers spend more time teaching grammar, vocabulary and reading comprehension than teaching oral skills, especially pronunciation. And the lack of attention to pronunciation in language teaching and learning is not only an issue in Chinese classrooms. This happens for a number of reasons. First, teachers consider pronunciation to be difficult to teach (Darcy, Ewert, & Lidster, 2012). In addition, oral skills are seldom tested on the standard exams, and the English L2 curriculum in countries like China is largely designed to prepare students for these exams. Furthermore, many teachers feel intimidated to teach pronunciation explicitly (Murphy, 2014) because they lack confidence in their own pronunciation. Although most English teachers in China are non-native English speakers, both teachers and students have the tendency to set nativelikeness as the goal of pronunciation acquisition and believe that only native speakers can help learners achieve that goal (Luk & Lin, 2017). Finally, the few pronunciation instruction materials that are available are not evidence-based and may be ineffective (Derwing & Munro, 2005). As a consequence of the above, learners rarely practice speaking English in the classroom, and they have few opportunities to develop their phonetic knowledge.

The lack of communicative practice makes students unconfident when speaking English, which gradually leads to their reluctance to speak their second language (L2) at all. In a monolingual society like China, most L2 learners do not expect to use their L2 beyond the classroom, but for those who want to use English to pursue a career or a degree abroad, they feel

discouraged to learn “mute English” (Zhang, 2009, p. 32). Even during the small proportion of time dedicated to pronunciation teaching, there are many problems, not only in China, but in classes in other countries as well. Apart from the lack of output and explicit phonetic instruction, students often suffer from foreign language anxiety when they speak in their L2 (Onwuegbuzie, Bailey, & Daley, 1999). There is also a mismatch between learner’s willingness to have their oral errors corrected by their teachers and the teacher’s belief that learners do not want feedback (Lyster & Saito, 2010; Nicholas, Lightbown, & Spada, 2001). Actually, in a classroom with 40 or more students but only one teacher, extensive interactions in the foreign language and timely corrective feedback from the teacher are not easily available (e.g., Derwing, Munro, & Thomson, 2007; Ranta & Meckelborg, 2013). The lack of feedback may hinder learners’ progress in their language skills and even cause fossilization of wrong knowledge (Han, 2006).

Training learners to become peer feedback providers can be a pedagogical solution to this issue. For example, Sato and Lyster (2012) found that during peer interaction, learners were surprisingly able to help others produce accurate language, and spontaneously self-corrected their own errors more often than when interacting with teachers. The major difference between teacher feedback and peer feedback is that L2 learners are not only feedback receivers, they are also feedback providers. During the process of providing feedback, they actively seek and use metalanguage and monitor their own production as well. From their affective perspective, they feel more comfortable to make mistakes when interacting with their peers than with their teachers or native speakers (Sato, 2013).

Admittedly, schools and teachers may be concerned about the applicability of peer feedback from both a technical perspective and a psycholinguistic one: peer feedback may not be as comprehensive (Li, Liu & Steckelberg, 2010) nor as authoritative as the teacher’s feedback. Sometimes peer feedback may be considered offensive (Yoshida, 2008). L2 learners may feel

intimidated to point out their peers' mistakes in front of others, and in some cultures, including Chinese culture, the urge to avoid causing others to "lose face" may have a strong influence on learners' behavior. Learners are sometimes also hesitant to break the flow of conversation, and feedback providers may lack confidence to provide quality feedback because they believe that their linguistic knowledge is not strong enough. However, research has demonstrated many benefits of peer interaction and peer corrective feedback (Philp, Adams & Iwashita, 2013; Sato & Ballinger, 2016)

Given the problems mentioned above, it is important to seek a solution to facilitate pronunciation teaching and learning. Many researchers have made suggestions for reducing foreign language anxiety in the classroom. The most frequent suggestion is to create a friendlier learning environment which allows students to make mistakes (e.g., Alsowat, 2016; Kralova, Skorvagova, Tirpakova, Markechova, 2017). So, the solution should focus on building a supportive and anxiety-free environment where L2 learners can received optimal opportunities to practice and receive feedback, not only from their teachers, but from peers as well. In order to find this better solution for pronunciation acquisition for students and teachers, the present study examines the feasibility and impact of peer corrective feedback and collaborative learning in a mobile-assisted language learning context. More specifically, it uses WeChat, the most popular instant messaging mobile application in China, to create a collaborative learning environment among L2 learners of English. In this learning context, the learners can provide feedback to and receive feedback from each other targeting their mispronunciation.

1.2. Outline of the thesis

This thesis consists of a total of six chapters. **Chapter one, Introduction** displays the background of the study. **Chapter two, Literature Review**, reveals the problems of current pronunciation instruction, displays the potentials for peer feedback with theoretical and empirical

evidence and presents the application of mobile assisted learning in second language education. Research questions for the current study are presented at the end. **Chapter three, Methodology**, introduces in detail the methodology designed to explore the research questions. Participants' information, the procedure of intervention and testing methods are provided. This chapter will also describe data analysis procedures. The results are demonstrated in **Chapter four, Results**. **Chapter five, Discussion**, answers the research questions by discussing the quantitative and qualitative findings and their possible explanation based on the literature. Lastly, in **Chapter six, Conclusion**, a brief conclusion is presented along with limitations of the present study and suggestions for future research. To summarize, the present study aims to explore the pedagogical value of peer feedback in pronunciation training complementary to teacher-led instruction. It is also expected to fill the gap in pronunciation and peer feedback research.

Chapter 2

Literature Review

This chapter presents the theoretical foundation of the current study and relevant research findings, including the main problems in pronunciation instruction as well as the potential and rationale for involving peer feedback in that instruction. This chapter also discusses the context in which the present study was conducted—mobile assisted language learning, as well as its pedagogical use in language acquisition and instruction. Finally, this chapter explains the motivation for selecting WeChat as the intervention platform for the study and as a method to partially counterbalance the challenges of peer feedback.

2.1. L2 pronunciation

Pronunciation refers to "the ways in which speakers use their articulatory apparatus to create speech" (Derwing & Munro, 2015, p.2). The minimal unit involved in pronunciation is called the phoneme (segmentals). Different languages "possess different phonemic inventories" (Showen, 2016, p.116). Apart from segmentals, pronunciation includes pitch, prosody and stress of certain syllables, words and phrases. These are referred to as suprasegmentals (Derwing & Munro, 2005; Jenkins, 2004). One's pronunciation can be assessed from different perspectives, such as fluency, comprehensibility, intelligibility and accentedness. According to Munro and Derwing (1995), comprehensibility is "listeners' perceptions of difficulty in understanding particular utterances" (p.291). Accentedness is a judgement of "how strong the talker's foreign accent is perceived to be" (p.291) and intelligibility is "the extent to which an utterance is actually understood" (p. 291). They concluded that comprehensibility is the effort necessary to understand a speaker, accent is difference and intelligibility is actual understanding.

Although pronunciation plays an essential part in the effectiveness of oral communication in foreign languages, it has long been a topic underestimated and under-investigated in research

(Derwing & Munro, 2005; Munro & Derwing, 2011; Smotrova, 2017). Much less research has been carried out on L2 pronunciation than on other language skills such as grammar and vocabulary. Not only the researchers, but also teachers, pay insufficient attention to this subject area. Many have noted that it usually only takes up a small proportion of the time in language classes, and that pronunciation instructional materials are mainly informed by common sense and intuitive notions (Derwing & Munro, 2005). This is not only because of pronunciation instruction's challenging nature, but also because of teachers' beliefs.

Many non-native English teachers are intimidated to teach pronunciation explicitly in class, and they feel insecure about using their own speech as a pronunciation model for their students (Murphy, 2014) because they themselves do not speak the target language as their L1 (first language). Schools and students tend to have a "high deferential attitude towards the NETs (native English-speaking teachers)" (Luk & Lin, 2006, p.11). Through a survey with 421 Greek EFL (English as Foreign Language) teachers, Sifakis and Sougari (2005) found that while all teachers felt that native accent are important as accent models, only a small proportion consider intelligibility to be equally important. And this is connected to their beliefs of the ownership of English as well. In the same study, 70% of the respondents believed that English belongs to either "NSs [native speakers] or to people with NS competence" (p.480).

One reason behind people's perception is their beliefs about the relation between pronunciation and identity. Pronunciation is more open to judgement than other features of foreign language (Canagarajah, 2005). Although researchers have gained a better understanding of speakers' identity and have increasingly agreed that one's accentedness does not necessarily affect his or her comprehensibility, biases are still easily evoked when non-native speakers speak a language with a foreign accent (Marx, 2002). A foreign accent in English indicates that the sounds produced by the speakers are outside of the norm of English in a particular country or

region (Derwing & Munro, 1999). It is caused by phonemes as well as pitch, stress and speech rate (McCrocklin & Link, 2016). In an exploration of adult immigrants' perceptions of their foreign accent, Derwing (2003) found that two thirds of the students said "no" when asked whether they have been discriminated against because of their foreign accent. But the majority of the participants said "yes" when answering whether they think people would respect them more if they pronounced English better.

Another reason for not teaching pronunciation is the belief that pronunciation is not as important as grammar and reading skills in exam-oriented settings, which can be found in many Asian countries, where foreign languages are rarely used outside of the classroom and where pronunciation is less often assessed in exams. The reasons may also include the difficulty to assess pronunciation. Usually in research, comprehensibility and accentedness are measured using Likert scales. In comparison, the methods of assessing intelligibility are more limited and complicated. To measure intelligibility, native listener's orthographic transcriptions are often analysed to determine the percentage of words transcribed correctly by listeners (see e.g., Munro & Derwin, 1995). There are also cases when listeners are asked to evaluate global intelligibility on a Likert scale as well (e.g., Fayer & Krasinski, 1987). However, the methods used in research can hardly be widely implemented for teachers' classroom evaluation in schools.

2.1.1. The goal of pronunciation instruction.

There's no unanimous goal in pronunciation teaching and learning. For some learners and teachers, the ultimate goal is to be easily understood (Levis, 2005), while for others, the main objective is to learn to speak with a native-like accent. This goal, as mentioned in the previous section, impacts non-native speaking teacher's reluctance to teach pronunciation. Tokumoto and Shibata (2011) used a questionnaire to examine the attitudes of Asian learners from three countries towards their L1 accented English pronunciation. The results differed

according to country. While Malaysian students valued their accented English, Japanese and Korean learners of English preferred native-like pronunciation.

However, the goal of mastering nativelikeness is hard to achieve. In a study conducted with nearly 200 individuals who spoke Swedish as their second language, Abrahamsson and Hyltenstam (2009) found that despite of their high proficiency levels, these L2 learners still failed to achieve scores that were equivalent to native speakers'. Although L2 learners wish to speak like native speakers, it is difficult for sequential learners of a foreign language to achieve a native-like accent (Abrahamsson & Hyltenstam, 2009). Abrahamsson and Hyltenstam thus suggested that native-likeness should not be the goal of pronunciation learning. This idea had also been proposed by Abercrombie (1949), who argued that most language learners only need "a comfortably intelligible pronunciation" (p.120). However, students and teachers often perceive non-RP (received pronunciation) accent as sub-standard (Levis, 2006). The mainstream perception fuels plenty of tutoring commercials which attracts student by promoting "speaking like a native speaker in three months", for example.

In fact, the perception of nativelikeness and the promotion of native accent has been controversial, as it places supreme power to white native English speakers. Both L2 learners and teachers are affected by the notion that competent language teachers should not only be native English speakers, but they should also be white native English speakers who were "born in majority-white countries" (Ramjattan, 2019a, p.1). In qualitative interviews with 10 nonwhite ESL instructors in private language schools in Toronto conducted by Ramjattan (2019b), half of the participating teachers reported that they felt unwelcomed in some parts of the workplaces because they were seen as "deviant teachers" (p.131). The interview also revealed that the customers in the schools— L2 learners, expressed suspicion towards nonwhite teachers' competence. It is important thus for both language teachers and learners to develop a critical

perspective towards the notion of native English because their cognition has an impact on their teaching/learning strategies and outcome (Alghazo, 2015).

Apart from the pursuit for white nativelikeness, the language environment in which L2 learners learn their foreign languages also plays a role in their pragmatic goal setting. For example, Munro and Derwing (1999) affirmed that the chief goals of learning a foreign language is to convey one's thoughts and to be understood by interlocutors in different contexts. This perception does not echo among Chinese learners of English, who seldom use their L2 in the conversation outside of the class. So, they don't have the motivation of being understood by an interlocutor, and again, this cognition may have a major impact on the oral language learning. Both teachers and learners deserve to be informed of a holistic idea of pronunciation and its acquisition. Since a strong foreign accent does not necessarily reduce the comprehensibility or intelligibility of L2 speech (e.g., Munro., & Derwing, 1995), the loss would overweigh the gain if L2 learners neglect the communicative nature of language and become timid to use the language verbally only because of an unrealistic goal of native accentedness.

2.1.2. Problems in pronunciation teaching.

Apart from the disproportionately small amount of time devoted to pronunciation instruction, there are several problems in the current pedagogical practice in teaching L2 pronunciation.

2.1.2.1. Lack of explicit knowledge (metalanguage).

The scarcity of pronunciation instruction results in the lack of explicit knowledge among L2 learners. Their pronunciation knowledge is often very implicit and sometimes intuitive. Previous studies (e.g., Akita, 2007; Gooch, Saito., & Lyster, 2016; Saito, 2007, 2011, 2013; Saito & Lyster, 2012) have revealed that explicit instruction of pronunciation and corrective feedback on phonological errors are beneficial to L2 learners. They get declarative information

about rules and descriptions of the target linguistic features through explicit instruction (Hernández, 2011; Hulstijn, 2005; Norris & Ortega, 2000). Svalberg (2007) distinguished between communicative language teaching, which emphasizes meaning, and the teaching of metalanguage, the language used to talk about language itself. The latter has been associated with learners' increased awareness of the linguistic features in their L2.

This awareness not only helps learners distinguish different sounds in their L2, but it also facilitates the distinction of sounds between their L1 and L2. Studies (e.g., Elliott, 1997; Lord, 2010; Saito & Lyster, 2012; Saito, 2007, 2013) have revealed that explicit instruction can help learners acquire unfamiliar L2 sounds that do not exist in their L1. For example, in a study with 49 Japanese learners of English, Saito (2012) found positive effects for explicit instruction of phonetic knowledge on the acquisition of English vowels which does not exist in Japanese language. Lord (2010) found that participants who had had explicit instruction of voiced occlusive and fricative allophones (/b, d, g/; bilabial, dental, and velar, respectively) in Spanish got higher accuracy ratings than those who had not.

This pedagogical value of explicit instruction is not only restricted to the segmental level. In a study of the effects of suprasegmental-based instruction with 20 students, Saito and Saito (2017) found significant gains in students' overall comprehensibility, word stress, rhythm, and intonation in both trained and untrained lexical contexts. More specifically, by addressing the difference between their L1 and L2, learners were able to mark stressed syllables with longer and clearer vowels, reduce vowels in unstressed syllables and use appropriate intonation patterns for different types of questions. So, the authors conclude that suprasegmental-based instruction is beneficial to phonological development, even with beginner-level EFL learners who have a limited amount of L2 conversational experience. However, explicit knowledge itself is not

enough. “Knowing” does not equal to “being able to put into practice”. Something more is needed to transfer the knowledge into action.

2.1.2.2. Lack of practice and output.

The development of oral productive skills in a foreign language necessarily relies on opportunities for production practice. Practice is the key tenet throughout every aspect of foreign language acquisition. According to *Skill Acquisition Theory* (Dekeyser, 1998, 2007), similar to the learning procedure of other skills, when learning a new language, learners first acquire declarative knowledge, and proceduralize it through practice before they can use the knowledge automatically. Contrary to reading comprehension and listening, the practice of L2 writing and speaking is a process when learners make a large amount of output. In her *Comprehensible Output Hypothesis*, Swain (1993, 2005) argues that output is crucial in language learning because it pushes learners to process language with more cognitive efforts. Based on Swain’s theory, Gass and Mackey (2007) concluded that the four functions of L2 output are (a) to test linguistic hypotheses; (b) to receive feedback and verification; (c) to shift from meaning-based processing of L2 to a more syntactic mode and (d) to achieve higher fluency and automaticity in their interlanguage production. But in the current language classes, L2 learners have very rare opportunities to practice and make oral output, again because of the short or no time spent on pronunciation training. Both teachers and students expect pronunciation to be acquired implicitly during the training of L2 learners’ listening skills. Listening training is likely to strengthen students’ perception of sounds (Akita, 2007; Hazan, Sennema, Iba, and Faulkner, 2005), but the relationship between one’s speech perception and production has not been confirmed. Perception refers to L2 learners’ ability to distinguish in the input different L2 phonemes and suprasegmental components in the same language as well as among different languages (especially between their L1 and L2). Production is their ability to articulate certain

sounds (Loewen, 2018). Some researchers have found that perception precedes production or vice versa. For example, some studies have found that perception accuracy is a significant predictor of learners' improvement in production accuracy (e.g., Akahane-Yamada, Tohkura, Bradlow, & Pisoni, 1996; Bradlow, Akahane-Yamada, Pisoni & Tohkura, 1999). In a study conducted by Kartushina, Hervais-Adelman, Frauenfelder and Golestani (2015), production training with visual feedback led to improvement in perception. However, an increasing number of empirical studies support the possibility that perception and production are independent of each other and develop individually (Lee & Lyster, 2017; Loewen, 2018). As a result, perceiving a target sound does not guarantee the improvement of learners' own production. The practice needs to be carefully designed for production itself.

The present study aims to create more practice opportunities when learners' awareness of language can arise autonomously or with the help of others.

2.1.2.3. Lack of timely feedback.

As discussed in the previous section, one of the functions of L2 output is to receive feedback and verification (Gass & Mackey, 2007). Feedback is the essential way to help learners avoid making the same mistakes again and again. Swain (1993) mentioned in the output hypothesis that just speaking and writing are not enough. Learners test their language hypothesis based on the teacher's or other learner's reaction and feedback. It is an ongoing dialogue between teachers and students, feedback providers and receivers (Straub, 1996; Nicol, 2010). There are already studies indicating that corrective feedback as an effective pedagogical tool can help learners achieve target forms (e.g., Ellis, 2009; Lyster & Saito, 2010; Russell & Spada, 2006). To be more specific, L2 learners can benefit from corrective feedback by making a cognitive comparison between the target input and their own interlanguage (Ellis, N., 2005; Ellis, R. & Ellis, R. R., 1994) and this process of noticing the gap can lead to language acquisition.

Although receiving feedback can be anxiety-provoking, studies have found that learners tend to prefer to be given corrective feedback when they make errors (Lyster & Saito, 2010; Nicholas, Lightbown, & Spada, 2001). This differs from teachers' belief that students do not want to get feedback when they make errors. Through questionnaires with 100 students and interviews with 21 of them, Zacharias (2007) found that students highly prefer teachers' feedback on their language output (writing), while the teachers prefer to give general feedback on the content. The results also revealed that teacher feedback contributed greatly to learners' motivation and attitudes towards writing in their L2.

Learners may feel discouraged when being corrected by the teacher in front of other learners, so they may try to avoid being corrected when interacting with the teacher (Sato, 2013) in a communicative context. However, Sato (2013) asserted that the finding that learners tend to avoid situations where they may be given corrective feedback does not necessarily mean that (a) they do not wish to receive feedback from the teacher or (b) that they will also avoid feedback when interacting with their classmates. In addition, Van Lier (1988) argued that language learners in classrooms are different from speakers in real-life situations. In the latter situation, being corrected can be insulting. In the classroom, students are willing to learn from another person's feedback. Self-regulated learners seek feedback from external resources, including peers' contributions, in collaborative contexts to help facilitate their language (Butler & Winne, 1995). Nonetheless, attitudes toward corrective feedback may be affected by learners' cultural backgrounds and proficiency levels (Sato, 2013). So, research on learner's beliefs should not expect results that are consistent across contexts or learners. The present study explores the affective response towards feedback by Chinese learners of English.

However, knowing the discrepancy between students' and teachers' perceptions of corrective feedback does not make the teacher's job easier. Giving feedback to each student on

each mistake is unrealistic in a classroom with 40 or more students but only one teacher. This dilemma is likely to be addressed by training learners to provide peer feedback. Focusing on Chinese learners of English, the present study examines whether the general positive beliefs found in Sato's (2013) research with Japanese learners of English can be observed in a different context.

2.1.2.4. Foreign Language Anxiety.

Not only do teachers avoid teaching pronunciation, based on the researcher's experience as a student and as a language teacher, students do not enjoy practicing pronunciation and lack methods to do it. From the learners' perspective, their reluctance to use the target language orally does not only occur because they are not proficient enough. As an EFL teacher, the researcher has noticed that in some cases, even intermediate learners with a high proficiency are still hesitant to speak the target language. What prevents them is their self-perceived incompetence. It is possible that they experience foreign language anxiety when they have to speak in their non-dominant language.

Foreign language anxiety is the feeling of tension, fear and apprehension associated with foreign language contexts. It can be divided into three components: communication apprehension, fear of negative social evaluation and test anxiety (Horwitz, E. K., Horwitz, M. B. & Cope, 1986). One of the sources of foreign language anxiety among L2 learners is the apprehension that their egos might be threatened in front of others (Baran-Łucarz, 2014). So, Azher, Anwar and Naz (2010) concluded that "speaking in front of others" is rated as the biggest cause of language anxiety followed by "worries about grammatical mistakes", "pronunciation" and "being unable to talk spontaneously". Thus, the level of foreign language anxiety affects learners' language performance (Chastain, 1975; Horwitz, 2001). In Kralova, Skorvagova, Tirpakova and Markechova (2017), after psycho-social training, a non-therapeutic intervention

program of active social learning, learners' anxiety was significantly lower and pronunciation quality was significantly higher in the experimental group.

Foreign language anxiety can also appear when L2 learners have unrealistic beliefs about target language learning, such as the previously mentioned goal of native-like accent. The degree of learners' anxiety can be affected by individual differences and thus varies from individual to individual, but among the methods suggested to address learners' high level of foreign language anxiety, the most frequently mentioned one is to build a supportive and motivating classroom environment where L2 learners are comfortable to practice and make mistakes (e.g., Alsowat, 2016; Kralova et al., 2017). The current study tries to create a safe space for L2 learners to practice and help other learners' practice with minimized anxiety stimuli, not in the classroom, but in mobile-assisted learning.

2.2. Peer interaction and peer feedback

2.2.1. Peer interaction.

Peer interaction as a learning strategy has been increasingly acknowledged and investigated. In peer interaction contexts, knowledge does not only transfer unilaterally from the teacher to the student, but it can transfer and be explored between students. From both sociocultural and cognitive perspectives, research has found that peer interaction can create abundant L2 learning opportunities (Boud, Cohen., & Sampson, 1999, 2014; Sato & Ballinger, 2016). Sato (2017) also notes that although native interlocutors can give L2 learners more quality input, peer interaction creates more occasions during which feedback, modified output and self-initiation modification increased. During peer interaction, learners may develop a more comprehensive idea of their own L2 language (Firth & Wagner, 1997; Hall, 2004; Larsen-Freeman, 2007; Sato & Ballinger, 2012; Swain, Brooks, & Tocalli-Beller, 2002; Swain & Deters, 2007; Van Lier, 1998). In a cross-context, cross-methodology examination, which

combined a study in a Japanese university with a study in Canadian French immersion classes for grade 3 and grade 4 students, Sato and Ballinger (2012) found that L2 learners' language awareness can be enhanced through peer interaction, during which a reciprocal mindset among learners is essential. Based on these findings, researchers have suggested that relevant pedagogy should be implemented to maximized learners' exposure to peer interaction and to develop the proper mindset towards it. One of the key elements that makes peer interaction rewarding is their opportunity to receive feedback from and give feedback to each other during the interactive activities, its advantages and challenges will be discussed below.

2.2.2. Peer feedback.

When it comes to feedback, it is commonly believed that only teachers' or native speakers' feedback can help learners notice a gap between what they do and do not know about their L2. A large proportion of feedback research were accordingly conducted on the interaction between teachers and learners as well as between native speakers and learners. However, other researchers have argued that the feedback between learners can serve as deeper, learning-oriented dialogue (Sato, 2013, 2017). According to Storch (2001, 2002), learners are actually skillful at scaffolding and are routinely doing so during class activities. There is empirical evidence that supports the pedagogical and social benefits of peer feedback in language acquisition, especially in L2 writing (e.g., Rollinson, 2005). In a study (Lee, 2015) with 30 Chinese junior secondary students in Hong Kong, students responded in the interview that peer feedback in their writing activity (reviewer-writer exchange) triggered their task interest, offered opportunities for perspective-taking and enhanced their writing development. Liu and Carless (2006) argued that peer assessment and peer feedback enable students to take an active role in managing their own learning.

The major difference between peer and teacher feedback is noteworthy: learners are not only feedback receivers but also feedback providers (e.g., Sato, 2013, 2017). From a feedback receiver's perspective, peer feedback affects learners' processing of linguistic information, which is often followed by modified output. Peer feedback can also raise the language awareness (explicit knowledge about language, conscious perception, sensitivity in language learning and reflection upon the language; Carter, 2003) on the part of feedback provider. Before making modified output, L2 learners have to decide whether their peers have provided correct feedback, which is different in the situation where learners prefer to accept unconditionally the teacher's suggestions. In a study with Japanese EFL learners, Sato and Lyster (2012) affirmed that learners self-corrected and self-monitored more in peer interaction than when interacting with teachers. In order to provide feedback to others, L2 learners must notice the gap between the error and the target-like production or what they believe to be correct. During this process, the learner may (a) compare the target error with his/her interlanguage; (b) decide whether it is his/her peer or him-herself made the mistake; (c) provide feedback accordingly to make it explicit and understandable, (d) monitor his/her own production. So, learners involved in reciprocal learning with their peers learn not only from the feedback given by their interlocutors, but from the process of self-monitoring and self-reflection. Based on this argument, even though the efficacy of peer feedback during an intervention might be low, learners are in the process of acquiring the long-term habit of speech monitoring. Peer feedback is therefore associated with a greater degree of student autonomy, even in a teacher-authoritative environment (Yang, Badger., & Yu, 2006). Given the potential of peer feedback in general language education, it is assumed that it can also be used in helping to improve L2 learners' pronunciation. But the literature on the use of peer feedback in the training of speaking skills is rare. So, the current study aims to explore its applicability with empirical evidence.

2.2.3. Challenges of peer feedback.

But there are also challenges in implementing peer feedback. Technically, peer feedback is not as comprehensive and reliable as teacher's feedback (Li, Liu & Steckelberg, 2010). However, as mentioned in the previous section, learners' ability to provide quality feedback is stronger than commonly believed. This will be further explored in the present research.

From a psycholinguistic perspective, peer feedback can cause tension among L2 learners, especially those who know each other. Peer feedback could be considered as offensive and can cause the learner to "lose face" (e.g., Yoshida, 2008). Both the mistrust of the feedback receiver and the lack of confidence in the feedback provider can affect the frequency, quality and efficacy of peer feedback on language acquisition. Some learners feel insecure in providing feedback because they think their own English is not good enough and think that providing feedback is the teacher's job. Philip, Walter, and Basturkmen (2010) also said that in order to give feedback to classmates, learners need to be confident in their own proficiency. Yoshida (2008) reported that the effectiveness of peer feedback depends on learners' satisfaction in their own and their classmates' linguistic ability. So, if they don't trust their own ability and their peers' ability to provide feedback, the linguistic hints produced with the feedback can be neglected. In some cases, learners feel timid to give feedback because they don't want to interrupt the flow of their conversation with others. To conclude, learners' hesitation to provide feedback to others comes from the lack of confidence in their language proficiency, task-related discourses and their social relationship (Sato, 2017). However, it is possible to reduce these challenges with pedagogical strategies. The strategy used in the current study is to involve mobile-assisted language learning. Some of the advantages of mobile-assisted language learning and how it can help minimize the challenges of peer feedback will be discussed in the following section and in the motivation of the study.

2.3. Mobile assisted language learning

The ubiquitous usage of smart devices has brought changes to foreign language education. It has made language learning more reachable and portable. Kukulska-Hulme (2013) defined mobile-assisted language learning (MALL) as "the use of mobile technologies in language learning, especially in situations where device portability offers specific advantages" (p.1). Studies involving mobile devices in English education have been focusing primarily on teaching vocabulary (Stockwell, 2007; Suwantarathip & Orawiwatnakul, 2015; Wong & Looi, 2010) writing (Li & Hegelheimer, 2013) and reading (Lan, Sung & Chang, 2007; Lin, 2014). Only a few have investigated the effects of mobile-assisted learning on speaking (e.g., Demouy & Kukulska-Hulme, 2010; Kukulska-Hulme & Shield, 2007; Saran, Seferoglu, & Cagiltay, 2009) such as speech recognition (Kumar, Aggarwal, & Jain, 2012) and speaking assessment (Demouy, Eardley, Shrestha, & Kukulska-Hulme, 2011).

Mobile-assisted learning has certain features that can facilitate language acquisition compared to traditional classroom learning. First, mobile phones are readily available. The portability of mobile media is the most distinctive feature that distinguishes it from other educational technologies. Learners can "study and practice manageable chunks of information in any place on their own time" (Chinnery, 2006, p.13). It allows L2 learners to engage in EFL learning and practicing activities based on their own needs and pace. In other words, learners have more autonomy, which Holec (1981) defined in his book *Autonomy and Foreign Language Learning* as the "ability to take charge of one's own learning" (p 3). The huge percentage of ownership of mobile phones among students makes teaching and learning more flexible. Some researchers refer to mobile-assisted learning as an important method of flexible education or flexible learning (e.g., Yue, 2015). Flexible learning differs from traditional classroom learning in a way that makes use of time and location of study, teaching, assessment and certification.

Students are the center of flexible learning and have been viewed as active participants in the learning process (Nikolova & Collis, 1998). Mobile technologies are not in themselves instructors. They are instructional tools. They change the way students receive information and the way they interact with teacher and other learners.

Another advantage of mobile-assisted learning is based on its interactive function of instant messaging. In a study (Cavus & Ibrahim, 2009) carried out with 45 first-year students at the Near East University, Short Message Service (SMS) was used in teaching new technical words. Results showed that students enjoyed the learning process and learned new words with the help of their mobile phones. With a mixed method of quantitative and qualitative analyses, Saran, Seferoglu and Cagiltay (2009) explored the use of multimedia messages via smart phones to improve L2 learners' pronunciation. During this four-week study, 24 elementary learners were assigned into three different groups where they receive learning materials in terms of multimedia messages, handouts and websites. The multimedia message group allowed students to see the definitions of words, example sentences, related picture and to listen to the pronunciation. They found positive effects in the post-tests, which had been furthered supported by the data collected through their open-ended questionnaires and interviews.

Interestingly, the learning environment created with the help of mobile devices is supportive and collaborative but allows learners more private space as well. Learners can make use of both the synchronous and asynchronous features. More specifically, mobile devices and messaging applications enable not only real-time reply or conversation like learners do in the classroom, but also delayed comments on previous assignments. This has been shown in empirical studies as well. For example, Kim and Yoon (2014) discussed how the smart-phone-based application Mobile Community (Mocafe) and Kakao Talk can be implemented and blended with offline classes to teach writing. Eight students aged 14-15 from a private language

institute participated in the study. Through the qualitative and quantitative data from the questionnaires, pre-and post-tests, and interviews, they found that this blended learning approach increased students' written output in both quality and quantity, and that the students preferred doing asynchronous online writing assignments over a synchronous text communication (instant messaging). L2 learners don't have to react immediately when they feel they are not able to react or when they notice the gap of their knowledge based on their interlocutors' production.

Mobile-assisted learning is favored among learners not only because of the timing of receiving and responding to feedback. Acting behind the screen provided L2 learners with a protection both physically and psychologically. It makes collaboratively learning and privacy compatible. Portable devices help unconfident learners by saving a private space to practice speaking and pronouncing a foreign language (Kukulska-Hulme, 2013). Also, the absence of an authority figure (Sato & Ballinger, 2016) makes it easier for learners to take risks with their languages. In a study using a mobile-device-supported peer-assisted learning system for collaborative EFL learning, Lan, Sung and Chang (2007) identified learners's anxiety, motivation and oral reading confidence by video data observation. They affirmed that the anxiety level in elementary EFL learners were reduced and they were more motivated and more confident in oral reading. Han and Keskin (2016) explored the use of WhatsApp in EFL speaking class with 39 adult English learners in Turkey. After analyzing learners' interviews about their WhatsApp experience based on recurring themes, they find that most students like the idea of using WhatsApp in the classroom, and believed the application contributed to their language performance. Attewell and Webster (2005) also found that mobile learning inspires enthusiasm in young adults and increases their motivation to improve their reading skills collaboratively. However, they also affirmed that simply grouping students into heterogeneous small groups does not guarantee effective collaboration. The pairing strategy of students need to be considered.

Mobile assisted learning can also help build a learning profile for each learner which enables them to track their own progress in language learning. Going back to learner autonomy, Little and Packman Smaby and Massux (2005) emphasized that enjoying autonomy requires learners' self-assessment. Keeping track of their own learning and progress does not only serve a pedagogical function, but also strengthens learners' psychological momentum. Additionally, one of the reasons why immediate corrective feedback works better than delayed corrective feedback is that learners may find it hard to recall precisely what they said during communicative practice (Isobe, 2018). Mobile devices used in their learning have made the storage of their performance and the recall more convenient and timelier.

2.4. Motivation of the study

Given the theoretical potential of peer feedback in L2 learning, it is worth exploring more empirical evidence. To be more specific, this study aims to investigate the possible application of peer feedback in helping L2 learners improve their pronunciation, an essential subject less investigated in second language education.

As mentioned in previous sections, although perception and production are independent, noticing the gap between one's mispronunciation and the target sounds does not guarantee the production of the accurate sound by L2 learners, the researcher hypothesizes that L2 learners can make use of their perception capacity to help other L2 learners to find some of the mispronunciations which has been neglected by the speaker him-/herself. Since there is no empirical evidence to support this hypothesis, the current study aims to bridge the gap. Knowing that peer feedback can be problematic without pedagogical strategies, the current study integrates mobile-assisted learning, endeavouring to make use of its strengths to counterbalance the drawbacks of peer feedback.

Since the participants are Chinese L1 learners of English living in China, the researcher selected WeChat as the learning media. WeChat is one of the most popular instant messaging applications used in mainland China, and by Chinese people overseas, which enables real-time interactivity and communication. The learners in the current study are already familiar with the user interface because of its prevalence in China as a messaging tool. It has also been used by some language learners as a platform to take online video and audio language lessons. In a study on WeChat assisted language learning, Pan, Hu, and Quan (2016) pointed out that WeChat could provide a situational and communicative learning environment for students, which in turn may help them convert language competence into language proficiency. In their study, WeChat was found to be effective for vocabulary practice and learning. Providing feedback through WeChat, compared with providing feedback in the classroom, allows the learners more time (asynchronous) to listen to other students' reading, think about their own reading and prepare the feedback they are going to provide. They are able to turn to multimedia learning materials easily through their mobile devices. This is also based on researchers' suggestions for reducing foreign language anxiety by creating a friendlier learning environment which allows the students to make mistakes and to provide non-native learning examples. In addition, with one's voice message store in the chatting group, it's easier for them to track their own progress by re-listening to their readings every step of the way. Since the voice message is available to everybody, they can also learn from more advanced learners.

2.5. Research questions

In light of the previous research studies and motivation of the current study, the research questions are as follows:

1. Can L2 learners perceive errors in their peers' pronunciation and therefore give them feedback?

2. If learners are able to perceive their peers' pronunciation errors, what are the effects of peer feedback on English pronunciation by Chinese L2 learners using the WeChat application?

    (a) Can L2 learners improve their pronunciation through peer feedback? If yes, can they retain this progress over time?

    (b) Does peer feedback have similar effects on L2 pronunciation comprehensibility and accentedness in comparison with teacher feedback?

3. What are the methods that L2 learners use to provide feedback to each other?

4. What are L2 learners' beliefs about peer feedback?

Chapter 3

Methodology

This study used mixed methods (i.e., quantitative and qualitative) to get a clear insight into the effects of peer feedback on L2 learners' pronunciation and their beliefs about giving as well as receiving peer feedback. This chapter will explain the methodology of the current study in detail, including the participants, procedure, intervention, testing materials and data analysis.

3.1. Participants

The current study involved five types of participants:

- Native English Speakers (n = 2)
- Native English-speaking raters (n = 6)
- Chinese-L1 EFL teacher (n = 1)
- Chinese-L1 learners of English (n = 32)

The native speakers' group consisted of one male and one female North American English speaker, according to their self-reporting (e.g., dominant language and places of education). At the time of the study, they were graduate students in the Faculty of Education at an English university in Canada. They were asked to read and record the pretest, immediate post-test and delayed post-test materials. Their recording samples were mixed up with participants' recordings and were rated by the raters blindly.

The six native English-speaking listeners comprised the rater group and included two males and four females recruited from self-reported English monolingual speakers (n = 1) and English dominant bilingual speakers (n = 5). They were all majoring or minoring in linguistics or second language education in English-speaking universities in Montreal, Canada, at the time of the study.

The Chinese-L1 EFL teacher was the researcher's colleague who was working in a private English language teaching institute in China at the time of the study. He has two-year experience in both online teaching and classroom teaching. The researcher informed him of the research details after he expressed his interest in participating in the present study. The researcher recruited participants mainly via written blogs and podcast. The student recruitment advertisement was posted on the EFL teacher's WeChat blog. In the advertisement, the researcher introduced herself, the objectives and the procedure of this research and sought potential participants. Snowball sampling was also promoted. The researcher then read and audio-recorded the script of the advertisement, making it available on the teacher's podcast account. Lecturers and professors in the Chinese university from which the researcher graduated also helped share the advertisement and podcast link to the current students at that university. Students who were interested in the study contacted the researcher through WeChat and emails.

In order to measure potential participants' English proficiency and their ability to perceive mispronunciations before providing feedback, the researcher invited all L2 learners who were interested in participating in the study to take two tests. The first test was to read a short paragraph in English (150 words). The researcher herself listened to their recordings and the measurement was based on their pronunciation. To be qualified as a participant, one should read the entire paragraph without repetition, nor prolongation of words and sounds, and with no omission of words and no obvious interruption in the reading flow. The second test was to provide feedback on a recording (60 seconds) made by the researcher's previous student, who was at an elementary level of English and had made various types of mistakes in the recording. The researcher gave no instructions on how to give feedback or what kind of mispronunciation (e.g., segmental, suprasegmental) they should look at, because exploring whether they are able to provide feedback and the type of errors they prefer to correct are objectives of the study.

Thirty-three participant students (male: $n = 5$, female: $n = 27$) confirmed to attend the study. All participants completed a survey regarding their personal information (e.g., age, gender), language learning background, previous experience with and beliefs about peer feedback (see Appendix A for the survey). Apart from basic personal information, they were asked when and where they use English; how they practice spoken English; whether they have experience providing feedback on other English learners' pronunciation or receiving feedback from other English learners; and whether they believe they are capable of providing feedback on other learners' pronunciation errors and vice versa.

Based on the controlled reading tests they took before the confirmation of participation and their exposure to English reported in the survey, their English proficiency varied, but was high enough to complete the tasks described above, which required more than beginner-level proficiency. They were between the ages of 18 and 31 years (*Mean* = 23.13, *SD* = 4.92). All participants were Mandarin L1 speakers, and none of them had visited an English-speaking country during the six months prior to the intervention. The range of years that participants had studied English varied between 5 and 20 (*Mean* = 12.47, *SD* = 3.16). For this study, the diversity of participants (in terms of age, English proficiency and the amount of exposure to English) can provide a more comprehensive context which allows us (a) to see their different ability to provide feedback as well as the degree to which they can benefit from the feedback, and (b) to compare learners' ways of providing feedback when they were paired with higher and lower proficiency peers.

These 33 participating L2 learners were randomly assigned to three different groups: a teacher feedback group ($n = 11$), a peer feedback group ($n = 11$) and a control group (no feedback; $n = 11$, one participant in this group withdrew from the control group before the immediate post-test, whose recordings were then excluded from the database). Three WeChat

chatting groups were created by the researcher and were named “teacher feedback group”, “peer feedback group” and “practicing group (control group)” respectively.

3.2. Procedure

3.2.1. Training for the EFL teacher and peer feedback providers.

Before the intervention, the researcher provided a 45-minute training session to the EFL teacher through the audio call via WeChat. The EFL teacher had taught pronunciation and had used WeChat to provide explicit correction to his previous students, so instead of telling the EFL teacher how to provide feedback, the researcher simply suggested that he provide feedback as he did in his regular WeChat class. She also told the EFL teacher that he should give feedback after students have uploaded their recordings and informed him that his feedback messages would be used for data analysis. The L2 learners in the peer feedback group did not receive training on how to give feedback or on what kind of mispronunciation (e.g., segmental, suprasegmental) they should respond to. This was because one of the research questions in this investigation was related to which type of pronunciation error would elicit their feedback. Instead, prior to the study, the researcher explained the intervention procedures to the participants in the peer feedback group. For example, they were told when they should give feedback, to whom they should provide feedback each day, and what they needed to do after receiving feedback themselves.

Every day during the five-day intervention, each learner in the peer feedback group only provided feedback to one other learner and received feedback from another learner (the researcher sent them a message of name list every day to let them know their feedback provider and receiver of the day). Since in the survey, most of the participants believed that only learners of higher English proficiency would be able to help them by offering feedback, the researcher also informed them that they might be paired with learners whose English proficiency was higher

than theirs. The researcher encouraged them to try their best by helping more advanced learners to find errors that would otherwise be neglected by the speakers themselves.

3.2.2. Pretest.

Before the intervention began, all 33 participants and two native speakers were asked to take part in the pretest of their controlled reading skills. They were asked to read aloud a short paragraph adapted from *Aesop's Fables* named *The North Wind and the Sun* (113 words) and to record the reading with their smartphones or recorders in a quiet environment and send the recording to the researcher. The quality of the testing recordings was then screened by the researcher.

3.2.3. Intervention.

After the training, the intervention began. Each day during five consecutive days, all 33 participants received a short text (about 150 words) from *The Economist* or *Business Insider* chosen by the researcher. Every day, an audio instruction (narrated in Mandarin Chinese) explaining background information in the text was recorded and sent to each group by the researcher. Audio examples made by native broadcasters of the corresponding text were also provided to the participants. L2 learners in all three groups were asked to read the text aloud using the voice message function on WeChat and the messages could be heard by everyone in the same group. Learners were allowed to self-correct their messages. That is to say, they were able to send as many messages as they wanted before 2 pm of that day (to leave enough time for their peers to provide feedback and to make the second reading on the same day), but the feedback provider in the corresponding group only listened to and provided feedback on the last recording. The researcher encouraged them to listen to the example recordings before reading aloud in the chatting group. Listening to the broadcasters' reading could also serve as a method to help them detect their peers' pronunciation.

3.2.3.1. Procedures of intervention for experimental groups.

For the **teacher feedback group**, after listening to the students' recordings of the text, the EFL teacher provided feedback to them targeting their mispronunciations such as errors in specific phonemes, stress and intonation. The teacher also gave confirmation and encouragement to learners. The teacher's feedback was delivered through a mix of written feedback (text message) and audio feedback (voice message). Learners were required to read the text again and send another voice message after they listened to or read the teacher's feedback. The teachers' feedback to each student and the students' corrected (after receiving feedback) readings were accessible by all the learners in the same group. In the questionnaire after the intervention, they were asked whether they listened to other learners' readings and the teacher's feedback.

For the **peer feedback group**, each learner provided feedback on one peer's reading and received feedback from another learner. They were allowed to give feedback in any format (e.g., written message, voice message, picture). Learners in this group were also required to read the text again and send another voice message after they read or listened to their peers' feedback. All the messages were accessible to learners in the same group. It was believed that learners could also benefit from listening to the feedback provided to their peers. The researcher encouraged participants to listen to other learners' feedback and readings. In the questionnaire after the intervention, they were asked whether they listened to other learners' readings and other learners' feedback.

3.2.3.2. Procedures of intervention for control group.

Learners in the control group were also asked to read the text aloud and send voice messages to the group. But they were provided with no feedback. The researcher encouraged them to record themselves as many times as they liked to get their pronunciation more target

like. After the intervention and delayed post-test, the researcher and the ESL teacher provided learners in the controlled group suggestions on improving their pronunciation as a compensation.

3.2.4. Immediate post-test.

One participant in the control group withdrew from the study after the intervention, before the immediate post-test, because of a personal reason. Her materials were excluded from all sessions. Thirty-two participant students and two native speakers took the immediate post-test after the intervention. In order to compare L2 learners' pronunciation before and after the intervention, the immediate post-test was also a controlled reading. Thirty-two participants and two native speakers were asked to read *The Boy Who Cried Wolf*, a short story adapted from *Aesop's Fables,* and then to record their readings with their smartphones or recorders in a quiet environment and send the recordings to the researcher. The quality of the recordings was screened by the researcher.

3.2.5. Questionnaire.

After the immediate post-test, participants in the peer feedback group and teacher feedback group completed online questionnaires respectively regarding their perceptions of and affective responses to providing and receiving feedback (see Appendix B and Appendix C for the questionnaires). The items in the questionnaires are adapted from Dewaele and MacIntyre (2014), Sato (2013) and Pekrum. Goetz, Frenzel, Barchfeld and Perry (2011)

3.2.6. Delayed post-test.

One week after the intervention, 32 participants and two native speakers took the delayed post-test. In order to see whether the effects of feedback (if any) were retained, the delayed post-test, like the first two tests, took the form of a controlled reading. Participants were asked to read aloud the revised article called *Arthur the Rat*, a short tale originally devised to obtain phonetic representation and used by the International Phonetic Association. As in the previous tests,

participants were required to record their readings with their smartphones or recorders in a quiet environment and to send the recordings to the researcher. The researcher screened the quality of each recording before moving forward to the rating session.

3.3. Intervention and testing materials

The paragraphs used during the five-day intervention were excerpted from the British weekly magazine *The Economist* and the American website *Business Insider*. The researcher selected these two resources because (a) they provide standard and easy-to-understand English text on various topics; (b) both journals provide audio version of corresponding text recorded by native broadcaster with a British accent and an American accent, so that the influence of different English accents can be minimized. The researcher edited the audio file based the excerpts selected.

The text used in the pretest is *The North Wind and the Sun* (113 words). The full English text as it occurs in the *Handbook of the IPA* (1999) can be found in Appendix D. This passage was selected because it is the standard text used by the International Phonetic Association to illustrate the International Phonetic Alphabet in different languages. The English version has been widely used in phonetics research as it contains various phonemes in English (e.g., all the monophthong vowels) and it is available for a wide range of accent varieties of English.

For the same reasons, the other two texts used by International Phonetic Association were employed in the immediate post-test and delayed post-test. They are *The Boy Who Cried Wolf* (216 words) and *Arthur the Rat* (295 words). These two tests are longer than *The North Wind and the Sun* (113 words). In order to make the three tests similar in terms of length, the participants and two native speakers were asked to read only for one minute in the immediate post-test and the delayed post-test respectively. The whole texts, however, were sent to them to help them know the complete story of the paragraph they were reading. The complexity of three

texts were not compared because the present study does not include within-groups contracts. Instead, it only compares the between-group differences in each test. The two texts used in the immediate post-test and delayed post-test can also be found in Appendix D.

3.4. Data analysis

3.4.1. Quantitative data and the assessment of testing recordings.

Participants' answers in the pre-intervention survey and post-intervention questionnaires will be displayed descriptively by percentage.

In the current study, the participants' performance of pronunciation was assessed for its comprehensibility and accentedness. Since the assessment of intelligibility involves a large amount of phonetic transcription, and due to the small number of raters and the limitation of time, the researcher decided not to measure intelligibility. All the recordings made by the participants and the two native speakers in the pretest, immediate post-test and delayed post-test were mixed up and rated by six raters for **comprehensibility** on a scale from 1 (extremely incomprehensible) to 7 (extremely comprehensible) and for **accentedness** from 1 (very strong accent) to 7 (no accent) separately. That is to say, higher scores represent better pronunciation. The raters were allowed to give .5 to the recording. Therefore, 14-point Likert scales (*i.e.,* 0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7) were employed in the assessment.

3.4.1.1 Rater training.

Before rating the participants' recordings, the researchers gave group trainings to six raters. In the training, raters worked through a set of familiarization activities together. This ensured that all raters were aware of the definition of "comprehensibility" and "accentedness" and had a working knowledge of the rating scale. Raters attended a two-hour training session that took place at a university in Montreal, Canada. They used the scales described before to rate 11 speech samples for their comprehensibility and accentedness. The speech samples were produced

by L2 learners of English in Canada (n = 8) and China (n = 3) with Mandarin Chinese (n = 9) and French (n = 2) as their L1s. These 11 speakers represented a range of proficiency levels and L1 backgrounds. Each sample was a controlled reading of a short paragraph (about 150 words) and was between 54 and 60 seconds long. The rating process took around 60 minutes. All raters then took part in the group discussion. Raters were able to refer to their rating sheets, where they had taken notes while rating. The researcher acted as the discussion moderator. The group discussion came to a natural conclusion (e.g., which sample was considered as heavily accented or very comprehensible examples) after approximately 100 minutes.

3.4.1.2. Rating process.

The listening sessions were self-paced, and the raters could listen to each recording, replay it, and change their responses as many times as they wished. The rating process was completed individually by six raters. After listening to each recording, the raters filled out the scales on comprehensibility and accentedness in Excel worksheets. The rating was based on the entire recording, not on specific words or sentences. The inter-rater reliability (Cronbach's alpha) computed for the two sets of ratings (.78-.80) was sufficient for listeners (Shrout & Fleiss, 1979). Therefore, the mean value for comprehensibility and accentedness scores given by the six raters was computed for each student (separately for pretest, immediate post-test and delayed post-test). These final scores were used in all subsequent analyses.

3.4.2. Statistical analyses.

The testing scores were analyzed by the researcher with ANCOVAs using version 17.0 of the Statistical Package for Social Science (SPSS). First, to examine the differential effects of the intervention on L2 pronunciation in the immediate post-test, two ANCOVAs were conducted on the two outcome measures (comprehensibility and accentedness), using the pretest scores as covariates, and the immediate post-test scores as dependent variables. All the statistical

assumptions were met, including the assumption of regression of slopes, meaning that ANCOVAs were initially run with models that included interaction between the independent variables and the covariates. After confirming that there were no significant interaction effects (p = .323), another set of ANCOVAs were computed that excluded interaction.

The second research question is "if learners are able to perceive their peers' pronunciation errors, what are the effects of peer feedback on English pronunciation by Chinese L2 learners using the WeChat application?" In order to answer this question one step further by exploring the retention of effects created by different types of feedback, another two sets of ANCOVAs were conducted on comprehensibility and accentedness, but this time using pretest scores as covariates and the delayed post-test scores as dependent variables. Again, before running the ANCOVAs, the statistical assumptions were met, and there were no significant interaction effects (p = .548). Post hoc comparisons were conducted where significant difference was found among groups. The results from the later sets of ANCOVAs and post hoc comparisons will be reported in the results section.

3.4.3. Qualitative data.

Text messages and transcripts of voice messages produced by learners as well as the EFL teacher in the two treatment groups during the intervention was analyzed and selected to interpret the statistical results and answer the third and the fourth research questions: What are the methods that L2 learners use to provide feedback to each other? What are L2 learners' beliefs about peer feedback? The themes were derived from the participants' text by the researcher in an inductive manner after full-text screening.

This chapter explained the information of participants, study procedure, the rationale for the material used and the method of data analysis. The next chapter comprises a narrative description of the data as well as the presentation of statistically analyzed data.

Chapter 4

Results

A mixed method of quantitative and qualitative analysis was used in this study. This chapter provides results from the quantitative analysis based on the pre-test, immediate post-test, and delayed post-test as well as pre-intervention survey and after-intervention questionnaire to answer the second and fourth research questions raised in the previous chapter:

2. If learners are able to perceive their peers' pronunciation errors, what are the effects of peer feedback on English pronunciation by Chinese L2 learners using the WeChat application?

(a) Can L2 learners improve their pronunciation through peer feedback? If yes, can their progress retain?

(b) Does peer feedback have similar effects on L2 pronunciation comprehensibility and accentedness in comparison with teacher feedback?

4. What are L2 learners' beliefs about peer feedback?

Qualitative data will be used in Chapter 5 Discussion to answer the first research question. It is also used jointly with quantitative data to answer the third and fourth research question in the Discussion part.

4.1. Pre-intervention survey

All participants were asked to complete a survey before the intervention. According to the survey, the main contexts in which participants used English were in the classroom (n = 30), at work (n = 8) and when travelling (n = 5). Fifteen participants reported that they had received feedback from other learners in their English language class (during presentations) or online courses (in the after-class web forum) targeting their ungrammatical utterances, but they had

never received peer feedback on their pronunciation. Only two participants had received peer feedback (explicit correction) targeting their mispronunciation when they took online courses and practiced their pronunciation as required in the web forum. Table 1. displays the main methods used by these learners to practice English pronunciation.

Table 1 The main methods used by participants to practice English pronunciation

Methods	Number
Watching English TV dramas, movies or speech (e.g., TED talk) and repeating the subtitles	12
Listening to English songs or radio programs (e.g., BBC or VOA)	8
Reading aloud textbooks	8
Using English learning mobile apps to dub for movie clips	3
Answering teacher's questions or doing presentations in the language class	4
Reading aloud the text and asking friends to give feedback	1

When answering "Do you think other L2 learners can give you feedback on your pronunciation? Why or why not? If yes, what kind of L2 learners (their proficiency)?", 28 out of 32 participants believed that other learners might be able to provide feedback to them. But among them, 24 reported that only English major students or advanced learners could do so. For example, one participant wrote in the comments section of the survey, "He/She should have beautiful and standardized pronunciation." Another wrote, "As long as he/she is an English major student and have linguistic knowledge," and a third participant wrote, "I think learners who live in an English-speaking environment can provide more quality feedback." The fourth one, an English major sophomore wrote "Only my university classmates will be able to provide feedback to me." Three participants believed that other learners could give them feedback as

long as they had basic phonetic knowledge. For example, one student wrote “Yes, as long as they have basic knowledge about pronunciation.” Four learners who said “no” to this question believed only native speakers and teachers would be able to provide feedback.

Interestingly, when asked to self-assess whether they themselves could help other learners by pointing out mispronunciations and could provide feedback accordingly, 28 out of 32 learners thought they would be able to do so, because they “ha[d] some basic phonetic knowledge” and due to their “phonetic intuition”. For example,

Student 1: Yes, because I know some basic information about what correct pronunciation should be like.

Student 2: Yes, I have been learning English for a long time, and I watch English TV dramas very often, I think I know the prosody and have the phonetic intuition of what is native-like and what is not.

Student 3: Yes. I compare my peers’ pronunciation to the one I heard implicitly on television and in the radio program.

Student 4: Yes, I think I can. Although my own pronunciation isn’t good enough, I already know the rules about how to pronounce words.

Participants also reported that they were only able to provide feedback on segmental errors but not suprasegmental ones or vice versa. For example:

Student 5: Yes, I can provide feedback on phonemes, because I can check the International Phonetic Alphabet (IPA). I cannot provide feedback on intonation because I’m not a native speaker and don’t know the correct way to pronounce the melody of the sentence.

Student 6: Yes. I can tell whether he or she makes mistakes in intonation or pause because I have feeling of what is native and what is not.

Five participants expressed their hesitation and lack of confidence to provide feedback to others. Some typical responses were, “my own pronunciation isn’t good enough,”.

Student 7: No. My assessment of other learner’s reading is very intuitive and it’s hard to express how I feel about their pronunciation to the speaker.

Student 8: I don’t know. It depends. I can provide feedback to learners of lower proficiency than me. But for those whose English competence is better than mine, I cannot find their mistakes and don’t know how to provide feedback to them.

Student 9: Hard to say. I think I can tell the mispronunciation. But I will hesitate to give feedback. My phonetic knowledge isn’t solid enough and I’m afraid of giving the wrong feedback to others.

4.2. Effects of feedback on controlled reading tests (Immediate post-test) and the retention of the effects (Delayed post-test)

In order to answer the second research question—what are the effects of peer feedback on L2 learners’ pronunciation, several statistical analyses were conducted.

First, two sets of ANCOVAs were run to determine the changes in participants’ performance of comprehensibility and accentedness in their immediate post-test. Then, another two sets of ANCOVAs were run using learners’ scores of comprehensibility and accentedness on the delayed post-test in order to explore whether the effects of teacher feedback and peer feedback in WeChat-assisted learning are retained after the intervention. The results are presented below. Table 2. presents the group means and standard deviations of each group at the three testing times, and Figures 1. and Figure 2. display the group means graphically.

The ANCOVA of comprehensibility yielded a significant group effect ($F(2, 28) = 9.684$, $p = .001$, Partial Eta Squared = .409), revealing significant differences among the three groups at the time of the immediate post-test. The Bonferroni post hoc comparisons revealed that both the

peer feedback group (adjusted mean = 4.45) and the teacher feedback group (M = 4.87) outperformed the control group (M = 3.75; *peer-control group: p = .03; *teacher-control group: p < .001). No significant difference was detected between the peer feedback and teacher feedback groups (p = .325).

On the contrary, no significant difference among groups was detected by the ANCOVA on accentedness in the immediate post-test (F(2, 28) = 1.260, p = .299, Partial Eta Squared = .083).

Table 2 Group means and standard deviations for comprehensibility scores and accentedness scores

		Pretest		Immediate post-test		Delayed post-test	
Groups		*M*	*SD*	*M*	*SD*	*M*	*SD*
Peer feedback (*n* = 11)	(Comprehensibility)	4.39	0.62	4.46	0.74	4.46	0.67
Teacher feedback (*n* = 11)		4.28	1.05	4.80	0.79	4.92	0.62
Control (*n* = 10)		4.47	1.10	3.81	0.99	4.48	0.96
Native English Speakers (*n* = 2)		7.00	0	7.00	0	7.00	0
Peer feedback	(Accentedness)	3.55	0.75	3.51	0.63	3.52	0.70
Teacher feedback		3.75	0.84	3.68	0.78	3.68	0.65
Control		3.75	1.01	3.40	1.03	3.44	1.00
Native English Speakers (*n* = 2)		7.00	0	7.00	0	7.00	0

In the comparison of the delayed post-test scores on comprehensibility, no significant difference was found among groups (F(2,28) = 3.926, p = .031, but all p > .05 in the post hoc comparisons, Partial Eta Squared = .219). Similar to the immediate post-test, the ANCOVA on accentedness detected no significant difference among groups in delayed post-test (F(2,28) = 1.013, p = .376, Partial Eta Squared = .067).

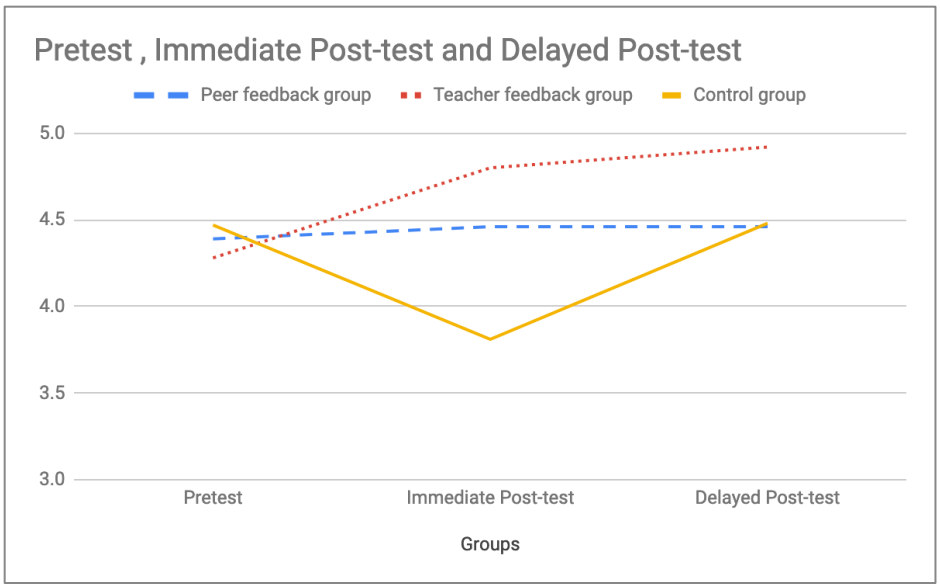

Figure 1 Mean scores on comprehensibility

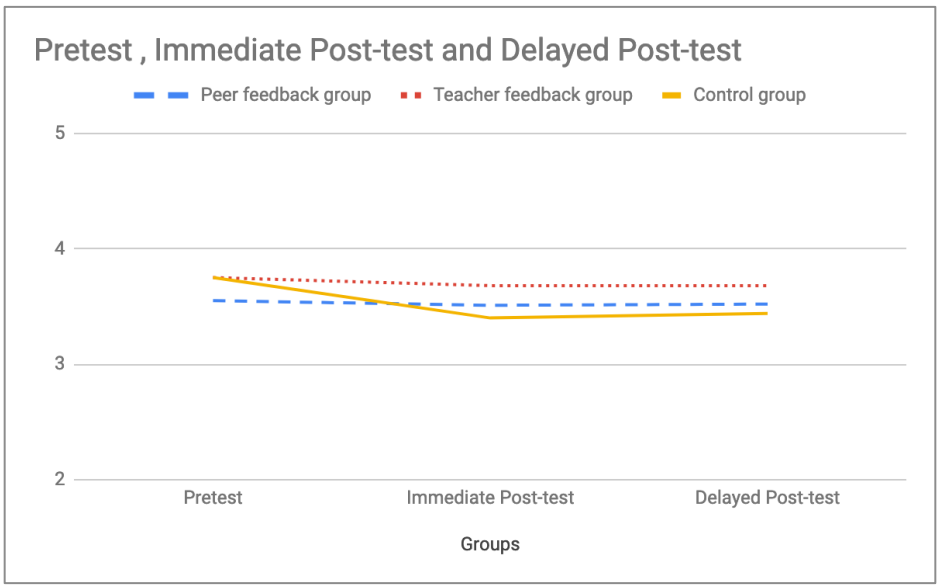

Figure 2 Mean scores on accentedness

4.3. Learners' affective response to teacher feedback and peer feedback

Items from the post-intervention questionnaire aiming to explore learners' beliefs towards peer feedback are displayed as follows:

Table 3 Percentage of participants' responses to survey items

Statements		Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
I think reading aloud in the chatting group gave me more chance to practice pronunciation.	PF	90.09%	9.09%	0	0	0
	TF	63.64%	36.36%	0	0	0
The chatting group was a positive and supportive learning environment.	PF	72.73%	27.27%	0	0	0
	TF	63.64%	36.36%	0	0	0
Every time other learners (PF)/ the teacher (TF) pointed out my errors in pronunciation and/or provided a correction, I trusted him/her.	PF	18.18%	72.73%	0	0	0
	TF	72.73	27.27%	0	0	0
I didn't hesitate to read because I believe other learners (PF) /the teacher (TF) would help me when I make mistakes.	PF	45.45%	54.55%	0	0	0
	TF	45.45%	54.55%	0	0	0
When my classmate made an error, I could point it out.	PF	18.18%	72.73%	9.09%	0	0
	TF	--	--	--	--	--
	PF	63.64%	27.27%	9.09%	0	0

I paid more attention to my own reading since I started to provide feedback to others (PF)/ I paid more attention to my reading since the teacher gave me feedback (TF).	TF	81.82%	18.18%	0	0	0
I enjoyed receiving feedback from my peers (PF)/ the teacher (TF).	PF	45.45%	45.45%	0	9.09%	0
	TF	63.64%	27.27%	9.09%	0	0
I enjoyed providing feedback to other L2 learners.	PF	27.27%	36.36%	18.18%	18.18%	0
	TF	--	--	--	--	--
I felt anxious and uncomfortable when receiving feedback from my peers (PF)/ from the teacher (TF).	PF	0	9.09%	0	54.55%	36.36%
	TF	0	0	0	81.82%	18.18%
I felt anxious and uncomfortable when providing feedback to my peers.	PF	0	9.09%	18.18%	45.45%	27.27%
	TF	--	--	--	--	--
I could see my progress during the five-day practice.	PF	18.18%	45.45%	36.36%	0	0
	TF	81.82%	0	18.18%	0	0
	PF	36.36%	54.55%	9.09%	0	0

I could understand the feedback I got and could make modifications accordingly.	TF	27.27%	72.73%	0	0	0
I could understand the feedback I got but I could not correct my mispronunciation.	PF	0	9.09%	18.18%	63.64%	9.09%
	TF	0	45.45%	9.09%	45.45%	0
I felt a sense of achievement when I correct my mispronunciation with the help of my peers (PF)/ the teacher (TF).	PF	18.18%	72.73%	9.09%	0	0
	TF	45.45%	45.45%	9.09%	0	0
I felt a sense of achievement when my peers find my feedback useful.	PF	27.27%	54.55%	9.09%	9.09%	0
	TF	--	--	--	--	--
I listened to other learners' recordings and others' feedback (not targeting my reading).	PF	18.18%	54.55%	0	18.18%	9.09%
	TF	9.09%	63.64%	9.09%	18.18%	0
I found listening to other learners' recordings and feedback (not targeting my reading) very useful for my own pronunciation practice (PF). / I found listening to other learners' recordings and the	PF	27.27%	63.64%	9.09%	0	0
	TF	9.09%	72.73%	9.09%	9.09%	0

teacher's feedback (not targeting my reading) very useful for my own pronunciation practice (TF)						

Detailed interpretation of learners' responses will be provided in the next chapter.

4.4. Qualitative findings

Learners generated 98 text messages and 23 voice messages in the peer feedback group, and learners and teachers 35 text messages and 75 voice messages in the teacher feedback group (including feedback; excluding required controlled reading). In order to have a more comprehensive understanding of learners' interaction and feedback, selected messages from both treatment groups were transcribed and translated by the researcher and are used along with the quantitative findings in the Discussion part to explain the effects of peer feedback and to answer the third and the fourth research question: What are the methods that L2 learners use to provide feedback to each other? What are L2 learners' beliefs about peer feedback?

In this chapter, quantitative analyses results were reported. First, participants previous experience involving peer feedback on pronunciation and their beliefs about L2 learners' capability of providing feedback on English pronunciation were displayed through their answers to the pre-intervention survey items. Second, in order to investigate the effects of peer feedback and thus answer the second research question, a comparison of the pretest and immediate post-test scores was conducted. Third, the comparison of the pretest and delayed post-test scores demonstrated that the effects peer feedback in a mobile-assisted learning context did not retain after the intervention. Fourth, the results of the questionnaires exploring participants' affective response to the feedback they received in the learning group were demonstrated to allow a close

look at learners' beliefs towards peer feedback. This was combined with participants' survey responses to address the last research question in the discussion chapter.

The next chapter will discuss and interpret the main findings of this research based on the quantitative results, qualitative data and the literature on pronunciation acquisition and peer feedback.

Chapter 5

Discussion

In this chapter, I will address the four research questions by discussing the qualitative and quantitative findings and their possible explanations based on the literature.

5.1. L2 learners' ability to notice mispronunciation and to provide feedback

The first research question was: Can L2 learners perceive errors in their peers' pronunciation and therefore give them feedback? Their interaction in the chatting group sufficiently supported the fact that they were able to detect some of the mispronunciations produced by other learners and then provide confirmation and/or corrections accordingly. This partially matched their self-reported capability of providing feedback to others.

Although in the literature, learners often express a lack of confidence in their ability to provide feedback, and a lack of trust in the accuracy of feedback provided by their fellow L2 learners (e.g., Guardado & Shi, 2007; Sengupta, 1998; Tsui & Ng, 2000), some ESL researchers have suggested that L2 learners are capable of providing helpful corrections (e.g., in DeKeyser, 2007; Sato & Ballinger, 2012, 2016). Learners' beliefs are directly related to their learning behaviors (Borg, 2003), so it is highly possible that students who believe in their ability to give feedback (even those who believe that their feedback may not be perfect) will end up providing more feedback to others.

Additionally, researching the reason why learners distrust other learners' feedback may lead to pedagogical adjustments to the involvement of peer feedback in language teaching process. This study also examined factors influencing learners' trust of their peers' ability to give feedback: (a) their perception of whether their peers could produce model pronunciation and (b) their perception of whether their peers had mastered phonetic knowledge. To be more specific, when asked what kind of learners can give them feedback on their pronunciation, most

participants believed that only those who could pronounce English very well would be able to do so. When answering whether they were able to give other people feedback, the majority of participants (87.5%) wrote yes, and the reason was they "have some phonetic knowledge to help them".

The main difference between teacher feedback and learner's feedback is that learners are unable to provide feedback that is as comprehensive as language teachers' (Li, Liu & Steckelberg, 2010). In this study, learners were aware of this weakness, for example (all names are pseudonyms):

> Julia: Hello, it's my pleasure to work with you. I hope we can help each other and improve our pronunciation together. My pronunciation isn't perfect, but I've been practicing. **I may not find out all your mistakes, please excuse me.** First of all, your pronunciation is pretty good, but you can do better... (peer feedback group, Day 1).

However, their limited ability to provide feedback did not prevent them from actively interacting with their peers in the group, which can be seen from the amount of text they generated in the group.

5.2. The effects of peer feedback on comprehensibility and accentedness

The second research question was: If L2 learners are able to perceive their peers' pronunciation errors, what are the effects of peer feedback on English pronunciation by Chinese L2 learners using the WeChat application? To be more specific, this question sought to determine whether L2 learners can improve their pronunciation through peer feedback and whether that progress can retain over time. Finally, a sub-question investigated whether peer feedback has a similar effect on learners' L2 comprehensibility and accentedness in comparison with teacher feedback.

As discussed in the previous section, L2 learners were able to perceive pronunciation errors (at least part of the errors) and provide feedback accordingly, although the feedback was not complete. The following section will provide a detailed interpretation of the statistical analysis on the changes of learners' comprehensibility and accentedness after the intervention.

5.2.1. Comprehensibility in the immediate post-test.

When comparing the three groups' immediate post-test scores on comprehensibility, the ANCOVA yielded a significant group effect, indicating that both the peer feedback group and the teacher feedback group outperformed the control group in terms of comprehensibility after the intervention. It was assumed that the teacher feedback group would perform better than the peer feedback group due to the higher quality of the EFL teacher's feedback. However, no significant difference was detected between the two treatment groups. Considering the short duration of the treatment, it is important not to over-interpret these results. Nevertheless, this finding can demonstrate some positive effects of peer feedback on learners' phonetic comprehensibility. The results can be explained by the effects of practice and metalinguistic awareness in language acquisition.

5.2.1.1. Practice and L2 acquisition.

According to skill-acquisition theory (Johnson, 1997; DeKeyser, 1998, 2007), practice plays an essential role in proceduralizing declarative knowledge. Since L2 learners in this study had a higher level of proficiency than beginner learners and had various amounts of phonetic knowledge, practice would help them proceduralize their explicit knowledge so that it could be integrated into their pronunciation as they read aloud.

As showed in the survey, participants in the present study mainly practiced English pronunciation through watching English-language videos (37.5%), listening to English songs (25%), reading aloud from textbooks (25%), using mobile applications to dub for movie clips

(9.38%) and through answering questions in their language classes (12.5%). The amount of practice was generally small, and the output they produced in the language was less than their input. During the study, however, learners were asked to produce output intensively and constantly by practicing and reading the text every day. Compared with the control group, who only read the text once per day without any feedback, both the teacher group and the peer feedback group were asked to read the text twice, once before receiving feedback and once after receiving feedback. In addition, learners were aware that in order to improve their pronunciation, or speaking skills in general, it was necessary to practice. For example, the most frequently given suggestion in the peer feedback group was "I think you need to **practice it more**. Repeat after the native speakers recording." One participant in the group texted to her peer, "yes, this vowel is hard to pronounce. But just practice and practice and practice, then the muscle of your mouth will remember how you do it" (Day 3). Also, before sending the second recording in the group, L2 learners often left a note to their feedback providers such as "please allow me more time to practice the text a few more times. I will send the recording very soon." One of the items in the post-intervention questionnaire was: I think reading aloud in the chatting group gave me more chance to practice pronunciation. In the peer feedback group, learners strongly agreed (90.91%) or agreed with (9.09%) this statement.

Practicing pronunciation in this way increased the amount of output made by learners. Since the reading examples made by native broadcasters had also been provided to L2 learners, they were able to model the pronunciation. Additionally, the process of providing and receiving feedback reinforced their pre-exist or newly acquired knowledge (if any). Lyster, Saito and Sato (2013) affirmed that the overall purpose of feedback is to initiate the acquisition of new knowledge or to consolidate already acquired knowledge. They noted that learners may have had target language knowledge that is accessible for comprehension but not for production, but that

accurate production requires further activation of the knowledge with the help of feedback and practice (Lyster, Saito & Sato, 2013). In the present study, L2 learners acquired new knowledge not only from others' feedback, but from the research they did before providing feedback, such as referring to the dictionary, language forum, native speaking videos or other multi-media resources. Then, both new and old knowledge were consolidated.

However, real classrooms are different from that of research settings: although both teachers and learners know the importance of practice, and as shown in the current study, L2 learners constantly suggested their peers to "practice more", it has not been turned into actions in foreign language classes (Sato, 2013). The time, energy and strategies targeted at pronunciation practice in real classrooms are far from enough.

5.2.1.2. Feedback providers and self-monitoring.

Schmidt (1994) claimed in the noticing hypothesis that "intake is what learners consciously notice" (1990, p.149). Many researchers have investigated the importance of attention and awareness for L2 acquisition (e.g., Doughty, 2001; Doughty & Williams, 1998). As feedback receivers, L2 learners may benefit from noticing negative evidence (Loewen, 2018) in their interlanguage with the help of their peers. Negative evidence is the "information about what is incorrect in the language produced by a learner and what is needed to make a correction to align the learner's language with the target language" (Gass, 2002, p. 170-171). Learners can receive negative evidence from explicit corrections or from incidental corrections (implicit) during interaction (Long, 1996). In the current study, after receiving explicit corrections from their peers, learners were able to notice their nontarget-like utterances which they had missed when they listened to their own readings.

Feedback was also found to provide learners with negotiated assistance as they move from other-regulation towards self-regulation (Nassaji & Swain, 2000; Sato & Ballinger, 2012).

However, self-regulation becomes more explicit when learners become feedback providers. As feedback providers, participants in the current study needed to first compare their peers' reading to their own reading or modeled reading made by native broadcasters. It is likely that they benefitted both from the positive evidence provided in the models (how the target form sounds/looks like) in the native speaker's recording and from noticing the gap between the native recordings and other learners' interlanguage. By comparing their peers' reading with their own, they were able to discover their own errors. For example,

> Billy: In the word "Colorado", it should be /a:/ in instead of /ʌ/. **I just realized that I made the same mistake, after I checked the dictionary.** (peer feedback group, Day 1)

> Frank: Hey Linda, please listen to the third voice message I sent. **I listened to Celine's recording and re-listened to my own. I corrected some words.** Thanks! (peer feedback group Day 3)

In the post-intervention questionnaires, most learners agreed (63.64%) or strongly agreed (27.27%) that they paid more attention to their own reading after they had begun to provide feedback to other learners.

This self-monitoring and self-correcting behavior are supported empirically in the literature. In their study with Japanese learners of English, Sato and Lyster (2012) found a positive relation between peer feedback, knowledge proceduralization, and self-monitoring. They concluded that giving feedback to each other enabled learners in their study to reassess their erroneous structures retrieved from long-term memory by reprocessing them in working memory. Learners thus became more fluent in their speech. The feedback facilitated their self-monitoring: learners detected errors and edited their potential nontarget-like utterances before

finally speaking in front of their interlocutors. After detecting mistakes during the self-monitoring process, learners were more likely to self-correct before others pointed out their errors. This can also be seen in the present study: learners sometimes asked their peers to listen only to the last piece of message by saying "there are some mispronunciation in the previous message I read. Please listen to the last one. **I corrected them (the mistakes).**" This self-correcting behavior increased over the course of the study, which was also shown from the number of self-correcting voice messages sent by each participant as the intervention went on. For example, on the first day of the intervention, the average number of recordings sent by each participant was 1.27, while the numbers on the third day and fourth day were 2.10 and 2.27 respectively. On the first day, only two learners in the peer feedback group sent self-correcting messages. This number increased to seven on the fourth day.

To summarize, in the present study, the feedback receiving and providing process might have increased L2 learners' ability to self-monitor and self-correct, both of which contributed to their progress in comprehensibility.

5.2.1.3. Metalanguage and L2 pronunciation acquisition.

One notable outcome of the intervention was the increase of L2 learners' use of metalanguage. Metalanguage refer to (a) the terminologies used to describe language and (b) the process of talking about language (Berry, 2010; Schleppegrell, 2013). In the current study, the increase of metalanguage used by L2 learners has been shown in their feedback provided in the group. For example,

> Chloe on Day 1: The "policy" should be **lower** (the intonation goes down); the last word should sound **"round" and "full"** (should be /au/ instead of /eu/), like what the native speaker does.

Chloe on Day 4: The **intonation and stress** of your last sentence sounds weird. The **vowel** in "requirement" is not accurate.

In order to provide understandable and convincing feedback, Chloe increasingly used metalanguage to explain and justify herself. It seems that her ability to identify and reflect on the language features (metalinguistic awareness; Shu & Anderson, 1999) was raised. The way Chloe formulated her feedback might have also been affected by other learners' feedback sent in the group. Generally, learners in the peer feedback group increasingly provided feedback that made reference to the phonetic alphabet and phonetic terminology. Another participant said to me, "I now understand why you asked us to read *The North Wind and the Sun* (the text used in pre-test). It contains lots of different English phonemes!"

It is interesting that when asked what kind of learners will be able to provide feedback to them in the pre-intervention survey, many participants wrote that they believed those who had phonetic knowledge would be able to provide feedback on pronunciation errors to other learners. It seems that they had a belief that there is a relation between one's phonetic knowledge and one's ability to provide feedback. However, the role of metalinguistic knowledge in learning a foreign language has been under debate in the literature. Although Han and Ellis (1998) concluded that metalanguage plays only an insignificant role in general language proficiency (Also see Alderson, Clapham, & Steel, 1997), Saito (2013) found explicit instruction of phonetic knowledge is beneficial to L2 learners in their pronunciation. In his study with 49 Japanese learners of English, he embedded explicit phonetic information before focus on form (FFI) treatment design to help learners practice the English sound /ɹ/. During explicit instruction, beginner-intermediate learners could pay more attention to the phonetic unit of L2 input without communicative pressure. After explicit instruction, learners had the opportunity in FFI activities

to proceduralize more target like representations and to generalize their new phonetic knowledge to unfamiliar contexts, which then led to better performance. Similar positive effects of phonetic knowledge have been found in earlier studies. In order to explore the relation between phonological awareness and speech comprehensibility, Venkatagiri and Levis (2007) asked 17 EFL learners to complete three tests of their phonological short-term memory and 14 tests which measured their explicit knowledge of English phonological structures. To be more specific, they were tested on their ability (a) to blend phonemes into syllables and syllables into words; (b) to change phonemes or groups of phonemes within a word or a phrase; (c) to decompose a word into phonemes and syllables; (d) to identify the position of a specified phoneme or a sequence of phonemes within a word; (e) to identify and produce rhyming and alliterating words, and (f) to read a sequence of phonemes without words. The learners were then asked to read aloud a passage and describe pictures. The testing results were rated by 12 native speakers of English on a 9-point scale. Their analysis showed a positive correlation between learners' composite phonological awareness scores and their rated comprehensibility. A positive correlation was also found between learners' phonological awareness and their short-term memory. The researchers affirmed that form-focused phonological instruction to EFL learners may lead to better speech comprehensibility.

Surprisingly, in the current study, learners' metalinguistic awareness was not only shown at the phonemic level, but also at the lexical and syntax level. Whether they have pre-existed knowledge or acquired this phenetic knowledge in between readings was not investigated in the present study. It seems that some learners were making connections between meaning and pronunciation, which can be seen from the frequently used word "意群"("chunk") in their feedback:

Chris: I think your reading is too flat and lack melody. **You need to punctuate between phrases and not to cut the "chunk"** (peer feedback group, Day 1).

Billy: **Do not pause within the chunk.** They are the whole unit. If you pause at the wrong place, you change the meaning of this sentence and people will be confused. You should listen to the native speakers' reading and pay attention where they pause or take a breath (peer feedback group, Day 2).

Chloe: Hi Jelly! Your reading is great. I should learn from you. You always pause at the right place. I mean, **I can easily distinguish chunks in the sentence** when listening to you. That sounds very native. There are some problems with your pronunciation of vowels such as /æ/, but your intonation is great (peer feedback group, Day 3).

By "chunk", they were referring to a thought group which usually consisted of two to five words that form a unit of meaning. Different pauses in the same sentence may change the meaning and pragmatic function of the sentence and affect intelligibility. It allows the speaker to organize speech into groups of words and helps listeners to understand information (Grant, 2010). This was not taught as part of the intervention in the present study. Some of the learners learned it on their own in language classrooms. For example, one participant in the peer feedback group wrote in the group, "Our English teacher said we should not stop in the middle of the chunk. Otherwise you may cause misunderstandings" (Day 2).

In the current study, L2 learners' critical listening skills also may have played a role. In exploring what makes pronunciation teaching work, Couper (2011) tested the effect of socially constructed metalanguage (SCM) and critical listening (CL). According to Couper, SCM relies

on both teachers and students working together to construct common ways of talking about phonetic concepts. Once the metalanguage has been developed, it can be used throughout the teaching process for quick and effective feedback. CL, however, requires the learners to listen for the contrast between the production made by themselves (or other learners) and the production made by native speakers. In the latter situation, learners learn phonological categories and their boundaries by themselves. Couper found significant immediate progress on reading tests by the SCM group and progress on listening discrimination by CL group.

In the present study, it seems that learners in the teacher feedback group received more metalanguage (or SCM) from their teacher in an explicit way. By contrast, although both SCM and CL were involved in the peer feedback group, learners in this group relied mainly on CL: admittedly, they discuss and received metalinguistic information from their peers. However, they spend more time comparing their own reading and their peers' reading with the model recording made by native speakers in order to detect the mispronunciation and give feedback accordingly. So, it is not surprising to see an increase of their metalinguistic awareness (as evidenced by their use of metalanguage) and their ability to perceiving mispronunciation, but limited progress in production. Looking for phonetic errors in other learners' production, as they did in the present study, seems to have trained their ears to be more sensitive and critical to the L2 sounds.

5.2.2. Accentedness in the immediate post-test and delayed post-test.

The ANCOVAs did not detect any significant difference in accentedness among groups on the immediate and delayed post-tests. This result seems to agree with previous research (Doughty, 2003; Elliot, 1997; Macdonald, Yule, & Powers, 1994; Saito, 2013; Schneiderman, Bourdages, & Champagne, 1988) which suggested that adult L2 learners' pronunciation is particularly resistant to change because, even after receiving targeted pronunciation instruction: according to the "Critical Period Hypothesis" (Lenneberg, 1967), language learners who learn a

new language after the biological and neurological period which ends around the age of 12 will find it extremely difficult to attain native mastery of that language, especially in relation to pronunciation. Considering that the current research included only a five-day intervention, it is not very surprising that no salient changes in L2 learners' accent were found. Other possible reasons for the "steadiness" of accentedness will be discussed below.

5.2.2.1. The perception of native-likeness.

In the present study, it can be seen from L2 learners' interaction in the peer feedback group that their goal of pronunciation training was to achieve a native-like pronunciation, and they also used this as the criterion to provide feedback to others. For example,

> Chris: The way you pronounce "artificial" is neither **British or American English**. If you want to practice British English, try not to roll your tongue (peer feedback group, Day 4).

> Tiny: The way you practice liaison **sounds more native**, which is good. You can improve your reading by trying to read it more melodically. You see what I mean? Also, listen to the native speakers' reading and compare her British accent to our Chinese accent (peer feedback group, Day 3).

L2 learners in the peer feedback group, like many learners of English, have a strong intention and motivation to sound like a native English speaker (Jenkins, 2000; Field, 2005). However, in this study, the participants' perception of native-likeness differed from the raters' perception. For example, raters said that they noticed in some recordings the participants seemed to slow down and pause on some particular words and sometimes "raised their intonation in a very weird way". It is assumed that the feedback might have triggered the participants'

awareness of suprasegmental features, but their efforts to modify their utterances failed to lead them to better scores in accentedness.

It is also important to point out that the Canadian raters in this study may have been biased towards a more British or a more American accent. As noted earlier, in order to minimize the effects of example accent in the study, the researcher selected audios from both *The Economist* (British English) and *Business Insider* (American English) in the intervention. Participants who consciously or unconsciously sought to produce American or British varieties of English (but failed to achieve a standard accent) may have been rated as strongly accented.

5.2.2.2. Prosody, meaning decoding and pronunciation.

Apart from their perception of nativelikeness, L2 learners' suprasegmental knowledge and their ability to decode the meaning of the text they read may also affect their accentedness. In a study conducted with 30 adult Korean learners of English and 10 adult English speakers, Trofimovich and Baker (2006) found that suprasegmentals contributed to foreign accent regardless of learners' age of arrival in the United States and exposure to English. In the present study, learners reported in both the pre-intervention survey and the interaction messages that they found it hard to give suggestions on suprasegmentals such as stress timing, pause duration and intonation, because they were "not native speakers" and could only rely on their "vague intuition" which had been acquired from TV dramas and English songs. For example,

> Chloe: I think your intonation and stress in the sentence "There is a good chance that the next Best Picture will be publicly screened for the first time at one or both of those events" sounds weird. I don't know how to read it correctly either. Maybe you can listen to the broadcaster's recording. She is very melodic but yours is a little bit stiff (peer feedback, Day3).

Chris: It will be better if you can add liaison. But I don't know where to add it. Maybe you can imitate the example recording (peer feedback group, Day2).

Since the testing took the form of controlled reading, learners were likely to focus on the pronunciation of individual words without paying much attention to the overall meaning of the paragraph. This may have impacted when and how long they paused while reading aloud, thus affect the accuracy of segmental. Trofimovich and Baker (2006) argued that not understanding the meaning of each sentence can also lead to improper peak alignment and speech rate, which both contribute to a perceived foreign accent. Two participants complained that when they read, they only focused on certain words. They were unable to decode the meaning of the paragraph at the same time (Xu, teacher feedback group; Carole, peer feedback group). Although the researcher provided background information of the news for learners, it was still hard for them to read and decode the meaning autonomously. But this is worth further exploring with empirical research the relationship between cognitive decoding and comprehensibility.

5.2.3. The retention of feedback effects on comprehensibility.

In the ANCOVA analysis of the delayed post-test scores on comprehensibility, no significant difference was found among groups, which was different from the assumption. As mentioned in the previous section, many second language acquisition (SLA) theorists argue that the first step for effective instruction is to have learners acquire declarative knowledge of formal rules of the target language features, because metalinguistic awareness is essential to interlanguage development. But the way they acquire this metalinguistic knowledge can also affect their cognition. According to DeKeyser (2003), there are two different methods to learn explicit knowledge: (a) through instruction (deduction) or (b) by "find[ing] the rules themselves (induction)" (p.321). In this study, both treatment groups addressed explicit phonetic knowledge,

but in slightly different ways. In the teacher feedback group, learners were taught phonetic rules deductively as the teacher pointed out learners' mispronunciations and explained them to them. However, in the peer feedback groups, apart from the information they learned deductively from others' feedback, learners were also inducting the phonetic rules as they listened to others' readings. Then they checked dictionary or other resources to verify their induction and explained the rules to their peers. It was assumed that induction would require deeper cognitive efforts and would thus lead to longer retention and better practice of the rules. It was also assumed that induction would involve more self-monitoring. Deep levels of conceptual processing of linguistic information is believed to associate with greater retention (Moranski & Toth, 2016; Qi & Lapkin, 2001).

One possible reason why the effects of peer feedback on comprehensibility were not retained was the limited amount of mispronunciation that peers were able to detect and correct. The type and content of feedback they provided were also limited. Although some participants in the peer feedback group expressed their willingness to practice pronunciation in the group and their wish that the intervention could be longer, they stopped interacting with each other after the intervention, perhaps because of the lack of authority and motivation. As one participant wrote in the peer feedback group, "I like the group learning mode. It motivates me to practice every day because I know someone is watching me. I would give up very easily when learning a new skill only by myself."

It is also possible that peer feedback alone was not enough, and more detailed instruction by the teachers was needed. In an instructed second language acquisition study conducted to investigate the effects of explicit phonetic instruction on L2 pronunciation (accentedness and comprehensibility), Saito (2011) found that explicit instruction given by the teacher had a significant effect on participants' comprehensibility but not on their accentedness. So, it is worth

investigating in future research the difference between teacher delivered explicit phonetic knowledge and autonomously or accidentally learned phonetic knowledge. In order to make new knowledge more acceptable for the learner, information provider needs to take into consideration the learners' ZPD (Zone of Proximal Development by Vygotsky, 1980). ZPD is "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers" (Vygotsky, 1980, p.86). It is possible that feedback provided and explained by the teacher is more understandable and within the learner's ZPD than feedback provided by L2 learners in the peer feedback group.

The lack of models may be another reason for the absence of retention. There are only a few studies that have examined how the effects of corrective feedback (recasts) can facilitate the L2 speech learning process (Saito & Lyster 2012a, 2012b), and these studies suggested that short pronunciation-focused recasts (showing learners the correct form) played an important role in L2 pronunciation development (Lyster, Saito., & Sato, 2013). They also explained that students first notice the negative evidence by comparing the examples in the feedback and their own reading. Then they practice the correct form in response to the pronunciation model made by the teacher (positive evidence). Explicit information in the feedback enables learners to make the best of teacher's models. In the current study, on the contrary, the lack of model in the peer feedback group may have reduced the effects of phonological information explicated mentioned by peer feedback providers.

5.3 The effects of teacher feedback on L2 pronunciation

It can be seen from the quantitative analysis that L2 learners' comprehensibility in the teacher feedback group was also significantly higher on the immediate post-test compared to that

in the control group. The following paragraphs will briefly discuss the effects of teacher's feedback on L2 learners' pronunciation, and to be more specific, comprehensibility.

There is a paucity of studies investigating the value of corrective feedback in pronunciation teaching and learning. But the existing literature did find that teacher corrective feedback is effective for improving L2 learners' comprehensibility compared to the scenario when learners receive instruction or conduct practice without feedback (e.g., Lee, Jang, & Plonsky, 2014; Mackey, Gass, & McDonough; Saito & Lyster, 2012)

In order to investigate the effects of teacher's individual corrective feedback (ICF) on L2 learners' pronunciation, Dlaska and Krekeler (2013) conducted a study with 169 adult learners of German. They assigned the L2 learners to two groups: a listening-only group, where learners listened to their own recordings and the teachers' model pronunciation, and an ICF group, where learners received teachers' feedback on individual consonant, vowel sounds, word stress and other prosodic features, along with teacher's examples. By comparing the rating of controlled speech production made by all L2 learners, Dlaska and Krekeler found that learners in the ICF groups performed significantly better than their listening-only counterparts. They claimed that effective feedback on pronunciation required information about three aspects, which are (a) the assessment of performance made by L2 learners as compared to the target performance; (b) the description of the target performance, and (c) proposed methods of how to bridge the gap between learners' performance and the target performance. These three aspects can also explain the progress of learners' comprehensibility in the teacher feedback group in the present study. The EFL teacher in the current study always started his audio feedback by pointing out the learner's mistakes, before producing an example for that students. Under such circumstances, L2 learners are likely to benefit from both negative evidence (noticing their mispronunciation) and positive evidence (directly listening to how the teacher produced the target sound). In the present

study, the EFL teacher also provided learners with detailed explanation on the linguistic forms. With the teacher 's information, L2 learners may become more aware of the difference between their L1 and L2, and of how to improve their interlanguage. For example, the EFL said in his voice message: "Chinese speakers usually finish the sentence with a downward intonation. But this is not the same in English. Try to raise your intonation a little bit when you pause at the comma, and the listeners will know that you haven't finish your sentence." (EFL teacher, Day 2), which helps the feedback receiver have a better understand not only on the target sentence, but also on general English pronunciation at the syntax level. Another example is when the teacher told one L2 learners the difference between syllable-timed and stress-timed languages — "Try not to pronounce each English word with the same length. Mandarin Chinese is a syllable-timed language: we pronounce each character at the same length. But English is stress-timed language, so the time it takes to say something does not depend on the number of syllables. If you read the English sentence in a Chinese way, you will sound like a robot. You can, for example, shorten and lighten the 'the' sound" (Day 1).

Despite of the evidence of being effective in the present study, peer feedback is not to be used to take the place of teacher feedback. Instead, it could and should be the complement of teacher-led pronunciation instruction and teacher feedback. It has a great potential to tackle the dilemma of teacher-learner ratio and learners' demand for timely feedback. The present study focuses on the impacts of peer feedback on L2 learners' pronunciation. However, it is worth seeking empirical and statistical evidence in the future research about the different mechanisms and effects between teacher feedback and peer feedback.

5.4. L2 learners' feedback provision methods

The third research question was: How do peers provide feedback to each other? In this section, teacher feedback will also be discussed in order to compare the differences between peer feedback and teacher feedback.

5.4.1. Format of the feedback.

In the teacher feedback group, the EFL teacher used voice message to provide feedback and to model the correct pronunciation instead of writing out his comments in a message. He reported doing so for three reasons: (a) it was more convenient for him to utter the confirmation or correction just like as he normally did in the classroom; (b) via voice message he is able to produce examples for his students, so that they are likely to modify their nontarget-like output by imitation; (c) his previous students told him that they preferred audio feedback because it created a closer connection with the teacher. He further explained that the students felt the teacher was talking to them personally in order to help them with their English learning.

On the contrary, for the first two days of the intervention, learners in the peer feedback group tended to give feedback by typing the words and IPA instead of using audio feedback. Their feedback was therefore mediated with Mandarin. The example and translations of their original texts are presented below,

> Example 1: Hi Aurora, 1) Alone 与 Along 混淆啦。2) Rich 与 Reach 发音有差别，rich 是 i:ch 3) Year 的发音稍微注意一下就好了。4) Obesity 是 obe 不是 obei。5) With，“th”不是“s” 6) Cognitive 和 Alzheimer 的发音可以再改善一下。一起进步呀！

Translation: Hi Aurora, 1) you mistook “Alone” and “Along”; 2) There is a difference between “Rich” and “Reach”, you should pronounce /i:/ in rich; 3) pay more attention to “year”; 4) “obesity” should be pronounced as “obe” instead of “obei”; 5) it’s “th”, not “s”. 6) your pronunciation of “cognitive” and “Alzheimer” can be better. Let’s work together!

There were only two learners in the peer feedback group who used voice messages to provide feedback from the first day of the intervention. Here's an example of the feedback provider modeling the sentence through voice message to show her peer how to make "proper intonation":

> Transcript (translated): You should pay attention to the intonation when you list things. For example, when you read "Britain, Denmark and Australia", you should rise the tone on "Britain", "Denmark" and fall on "Australia". You could listen to the native speaker's reading and to imitate it (peer feedback group, Day 1).

L2 learners in the peer feedback group started to increase the use of voice messages from the third day of the intervention as they became familiar with their peers and became more comfortable providing feedback and sometimes even pronouncing examples. There was only one learner in the peer feedback group who never used voice message to provide feedback.

No matter what kind of message they used, it seemed that they were aware that it is important to be friendly and respectful. They usually started their feedback with confirmation of their peer' general pronunciation to make the feedback sound friendly. For example,

> Charlie: I've been listening to your reading several times and **I think you are very good**. My pronunciation is not as good as yours, but **I hope my feedback can help you a little bit** (peer feedback group, Day 1).

> Chris: Hi, here's my feedback: **I think your reading is good in general**. I agree with the way you punctuate. The only thing I think you should pay attention to is the distinction between "th" and "s". And if you add liaison, you may sound more native (peer feedback group, Day 2).

In order to make their feedback clearer and more convincing, participants also used screenshots of the e-dictionary (Figure 3.), photos of hard copy dictionaries (Figure 4.), tips in the online forum (Figure 5.) as well as video and audio clips containing native speakers uttering the target word. Not all participants knew how to transcribe phonetically with IPA, so they creatively used the comparison of English and their shared L1, Mandarin, to indicate the phonemes which they perceived to be right. When providing feedback on intonation, they drew arrows to indicate when to rise their tones and when to fall down (see Figure 6.).

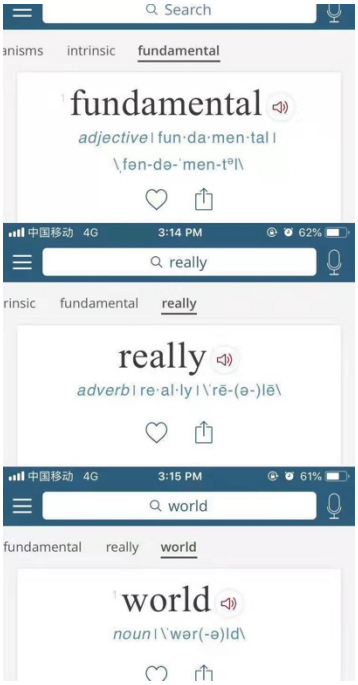

Figure 3 Screenshot of the e-dictionary used by one L2 learner in the peer feedback group on day 1 of the intervention

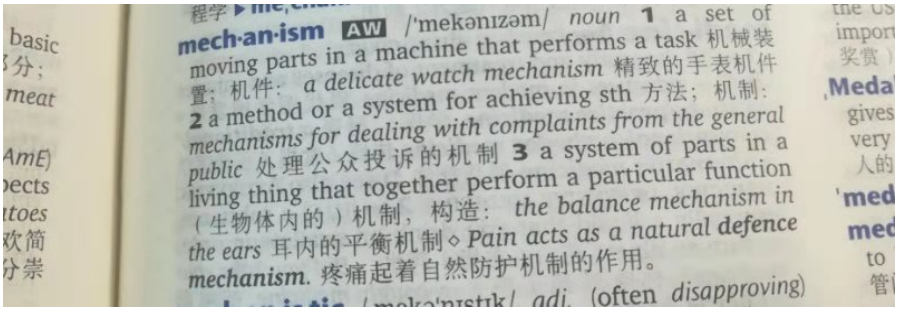

Figure 4 Hard copy dictionary used by one L2 learner in the peer feedback on day 2 of the intervention

Figure 5 Photo of tips on pronunciation found in the online forum by one L2 learner in the peer feedback group on day 2

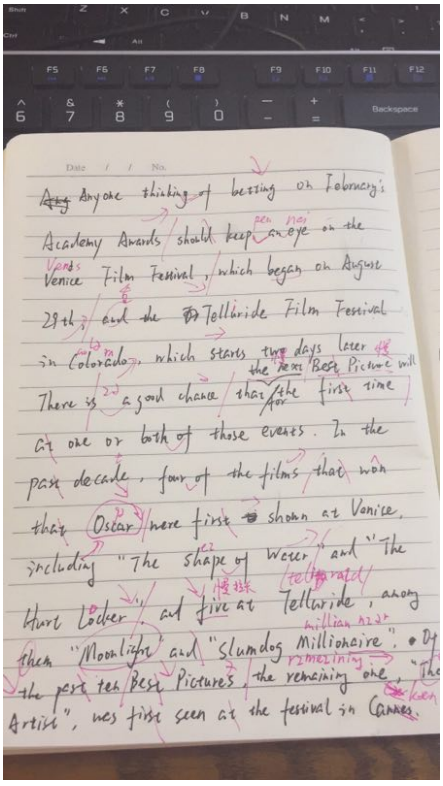

Figure 6 Picture sent by one L2 learner in the peer feedback group using arrows to indicate intonations

Previous studies have supported the effects of visual aids on the acquisition of foreign language pronunciation. In a study discussing how electronic visual feedback can be used to teach suprasegmentals, Anderson-Hsieh (1992) concluded that the visual demonstration made suprasegmental tangible to learners and provided an easier means for leaners to discuss their problems. In his study, suprasegmentals (stress, rhythm, linking, and intonation) are displayed in the graphs in terms of pitch and intensity line contours. Hirata (2004) employed a similar idea in an empirical study in Japanese learning context. She assessed the efficacy of pronunciation training with fundamental frequency contours (graphs that visualize how the pitch of the voice changes through an utterance) for native English speakers acquiring Japanese pitch and durational contrasts. After the matching task of frequency contours of Japanese-native models, participants' ability to perceive and produce novel Japanese words were tested. The trained participants displayed significant improvement in word perception and production, at both lexical and sentence levels.

Although the visual aids used in the current study are different from those discussed in previous studies, it is assumed that in the peer feedback group, L2 learners could benefit from pictures and videos when practicing their English pronunciation. To the author's knowledge, there are few studies exploring the effects of different feedback formats (e.g., written, picture, audio and video), it is worth investigating the efficacy of different types of feedback on different linguistic features.

5.4.2. Negotiation.

Learners in the peer feedback group negotiated when they disagreed with another learner' feedback. Interestingly, even though the EFL teacher said explicitly in his group that learners could let him know if they disagreed with his feedback or had follow-up questions regarding his feedback, no one negotiated or discussed the teacher's feedback throughout the intervention.

Their reply was either reading the text again or showing agreement with and appreciation for the teacher's feedback. For example,

Teacher feedback group:

Teacher: Hi Amy, your reading is fluent. When you want to emphasize the word in one sentence, for example, "fifteen cigarettes per day", do not simply raise your volume. Instead, stress a little bit of the syllables in that word "fifteen". It seems that you raise the intonation of each word and only lower it at the end. This makes your reading sound tiring and awkward.

Amy: Thank you! I really appreciate your help. Yeah...I know that I always have problems with the stress and intonation, but it's hard to correct it. I will try.

Peer feedback group:

Ben: "The" in "the US" should be pronounced as /ði:/ instead of /ðə/.

Chris: Thanks. But I think "US" starts with /j/, which is not a vowel.

Gary: I agree with Chris. I think we should pronounce "the" as /ðə/.

Ben: Hi, Chris, thanks! I checked the dictionary and listened to some examples. Yes, it's /ðə/. I thought "the" should be /ði:/ if it's in front of the vowel letter. I had been wrong. Sorry for the oversight and thanks.

Chris: No worries. Hope we can help each other.

Linda: I've heard several times the way native speakers pronouncing "the". I don't think there's a fixed rule on this. I don't know how to transcribe the phonemes. I will draw you a picture. Personally speaking, both are correct. But here, we can pronounce /ði:/ in order to emphasize.

The negotiation between L2 learners may have a positive effect on their language learning, and this has been supported by previous studies. For example, in a study with 31 students in two intermediate adult ESL classrooms, Nassaji (2011) compared three types of feedback on L2 learners' written errors for articles and prepositions: (a) non negotiated direct reformulation; (b) feedback with limited negotiation (teacher's prompt and reformulation) and (c) feedback with negotiation (encouraging the learner to find the answer him-/herself with more guidance and scaffolding from the teacher rather than just prompts). The results showed a significant advantage for feedback with negotiation. Nassaji explained the results using the Zone of Proximal Development (Vygotsky, 1980). Nassaji asserted that negotiation in language learning is important because this joint action helps learners to make use of their existing linguistic knowledge and also develop the knowledge they have not mastered independently. This also agrees with the literature that L2 learners prefer interacting with peers over interacting with teachers and native speakers (Sato, 2012, 2017) because they feel less anxious to make mistakes.

However, Nassaji also affirmed that the degrees of effects of negotiated feedback may differ for different linguistic targets. It is worth investigating in the future research the effects of negotiated feedback on L2 learners' pronunciation.

In addition, this kind of negotiation also reduced the possibility of learners fossilizing inaccurate knowledge (Han, 2006). In the example of the present study, Ben could have been carrying the misconception of how to pronounce "the" without Chris and Gray expressing their disagreement. Linda's explanation may have given him more evidence and helped him to reinforce the new/updated knowledge.

5.5. L2 learners' affective response to peer feedback

The fourth research question was: What are L2 learners' affective response to peer feedback?

Similar to their answers to the survey before the intervention, learners in the peer feedback group still displayed confidence in providing feedback to others in the questionnaire after the intervention. Apart from providing feedback, they also indicated that they were willing to receive feedback from others. Although learners who volunteered to participate in this study may have had a pre-existing tendency to trust peer feedback, their answers to some extent agreed with the literature in which L2 learners indicate their positive attitudes towards peer feedback (Sato, 2012).

Lyster, Saito and Sato's review (2013) revealed a clear preference among learners to receive feedback on their errors rather than having them ignored. What the current study adds is that this feedback may not have to come from teachers. As discussed in the literature review chapter, although some degree of language anxiety can motivate language learners, high levels of anxiety may prevent them from fulfilling their language potential (Chastain, 1975; Horwitz, 2001). L2 learners in the current study expressed low anxiety in the learning group while reading the text, receiving and providing feedback. It is possible that their language performance might have been better in this context than if they had been interacting with teacher or native speakers in an official encounter. In the literature on foreign language anxiety, previous researchers have suggested that a supportive learning environment should be created to help students. The present study demonstrated that WeChat is a good tool to create the friendly and tolerant environment where learners are less fearful to make mistakes.

In another study exploring how teachers can learn to create a low-anxiety classroom environment from language anxiety research (Young, 1991), Young's subjects described several characteristics of an instructor who can help them alleviate foreign language anxiety, including

being humorous, relaxed, patient and not overreacting to their mistakes. The most frequent suggestion they made was that they would feel more at ease if "the instructor was more like a friend helping them to learn and less like an authority figure making them perform" (p.107). This is interesting because in the current study, learners were helped by an actual "friend" instead of an authority.

In the present study, L2 learners expressed an openness to getting feedback from other learners, which has been shown in both questionnaire and their interactive messages in the chatting group. For example:

> Sam: Hi, Billy (her feedback provider of the day), here's my reading. Please feel free to let me know the weaknesses in my reading. Thank you!
>
> Aurora: I've been reading it several times. Please listen to the last voice message I sent. I think this one is better. Look forward to hearing your feedback. Thanks.

They were convinced, even before getting informed of the test results, that the feedback they received from either the teacher or their peers had been effective in helping them improve their pronunciation. In a study discussing peer response on writing, Hansen and Liu (2005) listed the guiding principles chronologically. They defined "peer response" as "the use of learners as sources of information, and interactants for each other in such a way that learners assume roles and responsibilities normally taken on by a formally trained teacher, tutor, or editor in commenting on and critiquing each other's drafts in both written and oral formats in the process of writing" (p.31). They affirmed that it is important to create a comfortable environment where students can establish peer trust. In the current study, L2 learners expressed their trust towards their peers. Most learners indicated that every time other learners pointed out their errors in

pronunciation and/or provided a correction, they trusted him/her. And a large proportion of learners in the peer feedback group showed that they were not afraid of making mistakes in the group because they believed other learners would help them. This is in line with their interaction during the intervention, which has been exemplified before.

However, to trust their peers does not mean they would believe and accept everything suggested by other learners, as discussed in the previous part of negotiation. Similarly, the lack of ability to provide complete feedback like what teacher do does not prevent learners from building peer trust and creating the collaborating learning environment.

After the intervention, learners in the peer feedback group self-reported as being more sensitive to the phonological information contained in the text. As one participant in the peer feedback group put it: “My ears are smarter than my mouth. Even if I cannot pronounce it in the right way, I can tell whether my friends are reading it right or wrong.”

Chapter 6

Conclusion

The current study contributes pedagogically to pronunciation instruction and training in different ways. Overall, it seems that peer feedback is beneficial in helping learners improve their pronunciation comprehensibility and can be complementary to teacher-led pronunciation instruction. The present study not only revealed how L2 learners perceive their abilities to provide feedback (as well as reasons) before they personally engaged in the intervention, but also uncovered their beliefs after they participated in offering and receiving feedback in a supportive mobile environment.

6.1. Maximizing opportunities for interaction

Based on the fact that peer interaction could facilitate L2 acquisition and pronunciation, mobile-assisted learning groups can be used to maximize learners' interaction opportunities, especially for learners who are shy to speak face to face with other learners in the classroom. WeChat provided a learning environment where they can give and receive feedback from other L2 learners without in-person interaction. The lack of authority (e.g., teacher, native speakers) and of physical presence give them more time to compose feedback, test their hypotheses and thus make it easier to express confirmation and suggestions. They are more willing to have an equal conversation in the virtual learning group. It could be a mutually beneficial solution for both learners and teachers in an EFL environment where the number of students limits their access to teacher-student interaction (Mayo & Pica, 2000).

6.2. Fulfilling feedback providers' potential

We can see from the present study and previous research that in both learner-learner and learner-teacher interactions, feedback plays an important role in facilitating interlocutor's language skills during the interaction. Unlike the common belief, L2 learners are willing to

receive and able to provide feedback to others. So, teachers and researchers can work on designing training activities and finding better ways to fulfil learners' potential as feedback providers

6.3. Teacher's role in peer interaction

While making use of peer feedback, we cannot ignore its limitations. The most salient shortcoming is its incompleteness. When learners provide controversial feedback, it triggers group discussion and invites collaborative exploration. However, teacher's supervision is necessary to confirm or deny their hypotheses. Both metalanguage instruction and feedback training are necessary among intermediate and advanced learners who are able and willing to provide feedback. Explicit introduction of metalanguage should be included in the language instruction for L2 learners of all levels. When discussing the use of form-focused instruction, "any pedagogical effort which is used to draw the learners' attention to language form either implicitly or explicitly" (Spada, 1997, p.73), Spada proposed that it will be most effective when integrated in communicative context, because learners can not only notice the form, but can also benefit from practicing linguistic features during meaningful interaction (Spada, 2011; Doughty, 2003; Ellis, 2002; VanPatten, 2004). Since L2 learners may have already been practicing their pronunciation through listening to broadcasts or shadowing movies or songs, the metalinguistic knowledge may work better with their "phonetic intuition".

Apart from delivering metalinguistic knowledge, teachers are the main character that shapes learners' perception of the goals in learning L2 pronunciation. In the current study, L2 learners seemed to swing between the pursuit of comprehensibility or native-accentedness, but they favored the latter. Teachers can show students examples of L2 learners whose speech is accented but still highly comprehensible. By doing so, it is easier for learners to set a goal of achieving comprehensibility instead of sounding like native speakers. On the other hand, more

effective ways to teach and train accentedness should also be explored. Admittedly, making oneself understood by the interlocuter is a more practical and realistic goal to set when learning pronunciation. Since learners are so eager to acquire "beautiful pronunciation," it can be beneficial if this affection can be transferred into motivation instead of a sense of frustration to learn and practice their L2.

We can see from the current research that students are not obliged to learn unilaterally from higher proficiency partners. Lower proficiency learners are also able to help their peers in different ways. This can be of pedagogical value for teachers who teach a diverse class where students' language proficiency varies. However, the effects of peer interaction between different student pairs may differ. The way of pairing peers is also worth considering in the future practice and research because different levels of proficiency might affect the quality or frequency of peer feedback provided.

6.4. Bridge the gap in the literature

The present study also fills the gap in the literature where the pedagogical value of peer feedback on L2 pronunciation has been less investigated. Previous studies on peer oral corrective feedback mainly focused on the correction of grammar and vocabulary (e.g., Hyland, 2000; Hyland & Hyland, 2006; Yang, Badger & Yu, 2006) during the conversation. The current study took a first step toward investigating the value of peer feedback (mainly explicit correction) in supporting L2 pronunciation development.

6.5. Limitations

Although the current study makes research and pedagogical contributions to the language education field, it has some limitations. The small number of participants makes it hard to draw a definitive conclusion about the specific effects of peer feedback which can be applied and generalized to a more diverse group of learners. It is worth noting that, based on the group means

on comprehensibility scores in three tests, the control group scored lower in the immediate post-test than it did in the pretest and delayed post-test. It is possible that the statistical significance may be due to the decrease in control group, and not because of the other groups' improvement. The possible reasons for the control group's decrease are (a) the lack of learner interaction and feedback may have caused a fluctuation in learners' pronunciation performance, and (b) in the current study, learners in the control group were only asked to read the paragraph once every day. Their performance may also be a result of a lack of practice. Regarding participants' affective response to peer feedback, because all participants volunteered to participate in this "peer feedback study", the results may not provide accurate information of learners' beliefs under normal learning conditions.

6.6. Future studies

The current study focuses on the effects of peer feedback on L2 pronunciation generally. It would be intriguing to explore the efficacy of peer feedback on fluency or other linguistic aspects. For example, it is worth investigating whether L2 learners benefit more from feedback on minimal pairs or on suprasegmentals such as word stress and intonation. It would also be interesting to determine how effective it is in helping learners correct phonemes that cause particular difficulties for Chinese L2 speakers.

Since the tests in the current study only involved controlled reading, it will be interesting and pedagogically important to explore whether the impact of peer feedback on learners' interlanguage development was only at a controlled speech level or at a spontaneous speech level as well. L2 learners are supposed to use their second language spontaneously in a communicative context. Therefore, spontaneous speech test would be closer to daily language use than controlled reading.

The current study was conducted among adult English as foreign language learners. It is assumed that adult learners have stronger phonological awareness and are able to use metalanguage when communicating with other. But it is worth studying the ability of providing feedback and the potential of benefiting from peer feedback among other age groups. For example, are younger learners able to detect the mispronunciation in other learners' speech production? If they are able to find out the errors and provide feedback accordingly, how do they do so? What is the difference between the feedback provided by adult learners and younger learners?

In terms of the duration of the intervention, five day is a very short period for any kind of pronunciation training. So, it would be important for future research to investigate the sustainability of peer feedback over a longer period of time (Saito, 2012, Derwing & Munro, 2005).

Interestingly, two of the many advantages of mobile-assisted language learning are (a) learners can get timely feedback; (b) learners can have more time to think about the linguistic subject and response to their interlocutors asynchronously. These two seemingly self-contradictory advantages can co-exist under a broader criterion: learners are able to receive feedback targeting their production within few hours, compared to the context when they may need to wait for days to receive feedback from teachers. However, their peers have enough time to listen and re-listen to other learners' recordings, check the phonetic knowledge with external help (e.g., dictionary and media) and get back to their peers, compared to the classroom context where they need to reply immediately during the conversation. Thus, it can be useful to explore whether and how the timing of feedback in mobile-assisted learning affects learner's perception of such feedback and its efficacy.

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Appendix A

Pre-intervention survey for participants

1.Name _____

2.Age _____

3.Gender _____

4.How long have you been learning English (year)?

_____

5. Have you been to any English-speaking country in the past six months? If yes, where had you been and how long had you stayed?

_____

6.When and where do you use English?

_____

7.How do you practice your oral English?

_____

8.Have you ever received any feedback on your pronunciation from another L2 learner (except language teachers and native English speakers)? If yes, when and where?

_____

9.Have you ever given any feedback on the pronunciation to another L2 learner? If yes, when and where?

_____

10. Do you think you are capable of providing CF to other L2 learners on their pronunciation? Why or why not?

_____

11.Do you think other L2 learners can give you CF on your pronunciation? Why or Why not? If yes, what kind of L2 leaners (their proficiency)?

Appendix B

Post-intervention questionnaire for teacher feedback group

This questionnaire is adapted from Dewaele and MacIntyre (2014), Sato (2013) and Pekrum. Goetz, Frenzel, Barchfeld and Perry (2011)

1: Strongly agree 2: Agree 3: Neither agree nor disagree 4: Disagree 5: Strongly disagree

I think reading aloud in the chatting group gave me more chance to practice pronunciation.
(1 2 3 4 5)

The chatting group was a positive and supportive learning environment.
(1 2 3 4 5)

Every time the teacher pointed out my errors in pronunciation and provided a correction, I trusted him.
(1 2 3 4 5)

I didn't hesitate to read because I believe the teacher would help me when I make mistakes.
(1 2 3 4 5)

I paid more attention to my reading since the teacher gave me feedback.
(1 2 3 4 5)

I enjoyed receiving feedback from the teacher.
(1 2 3 4 5)

I felt anxious and uncomfortable when receiving feedback from the teacher.
(1 2 3 4 5)

I could see my progress during the five-day practice.
(1 2 3 4 5)

I could understand the feedback I got and could make modifications accordingly.
(1 2 3 4 5)

I felt a sense of achievement when I correct my mispronunciation with the help of the teacher.
(1 2 3 4 5)

I listened to other learners' recordings and the teacher's feedback (not targeting my reading).
(1 2 3 4 5)

I found listening to other learners' recordings and the teacher's feedback (not targeting my reading) very useful for my own pronunciation practice. (1 2 3 4 5)

Appendix C

Post-intervention questionnaire for peer feedback group

This questionnaire is adapted from Dewaele and MacIntyre (2014), Sato (2013) and Pekrum. Goetz, Frenzel, Barchfeld and Perry (2011)

1: Strongly agree 2: Agree 3: Neither agree nor disagree 4: Disagree 5: Strongly disagree

I think reading aloud in the chatting group gave me more chance to practice pronunciation.
(1 2 3 4 5)

The chatting group was a positive and supportive learning environment.
(1 2 3 4 5)

Every time other learners pointed out my errors in pronunciation and/or provided a correction, I trusted him/her.
(1 2 3 4 5)

I didn't hesitate to read because I believe other learners would help me when I make mistakes.
(1 2 3 4 5)

When my classmate made an error, I could point it out.
(1 2 3 4 5)

I paid more attention to my own reading since I started to provide feedback to others.
(1 2 3 4 5)

I enjoyed receiving feedback from my peers.
(1 2 3 4 5)

I enjoyed providing feedback to other L2 learners.
(1 2 3 4 5)

I felt anxious and uncomfortable when receiving feedback from my peers.
(1 2 3 4 5)

I felt anxious and uncomfortable when providing feedback to my peers.
(1 2 3 4 5)

I could see my progress during the five-day practice.
(1 2 3 4 5)

I could understand the feedback I got and could make modifications accordingly.
(1 2 3 4 5)

I felt a sense of achievement when I correct my mispronunciation with the help of my peers.

(1 2 3 4 5)

I felt a sense of achievement when my peers find my feedback useful.
(1 2 3 4 5)

I listened to other learners' recordings and others' feedback (not targeting my reading).
(1 2 3 4 5)

I found listening to other learners' recordings and feedback (not targeting my reading) very useful for my own pronunciation.
(1 2 3 4 5)

Appendix D

Testing materials

Pretest text:

The North Wind and the Sun

The North Wind and the Sun were disputing which was the stronger, when a traveller came along wrapped in a warm cloak. They agreed that the one who first succeeded in making the traveller take his cloak off should be considered stronger than the other. Then the North Wind blew as hard as he could, but the more he blew the more closely did the traveller fold his cloak around him; and at last the North Wind gave up the attempt. Then the Sun shone out warmly, and immediately the traveller took off his cloak. And so, the North Wind was obliged to confess that the Sun was the stronger of the two.

Immediate post-test text:

The Boy who Cried Wolf

There was once a poor shepherd boy who used to watch his flocks in the fields next to a dark forest near the foot of a mountain. One hot afternoon, he thought up a good plan to get some company for himself and also have a little fun. Raising his fist in the air, he ran down to the village shouting 'Wolf, Wolf.' As soon as they heard him, the villagers all rushed from their homes, full of concern for his safety, and two of his cousins even stayed with him for a short while. This gave the boy so much pleasure that a few days later he tried exactly the same trick again, and once more he was successful. However, not long after, a wolf that had just escaped from the zoo was looking for a change from its usual diet of chicken and duck. So, overcoming its fear of being shot, it actually did come out from the forest and began to threaten the sheep. Racing down to the village, the boy of course cried out even louder than before. Unfortunately,

as all the villagers were convinced that he was trying to fool them a third time, they told him, ‘Go away and don’t bother us again.’ And so, the wolf had a feast.

Delayed post-test text:

Arthur the Rat (revised)

There was once a young rat named Arthur, who could never take the trouble to make up his mind. Whenever his friends asked him if he would like to go out with them, he would only answer, ‘I don’t know.’ He wouldn’t say ‘yes’, and he wouldn’t say ‘no’ either. He could never learn to make a choice. His aunt Helen said to him, ‘No one will ever care for you if you carry on like this.”

One rainy day, the rats heard a great noise in the loft where they lived. The walls shook, and all the rats’ hair stood on end with fear and horror. The chief said: ‘I’ll send out scouts to search for a new home.’

Three hours later the seven tired scouts came back and said, ‘We have found a stone house, which is just what we wanted; there is room and good food for us all. There is a kindly horse named Nelly, a cow, a calf, and a garden with flowers.’ ‘Are you coming with us?’ The chief rat asked. ‘I don’t know.’ Arthur sighed. ‘The roof may not come down just yet.’ ‘Well,’ said the old rat angrily, ‘we can’t wait all day for you to make up your mind’ And they went straight off.

Arthur stood and watched the other little rats hurry away. The idea of an immediate decision was too much for him. ‘I’m going back to my hole to make up my mind.’ That Tuesday night there was a great crash that shook the earth and down came the whole roof. Next day some men rode up and looked at the ruins. One of them moved a board and hidden under it they saw a young rat lying in the hole, quite dead.