

Knocking tones off their perch: investigating the intelligibility of
Anglophone beginner learners of Mandarin Chinese at two
secondary schools in the North of England

Robert Jonathan Neal
Homerton College

April 2020

This thesis is submitted for the degree of Doctor of Philosophy

Declaration

This thesis is the result of my own work and includes nothing which is the outcome of work done in collaboration except as declared in the Preface and specified in the text. It is not substantially the same as any that I have submitted, or, is being concurrently submitted for a degree or diploma or other qualification at the University of Cambridge or any other University or similar institution except as declared in the Preface and specified in the text. I further state that no substantial part of my thesis has already been submitted, or, is being concurrently submitted for any such degree, diploma or other qualification at the University of Cambridge or any other University or similar institution except as declared in the Preface and specified in the text. It does not exceed the prescribed word limit for the relevant Degree Committee.

Knocking tones off their perch: investigating the intelligibility of Anglophone beginner learners of Mandarin Chinese at two secondary schools in the North of England

Robert Neal

Abstract

Set within the context of teaching and learning Chinese at two secondary schools in the North of England and adopting a case study research design, the aim of this PhD study is to explore the intelligibility of young Anglophone beginner learners of Chinese in order to make a contribution towards the creation of a more evidence-informed Chinese as a Second Language (CSL) pedagogy.

Data collection activities included recording the spoken Chinese of 20 L2 learners during a variety of speaking tasks – from reading aloud single words and sentences to speaking extemporaneously in role plays. 40 L1 raters were subsequently interviewed as they tried to comprehend the learners' randomised speech samples. I also made use of stimulated recall interviews in which learners listened to selected audio extracts of their own L2 Chinese spoken data and were invited to comment upon any perceived pronunciation errors.

Distinguishing between the key constructs of accentedness, comprehensibility and intelligibility, I found that heavily accented tones did not necessarily lead to lower levels of comprehensibility and intelligibility. Furthermore, many intelligibility breakdowns – i.e. when raters failed to correctly transcribe the learners' intended utterances - could be traced to problems with individual words which usually implicated segmental sounds as well as tone. All learners demonstrated low levels of awareness of their own pronunciation errors both during and after speech production while learners who were more intelligible were generally more aware of their own pronunciation errors.

The majority of findings were interpreted in terms of indicating a need for more explicit forms of instruction, particularly in light of the low levels of awareness surrounding

learners' own pronunciation errors. Nevertheless, I also recognised the need to provide a healthy balance of more implicit forms of instruction to cater for more incidental learning. In light of the case study nature of the research design, the pedagogical suggestions were framed with reference to the learners who participated in this study. However, it is hoped that they will also be useful for wider application within the context of teaching Chinese as an L2 to young beginners in Anglophone settings. In terms of methodology, the coding systems developed to investigate listeners' responses to the L2 Chinese speech signal and the learners' awareness of their own pronunciation errors provide a new tool for other researchers in the field.

Acknowledgements

I would like to express my deepest thanks to Michael Evans for being such an inspiring, supportive and patient supervisor. Ever since he took the time to reply to a speculative email in 2010, Michael has done more than anyone to help me develop as a researcher. Special thanks must also go to my advisor Yongcan Liu, as well as Pam Burnard, Edith Esch and Karen Forbes for always taking an interest in my research.

As a part-time student based some distance away from Cambridge, I have particularly appreciated the support of the wonderful library team at the Faculty of Education. I would also like to thank the members of the Second Language Education Group for their friendship and moral support, as well as everyone at Homerton College including Kelly Collinwood and Melanie Keene. My friend Gordon Davies has proved to be a godsend with his generous hospitality on the numerous occasions I have needed to stay in Cambridge over the last nine years.

This study would not have been possible without the studentship awarded by the Economic and Social Research Council (ESRC) Doctoral Training Centre (DTC). For this I will always be grateful. The Faculty of Education and Homerton College also provided additional financial support so I could attend the 5th International Conference on Chinese as a Second Language Research (CASLAR) at the University of Hong Kong in June 2018. I am also hugely grateful to all the pupils and raters who agreed to take part in this study, as well as the teachers and Headteachers who kindly granted their permission so that I could carry out the research. I also gratefully acknowledge the assistance I received from Yang Renwang in finding the raters from a Beijing senior high school and with initial data analysis for the small-scale study discussed in Chapter 2.8.2.

Finally, I would like to acknowledge the support of my family. My parents first inspired me to take an interest in China as a teenager while my parents-in-law have made the campus at Xinxiang Medical University a second home and taught me much about life in Henan Province. My young sons Daniel and Louis have been a source of great joy and helped me not to take things too seriously. Above all my wife Jia has been a rock throughout the PhD journey. It is to you that this is dedicated with love and gratitude.

Contents

1. Introduction	1
1.1 Context: teaching Chinese in English secondary schools	1
1.2 Obstacles to further growth of Chinese in English secondary schools	2
1.3 Purpose and significance of study	4
1.4 Overview of the thesis	5
2. Literature Review	7
2.1 Challenges of learning Chinese for L1 Anglophone beginner learners.....	7
2.2 Intelligibility, comprehensibility and accentedness	8
2.3 Mandarin Chinese as a lingua franca.....	10
2.4 Second language acquisition perspectives on L2 pronunciation	11
2.5 Intelligibility-oriented research	12
2.6 Chunking in vocabulary research of young beginner L2 learners.....	13
2.7 CSL pronunciation research	13
2.7.1 The tonal system of Mandarin Chinese	14
2.7.2 CSL tonal production studies	15
2.7.3 CSL tonal perception and training studies	17
2.7.4 CSL intonation studies	18
2.7.5 CSL segmental studies	19
2.8 CSL intelligibility studies	20
2.8.1 Yang (2016)	20
2.8.2 Neal (2018)	23
2.9 Presentation of research questions.....	25
3. Research methodology	29
3.1 Second language acquisition, applied linguistics and practitioner research	29
3.2 Epistemological assumptions.....	30
3.3 Theoretical underpinnings and conceptual frameworks	31
3.4 Case study research.....	34
3.4.1 Background contextualisation.....	34
3.4.2 Sampling strategies.....	36
3.4.3 Ethical considerations	38
3.5 Data collection instruments and focus of analysis.....	40
3.5.1 Speaking tasks.....	40
3.5.2 Dictation exercises	41
3.5.3 Accentedness and comprehensibility ratings.....	42
3.5.4 Semi-structured interviews with raters.....	43

3.5.5 Stimulated recall interviews with learners	43
3.6 Procedure.....	44
3.7 Data analysis	47
3.7.1 Data analysis: identification and description of intelligibility breakdowns	47
3.7.2 Data analysis: raters' explanations of their ratings and transcriptions.....	48
3.7.3 Data analysis: learners' explanations of any perceived pronunciation errors	49
3.8 Conclusion.....	49
4. Investigating the relationship between learners' tonal production and their intelligibility ..	51
4.1 The ten monosyllabic words featured in this chapter	51
4.2 Overall intelligibility levels	52
4.2.1 Individual intelligibility levels	53
4.3 Overall interrater reliability ratings.....	54
4.4 Categorising intelligibility breakdowns	55
4.4.1 'wǒ' (I/me)	57
4.4.2 'nǐ' (you)	59
4.4.3 'hē' (to drink)	61
4.4.4 'dà' (big)	63
4.4.5 'chá' (tea)	66
4.4.6 'ròu' (meat).....	70
4.4.7 'chī' (to eat)	74
4.4.8 'suì' (age/years old).....	79
4.4.9 'xué' (to study).....	85
4.4.10 'shí' (ten)	90
4.5 Emerging themes and issues.....	97
5. Investigating the accentedness, comprehensibility and intelligibility of the learners' L2 Chinese at the sentence level	100
5.1 Initial coding framework	100
5.2 Overall rater responses to learners' sentence level utterances	102
5.3 Interview data	103
5.3.1 Category 1 transcriptions	104
5.3.2 Category 2 transcriptions	106
5.3.3 Category 5 transcriptions	114
5.3.4 Category 8 transcriptions	125
5.4 Concluding comments	137
6. Analysis of learners' awareness of their own pronunciation errors	139
6.1 Learners' awareness of their own pronunciation errors during speech production ...	139
6.2 Learners' implicit awareness of their own pronunciation errors after speech production	140

6.3 Learners' explicit awareness of their own pronunciation errors after speech production	155
6.3.1 Categorising the intelligibility breakdowns which featured in the stimulated recall interviews.....	156
6.3.2 Coding framework used to analyse learners' responses to their own intelligibility breakdowns	157
6.3.3 Learners' explicit awareness ratings.....	161
6.4 Analysing the explicit awareness coding framework	174
6.4.1 Code 1 responses – no recognition of breakdown(s).....	176
6.4.2 Code 3 responses – inaccurate explanation of intelligibility breakdown.....	178
6.4.3 Code 5 responses – successful self-repairs	180
6.4.4 Code 6 responses – partial explanations.....	180
6.4.5 Code 7 responses – full explanations.....	181
6.5 Conclusion.....	182
7. Evidence-informed perspectives for teaching pronunciation to young Anglophone beginner learners of Chinese	184
7.1 Key findings and their significance.....	185
7.1.1 All learners are considerably more intelligible at the sentence level than the individual word level.....	185
7.1.2 A majority of learners are most intelligible during the role-play activity as opposed to the read-aloud tasks.....	186
7.1.3 L1 Chinese raters frequently disagreed about the precise nature of an intelligibility breakdown, or even that there had been an intelligibility breakdown	188
7.1.4 Learners displayed high levels of inter-learner variability.....	190
7.1.5 Accentedness, comprehensibility and intelligibility are partially independent speech dimensions	191
7.1.6 Non-standard tones do not necessarily lead to lower levels of comprehensibility and intelligibility.....	193
7.1.7 Few intelligibility breakdowns at the sentence level can be traced solely to tone.....	194
7.1.8 Learners have low levels of awareness of their own pronunciation errors, both during and after speech production.....	195
7.1.9 Learners who are more intelligible are generally more aware of their own pronunciation errors	196
7.2 So what?	197
7.3 Explicit and implicit knowledge in instructed second language acquisition	198
7.4 Conclusion.....	202
8. Conclusion	203
8.1 Summary of findings.....	203
8.2 Pedagogical implications	204
8.3 Limitations of study.....	204

8.4 The study's contribution to research	205
8.5 Suggestions for future research	206
8.6 Concluding comments	207
References	209
Appendix A: Letter to parents/carers seeking permission for their child to take part in the study	222
Appendix B: Speaking tasks used to elicit L2 Chinese speech samples.....	223
Appendix C: Classification of pronunciation errors at the monosyllabic level	225
Appendix D: Coding framework used to analyse the perceived causes of accentedness ..	226
Appendix E: Coding framework used to analyse the perceived causes of lower levels of comprehensibility	227
Appendix F: Coding framework used to analyse the perceived causes of intelligibility breakdowns	228
Appendix G: Coding framework used to analyse learners' responses to their own intelligibility breakdowns	229
Code 1: No recognition of breakdown(s).....	229
Code 2: No explanation of breakdown(s).....	229
Code 3: Inaccurate explanation	229
Code 4: Unsuccessful self-repair	230
Code 5: Successful self-repair	230
Code 6: Partial explanation.....	230
Code 7: Full explanation.....	230

List of tables

Table 2.1: Accentedness, comprehensibility and intelligibility	9
Table 2.2: The tones of Mandarin Chinese.....	14
Table 2.3: Factors that affected L1 Chinese raters' foreign accent ratings	22
Table 2.4: Errors in the transcriptions by the L1 Chinese raters	22
Table 3.1: Key characteristics of School A and School B	35
Table 3.2: Key characteristics of participants from School A	37
Table 3.3: Key characteristics of participants from School B	38
Table 3.4: Research questions, data collection instruments employed and focus of analysis	40
Table 4.1: The ten monosyllabic words featured in Chapter 4	51
Table 4.2: Intelligibility levels for each of the ten monosyllabic words across the three tasks	52
Table 4.3: Average intelligibility ratings for each of the three tasks.....	52
Table 4.4: Individual learner intelligibility levels	53
Table 4.5: Interrater reliability ratings	54
Table 4.6: Classification of intelligibility breakdowns at the monosyllabic level	56
Table 4.7: Overall intelligibility and interrater reliability ratings for 'wǒ'	57
Table 4.8: Intelligibility breakdowns featuring 'wǒ' (n=7).....	57
Table 4.9: Respective contributions of tones, initials and finals to intelligibility breakdowns of 'wǒ'	58
Table 4.10: Overall intelligibility and interrater reliability ratings for 'nǐ'	59
Table 4.11: Intelligibility breakdowns featuring 'nǐ' (n=7)	59
Table 4.12: Respective contributions of tones, initials and finals to intelligibility breakdowns of 'nǐ'	60
Table 4.13: Intelligibility and interrater reliability ratings for 'hē'	61
Table 4.14: Intelligibility breakdowns featuring 'hē' (n=20)	61
Table 4.15: Respective contributions of tones, initials and finals to intelligibility breakdowns of 'hē'	62
Table 4.16: Intelligibility and interrater reliability ratings for 'dà'	63
Table 4.17: Intelligibility breakdowns featuring 'dà' (n=28)	63
Table 4.18: Respective contributions of tones, initials and finals to intelligibility breakdowns of 'dà'	65
Table 4.19: Intelligibility and interrater reliability ratings for 'chá'	66
Table 4.20: Intelligibility breakdowns featuring 'chá' (n=29).....	66
Table 4.21: Respective contributions of tones, initials and finals to intelligibility breakdowns of 'chá'	69

Table 4.22: Intelligibility and interrater reliability ratings for ‘ròu’	70
Table 4.23: Intelligibility breakdowns featuring ‘ròu’ (n=43)	70
Table 4.24: Respective contributions of tones, initials and finals to intelligibility breakdowns of ‘ròu’	73
Table 4.25: Intelligibility and interrater reliability ratings for ‘chī’	74
Table 4.26: Intelligibility breakdowns featuring ‘chī’ (n=45).....	74
Table 4.27: Respective contributions of tones, initials and finals to intelligibility breakdowns of ‘chī’	78
Table 4.28: Intelligibility and interrater reliability ratings for ‘suì’	79
Table 4.29: Intelligibility breakdowns featuring ‘suì’ (n=57).....	79
Table 4.30: Respective contributions of tones, initials and finals to intelligibility breakdowns of ‘suì’	83
Table 4.31: Intelligibility and interrater reliability ratings for ‘xué’	85
Table 4.32: Intelligibility breakdowns featuring ‘xué’ (n=47).....	86
Table 4.33: Respective contributions of tones, initials and finals to intelligibility breakdowns of ‘xué’	89
Table 4.34: Intelligibility and interrater reliability ratings for ‘shí’	90
Table 4.35: Intelligibility breakdowns featuring ‘shí’ (n=82).....	90
Table 4.36: Respective contributions of tones, initials and finals to intelligibility breakdowns of ‘shí’	96
Table 4.37: Respective contributions of tones, initials and finals to intelligibility breakdowns of all ten monosyllabic words across the three tasks.....	98
Table 5.1: Eight possible responses to learners’ utterances in terms of intelligibility, comprehensibility and accentedness.....	101
Table 5.2: Number of Category 1 responses across Tasks 2 and 3	104
Table 5.3: Category 1 utterances featuring interrater reliability.....	105
Table 5.4: Number of Category 2 responses across Tasks 2 and 3	106
Table 5.5: Category 2 utterances featuring interrater reliability.....	106
Table 5.6: Coding framework for the perceived causes of accentedness	107
Table 5.7: Coding for each of the Category 2 transcriptions (n=52).....	108
Table 5.8: Perceived causes of accentedness according to the raters (n=52)	111
Table 5.9: Suprasegmental causes of accentedness	112
Table 5.10: Number of Category 5 responses across Tasks 2 and 3	114
Table 5.11: Category 5 utterances featuring interrater reliability.....	114
Table 5.12: Coding for each of the Category 5 transcriptions (n=82).....	116
Table 5.13: Perceived causes of lower levels of comprehensibility according to the raters (n=82)	122
Table 5.14: Number of Category 8 responses across Tasks 2 and 3	125

Table 5.15: Category 8 transcriptions featuring interrater reliability	125
Table 5.16: Coding framework used to analyse the cause of intelligibility breakdowns in terms of raters' responses to Category 8 utterances	126
Table 5.17: Coding for each of the Category 8 transcriptions (n=86).....	127
Table 5.18: Raters' responses to Category 8 utterances (n=86).....	135
Table 6.1: Learner 1 implicit awareness rating	142
Table 6.2: Learner 2 implicit awareness rating	142
Table 6.3: Learner 3 implicit awareness rating	143
Table 6.4: Learner 4 implicit awareness rating	144
Table 6.5: Learner 5 implicit awareness rating	144
Table 6.6: Learner 6 implicit awareness rating	145
Table 6.7: Learner 7 implicit awareness rating	145
Table 6.8: Learner 8 implicit awareness rating	146
Table 6.9: Learner 9 implicit awareness rating	147
Table 6.10: Learner 10 implicit awareness rating	147
Table 6.11: Learner 11 implicit awareness rating	148
Table 6.12: Learner 12 implicit awareness rating	149
Table 6.13: Learner 13 implicit awareness rating	149
Table 6.14: Learner 14 implicit awareness rating	150
Table 6.15: Learner 15 implicit awareness rating	151
Table 6.16: Learner 16 implicit awareness rating	151
Table 6.17: Learner 17 implicit awareness rating	152
Table 6.18: Learner 18 implicit awareness rating	152
Table 6.19: Learner 19 implicit awareness rating	153
Table 6.20: Learner 20 implicit awareness rating	154
Table 6.21: No recognition of an intelligibility breakdown	157
Table 6.22: No explanation of an intelligibility breakdown	158
Table 6.23: Inaccurate explanation of an intelligibility breakdown	158
Table 6.24: Unsuccessful self-repair of an intelligibility breakdown	159
Table 6.25: Successful self-repair of an intelligibility breakdown	159
Table 6.26: Partial explanation of an intelligibility breakdown	159
Table 6.27: Full explanation of an intelligibility breakdown	160
Table 6.28: Learner 1 explicit awareness rating	161
Table 6.29: Learner 2 explicit awareness rating	162
Table 6.30: Learner 3 explicit awareness rating	162
Table 6.31: Learner 4 explicit awareness rating	163

Table 6.32: Learner 5 explicit awareness rating	163
Table 6.33: Learner 6 explicit awareness rating	164
Table 6.34: Learner 7 explicit awareness rating	165
Table 6.35: Learner 8 explicit awareness rating	165
Table 6.36: Learner 9 explicit awareness rating	166
Table 6.37: Learner 10 explicit awareness rating	166
Table 6.38: Learner 11 explicit awareness rating	167
Table 6.39: Learner 12 explicit awareness rating	167
Table 6.40: Learner 13 explicit awareness rating	168
Table 6.41: Learner 14 explicit awareness rating	169
Table 6.42: Learner 15 explicit awareness rating	169
Table 6.43: Learner 16 explicit awareness rating	170
Table 6.44: Learner 17 explicit awareness rating	170
Table 6.45: Learner 18 explicit awareness rating	171
Table 6.46: Learner 19 explicit awareness rating	172
Table 6.47: Learner 20 explicit awareness rating	172
Table 6.48: Code 1 responses (n=18)	178
Table 6.49: Code 3 responses (n=8)	179
Table 6.50: Code 5 response (n=1)	180
Table 6.51: Code 6 response (n=3)	181
Table 6.52: Code 7 response (n=4)	182
Table 7.1: Pedagogical implications promoting implicit and explicit knowledge	198
Table 7.2: Summary of the three main interface positions	199
Table 7.3: Implicit and explicit forms of instruction	201

List of figures

Figure 2.1: Comparing tonal accuracy and intelligibility ratings	24
Figure 2.2: Causes of intelligibility breakdowns (n=62).....	25
Figure 4.1: Categorising the intelligibility breakdowns of 'wǒ' (n=7).....	58
Figure 4.2: Categorising the intelligibility breakdowns of 'nǐ' (n=7)	60
Figure 4.3: Categorising the intelligibility breakdowns of 'hē' (n=20)	62
Figure 4.4: Categorising the intelligibility breakdowns of 'dà' (n=28)	65
Figure 4.5: Categorising the intelligibility breakdowns of 'chá' (n=29).....	68
Figure 4.6: Categorising the intelligibility breakdowns of 'ròu' (n=43)	72
Figure 4.7: Categorising the intelligibility breakdowns of 'chī' (n=45).....	77
Figure 4.8: Categorising the intelligibility breakdowns of 'suì' (n=57).....	83
Figure 4.9: Categorising the intelligibility breakdowns of 'xué' (n=47).....	89
Figure 4.10: Categorising the intelligibility breakdowns of 'shǐ' (n=82).....	96
Figure 5.1: Overall rater responses to learners' sentence level utterances in terms of intelligibility, comprehensibility and accentedness.....	103
Figure 5.2: Learner 20's generic flat tones (Task 2 Utterance 7)	105
Figure 5.3: Learner 13's rising tone at the end of the sentence (Task 2 Utterance 6).....	113
Figure 5.4: Learner 16 attempts to say 'wǒ shí sì suì' (I am 14 years old)	123
Figure 6.1: Learners' implicit awareness levels of their own pronunciation errors.....	154
Figure 6.2: Average implicit awareness and intelligibility ratings at the two schools	155
Figure 6.3: Categorising the breakdowns which featured in the stimulated recall interviews	157
Figure 6.4: Learners' implicit and explicit awareness levels of their own pronunciation errors	173
Figure 6.5: Average implicit and explicit awareness and intelligibility ratings at the two schools	174
Figure 6.6: Learners' responses to their own intelligibility breakdowns.....	175
Figure 6.7: Intelligibility breakdowns which triggered a Code 1 response (n=46).....	176

List of abbreviations and acronyms

A Level	Advanced Level
AR	Action Research
BERA	British Educational Research Association
CSL	Chinese as a Second Language
L1/L2	First/second language
GCSE	General Certificate of Secondary Education
MALL	Mobile Assisted Language Learning
MEP	Mandarin Excellence Programme
PGCE	Postgraduate Certificate in Education
OCP	Obligatory Contour Principle
OFSTED	Office for Standards in Education
SCLF	Swire Chinese Language Foundation
SLA	Second Language Acquisition
TESOL	Teaching English to Speakers of Other Languages
TMS	Tonal Markedness Scale

1. Introduction

Alongside the increased prominence of China on the international stage, learning Chinese¹ at both the primary and secondary school levels is now much more of a realistic option for students in the UK and around the world (Hu, 2010; British Council, 2015a; Orton, 2016). Faced with this new reality, the field of Chinese as a second language (CSL) stands on the threshold of enormous opportunities. As Lo Bianco (2016) comments, “old authorities about the right and proper way to teach Chinese will have to make room for new voices posing new questions about Chinese in new sites of learning for new populations of learners” (p. viii). Yet despite this growing sense of excitement surrounding the development of CSL, current learning outcomes at the school level are generally very disappointing, both in the UK and in other Anglophone settings (Ke, 2016; Chen, 2018; Orton & Scrimgeour, 2019). Key issues explaining this underperformance remain largely ignored by researchers and policy-makers. Are there intrinsic, language-related barriers to learning Chinese at this level? Has the pedagogical focus been right?

In this introductory chapter, I initially provide some background context about teaching Chinese in English secondary schools before discussing barriers to the further growth of the subject. I then set out the purpose and significance of this study before presenting a brief overview of the thesis.

1.1 Context: teaching Chinese in English secondary schools

Superficially, the long-term prospects for mainstreaming Chinese into the English education system appear rosy. According to one estimate, unthinkable twenty years ago, Chinese is now taught at 13 per cent of state schools (British Council, 2016, p.124). Some of this momentum can be traced to the Chinese government and their ongoing expansion of Confucius Institutes and Confucius Classrooms, as well as a shift towards Mandarin Chinese as the most widely spoken variety of Chinese with the most international prestige (Duff, Anderson, Ilnyckyi, VanGaya, Wang, & Yates, 2013, p. 4). More recently, support has also come from the UK government in the form of the

¹ Unless otherwise stated, I use the term Chinese to refer to Mandarin Chinese throughout the study. I recognise that this might be interpreted as a denial of other widely spoken Chinese dialects such as Cantonese. However, this is not my intention and the decision is purely one of shorthand.

Mandarin Excellence Programme (MEP) which aims to get at least 5,000 additional pupils at schools in England “on track to fluency in Mandarin Chinese by 2020” (British Council, 2020). Further impetus has been provided by the privately funded Swire Chinese Language Foundation (SCLF) which was set up in 2016 to help embed Chinese as a mainstream subject in UK schools and is now working with 167 schools, many of which are located in “particularly deprived parts of the country” (SCLF, 2020). Yet in spite of these initiatives, much remains to be done before Chinese can be considered a mainstream subject. For example, although GCSE entries for Chinese in 2018 for Key Stage 4 (KS4) pupils (aged 15-16) in England rose by 7.5 per cent from the previous year, they were still a modest 4,410, languishing far behind the ‘big three’ of French, Spanish and German (Hazel, 2018). At A Level, the picture is somewhat misleading with entries for Chinese actually overtaking German for the first time in 2018 (Wood & Busby, 2018). However, this is partly due to a collapse in the number of entries for German A Level, as well as a shift towards more first language (L1) Chinese speakers taking Chinese A Level at independent schools (Turner, 2018). Overall, the profile of second language (L2) learners of Chinese “remains skewed towards high achievers and those from more advantaged backgrounds” (British Council, 2015a, p. 96) with much of the teaching taking place as an extra-curricular activity, often “involving outside teachers, and in some cases, very small numbers of pupils” (British Council, 2015b, p. 126).

1.2 Obstacles to further growth of Chinese in English secondary schools

Widespread concerns about the state of language learning at all levels in the UK have been well-documented (British Council, 2018; British Academy, 2019). Currently less than 50 per cent of pupils in England take a GCSE in any language, down from 76 per cent in 2002, despite a UK government target of 90 per cent by 2025 (British Academy, 2019, p. 4). The decline has disproportionately affected socio-economically and regionally disadvantaged groups, thereby creating a North/South divide in language-learning in England (p. 4). The introduction of the new GCSEs has also impacted upon the profile of pupils taking languages with “a very marked trend [...] towards high and middle ability pupils and away from lower ability pupils and those with Special Educational Needs” (British Council, 2018, p. 6). Brexit also appears to be having an adverse impact on language learning, either through lower levels of student motivation

and/or negative parental attitudes (p. 7).

On a more concrete level, there can be no escaping the fact that the intrinsic nature of the Chinese language poses Anglophone learners with some very significant challenges, not only as a result of its non-alphabetic script and tonal system, but also because there are only around 1,200 syllables, many of which are words in their own right, with numerous homophones and almost a complete absence of any English cognates (Orton, 2016, p. 84). In light of these challenges, the American Foreign Service Institute estimates that Chinese typically requires three and a half times as many class hours to achieve “professional working proficiency” as Spanish (US Department of State, 2019). Understandably, few schools appear prepared to devote such large swathes of curriculum time to the learning of a single foreign language although students on the Mandarin Excellence Programme are required to learn Mandarin for four hours a week on timetable and have a further four hours a week off timetable (British Council, 2020).

Chinese teacher education has also been repeatedly identified as a ‘key bottleneck’ (CILT, 2007; Ofsted, 2008; Zhang & Li, 2010; Busby, 2017). According to the Home Office’s Migration Advisory Committee, “there are only about 100 teachers of Mandarin in the state funded system, and a limited domestic supply pipeline” (MAC, 2017, p. 77) in comparison with 13,200 teachers of French, 4,500 teachers of German and 7,500 teachers of Spanish (p. 133). Although there are now a handful of universities offering PGCE teacher training courses in Mandarin, typically alongside a European language (GovUK, 2019), it would appear likely that for the time-being at least, most teachers of Chinese who do have qualified teacher status, including myself, have followed a generic languages teacher training course and not one targeting the specific linguistic challenges of teaching and learning Chinese (CILT, 2007). Interestingly, the same phenomenon can be observed in the United States (Everson & Xiao, 2009) and Australia (Orton, 2016) with Orton highlighting “pedagogical weakness” as a key factor in explaining the very high attrition rates observed amongst Australian secondary school students (Orton, 2011, p. 153). Another closely related and significant obstacle to the mainstreaming of Chinese remains the general dearth of research into the teaching and learning of Chinese at the school level (Zhang & Li, 2010) despite the emergence of recent publications which have focussed specifically on the Chinese learning experiences of secondary school pupils in both Ireland (Osborne, Zhang, &

Zhang, 2018) and the UK (Diamantidaki, Pan, & Carruthers, 2018). Put simply, very little is known about the nature of the learning that Chinese demands of L2 learners which has subsequently contributed to a general weakness in CSL pedagogy (Orton & Scrimgeour, 2019, p. 6).

1.3 Purpose and significance of study

This study is motivated by concerns that unless there is concerted research into the teaching and learning of Chinese at the school level, there is every chance that it will remain on the edge of the mainstream curriculum in the UK and go the way of Russian and Japanese – i.e. briefly fashionable but ultimately the preserve of a handful of independent schools. Set within the context of teaching and learning Chinese at two very different secondary schools in the North of England, and focussing solely on the learners' Chinese pronunciation, I hope to make a contribution to the creation of an evidence-informed CSL pedagogy. I am therefore assuming that research knowledge can and should inform classroom practice, but recognise that this contribution should not be an unmediated one (Borg, 2010, p. 141). A key perspective that informs this study is that practising teachers such as myself are in the best place to make such a contribution. A particular strength of practitioner research is that it is likely to have more 'ecological validity' than more traditional forms of research since teachers know their learners and their unique learning contexts better than anyone else (Macaro, 2003, p. 43). Research findings will inevitably be 'fuzzy', but should at least help provide "valuable clues to effective pedagogical practice" (Lightbown, 2000, p. 452).

It is widely assumed that tone learning is one of the largest challenges for all beginning Chinese learners, regardless of language background (Duff et al., 2013, p. 48). This is particularly the case for Anglophone learners due to their inherent unfamiliarity with tones (McGinnis, 1997; Winke, 2007) which in addition to consonants and vowels, are used to distinguish word meaning (Lin, 2007, p. 3). While I do not want to question the common-sense assumption that producing and perceiving Chinese tones can be problematic for many CSL learners, I do aim to address whether intended meanings can still be understood despite heavily accented tones, as well as to draw some preliminary conclusions about which specific areas of the learners' speech signal mislead their listeners. Such a change in emphasis is important in terms of setting

more realistic pronunciation goals by focussing on those areas of a learner's pronunciation most likely to hinder intelligibility, as well as challenging commonly held views which tend to regard any form of L2 pronunciation as a deficit model (Cook, 1999; Pavlenko, 2003; Murphy, 2014). This focus on intelligibility also dovetails with the latest version of the UK government's Modern Foreign Languages GCSE subject content guidelines which states that pupils should be able to "use accurate pronunciation and intonation such as to be understood by a native speaker" (Department for Education, 2015, p. 6) but makes no mention of needing to sound like an L1 speaker. A focus on intelligibility is particularly critical for beginner learners for if they cannot be understood by their interlocutors, they will soon lose confidence and motivation (Zielinski & Yates, 2014, p. 75).

Although this study is primarily aimed at those CSL teachers, researchers, policy-makers, teacher educators and administrators working in the secondary school context in the UK, it is hoped that it will also attract the interest of wider sections of the CSL community, particularly those working in other Anglophone settings. To my knowledge, this is the first study which has applied Derwing and Munro's (2015) pronunciation framework to the specific context of young Anglophone beginner learners of Chinese in a secondary school setting. The study should therefore also be of interest to anyone with an interest in L2 pronunciation.

1.4 Overview of the thesis

In the following chapter, I carry out a literature review focussing on CSL pronunciation research, arguing that it has focussed primarily on a less realistic goal of native-speaker tonal competence as opposed to the more pedagogically relevant construct of intelligibility. Towards the end of the chapter, I present my three research questions which focus on both how L1 Chinese raters respond to learners' L2 Chinese speech signals, as well as the extent to which the L2 Chinese learners are aware of their own pronunciation errors. In Chapter 3, I discuss methodological issues relevant to the study. Adopting a case study research design, I consider the epistemological and theoretical assumptions underpinning the study before carrying out a critical analysis of both the data collection and data analysis methods employed. In the following three data analysis chapters, I present the findings to each of the three research questions

in turn. In Chapter 7, I attempt to position the key findings of my study in relation to the broader theoretical and research evidence in the literature. Engaging with well-established principles from the broader field of instructed second language acquisition, I make the case for a healthy balance of both implicit and explicit instruction, in line with the weak-interface position (Ellis, 1993). In the concluding chapter, I draw out the main research and pedagogical implications, before considering the limitations of the study and making suggestions for future research.

2. Literature Review

An underlying premise of this study is that CSL pronunciation research has largely failed to keep up with contemporary approaches to L2 pronunciation and is still overly focussed on native-speaker like accent as opposed to the more important constructs of intelligibility and comprehensibility. Moreover, the L2 Chinese pronunciation of young Anglophone beginner learners in school settings is woefully under-researched. In this literature review, I briefly consider the challenges of learning Chinese as an L2 from the learners' perspective before engaging with key research findings and principles from the field of L2 English pronunciation research which are of particular relevance to this research project. I subsequently turn my attention to the less-established field of CSL pronunciation research. Although some of the papers I discuss provide a useful basis for further inquiry, I argue that it is by no means obvious how relevant their partly contradictory findings are to the needs and priorities of secondary school teachers and learners of Chinese in the UK. In the final section of the chapter, I present the specific research questions of this study.

2.1 Challenges of learning Chinese for L1 Anglophone beginner learners

As mentioned in Chapter 1, Chinese is generally regarded as extremely difficult for Anglophone learners to acquire (Hu, 2010; Rosell-Aguilar & Kan, 2015). One obvious source of difficulty is the challenge of learning to read and write Chinese characters. Each character corresponds to a syllable comprised of one to twenty or more strokes with an average of 9.18 strokes for the 2000 most frequently used characters (Kan, Owen, & Bax, 2018, p. 2). Given that there is no obvious correspondence between the character script and the pronunciation, L2 learners are also required to learn the *pīnyīn* romanization system as a tool to help with pronunciation (p. 2). Compared to English words, words transcribed in *pīnyīn* are very short (often only two letters long) and comprised of only a small variety of sounds which results in a large number of homophones (Orton, 2016, p. 89). Moreover, *pīnyīn* looks very different from English with nearly 24 per cent of words beginning with the letters x y or z as opposed to only 0.6 per cent of English words (p. 90). A further challenge, discussed in Section 2.7.1, is the tonal nature of the Chinese language.

Beyond its inherent linguistic challenges, it should also be noted that Chinese has not yet been subjected to the same levels of extensive linguistic research as European languages (Orton, 2011, p. 159). As Orton comments, “its usage by an enormous population, spread across a vast country is still being documented, and only gradually codified” (p. 159). Chinese is generally thought to be made up of seven mutually unintelligible dialects: Mandarin, Wu, Xiang, Gan, Kejia (Hakka), Yue (Cantonese) and Min (Xing, 2006, p. 26) of which Mandarin, with around 850 million native (L1) speakers, is by far the most widely spoken (Wei & Hua, 2011, p. 12). However, each of these seven dialects, including Mandarin, can be more accurately described as dialect families which in turn consist of many other dialects (Duanmu, 2007, p. 1), perhaps numbering as many as 2,000 if subdialects are included (Li, 2006, p. 150).

2.2 Intelligibility, comprehensibility and accentedness

Levis (2005) has pointed out that L2 pronunciation research and pedagogy have traditionally been inspired by two competing paradigms - the *nativeness* principle and the *intelligibility* principle (p. 370). According to the *nativeness* principle, it is both “possible and desirable to achieve native-like pronunciation in a foreign language” (p. 370) whereas the *intelligibility* principle recognises that “learners simply need to be understandable” (p. 370). Despite some notable exceptions (e.g. Rajagopalan, 2010), many researchers from the field of Teaching English to Speakers of Other Languages (TESOL) now agree that intelligibility should be a reasonable goal for pronunciation instruction (e.g. Derwing & Munro, 2005; Field, 2005; Celce-Murcia, Brinton, Goodwin, & Briner, 2010; Murphy, 2014; Yazan, 2015; Kim, 2017). In their pioneering work with adult immigrants in Canada over the last 25 years, Derwing and Munro have developed a tripartite perspective on the study of L2 pronunciation, differentiating between accentedness, comprehensibility and intelligibility (e.g. Derwing & Munro, 2005, 2015; Munro & Derwing, 1995, 2011 among others). While these constructs appear to be unfamiliar to many L2 teachers and learners (Golombek & Rehn Jordan, 2005) with little consensus amongst researchers about how they might be best defined or measured (Isaacs, 2008; Pickering, 2012), this project draws upon the definitions offered by Derwing and Munro (2015a) and are set out in Table 2.1:

Table 2.1: Accentedness, comprehensibility and intelligibility

Term	Definition	Common Measures
Accentedness	Perceived differences in pronunciation as compared with a local variety	Scalar ratings
Comprehensibility	Perceived degree of difficulty experienced by the listener in understanding speech	Scalar ratings
Intelligibility	Extent to which listeners' perceptions match speakers' intentions	Transcripts Comprehension questions Summaries

(Adapted from Munro & Derwing, 2015a, p. 14)

As can be seen, accentedness is about “difference”, comprehensibility concerns the “listener’s effort” and intelligibility refers to “how much the listener actually understands” (Derwing & Munro, 2009, p. 480). Comprehensibility is thus used in exactly the same sense as Yates and Zielinski’s (2009) notion of “interlocutor load” or “how hard [the listener has] to work in order to understand what is being said” (p. 13). Whereas other researchers (e.g. Smith & Nelson, 1985; Jenkins, 2000; Field, 2005) have restricted their definition of intelligibility to the acoustic-phonetic content of the speech signal, Derwing and Munro’s much broader definition also includes “higher level evidence, such as world knowledge, which originates outside the signal” (Field, 2005, p. 401). More details about the specific challenges of measuring a speaker’s intelligibility will be discussed in Chapter 3 although it should be acknowledged from the outset that it is not possible to describe a particular speech sample as intrinsically intelligible or comprehensible since these constructs are influenced by a range of listener factors including their own L1, familiarity with the speaker’s accent, receptivity, attentiveness, level of fatigue and familiarity with the topic being spoken about (Murphy, 2014, pp. 258-9). As Murphy comments, “attempts at such descriptions are necessarily tied to contexts of instruction and learners’ needs” (p. 259).

Although the social ramifications of being perceived as having a ‘strong’ accent should not be ignored (Lippi-Green, 1997), or the occasions when accents do actually lead to a loss of intelligibility and lower levels of comprehensibility, accentedness is arguably given “more weight than it deserves” as a result of its “extreme salience” (Derwing & Munro, 2009, p. 488). Such a view manifests itself most visibly in L2 pronunciation research inspired by the *nativeness* principle (Levis, 2005) which for all its potential theoretical interest, is of little use in setting pedagogical priorities compared to the constructs of intelligibility and comprehensibility which are much more closely linked to communicative success (Derwing & Munro, 2014). For example, it is entirely

possible to have a strong accent and remain relatively easy to be understood (Munro & Derwing, 1995). An example which resonates with the interests of some of the participants in this study is the heavily accented English of Pep Guardiola, the Catalan manager of Manchester City Football Club. Moreover, learners are able to become more intelligible and comprehensible as a result of instruction with no obvious change in accentedness (Derwing, Munro, & Wiebe, 1998). With class-time at a premium, the priority for teachers, therefore, should be to help learners develop a “comfortable intelligibility” rather than an unrealistic focus on the elimination of an L2 accent (Derwing & Munro, 2014, p. 42).

2.3 Mandarin Chinese as a lingua franca

Much of the inspiration for the recent focus on intelligibility/comprehensibility in the field of L2 English pronunciation research has come in response to the growing number of users of English around the world and emergence of ‘indigenized’ varieties of Englishes (Yazan, 2015, p. 202). Thus the constructs of ‘intelligibility’ and ‘comprehensibility’ are highly relevant in terms of preparing learners to communicate successfully with users of other Englishes and in a lingua franca context (p. 202). Yet intelligibility-oriented research is also very relevant to the field of Chinese teaching given the fact that “permitted variations and optional rules seem to far outweigh obligatory rules” (Orton, 2011, p. 159). Indeed, the whole construct of a native speaker is highly problematic in light of the considerable differences amongst the sound systems of various Chinese dialects (Sun, 2006, p. 6). For example, modern dialects of Chinese offer a wide range of tonal systems, ranging from three to ten tones (Chen, 2000, pp. 13-19 as cited in Xing, 2006, p. 87). Despite the best efforts of the Chinese government to promote an idealised version of Mandarin known as *Pǔtōnghuà* (the common language) as the official language of China (Wei & Hua, 2011), it has recently been estimated that as many as thirty per cent of China’s population are unable to communicate in *Pǔtōnghuà*, and only ten per cent can speak it fluently (Luo, 2014). Indeed, Yang (2016) makes the very valid point that there are no real native speakers of *Pǔtōnghuà* since it represents an abstract language variety “which builds upon [...] but does not include all the features of Beijing Mandarin” (p. 3). It should be emphasised, therefore, that when L2 students from UK secondary schools start to use their fledgling Chinese in genuinely communicative settings – whether to a waiter from

Henan at a Chinese restaurant in Birmingham, or to a market trader in Chengdu during a summer camp - there is every possibility that both interlocutors will effectively be using Mandarin Chinese as a lingua franca. As Chinese language learning becomes ever more internationalised, with a concomitant rise in L2 Chinese teachers, this phenomenon is set to continue and should lead to interesting questions, similar to the debates taking place in the TESOL research community (e.g. Wonho Yoo, 2014), about who owns the Chinese language (Duff et al., 2013, p. 9) and which pronunciation models are most appropriate for L2 Chinese learners (McDonald, 2011, pp. 30-1).

2.4 Second language acquisition perspectives on L2 pronunciation

Further support for a particular focus on intelligibility and comprehensibility can be traced to second language acquisition (SLA) research findings (Derwing & Munro, 2005; Murphy, 2014). Admittedly, it should be recognised that many L2 learners, when asked, indicate that they aspire to sound like native speakers (Timmis, 2002) and some learners may want to sound more native-like than others for specific personal and professional reasons (Yates & Zielinski, 2009, p. 12). There is also limited evidence that those with special aptitude (Ioup, Boustagi, El Tigi, & Moselle, 1994) or particularly high levels of motivation (Moyer, 2004) may be able to occasionally reach native-like levels of pronunciation (as cited in Derwing & Munro, 2005, p. 384). Nevertheless, it appears much more likely that those learners who start to learn an L2 after early childhood will never acquire native-like phonological control (Derwing & Munro, 2005; Ortega, 2009; Murphy, 2014). As Cook (2016) comments, “SLA research should be concerned with the typical achievement of L2 learners in their own right rather than with that of the handful of exceptional individuals who can mimic native speakers” (p. 177). Such a view also accords with Interlanguage Theory (Selinker, 1972) which recognises that few learners ever reach the end state of native-speaker norms (Ellis & Shintani, 2014, p. 54). Moreover, the potential benefits of non-standard accents to L2 speakers should not be ignored since they can signal to their interlocutors the need for more modified input (Gass & Varonis, 1984).

It should equally be acknowledged that doubts have been raised within the SLA research community about whether L2 pronunciation instruction actually works (e.g. Purcell & Suter, 1980). These concerns appear to be linked to a belief that learners should be able to acquire pronunciation skills through sufficient exposure to the L2

(Krashen, 1985) and coincided with the rise of Communicative Language Teaching (CLT) with its emphasis on “authentic communication rather than mastery of language forms and structure” (Derwing & Munro, 2015, p. 176). Nevertheless, a number of pedagogical intervention studies carried out over the last 25 years have provided convincing evidence that a pedagogical focus on perception and production can be beneficial for L2 students for at least some linguistic foci (e.g. Derwing, Munro, & Weibe, 1997; Couper, 2011; Saito & Lyster, 2012; Dłaska & Krekeler, 2013 among others). These findings are also supported by several CSL tonal perception and training studies (e.g. Chun, Jiang, Meyr & Yang, 2015) which I discuss in Section 2.7.3.

2.5 Intelligibility-oriented research

In light of the importance afforded to intelligibility by many TESOL researchers, it is not surprising that empirical work has attempted to highlight specific phonetic properties of L2 English speech that reduce intelligibility (Munro, 2011). Some studies have highlighted the importance of suprasegmental features in intelligibility breakdowns such as non-standard word stress (Hahn, 2004; Field, 2005) and non-standard syllable stress patterns (Zielinski, 2008) whereas other studies have demonstrated how segmental issues can cause problems (Rogers & Dalby, 2005; Munro & Derwing, 2006). The contribution of global features such as volume, speech rate and articulatory settings to intelligibility should also be recognised (Grant, 2014). Some researchers have also highlighted the interconnectedness of aspects of pronunciation so that suprasegmental difficulties may impact upon particular segmental challenges and vice versa (Yates & Zielinski, 2009; Zielinski, 2015).

There has also been some attention paid to the role of the listener’s contribution to intelligibility. For example, Derwing, Rossiter and Munro (2002) showed that with training, L1 listeners could significantly improve their confidence that they could successfully interact with L2 English speakers. Lindemann (2010) found that listeners’ attitudes towards L2 speakers also played an important role while Kim (2017) demonstrated that listeners’ familiarity with an L2 English variety improved the intelligibility of that English variety regardless of the listeners’ L1. There appears to be growing recognition, therefore, that responsibility for intelligibility should be shared equally between speaker and listener, rather than assumed to be the sole

responsibility of the L2 speaker (Grant, 2014).

2.6 Chunking in vocabulary research of young beginner L2 learners

Young beginner classroom L2 learners have shown extensive and systematic use of rote-learned formulas or chunks in the early stages of language learning with convincing evidence that chunks can act as a basis for subsequent creative language capacity (Myles, Hooper, & Mitchell, 1998; Myles, Mitchell, & Hooper, 1999). However, chunking is also highly relevant from the perspective of intelligibility given that a key criterion of chunks is that they should be “phonologically coherent [...] fluently articulated [and] non-hesitant” (Myles et al., 1998, p. 325). Learning chunks can also be highly motivating for L2 beginners as it allows them “to actively participate in the lesson and to interact successfully in the target language at an early point in the learning process” (Becker & Roos, 2016, p. 10). As well as contributing to fluency and guaranteeing grammatical accuracy, mastering commonly produced chunks as a single unit is also likely to be much easier for learners than assembling phrases word by word (Field, 2014, p. 40). Learning high frequency formulaic expressions, therefore, is likely to be a highly productive strategy for L2 beginner learners (Duff et al., 2013, p. 48).

2.7 CSL pronunciation research

Having engaged with some key research findings and principles from the wider field of L2 pronunciation research which are of particular relevance to this research project, I now turn my attention to the less established field of CSL pronunciation research. The focus is on empirical research of L1 English learners of Chinese as opposed to descriptive accounts of pedagogical practice. As will be seen, the field has been dominated by a relatively narrow focus on the production and perception of lexical tone of adult learners based at North American universities (Miracle, 1989; Shen, 1989; Tao & Guo, 2008; Zhang, 2016 among others) with far fewer studies investigating other suprasegmental features such as intonation or segmental acquisition (e.g. Yang & Chan, 2010; Xie, 2015). Moreover, the majority of papers appear to be inspired by the ‘nativeness’ principle (Levis, 2005) with an emphasis on native speaker emulation

as opposed to intelligibility-based goals, even if this assumption is rarely made explicit (e.g. Chen, 1997; Zhang, 2013; Yang, 2014). Given the importance afforded to tones in L2 Chinese pronunciation research, I briefly outline the tonal system of Mandarin Chinese before discussing specific research findings.

2.7.1 The tonal system of Mandarin Chinese

Like 60-70 per cent of the world's languages, Chinese is tonal which means that in addition to consonants and vowels, tone is the third kind of speech element used to distinguish word meaning (Lin, 2007, p. 88). It is widely accepted there are four basic tones in Mandarin, as well as a short and weak neutral tone (Sun, 2006, p. 39). The most commonly used system for describing Mandarin tones is in terms of the five pitch levels, initially developed by Chao (1930) with one being lowest in pitch and five highest in pitch (as cited in Sun, 2006, p. 39). Each tone can be described in terms of its beginning and end point (Zhang, 2018, p. 4). For instance, the pitch value of Tone 2 is transcribed as [35] which means that it is a rising tone, beginning with a pitch occurring in the middle of a speaker's pitch range and ending with a pitch at the high end (p. 4). It is important to note that pitch is used in an entirely relative sense since actual pitch is determined by many variables including sex, age and emotional states (Norman, 1988, p. 145). In the *pīnyīn* romanization system, the tonal mark is placed on the vowel although tone is generally viewed as a property of the whole syllable and not as an inherent feature of a vowel (Lin, 2007, p. 4).

Table 2.2: The tones of Mandarin Chinese

Pitch Pattern	Pitch Value	Tone Number	Pinyin	Meaning
Level	55	1	mā	Mother
Rising	35	2	má	Hemp
Dipping	214	3	mǎ	Horse
Falling	51	4	mà	To scold

(Adapted from Lin, 2007, p. 4)

Mandarin also has several instances of tone sandhi “which refers to the situation in which certain tones adjacent to one another in natural oral discourse change in consequence of this juxtaposition” (Xing 2006, p. 88). The full, dipping version of Tone 3 ('214'), for example, only occurs in isolation or at the end of an utterance (Yang, 2016, p. 12) and most commonly surfaces as a low falling or level tone ('21') when it

precedes a first, second, fourth or neutral tone (Zhang, 2018, p. 10). There are consequently very important differences between tone production in the isolated canonical form and in natural connected speech (Tao & Guo, 2008).

2.7.2 CSL tonal production studies

Although CSL researchers agree that the production of Mandarin tones pose considerable problems for Anglophone learners (e.g. White, 1981; Shen, 1989; Miracle, 1989; Chen, 1997; Winke, 2007; Tao & Guo, 2008; Yang, 2014; Zhang, 2016), there is less unanimity about the source of these problems. A number of papers have highlighted negative effects of L1 transfer. White (1981), for example, claimed that tonal errors could be “partially traced to speaker transfer of English intonation patterns onto Mandarin sentences” (p. 27) with intonation used “to express emotion and attitude” (p. 53) being particularly resistant to change. In a similar vein, Chen (1997) also found “evidence of negative transfer of English prosodic features” (p. 35), including “level tones that do not exist in standard Mandarin and contour tones that do not realize their full value” (p. 37) while Shen (1989) concluded that adult American learners experienced particular problems producing the highest and lowest pitch points found in the first and fourth tones. Yang (2014) also demonstrated that intermediate and advanced American learners were particularly prone to producing Tone 1 as Tone 4 at prosodic-word initial positions which he attributed to the transfer of narrow focus at the beginning of sentences.

However, there is also evidence which suggests that the source of tonal errors cannot be simply traced to L1 interference or the intrinsic difficulty caused by the wider pitch range of Chinese. Miracle (1989), for example, found that the L1 English students in his study were making “both contour errors and tone register errors fairly evenly across all the tones” (p. 56) while Tao and Guo (2008) concluded that Tones 1 and 4 were the easiest tones to accurately produce after four months of Mandarin learning (p. 26). Several studies have demonstrated that the production of Tone 3 is particularly problematic for L1 English learners in connected speech (e.g. Winke, 2007; Tao & Guo, 2008; Zhang, 2016). Part of the problem appears to be an over production of the ‘Full Tone 3’ (i.e. ‘214’) which, as mentioned in Section 2.7.1, is rarely required unless it surfaces in isolation or at the end of an utterance. As a consequence, there have been calls for the ‘low version’ or ‘Half Tone 3’ to be seen as the ‘base version’ since

it is the more common variant (e.g. Zhang, 2016). Nevertheless, for the time-being at least, 'Full Tone 3' is still assumed to be the 'base version' in the majority of CFL textbooks (Zhang, 2018), including the *Jinbù* series of textbooks which participants in this study followed (Zhu & Yu, 2010, 2011).

More recently, there have also been attempts led by Zhang (2013, 2016) to explain L2 tonal acquisition with reference to universal phonological constraints. In a cross-linguistic study featuring the L2 acquisition of Chinese tones by American, Korean and Japanese speakers, Zhang (2013) found evidence of acquisition of Tone 1 before Tone 4 and that of Tone 4 before Tone 2 which she interpreted in terms of the Tonal Markedness Scale (TMS) (Hyman and VanBik, 2004). According to the TMS, rising tones are more difficult to produce than falling tones, which are more difficult than level tones (Zhang, 2010, p. 43). Zhang (2016) also found that L2 learners preferred not to use identical lexical tones on adjacent syllables, particularly on the contour syllables which she traced to an interaction of the TMS and the Obligatory Contour Principle (OCP), originally developed to provide an explanation for tonal dissimilation in the context of Mende and other African languages (Leben, 1973 as cited in Zhang, 2016, p. 428).

It should be noted that Zhang's attempts to present L2 tonal acquisition as being constrained by TMS are partly supported by other studies (e.g. Chen, 1997; Winke, 2007; Tao & Guo, 2008), as well as by an L1 tonal acquisition study (Li & Thompson, 1977). Nevertheless, a number of studies do not provide evidence of TMS operating on L2 tonal acquisition orders (e.g. Shen, 1989; Miracle, 1989; Yang, 2014). As Winke (2007) observes, part of the problem in comparing such studies lies in the relatively small sample sizes used, as well as the different methodologies employed for eliciting spoken Chinese, which ranged from having participants read Chinese words out loud (Shen, 1989; Miracle, 1989; Zhang, 2016) to including more spontaneous L2 Chinese production data (Chen, 1997; Winke, 2007; Tao & Guo, 2008; Yang, 2014). Chen (1997) also expressed concerns about the high levels of subjectivity involved in judging the acceptability of some of the tones. For the time-being at least, I would argue that the jury is still out on the relevance of TMS for L2 Chinese tonal acquisition. Moreover, far more empirical research is necessary to establish the potential role and relevance of OCP. For example, Yang (2013) found that when faced with consecutive Tone 2 characters in a phrase, it was the less-advanced L2 learners who tended to

pronounce each rising tone as fully as possible, while the L1 speakers and more advanced L2 learners produced more tone target undershoot with the second rising tone frequently surfacing as a level tone (Tone 1). In this instance at least, the effects of OCP only appeared to be operating on the higher proficiency L2 learners. Moreover, this phenomenon actually rendered their speech more native-like than the beginning learners.

Following Munro and Derwing (2011), I would also like to make the broader point that the theoretical concerns of many of these tonal production studies do not necessarily coincide with the pedagogical concerns of teachers. While it is obviously useful for teachers to gain a deeper theoretical understanding of why their students may experience problems with producing certain tones or tonal combinations, this focus on accent and accuracy of production ignores the fact that it is intelligibility, as opposed to native-like pronunciation, that is most important to successful communication in an L2 (pp. 316-7). Thus the dependent variable in all these papers essentially boils down to whether tones are 'correct' or 'incorrect' as assessed by L1 Chinese listeners' ratings of tonal accuracy according to Chao's tonal system discussed in Section 2.7.1. Such a methodology assumes that it is native or near-native production patterns that "are the acid test for successful learning" (p. 316) and avoids the more important question of whether listeners can understand intended meanings despite non-standard tones. Moreover, as Munro and Derwing point out, "the mere fact that a phonological structure poses difficulty for a learner says nothing about whether it is worth teaching or if it can even be taught" (p. 317).

2.7.3 CSL tonal perception and training studies

Although most of the focus has been on producing tones, there have also been some tonal perception and training studies with convincing evidence that perceptual training can have a beneficial effect on both the perception and production of tones. For example, Wang, Spence, Jongman and Sereno (1999) found that the perception of Mandarin tones by American learners could be improved by explicit training with trainees' identification improving by 21 per cent and retained six months after training in a post-test. In a later study, Wang, Jongman and Sereno (2003) investigated whether tonal perceptual training could affect tonal production and observed that

trainees' post-test productions improved by 18 per cent compared to their pre-test productions. However, despite strong evidence to suggest some sort of positive correlation between perception and production, they point out that Tone 3 remained difficult to produce, even after it had become relatively easy to perceive (p. 1042). So (2006) investigated the effects of two training approaches on the perception of Chinese tones and found that learners who received audiovisual feedback (i.e. audio-sound files, animated pitch contours and a brief message directing listeners' attention to the perceptual cues of tones) outperformed those learners who were only told whether they were correct or incorrect. Similarly, Chun et al., (2015) found that learners who created 'tone visualisations', which they subsequently compared with the pitch curves of L1 Chinese speakers, were able to make improvements in terms of their pronunciation of tones.

While these studies suggest a clear role for explicit instruction, it should be pointed out that the stimuli used in all these tests consisted only of monosyllabic or disyllabic Mandarin words presented in isolation. It is consequently by no means clear how such improvement would impact upon a learner's actual communicative success since it is much more common for tones to be perceived and produced in context. Moreover, tonal perception studies also fail to address the question of whether beginner learners actually need to be able to identify the tone in order to communicate. For example, Duff mentions the advantages of learning high-frequency formulaic expressions which can help keep intonation contours intact at the phrase level without having to focus on individual tones (Duff et al., 2013, p. 253). There is certainly a danger of adding to the already high levels of language anxiety in the L2 Chinese classroom (Zhou, 2014) by increasing the 'cognitive load' of having to concentrate on every tone at the individual syllable level. Such a task becomes even more daunting when learners have to remember to apply the tone sandhi rules.

2.7.4 CSL intonation studies

L2 Chinese pronunciation studies which have looked at the acquisition of utterance level prosody of L1 English learners remain very rare. Set within the context of learning Chinese at an American university, Yang and Chan (2010) found that Mandarin unmarked questions were particularly difficult for English speakers to identify when

ending in a falling fourth tone since Tone 4 conflicted with the rising pitch of English prosody which is typically used to ask questions. They also found that the perception of statements ending with the rising second tone posed problems for the L1 English learners as falling pitch tends to indicate statements in English.

In a recent study focussing on adult, intermediate/advanced L2 Chinese learners in a Canadian context, Luo (2017) obtained similar results, concluding that “participants were most accurate at perceiving intonation and tone when they were in compatible pitch movements” (p. 43). Unlike Yang and Chan’s (2010) study, Luo also included production tasks and found that learners were much better at producing tone than intonation. Luo also found that the L1 English speakers consistently produced more final rising pitch in Chinese unmarked questions which she attributed to L1 transfer. In addition, Luo observed that the intelligibility rates of the learners’ unmarked questions were particularly low (40.6 per cent) which Luo traced primarily to their narrower pitch range as well as a general lack of intonation instruction in the CFL classroom. While I welcome Luo’s focus on intelligibility, it should be pointed out that teaching unmarked questions is much more appropriate for intermediate and advanced L2 learners. For example, there are three more common ways of asking questions which all contain lexical/syntactic markers (i.e. using the *-ma* particle, A-not-A questions and *wh*-questions). In these instances, native-like intonation would obviously be far less critical for intelligibility due to the lexical/syntactic markers signalling the sentence modality. Moreover, it seems likely that within the context of real-life conversations, it should be clearer whether the speaker is making a statement or asking an unmarked question.

2.7.5 CSL segmental studies

L2 Chinese pronunciation studies focussing on segmental acquisition are also very thin on the ground, perhaps reflecting a widely held view that compared to tones, the consonants and vowels of Chinese are relatively straightforward to acquire (Hu, 2018, p. 4). For example, in the specially commissioned article for the fiftieth anniversary of the *Journal of the Chinese Language Teachers Association* designed to synthesize empirical research in second language acquisition of Chinese since the late 1980s, Ke (2012) claimed that “there has been only one study investigating CFL segmental acquisition” (p. 76). The study in question (Wen, 2008) found transfer effects on vowels

that appear similar in both Chinese and English, as well as “idiosyncratic and unstable articulation patterns for the Chinese vowels that do not have similar categories in English” (as cited in Ke, 2012, p. 77). In a more recent acoustic study, Xie (2015) investigated the acquisition of Mandarin basic vowels by American students in disyllabic words and sentences, concluding that although the pronunciation accuracy of vowels all dropped at the sentence level, the stability of most vowels increased. However, it was unclear whether this phenomenon affected learners’ intelligibility levels.

2.8 CSL intelligibility studies

Apart from Luo (2017), I only found two other studies which focussed explicitly on the intelligibility of L2 Chinese learners (Yang, 2016; Neal, 2018). Given their direct relevance to this project, I describe both studies in some detail.

2.8.1 Yang (2016)

Yang’s (2016) study is taken from Chapter 8 of his book on the acquisition of L2 Mandarin prosody which is mainly based on his previous studies, three of which I have already referred to in this literature review (Yang, 2013, 2014; Yang & Chan, 2010). The aim of Chapter 8 is to examine the relationship between intelligibility, comprehensibility and foreign accent in L2 Chinese and involves revisiting data from a previous study (Yang, 2013) which assessed learners’ production of various tone sequences. All 12 L2 learners featured in the intelligibility study had been learning Chinese for at least three years at an American university and were divided into a lower-proficiency and a higher-proficiency group of six learners respectively, according to their speaking proficiency and accuracy. Six L1 Chinese speakers who grew up in Beijing were recruited as a control group while 30 L1 Chinese raters were recruited from various universities in Beijing. All the raters were undergraduate students and had no experience of living or staying in an English-speaking country.

Participants were asked to read various “conversation scenarios” aloud in pairs. The conversations featured twenty embedded sentences which consisted of Tone 2 Tone 4 alternating sequences (e.g. Luó Yàn tán lùn míng lì – Luo Yan talks about fame and profit), Tone 2 sequences (e.g. Liú Míng lái ná yáng máo – Liu Ming comes to get wool)

and Tone 1 sequences (e.g. Wū Ānyīng xiū fēijī – Wu Anying repairs planes). Six utterances produced by the six lower-proficiency learners, six produced by the higher-proficiency learners and six produced by the L1 Chinese speakers were subsequently chosen for closer analysis, randomized and posted on the Qualtrics website along with 12 “filler sentences”, although Yang did not provide any further details about the content of the “filler sentences”. The L1 Chinese raters then accessed the website and were able to listen to each audio file “multiple times”.

Following Munro and Derwing (1995), intelligibility was measured according to the listeners’ orthographic transcription of the target sentences. Raters were asked to transcribe what they had heard in Chinese characters although credit was also given for transcriptions in *pīnyīn* with correct tones. After the transcription task, raters were also asked to rate the comprehensibility (the higher the value, the easier the utterance was to understand) and foreign accent (the higher the value, the more foreign the utterance sounded) of each utterance, by choosing an option along an 11-point Likert scale. In addition, raters were also asked to “specify the criteria for their judgement of foreign accent in the utterances” (p. 131) but not for comprehensibility.

Based on a negative correlation between comprehensibility and foreign accent ratings, Yang made the very strong claim that “the reduction of foreign accent [...] is critical in L2 Mandarin Chinese, as it directly affects comprehension” (p. 139). I would point out that from a methodological standpoint such a claim appears impossible to justify since correlational studies cannot be used to establish causal relationships, but can only indicate the presence or absence of a relationship between two measured variables (Derwing & Munro, 2015, p. 26). Moreover, as Yang acknowledged, “sometimes the native listeners [...] had difficulty in figuring out the meaning of the target sentences produced by the native speakers” (Yang, 2016, p. 134). Consequently, there is every possibility that the low levels of comprehensibility could not simply be traced to the learners’ accents, but were more a result of using very artificial sentences. It should be remembered that these sentences were originally chosen on the basis of their tonal combinations (e.g. six successive rising tones) as opposed to whether the L2 learners actually used such utterances in real-life communicative situations. An equivalent would be using a tongue twister such as ‘she sells sea shells upon the sea shore’ as a stimulus to investigate L2 English pronunciation.

Yang provided few concrete details of the main causes of foreign accent ratings as perceived by the L1 Chinese raters. However, according to a summary table which was based entirely on the raters' comments (see Table 2.3), phonemic issues were more important factors than tonal errors for both the lower and higher level learners. It is also noteworthy that some members of the L1 Chinese control group were rated as having some sort of foreign accent although Yang did not elaborate upon this point.

Table 2.3: Factors that affected L1 Chinese raters' foreign accent ratings

	Phonemic	Tone	Other prosodic issues	Do not understand
Lower-level	46	38	34	42
Higher-level	29	17	28	25
Native	5	7	3	4

(Adapted from Yang, 2016, p. 134)

Yang also provided minimal details about intelligibility breakdowns – i.e. any instances when the L1 raters failed to transcribe the L2 learners' intended utterances. As with the causes of the foreign accent ratings, all the errors in the transcriptions were summarised in a single table (see Table 2.4). Despite the lack of further details, segmental issues (i.e. initials and finals combined) clearly play a more important role than tonal problems. As with the foreign accent ratings, it is also interesting to note that the L1 Chinese control group was not completely intelligible, suggesting that the construct of a 'perfect' L1 speaker remains elusive.

Table 2.4: Errors in the transcriptions by the L1 Chinese raters

	Initial	Final	Tone	Missing or completely wrong
Lower-level	40	42	54	167
Higher-level	35	38	16	30
Native	12	15	15	6

(Adapted from Yang, 2016, p. 133)

To conclude my critique of Yang (2016), I would argue that it raises more questions than answers. While it is certainly possible that a foreign accent can lead directly to processing difficulties, I do not think that Yang has enough evidence to make such a claim. The study would also have been improved if more natural speech samples had been collected, either through designing read-aloud tasks which covered more

everyday language and/or through the use of extemporaneously produced speech. Given that the overall focus of his book is on the acquisition of L2 Mandarin prosody, I can understand why he has chosen not to highlight phonemic issues. However, since his data suggest that segmental errors are more critical than tones both in terms of the perception of a foreign accent and in terms of intelligibility, I think that he is in danger of missing the point.

2.8.2 Neal (2018)

In Neal (2018), I also revisited data originally collected for a previous study (Neal, 2013). At the time of the original data collection, all five L1 English learners had been learning Chinese for six months at a suburban secondary school in the North of England and were either 14 or 15 years old with no previous experience of learning a tonal language apart from Chinese. As part of the original study, they had been given a tonal accuracy rating based on the agreement of three L1 Chinese listeners who rated their tonal productions in terms of Chao's system of tone values discussed in Section 2.7.1. The data were taken from role-plays featuring topics already covered in class (e.g. hobbies/food and drink).

For this follow-up project, audio files featuring simple sentences taken from each of the learners' role plays were sent via email to five students at a senior high school in Beijing². All the sentences were grammatically correct and did not feature any unusual lexical choices. Each L1 Chinese rater was asked to listen to the audio files only once and transcribe what they thought they had heard in Chinese characters. Following Munro and Derwing (1995), each transcript was used to calculate an intelligibility score based on the number of characters the raters could successfully transcribe. The overall intelligibility rating for each L1 English student, based on an average score of the five Beijing high school raters, was then compared with the students' original tonal accuracy scores from Neal (2013) (see Figure 2.1).

As can be seen, all five participants obtained much higher intelligibility ratings than tonal accuracy ratings, lending support to the claim that L1 Chinese speakers may well be "able to understand intended meanings regardless of incorrect tones, simply based

² I gratefully acknowledge the assistance I received from Yang Renwang in finding the raters from a Beijing high school and with initial data analysis.

on the discourse context” (Duff et al., 2013, p. 49). Nevertheless, it should be stressed that even Participant 3, who with an intelligibility rating of 92 per cent notched the highest score, was effectively only having nine out of every ten syllables understood. It is unlikely that Participants 2 and 4, with intelligibility rates of 76 and 74 per cent respectively, were making much sense at all.

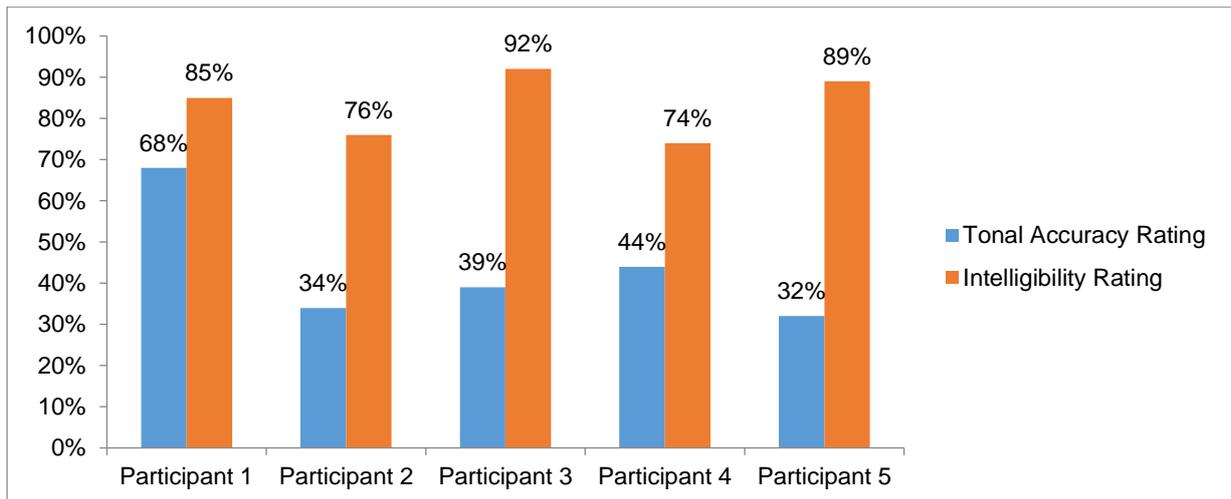


Figure 2.1: Comparing tonal accuracy and intelligibility ratings (Adapted from Neal, 2018, p. 136)

Similar to Yang (2016), I also looked at possible causes of any intelligibility breakdowns – i.e. any instances when a rater had transcribed a different character from what the speaker had intended to say. Working at the monosyllabic word level and focussing solely on the raters’ transcriptions, each breakdown in intelligibility was categorized as either being a result of the tone, or the initial consonant of the syllable, or the final part of the syllable deviating from the intended utterance, or a combination of two or all three of the factors. There were a combined total of 62 separate intelligibility breakdowns with evidence to suggest that learners’ pronunciation problems ran far deeper than non-standard tones (see Figure 2.2). For example, the most common breakdown occurred when the tone, initial and final were all different from the target pronunciation (23 per cent) while only 15 per cent of breakdowns could be traced solely to tone.

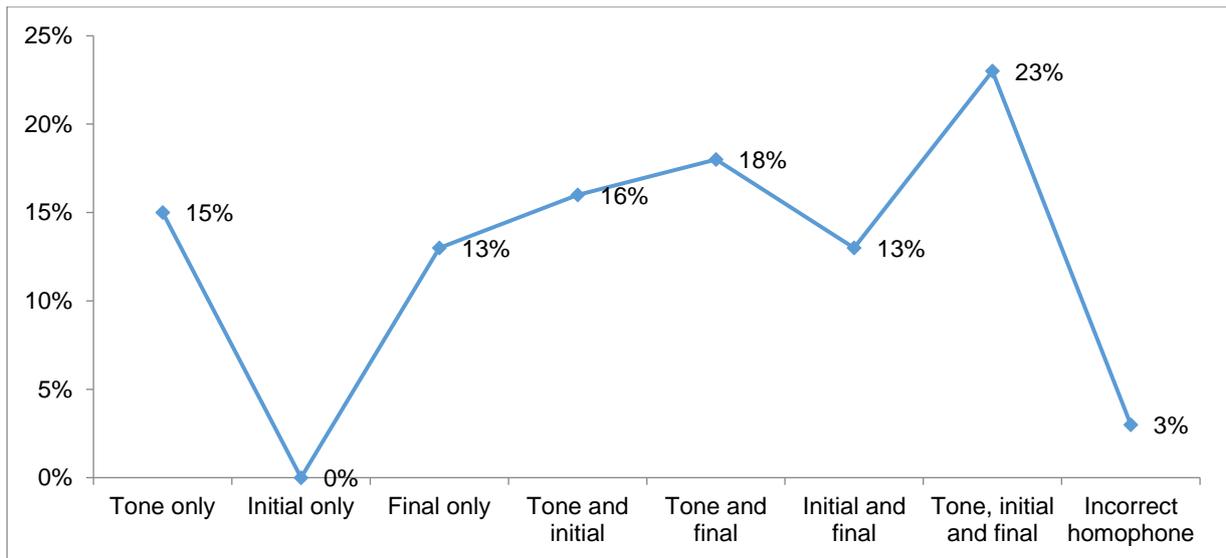


Figure 2.2: Causes of intelligibility breakdowns (n=62) (Adapted from Neal, 2018, p. 137)

Caution needs to be applied when interpreting the results due to a number of problems with the research design. Firstly, each rater listened to all five L1 English students' Chinese productions. It was highly likely, therefore, that those students who were rated later would have had artificially high levels of intelligibility due to practice effects since the role plays all covered very similar ground. Secondly, I was not able to observe the raters as they transcribed the data so I have no way of knowing how many times they actually listened to the data. Thirdly, I made no attempt to engage with the constructs of comprehensibility or accentedness which would have provided a more nuanced picture of how the listeners responded to the L2 speech. Fourthly, I recognise that listeners would have made use of other cues when recognising words in the speech signal, including the lexical chunk and the general context, as well as the role played by grammar and intonation (Field, 2008). In other words, a purely phonetic approach to intelligibility at the syllable level was clearly inadequate. Nevertheless, it seems reasonable to conclude that on the basis of this limited evidence, the participants had serious segmental pronunciation problems, in addition to their tonal errors. In this respect, the findings support those of Yang (2016).

2.9 Presentation of research questions

In this literature review, I have engaged with a number of empirical studies that have focussed on the L2 Chinese pronunciation of L1 English learners. While some of the papers led to some interesting pedagogical proposals, particularly regarding the

teaching of Tone 3 as a low tone as opposed to a low dipping tone (e.g. Zhang, 2016) and the use of visual input to raise learner awareness of their own pitch levels (So, 2006; Chun et al., 2015), it is unclear how applicable the results of these partly contradictory findings are to the teaching of Chinese to young beginner learners in UK secondary schools. The main problem is not simply because adolescent and younger learners in school settings have been largely ignored in the literature, but more because the implicit focus of many of these studies has been on acquiring native-speaker like accent, as opposed to communicative effectiveness (e.g. Yang, 2013; Zhang, 2013). Moreover, there has also been a narrow focus on the production and perception of lexical tone with segmental features almost completely neglected (e.g. Miracle, 1989; Winke, 2007; Tao & Guo, 2008).

In an attempt to redress the balance, as well as provide pedagogical suggestions more tailored to the needs of Anglophone young beginner learners at the secondary school level, this study sets out to answer the following three research questions (RQs) in relation to ten students from my own Year 9 class (13-14 year olds) at an inner-city comprehensive school in the north of England, as well as ten students from a selective school in an affluent suburb a few miles away:

1. *To what extent can the intelligibility breakdowns of young Anglophone beginner learners of Chinese be traced to problems with tonal production, as opposed to initials and finals?*

While existing research has shown that Anglophone beginner learners of Chinese experience difficulty producing native-like tones (e.g. Tao and Guo, 2008; Yang, 2014), the question of how important tones are for intelligibility has been largely ignored. There also seems to be an assumption that Chinese initials and finals are straightforward to acquire (Hu, 2018). With limited class-time and limited exposure to Chinese outside the classroom, the challenge for teachers of Chinese in UK secondary schools is to know which aspects of their students' Chinese pronunciation are most likely to interfere with intelligibility so that these factors can be highlighted first, ahead of other aspects of a learner's accent which may be noticeable, yet less important in terms of intelligibility (Derwing & Munro, 2014). Following Derwing and Munro (2015), I assume that intelligibility can only be understood in terms of listeners' responses to L2 speech, as opposed to relying on acoustic measures. Focussing on the L1 Chinese

raters' transcriptions of ten high frequency monosyllabic words across three different tasks, I look specifically at the respective contribution of tones, initials and finals to intelligibility breakdowns. I also address whether learners' levels of intelligibility are affected by the nature of the production task.

2. How do L1 Chinese raters process the L2 Chinese speech signal at the sentence level with respect to accentedness, comprehensibility and intelligibility?

I recognise that some intelligibility breakdowns may lie outside a purely phonetic explanation (Field, 2008; Munro, 2011). In order to provide a fuller picture, in this second RQ, I report on interview data, carried out with the L1 Chinese raters as they attempt to make sense of the learners' sentence level utterances. Such an approach allows me to explore whether the raters bring any of their own strategies to the task of decoding the L2 Chinese speech signal. In addition to intelligibility, I also look at the related constructs of accentedness and comprehensibility which have largely been ignored by the CSL research community. In a rare study, Yang (2016) argued that the reduction of a foreign accent "is critical in L2 Mandarin Chinese, as it directly affects comprehension" (p. 139). Such a stance would suggest that any differences between L1 and L2 Chinese speech would need to be highlighted in the L2 classroom. However, if intelligibility, comprehensibility and accentedness can be shown to be partially independent, it should be possible to develop more nuanced classroom priorities aimed at promoting highly comprehensible, intelligible L2 Chinese speech, but not concerned with an unrealistic elimination of an L2 accent (Munro & Derwing, 2015b).

3. To what extent are learners aware of their own pronunciation errors both during and after speech production?

In the final RQ, the focus shifts to the learners' perspectives as I examine the extent to which they are aware of their own pronunciation errors. Although there is a lack of unanimity regarding the role of awareness within the wider field of second language acquisition (VanPatten & Benati, 2010; Ellis & Shintani, 2014), CSL tonal perception and training studies would suggest that explicit corrective feedback can play an

important role in improving pronunciation (e.g. So, 2006; Chun et al., 2015). I am consequently assuming that it is useful for learners to be consciously aware of their own pronunciation problems as a first step to improving their own intelligibility and comprehensibility levels (Derwing & Munro, 2014). I distinguish between implicit and explicit levels of awareness, as well as between 'online' awareness levels during the process of L2 production and more general awareness which can be applied retrospectively. I also address whether there is any evidence of a correlation between learners' awareness levels of their own pronunciation errors and their overall intelligibility levels.

3. Research methodology

In this chapter I discuss methodological issues germane to the study. After situating the study within the broader fields of second language acquisition and applied linguistics, I consider the study's underlying epistemological assumptions. I then outline the conceptualisation of case study research employed before reflecting upon sampling strategies and ethical issues. The remainder of the chapter is dedicated to a critical discussion of the data collection and data analysis methods used. The study is framed as primarily qualitative and assisted by descriptive statistics with multiple datasets, which are triangulated to address the research questions.

3.1 Second language acquisition, applied linguistics and practitioner research

Adopting Macaro's broad definition of second language acquisition (SLA) as "the methodical study of second language learning" (Macaro, 2010, p. 4), I situate this study firmly within the field of SLA. SLA research draws its research methodology from a broad range of other fields including education, linguistics and psycholinguistics (Ellis & Barkhuizen, 2005, p. 1) and is widely accepted to be a branch of applied linguistics (Macaro, 2010, p. 300). Applied linguistics has in turn been defined in general terms as "the theoretical and empirical investigation of real-world problems in which language is a central issue" (Brumfit, 1995, p. 27 as cited in Ellis & Shintani, 2014, p. x). As highlighted in the previous chapter, these 'real-world problems' are severely under-researched in the context of teaching and learning Chinese in UK schools. One sensible and practical way forward is for Chinese teachers to research their own classrooms and share their findings with other practitioners (Dianmantidaki, Pan, & Carruthers, 2018). This study is conceptualised very much within this spirit. Unfortunately, the relationship between SLA researchers and classroom practitioners has occasionally been a fraught one with doubts expressed about a perceived lack of 'academic rigour' (e.g. Brumfit & Mitchell, 1990 as cited in Ellis, 2012, p. 29). Following Ellis (2012), the perspective which informs this study is that practitioner research should not be judged by "the standard criteria of generalizability and replicability", but by alternative criteria such as 'meaningfulness' and 'trustworthiness' (p. 33). As Ellis notes, "ultimately, [...] the significance of such research lies not in whether it can or cannot contribute to our theoretical understanding of the L2 classroom, but to its

relevance to language pedagogy” (p. 33).

3.2 Epistemological assumptions

Throughout the study, I adopt a pragmatic approach to knowledge claims. By this I mean that I am led entirely by my over-arching research aim of trying to obtain a deeper understanding of learners’ L2 Chinese pronunciation challenges as opposed to being tied to any particular “paradigmatic compartmentalization” (Dörnyei, 2007, p. 11). For example, in order to investigate the relationship between learners’ tonal production and their intelligibility (RQ1), samples of learners’ spoken Mandarin are analysed statistically from a primarily post-positivist approach. I assume that aspects of a speech signal can exist independently as an objective reality but are most usefully measured by reference to listeners’ experience (i.e. raters’ transcriptions), as opposed to fine-grained acoustic analyses using an acoustic software package (Munro & Derwing, 2015b, pp. 381-2). Research findings remain conjectural, subject to further revision, “but are supported by the strongest (if possibly imperfect) warrants we can muster at the time” (Phillips & Burbules, 2000, pp. 28-9).

In order to investigate how L1 Chinese listeners go about processing the L2 Chinese speech signal (RQ2) and the extent to which learners are aware of their own pronunciation errors (RQ3), I adopt a more interpretivist stance as the focus shifts to an analysis of interview data with the raters and learners. The goal of the interviews is not to directly access the interviewees’ actual thought processes, but to give the raters and the learners the opportunity to provide explanations of their own and others’ actions (Friedman, 2012, p. 190). Although interpretivist, the approach relies primarily on a quantitative rather than a qualitative analysis of the raters’ and learners’ interpretations of the recorded speech. The reason for this is so that perceived causes of higher levels of accentedness, lower levels of comprehensibility and intelligibility breakdowns (RQ2), as well as learners’ awareness levels of their own pronunciation errors (RQ3), can also be analysed statistically via coding frameworks. However, the interviewees’ perspectives are not accepted as fact, but as one of a number of possible interpretations (p. 190).

I take the view that a mixed-method approach such as this not only acknowledges the “multi-dimensionality of SLA” (Ellis & Barkhuizen, 2005, p. 1), but also leads to a more

illuminating picture of aspects of learners' intelligibility than a mono-method approach would have allowed. Echoing Pachler, Evans, Redondo and Fisher (2014), I recognise the dangers of unrealistic expectations regarding the ability of practitioner research, and indeed any other form of research, to offer definitive answers which are generalizable and transferable to other contexts (p. 54). My conclusions, therefore, remain tentative and restricted to the context of the study participants. Nevertheless, my hope is to start a conversation with other practitioners, researchers and policy-makers who are interested in the L2 Chinese pronunciation of young Anglophone beginners in a secondary school setting. My overriding concern is not so much whether my study is 'scientific' or leads to 'true' knowledge but whether it generates 'useful' knowledge (Kvale & Brinkman 2009, pp. 55-6) with 'useful' being understood as whether the research study can ultimately lead to providing informed "pedagogical advice" (Shen, 1989, p. 27).

3.3 Theoretical underpinnings and conceptual frameworks

As outlined in Chapter 2, this research project is situated within a framework stemming from the *intelligibility* principle (Levis, 2005). In other words, an underlying assumption of this study is that learners should not "strive to become native-like in all aspects of pronunciation" (Munro & Derwing, 2015b, p. 377), but should instead aim "to develop speaking patterns that allow them to communicate with ease, even if their accent retains nonnative characteristics" (p. 377). Although there is no field-wide consensus on how best to define the construct (Isaacs, 2008; Yazan, 2015), I make use of Munro and Derwing's (2015a) general definition of intelligibility as "the extent to which listeners' perceptions match speakers' intentions" (p. 14). Given that the focus is on 'actual understanding', intelligibility assessment can only be made "if the speaker's intended utterance is known to the researcher and compared with the interpretation that the listener attributes to that same utterance" (Munro & Derwing, 2015b, p. 382). This is why the focus of RQs 1 and 2 is on how the L1 listeners respond to the L2 speech signal as opposed to the specific properties of the L2 speech signal. I appreciate that it might appear that there is a jump from a focus on intelligible speech patterns to a focus on listening comprehension. Nevertheless, I would argue that given the nature of intelligibility, I need to do the latter in order to support the former. The emphasis is on both 'local' and 'global' intelligibility – i.e. monosyllabic words "outside

of a larger meaningful context” (Munro & Derwing, 2015b, p. 381) and sentences that “include rich contextual information” (p. 381). Two other constructs central to the intelligibility principle, and examined explicitly in the second RQ, are ‘comprehensibility’ and ‘accentedness’. Following Munro and Derwing (2015a), comprehensibility is defined as the “perceived degree of difficulty experienced by the listener in understanding speech” (p. 14) while accentedness refers to “perceived differences in pronunciation as compared with a local variety” (p. 14). In this context, ‘a local variety’ refers to how the L1 Chinese rater would pronounce the same utterance.

Although I recognise that listeners are likely to draw on information at many different levels simultaneously in order to make sense of the speech signal (Field, 2008), I adopt a mainly phonetic approach and work primarily at the syllable level. While the syllable is “a unit of immense importance” in any language (Setter & Jenkins, 2005, p. 3), it is arguably particularly crucial for listeners when processing Chinese speech, given that the overwhelming majority of syllables is associated with a specific meaning (Ross & Ma, 2006, p. 6). Indeed, Chinese is traditionally referred to as a monosyllabic language with almost all words seen as containing only one syllable, although the accuracy of such a view depends very much upon how a word is defined (Lin, 2007, p. 5). The actual number of syllables in Mandarin Chinese is surprisingly limited. According to Orton (2008) there are only 1200 syllables and a mere 400 when not including the possibilities actualised by tone variation (p. 31). One result is a very large number of homophones which arguably further raises the status of the syllable in Chinese compared to English (Ross & Ma, 2006, p. 6).

Throughout the study, I adopt the traditional analysis of the Chinese syllable (Norman, 1988; Chen, 1999; Ross & Ma, 2006; Sun, 2006; Xing, 2006; Hu, 2018). From this perspective, each Chinese character is one syllable in length and usually carries a tone, as well as an initial and a final. I am assuming that tone pertains to the whole syllable and is not an inherent feature of the vowel (Lin, 2007, p. 4). I understand the initial to be “the initial consonant of the syllable” (p. 305) whereas a final is “the part of the syllable without the initial consonant” (p. 304). Although much more complex accounts of the Chinese syllable exist (Duanmu, 2007; Lin, 2007; Triskova, 2011), the conventional description outlined here has the advantage of being easily understood by all the participants involved in this study, as well as other Mandarin teachers in the UK who may not necessarily be expert phoneticians. It is also closely related to the

romanized orthography known as *pīnyīn* (sound spelling) which has become the standard transcription of Mandarin Chinese words (Lin, 2007, p. 7) and is widely used, alongside Chinese characters, in the *Jinbù* textbook series all 20 learners in this study followed (Zhu & Yu, 2010, 2011). Moreover, this framework lends itself to a straightforward analysis of the respective contributions of non-standard initials, finals and tones to intelligibility breakdowns (RQ 1) discussed in more detail in section 3.7.1.

I analyse the extent to which learners are aware of their own pronunciation errors (RQ3) by differentiating between implicit and explicit forms of knowledge. Following Ellis and Shintani (2014), I assume that implicit knowledge is ‘procedural’ and does not require the learner to have any conscious awareness of linguistic forms, but does require the learner to know intuitively what is correct (p. 13). Explicit knowledge, conversely, is ‘declarative’, involving some sort of metalanguage and occurring when the learner is “consciously aware of linguistic norms” (p. 13). Explicit knowledge can be used to monitor L2 production, although it is frequently “anomalous and inconsistent as learners may have only a partial understanding of a linguistic feature” (p. 13). I also investigate whether there are differences between ‘online awareness’ during the process of L2 production and general awareness levels after speech production. While there is considerable controversy surrounding the precise role of awareness in SLA (VanPatten & Benati, 2010), I am assuming that it is helpful for learners to be consciously aware of their own pronunciation problems as a first step to improving their own intelligibility and comprehensibility levels (Derwing & Munro, 2014). Such an assumption can be linked to Schmidt’s (1990, 2001) claim that consciousness plays a key role in L2 acquisition. It also dovetails with research findings from the field of TESOL which highlight how explicit corrective feedback can play an important role in improving pronunciation (e.g. Saito & Lyster, 2012; Dlakser & Krekeler, 2013), as well as the results of the CSL tonal perception and training studies discussed in the previous chapter (e.g. Wang, Jongman, & Sereno, 2003; So, 2006). Having outlined some of the theoretical underpinnings and conceptual frameworks of this study, I now reflect upon the conceptualisation of case study research employed.

3.4 Case study research

It should be acknowledged that before opting to carry out a case study, I initially considered undertaking a more explicitly action research (AR) approach which would have involved some sort of direct intervention in the classroom. However, I soon abandoned the idea. This was mainly because I felt that I needed to gain a deeper understanding of the nature of my students' L2 Chinese pronunciation challenges, from multiple perspectives, before I felt that I would be in a position to propose authoritative pedagogical interventions. In order to broaden the scope of the research, and appeal to a wider audience, I also wanted to include data from another setting. It therefore made more sense to carry out a case study. Nevertheless, I recognise that this study also has elements of an AR study, particularly in terms of “feeling one’s way into research topics” and “fact finding to begin refining the topic” (Burns, 2005, p. 59).

Duff (2012) opines that since the emergence of ‘the social turn’ (Block, 2003), SLA case study researchers have been less concerned with cognitive and purely linguistic aspects of learning but have foregrounded social aspects of learning and their links to learners’ linguistic and social identities (Duff, 2012, pp. 100-1). In some respects, therefore, my approach to case study research, with its primary emphasis on investigating learners’ L2 Chinese intelligibility can be seen as rather old-fashioned. Nevertheless, in light of the embryonic state of CSL pedagogy in UK schools, I argue that this focus is entirely appropriate.

I define this case study as mainly ‘descriptive’ in nature as opposed to ‘exploratory’ or ‘explanatory’ (Yin, 2003). Given that I am focussing on a particular case in order to try and gain insight into a particular issue, I also conceptualise this study as being more of an ‘instrumental’ inquiry rather than an ‘intrinsic’ one (Stake, 2005). Although they come from two very different schools, I see the whole group of 20 learners as being ‘the case’. Since I only collected data during the learners’ second year of learning Chinese, the boundaries of the case are clearly marked (Merriam, 2009, p. 41).

3.4.1 Background contextualisation

This study is set in two secondary schools in the North of England. In order to preserve anonymity, I refer to one school as ‘School A’ and the other as ‘School B’. School A

is an inner city comprehensive school while School B is a selective boys' school in an affluent suburb a few miles away. All the information in Table 3.1 is adapted from the UK government's 'find and compare schools in England' website (Gov.UK, 2018). I have added the national average in brackets when this information is provided:

Table 3.1: Key characteristics of School A and School B

	School A	School B
School type	Foundation school	Academy - converter
Ofsted rating	Requires improvement	Outstanding
Age range	11 - 16	11 - 18
Total number of pupils on roll	824	1280
Girls on roll	41.1% (49.2%)	0% (49.2%)
Boys on roll	58.9% (50.8 %)	100% (50.8%)
Pupils with a statement of special educational needs (SEN) or education, health and care (EHC) plan	4.5% (4.3%)	0.3% (4.3%)
Pupils whose first language is not English	70.8% (16.1%)	9.9% (16.1%)
Pupils eligible for free school meals at any time during the past six years	46.8% (29.1%)	4.3% (29.1%)
Grade 5 or above in English and Maths GCSEs	31% (39.6%)	98% (39.6%)
L1 background of Chinese teacher	L1 English	L1 Chinese
Length of time Chinese taught as a curriculum subject	2014-2016	2006-present

(Adapted from Gov.UK, 2018)

Chinese was introduced on to the curriculum of School A for 'higher achieving' Key Stage 3 students in September 2014. I was employed as School A's Chinese teacher from September 2014 until August 2016 on a part-time basis. Despite teaching Chinese to over a hundred students, and taking a group of eight students to China in July 2015 on a two week immersion course, Chinese never became embedded as a mainstream subject. Although I started a new job based at a different school from September 2016, I returned to School A for two hours a week at the end of the school day to teach a group of three students who were determined to gain a GCSE qualification outside normal curricular hours. Chinese is no longer taught at School A with the school senior leadership team choosing to concentrate on the original

language options of French, Spanish and Urdu. The choice of Urdu reflects the large number of L1 Urdu speakers who attend the school. The other main L1s apart from English amongst the students include Gujarati, Panjabi and Somali.

Chinese was originally introduced on to the curriculum at School B in 2006 when the school was designated as a specialist Language College. The current Chinese teacher is an L1 Mandarin speaker and has been employed as the school's sole Chinese teacher since September 2014 on a part-time basis. Chinese is taught *ab initio* from Year 8 to a maximum of two classes of boys who have chosen to take the subject. There is currently one GCSE Chinese group in Year 10 and one in Year 11. Despite outstanding academic results, annual trips to China and high levels of enthusiasm surrounding the teaching and learning of Chinese, the subject remains very much on the edge of the mainstream curriculum. For example, there are currently no plans to offer Chinese as an A Level option in the sixth form or to offer it to Year 7 students which until recent funding cuts had been the case for all the other languages taught at the school (French, German, Latin and Spanish).

3.4.2 Sampling strategies

The selection of participants was mainly based on convenience sampling (Duff, 2008, pp. 114-5). At School A, the final group of ten students was taken from my 2015-16 class of Year 9 students who had all started learning Chinese *ab initio* at the beginning of Year 8. Participants had consequently been learning Chinese for 18 months at the time of the speaking tasks and 22 months when they took part in the stimulated recall interviews. Focussing on complete beginners would have meant that students would not have been able to cope with the specific demands of the speaking tasks. In Year 9, students had one double Chinese class a week which lasted for two hours, as opposed to three 50 minute lessons spread over a two week timetable in Year 8. Students in this particular class were motivated and included some of the most academically able pupils in the year group. I make no claims that this group of learners was representative of other classes at the school. I also make no claims that the ten participants were representative of this particular class since I only received ten consent forms back from carers/parents. Some key information about each of the learners is presented in Table 3.2. In order to preserve anonymity, I have changed all

the names. All the participants spoke English fluently regardless of their presumed L1³. None of the participants had visited China at the time of data collection. Two participants from School A subsequently continued with the after school Chinese lessons in 2016-17 and gained a 'B' and 'D' GCSE grade respectively after only three years' study. The remaining eight participants from School A no longer continued with their Chinese lessons after July 2016.

Table 3.2: Key characteristics of participants from School A

Participant	Pseudonym	Gender	Presumed L1	Age of participants
1	Hannah	Female	English	13/14
2	Amir	Male	Arabic	13/14
3	Shanice	Female	English	13/14
4	Faisal	Male	Urdu	13/14
5	Yusuf	Male	Gujarati	13/14
6	Gurdyal	Male	Panjabi	13/14
7	Irene	Female	English	13/14
8	Abdul	Male	Gujarati	13/14
9	Daniel	Male	English	13/14
10	Khalid	Male	Gujarati	13/14

The ten participants from School B came from two separate Year 9 classes. As with the participants from School A, they had all started learning Chinese *ab initio* from the start of Year 8 and had not visited China at the time of data collection. The participants from School B had also been studying Chinese for 18 months when they took part in the speaking tasks and 22 months at the time of the stimulated recall interviews. At School B, all students in Years 8 and 9 who had opted to take Chinese had four one hour Chinese lessons spread over a two week timetable. Key information about the ten participants is presented in Table 3.3. I make no claims that this group of learners is representative of the rest of the school or these particular classes. All participants from School B spoke English fluently regardless of their presumed L1. One participant dropped Chinese at the end of Year 9. The remaining nine participants gained a GCSE in Chinese in 2018 after four years' study, with eight obtaining an 'A star' grade and one gaining a 'C' grade.

³ Although the term 'first language' (L1) is frequently used to refer to an individual's mother tongue, a bilingual child may have more than one language as their L1 (Forbes, 2016, p. 5). In the context of this study, I regard all the participants at both School A and School B as 'L1 English', regardless of their presumed L1.

Table 3.3: Key characteristics of participants from School B

Participant	Pseudonym	Gender	Presumed L1	Age of participants
11	Chris	Male	English	13/14
12	Ahmed	Male	Urdu	13/14
13	Bhavesh	Male	Hindi	13/14
14	Kevin	Male	English	13/14
15	Ryan	Male	English	13/14
16	Luke	Male	English	13/14
17	Jamal	Male	English	13/14
18	Paul	Male	English	13/14
19	Peter	Male	English	13/14
20	Mohamed	Male	Urdu	13/14

The 40 L1 Chinese raters were all studying at a range of British universities at the time of data collection and came from Mainland China. Their selection for involvement in this study was also based on convenience sampling since several raters were acquaintances. I also benefited from snowball sampling as some of the initial recruits helpfully identified additional raters from their friendship circles. All the raters were fluent Mandarin speakers, had high levels of English proficiency, reported normal hearing and claimed to have no experience of teaching Chinese as a Foreign language. I insisted upon this latter criterion since familiarity with a topic and a particular L2 accent can facilitate a listener’s ability to comprehend L2 speech (Gass & Varonis, 1984), even if Chinese teachers were likely to respond to L2 speech more critically than less experienced listeners because of their ‘heightened awareness’ of the types of pronunciation problems learners tend to experience (Munro, 2008, p. 198). As a small token of my appreciation for their time and collaboration in the study, each L1 Chinese listener was paid an honorarium of £10.

3.4.3 Ethical considerations

I am highly aware of ethical considerations and designed my research in accordance with the guidelines set out by the British Educational Research Association (BERA, 2011). The study was also approved by the Faculty of Education’s research ethics committee at the University of Cambridge. Since the learners were only thirteen or fourteen years old at the time of data collection, I wrote to their parents/carers to seek

their consent (see Appendix A). I made it very clear to potential participants and their parents/carers that participation in the research study was entirely voluntary, protected by confidentiality, not part of any formal class assessment and could be ended at any moment by their choice (Taber, 2007, p. 140). In order to negate a “potential conflict of interests as a result of the dual teacher-researcher role” (Taber, 2002, p. 435), I also appointed the respective Heads of the Languages Departments at both School A and School B, as well as the Mandarin teacher at School B, as alternative ‘gatekeepers’ to whom participants or their parents/carers could address any concerns regarding the research (Taber, 2007, p. 139). I acknowledge the charge that the 20 participants in this study could have been seen as being singled out for ‘special treatment’ by the other class members. However, I was able to share some common pronunciation problems unearthed by the data with the whole class at School A and the Chinese teacher at School B. Moreover, very similar speaking tasks were carried out with the whole class at School A as part of a normal classroom activity, regardless of whether they were taking part in the research. Every effort was made to carry out all the data collection activities in a relaxed and informal manner so that participants did not feel that their own limitations as learners were being exposed (Taber, 2002, p. 435). In order to save participants’ time, the stimulated recall interviews were also very tightly structured.

While I was very grateful to have received the support of the Headteachers and Heads of Languages at both schools, as well as the Chinese teacher at School B, to carry out this research, it should be acknowledged that I often find myself torn between the seemingly contradictory pressures of preparing students for public examinations and carrying out academically rigorous research suitable for sharing with a wider audience. Indeed, the current educational climate in UK schools, with its increasingly narrow focus on examination results and accountability measures (British Council, 2015b), is arguably anathema to “stepping off the treadmill” (Lamb & Simpson, 2003, p. 55) and researching one’s own classroom. Nevertheless, I hope and expect that this study will not only inform my own teaching, but also make some sort of contribution, however modest, to the embryonic field of CSL pedagogy and will consequently be worth the investment of time and effort of all the participants.

3.5 Data collection instruments and focus of analysis

In Table 3.4, I set out my RQs, data collection instruments and focus of analysis. I initially discuss the speaking tasks before reflecting upon the dictation exercises, the accentedness and comprehensibility ratings tasks, the semi-structured interviews with the raters and the stimulated recall interviews with the learners. In an attempt to increase the ‘trustworthiness’ of the study, I highlight potential problems with the data collection instruments, as well as any strategies I employed to lessen the threats to validity and reliability (Evans, 2009a). All speaking tasks with the learners took place during March 2016. Dictation exercises and ratings tasks formed part of the semi-structured interviews with the raters and took place between April and July 2016. The stimulated recall interviews with the learners occurred in July 2016.

Table 3.4: Research questions, data collection instruments employed and focus of analysis

Research question	Data collection instruments	Focus of analysis
1. To what extent can the intelligibility breakdowns of young Anglophone beginner learners of Chinese be traced to problems with tonal production, as opposed to initials and finals?	Speaking tasks Dictation exercises	Identification and description of intelligibility breakdowns
2. How do L1 Chinese raters process the L2 Chinese speech signal at the sentence level with respect to accentedness, comprehensibility and intelligibility?	Speaking tasks Dictation exercises Accentedness and comprehensibility ratings Semi-structured interviews	Raters’ explanations of their ratings and transcriptions
3. To what extent are learners aware of their own pronunciation errors both during and after speech production?	Speaking tasks Dictation exercises Stimulated recall interviews	Learners’ explanations of any perceived pronunciation errors

3.5.1 Speaking tasks

In order to elicit L2 speech samples from the learners, I designed two read-aloud tasks (Tasks 1 and 2) and one role play activity (Task 3) (see Appendix B). Both approaches had their own particular advantages and disadvantages. For instance, the read-aloud tasks guaranteed control over content. I was consequently able to focus on specific words and could ensure that raters were not distracted by possible grammatical errors

or by unusual lexical choices (Derwing & Munro, 2015, p. 88). On the other hand, the read-aloud tasks were rather artificial compared to the role play activity which required, in theory at least, that the learners organise their own thoughts and speak spontaneously as opposed to merely reading words and sentences that had been written by someone else (p. 88). In reality, most learners may well have relied primarily on pre-fabricated chunks, although such a strategy would have been entirely natural for L2 beginner learners (Myles et al., 1998).

Task 1 was at the individual word level and featured ten high frequency monosyllabic words, taken from the key language sections of the *Jinbù 1* textbook (Zhu & Yu, 2010) which learners from both schools had been following the previous year. I was keen to lower the chances of learners mispronouncing words due to inadequate lexical knowledge rather than non-standard pronunciation. I also did not want to skew the findings by using more recently acquired vocabulary which may have resulted in artificially high levels of intelligibility. The words belonged to a variety of lexical classes such as pronouns, nouns and verbs and covered all four basic tones. Task 2 featured the same words, although they appeared as part of sentences ranging from three to nine characters in length. The content of the sentences was designed to be highly familiar to participants as they included topics already covered in class (e.g. family members and hobbies). Seven of the sentences were statements and three were questions, providing a range of sentence-level intonation patterns. However, unlike Yang and Chan's (2010) and Luo's (2017) studies, all the questions were marked. Task 3 took the form of a role-play similar to one developed by Winke (2007, p. 30). At the start of the task participants were told to imagine that they were at a party meeting a Chinese person for the first time who was going to ask them a few questions. I played the role of the Chinese person. The questions covered areas of language already learnt in class, such as life at school and daily routines. Learners were expected to answer without any recourse to notes and were not given the list of questions in advance.

3.5.2 Dictation exercises

According to Munro and Derwing (2015b), the most common approach to measuring intelligibility "is to have listeners transcribe utterances produced by an L2 speaker, and

then count the number of correctly transcribed words” (p. 382). Using dictations in this manner, albeit working at the syllable/character level, proved to be a useful way of providing a general intelligibility rating for each participant and for comparing intelligibility levels across different tasks and across learners (Munro & Derwing, 1995). Moreover, a close analysis of raters’ transcriptions could provide clues about the causes of any intelligibility breakdowns - i.e. instances when a rater incorrectly transcribed what a learner was intending to say (RQ1). However, dictations were only able to provide a partial picture. For instance, they provided no information about comprehensibility – the amount of effort required by the rater to understand the speech signal, or accentedness – how different the rater perceived the L2 pronunciation to be compared to how he/she would have pronounced the same utterance. Moreover, dictation exercises used on their own provided no details about the gravity of an inaccurate transcription. For example, transcribing ‘sì’ (four) instead of the intended utterance of ‘shí’ (ten) would completely change the meaning of the whole sentence, whereas transcribing the generic measure word ‘ge’ instead of a specific measure word such as ‘kǒu’ would arguably have a negligible effect on overall understanding.

3.5.3 Accentedness and comprehensibility ratings

Alongside the transcriptions, I asked raters to provide separate accentedness and comprehensibility ratings for each sentence level utterance. Ratings ranged from one (no accent/extremely easy to understand) to nine (extremely strong accent/extremely difficult to understand) (Derwing & Munro, 1997, p. 5). I provided some general guidance at the start of the exercise. For example, I would suggest that if a rater needed to listen to a learner’s utterance on three occasions and still had no idea what a learner was trying to say, then he/she should be given a comprehensibility rating of nine. However, it soon became apparent that the ratings were highly subjective with raters frequently displaying varying degrees of sensitivity towards the two constructs. For example, over the course of the interviews it transpired that ratings of two could mean that a fairly noticeable accent had been perceived or that the rater had been forced to work quite hard in order to make sense of the speech signal. I recognise that more explicit training at the start of the exercise would have been helpful although I was keen to encourage the raters to come up with their own ratings with as little input

from me as possible. Moreover, the goal of the activity was mainly to encourage the raters to reflect upon any causes of learners' accentedness and comprehensibility levels, as opposed to unearthing an exact measurement.

3.5.4 Semi-structured interviews with raters

The semi-structured interviews with the raters were carried out at the same time as the dictation exercises and the rating tasks. During the interviews all the raters were invited to provide explanations of their ratings and transcriptions. Raters' comments were treated very much as opinions rather than facts. In order to encourage their analytical thinking, I occasionally felt the need to use 'hypothesis-suggesting questions' (for example, 'is it the tone that's causing the problem?') which could be rejected or accepted by the interviewee (Evans, 2009b, p. 129). I recognise that I was consequently heavily involved in the process of data elicitation. However, since none of the raters had any formal experience of teaching Chinese as a foreign language, I felt that this approach was necessary. I also acknowledge that some raters may have provided answers they felt that I wanted to hear in the form of non-critical comments (Kvale & Brinkmann, 2007, p. 34). For example, they may have feared that I would regard negative observations about learners' pronunciation as an implicit criticism of my own teaching. Occasionally I supplemented their comments by making use of the acoustic software package *Praat* (Boersma & Weenink, 2014). *Praat* has a useful pitch-tracking device which could help illustrate the interference of English intonation patterns or non-standard tonal usage. Although the interviews were conducted almost entirely in English, I gave raters the option of speaking in Chinese if they could not think of the equivalent English word or phrase.

3.5.5 Stimulated recall interviews with learners

The traditional assumption behind stimulated recall interviews is that "some tangible (perhaps visual or aural) reminder of an event will stimulate recall of the mental processes in operation during the event itself" (Gass & Mackey, 2000, p. 17). In this study, I adopted a very different approach and used the interviews as a tool to analyse learners' awareness of their own pronunciation errors four months after the original

speaking tasks. Based on an analysis of the raters' transcriptions, each participant was presented with ten audio extracts of their own L2 Chinese spoken data. Five of the extracts had been accurately transcribed while the other five contained intelligibility breakdowns. Participants were invited to say whether they thought an extract was intelligible or not and comment upon the causes of any perceived pronunciation errors. I recognise that some of the extracts inevitably featured pronunciation errors which were more salient than others. Moreover, audio extracts coded as intelligible often contained elements of non-standard pronunciation which may well have confused the learners. Despite these important caveats, I felt that the exercise provided an approximate indicator of learners' awareness levels of their own pronunciation errors. I was also able to examine their 'online' awareness during L2 production by investigating whether there were any examples of 'self-repairs' during the role-play activity. Self-repairs were defined as any changes the learners made to the pronunciation of a syllable or a monosyllabic word, shortly or immediately after the initial production, regardless of whether the alterations actually improved intelligibility levels.

3.6 Procedure

The 20 L2 Chinese participants took part in the speaking tasks individually during March 2016 as part of a normal lesson activity. All the speaking tasks were recorded on a TX650 Sony digital voice recorder. All learners, regardless of whether they were taking part in the research, were given approximately ten minutes to practise the read-aloud tasks with other classmates. The monosyllabic words (Task 1) and sentences (Task 2) were presented in both Chinese characters and *pīnyīn*, alongside an English translation. In order to lessen any unhelpful influence from *pīnyīn*, learners were allowed to write their own pronunciation glosses on the task sheet. In actual fact, none of the participants availed themselves of this opportunity. It was difficult to know if they relied more on the characters or the *pīnyīn* although I suspect that it was the latter option for the majority of the learners. Some of my own pupils would certainly have struggled with the read-aloud tasks had I only presented the text in characters. Given that the focus of the exercise was on their pronunciation, as opposed to their reading ability, I felt that it was more sensible to use both forms. Unlike the *Jīnbù 1* textbook the students had been following (Zhu & Yu, 2010), less obvious examples of tone

sandhi were taken into account when preparing the *pīnyīn* transcriptions. For example, the diacritical tone markers on words such as ‘bù’ (no/not) and ‘dǎ’ (to play) were changed depending on the tone of the following word in the sentence.

Some participants were recorded at the front of the class while their classmates worked silently on a separate writing task although others were recorded in an adjacent room when another teacher was able to supervise the rest of the class. I recognise that some participants consequently had an unfair advantage since they would have had the opportunity to listen to the role play activity with their classmates and silently rehearse potential answers if they had so desired. However, those learners who performed in a separate room may have felt less self-conscious as they were not performing in front of their classmates.

Using Version 2.0.3 of Audacity, an open-source, cross-platform software for recording and editing sounds, I broke down each learner’s spoken data into separate MP3 sound files with each sound file featuring a separate utterance from the three speaking tasks. All false starts and slips of the tongue were removed, as were any unnaturally long pauses in the middle of sentences when a learner was searching for a suitable word or phrase. I recognise that such actions lower any claims that can be made about the influence of sentence level prosody upon students’ intelligibility levels although this was not the main focus of the analysis. Moreover, I felt that long pauses would have been particularly confusing for a rater when presented with a randomised sentence out of context. In a similar vein, any utterances from Task 3 which featured grammatical errors and/or unusual lexical choices were also removed, along with sentences longer than ten characters. My overarching aim was to increase the likelihood that inaccurate transcriptions by the raters were a direct result of learners’ pronunciation problems as opposed to other factors such as memory difficulties or unexpected word use (Zielinski, 2006, p. 26). Since the use of dictation exercises to measure intelligibility levels required certainty about a speaker’s intended utterance (Munro, 2008, p. 202), I also removed any utterances from the role play activity when I was unsure of what a learner was trying to say.

Individual semi-structured interviews with the 40 L1 Chinese raters took place between April and July 2016 at a variety of locations in the UK, typically in an empty university classroom. The interviews incorporated the transcription tasks and rating exercises

and were recorded on a TX650 Sony digital voice recorder. Raters were asked to transcribe the randomised utterances of a single participant into Chinese characters and *pīnyīn*. The utterances had been randomised to control for practice effects so that the intelligibility levels of utterances from Task 3 were not artificially high. Raters were allowed to listen to each utterance a maximum of three times. The sound files had been copied on to a laptop and I also provided the raters with a pair of headphones. For any sentence level utterances from Tasks 2 and 3, they were also asked to provide accentedness and comprehensibility ratings and to verbally justify their ratings if possible. At the end of the interviews, I informed the raters of the learners' intended utterances.

I then prepared the audio extracts for the stimulated recall interviews with the learners using Version 2.0.3 of Audacity. The interviews with each of the learners took place at Schools A and B in July 2016, four months after the initial speaking tasks. The delay was due to the length of time it took to carry out the interviews with the raters and subsequently analyse the data. However, subsequent doubts about the validity of the interviews can be played down given that the focus was not on bringing to light the learners' original thought processes at the time of data production. At School A, the interviews took place individually in empty classrooms outside normal lesson times. At School B, the interviews took place individually in a separate office space during a Chinese lesson. In order to increase the strength of the stimulus, learners were presented with a written transcript of each extract in Chinese characters, *pīnyīn* and English. The audio extracts and written transcripts were embedded into individual PowerPoint presentations on a laptop with learners asked to use a pair of headphones which I provided. Most of the extracts came from Task 1 and were consequently at the monosyllabic word level. This was primarily to increase the salience of any pronunciation error, and also because intelligibility breakdowns frequently lacked a straightforward phonetic explanation at the sentence level. At the start of the interview, all learners were informed that five of the audio extracts contained at least one intelligibility breakdown while the other five extracts had been accurately transcribed. Towards the end of each interview, I highlighted any discrepancies between participants' perceptions of their production data and their actual performance.

3.7 Data analysis

In common with much qualitative research, I acknowledge the constant interaction between data collection and analysis (Evans, 2009b, p. 126). For example, I have already mentioned how an analysis of raters' transcriptions led directly to choosing the audio extracts for the stimulated recall interviews. In this section, I reflect in general terms on the methods of data analysis I adopted. More specific details will be provided during the respective data analysis chapters.

3.7.1 Data analysis: identification and description of intelligibility breakdowns

In order to answer the first RQ I focussed on the raters' transcriptions of ten high frequency monosyllabic words across three different speaking tasks. Working at the syllable level, I analysed all the cases of intelligibility breakdowns - defined in general terms as any instance when a rater incorrectly transcribed what a learner was intending to say. Each breakdown was categorised as either being a result of the tone, or the initial consonant of the syllable or the final part of the syllable deviating from the intended utterance, or a combination of two or all three of the factors, as evidenced by the raters' transcriptions. Thus if a rater had transcribed 米 mǐ (rice) when the learner had intended to say 你 nǐ (you), the breakdown would be attributed solely to problems with the initial 'n', whereas if a rater had transcribed 水 shuǐ (water), when the learner had attempted to say 学 xué (to study), the initial, final and tone would all be implicated as contributing to the breakdown. I also noted any instances of raters leaving blank transcriptions, adding an extra word, or transcribing the wrong homophone.

I devised a simple points scoring system to examine the extent that the intelligibility breakdowns could be traced to tones, initials or finals (see Appendix C). For instance, if the only difference between the intended utterance and the rater's transcription was the tone, then the tone would 'earn' three points, while the initial and final would both remain pointless. When a breakdown implicated two elements (e.g. tone and initial) as contributing to the misunderstanding, then these elements would be given one point each. The element of the syllable which ended up with the lowest number of points was identified as contributing the least to intelligibility breakdowns.

3.7.2 Data analysis: raters' explanations of their ratings and transcriptions

The main set of data used to answer the second RQ came from the semi-structured interviews carried out with the 40 L1 Chinese raters. Adopting a broadly inductive approach, I converted the interview data into textual form and immersed myself in the data. I also listened repeatedly to the audio recordings of the interviews. Based on the raters' comments, I was able to draw up a simple coding framework to analyse the main causes of accentedness as perceived by the raters (see Appendix D). This involved distinguishing between segmentals (i.e. individual sounds such as vowels and consonants) and suprasegmentals (i.e. stress, intonation, tone). I used the same coding framework to look at the perceived causes of lower levels of comprehensibility (see Appendix E). I recognise that such a dichotomy could be viewed as problematic since the production of segmentals can affect suprasegmentals and vice versa (Zielinski, 2015). Nevertheless, the raters seemed comfortable making this distinction, even if they never actually used the terms 'segmental' and 'suprasegmental'. Moreover, if a rater's explanation of a particular accentedness or comprehensibility rating included both segmental and suprasegmental dimensions, this would be coded separately. I also had a fourth category entitled 'unspecified' when a rater did not provide any relevant comment.

I also used the raters' comments to delve deeper into the precise causes of any intelligibility breakdowns at the sentence level, as opposed to merely relying on their transcriptions. As with the perceived causes of accentedness and lower levels of comprehensibility, I only formulated a coding framework after immersing myself in the interview data (see Appendix F). Although the codes frequently overlapped, I differentiated between transcriptions which were the result of 'wild guesses', 'mistaken keywords', 'no understanding' and instances where wider contextual clues provided no extra help. When in doubt about which code to use, I gave priority to the raters' comments over their transcriptions. I felt that this focus on the perceived causes of intelligibility breakdowns built logically on the findings of the first RQ which had focussed exclusively on raters' transcriptions.

3.7.3 Data analysis: learners' explanations of any perceived pronunciation errors

In order to answer the third RQ, the focus of the analysis shifted from the raters' to the learners' perspectives. I initially looked at their 'online' awareness during the process of L2 production by investigating whether there were any examples of self-repairs during the role-play activity. The bulk of the analysis was dedicated to exploring learners' implicit and explicit awareness levels via a thorough examination of the results of the stimulated recall interviews. Learners were awarded an implicit awareness mark out of ten, turned into a percentage score, based on their ability to correctly identify whether an audio extract was intelligible or contained an intelligibility breakdown in line with the raters' transcriptions. I then focussed specifically on their reactions to the five audio extracts which had been inaccurately transcribed by the raters. Based on the learners' varied responses to listening to audio extracts of their own L2 Chinese spoken data, I drew up an 'explicit awareness' coding framework featuring seven different learner reactions, ranging from no recognition of an intelligibility breakdown to providing a full explanation (see Appendix G). Learners were awarded an 'explicit awareness' mark out of five, also turned into a percentage score, according to their ability to explain their own intelligibility breakdowns using some form of appropriate metalanguage. There was no obligation on the learners to use the sort of language found in their textbooks, as long as it tallied directly with their pronunciation error. For example, credit was given if they referred to "using the angry tone instead of the rising tone" to describe using a falling fourth tone instead of a rising second tone. I also looked at whether there was any suggestion of a positive correlation between learners' awareness levels of their own pronunciation errors and their overall intelligibility levels.

3.8 Conclusion

In this chapter I have discussed some of the main methodological issues related to the study. In an attempt to increase its 'trustworthiness' and 'meaningfulness', I have endeavoured to provide a degree of critical reflexivity throughout the discussion. While the case study framework of my research does not allow me to generalise from my findings to the wider student population, it provides a research-informed structuring of empirical evidence which could form the basis of a shared corpus of learner data

generated with other teachers of Chinese in Anglophone secondary school settings, on our joint journey towards creating an evidence-informed CSL pedagogy. In the following three data analysis chapters, I present the findings to each of the three research questions in turn.

4. Investigating the relationship between learners' tonal production and their intelligibility

In this initial data analysis chapter, I address my first research question: “To what extent can the intelligibility breakdowns of young beginner learners of Mandarin Chinese be traced to problems with tonal production, as opposed to initials and finals?” Focussing solely on the learners' pronunciation of ten high frequency monosyllabic words across three different tasks, an intelligibility breakdown is defined in general terms as any instance when a rater incorrectly transcribes what a learner is intending to say. Tasks 1 and 2 are read-aloud exercises at the word and sentence level respectively while Task 3 features more spontaneous speech taken from the role-play tasks, also at the sentence level. After considering overall interrater reliability and intelligibility levels, I focus on each of the ten words in turn and look specifically at the respective contribution of tones, initials and finals to intelligibility breakdowns across the three tasks, as evidenced by the raters' transcriptions.

4.1 The ten monosyllabic words featured in this chapter

The ten high frequency monosyllabic words featured in this chapter are displayed in Table 4.1 in both Chinese characters and the *pīnyīn* ‘sound spelling’ system.

Table 4.1: The ten monosyllabic words featured in Chapter 4

Monosyllabic word	<i>Pīnyīn</i> transcription	English meaning
你	nǐ	you
岁	suì	years old
喝	hē	to drink
大	dà	big
我	wǒ	I/me
茶	chá	tea
学	xué	to study
肉	ròu	meat
吃	chī	to eat
十	shí	ten

4.2 Overall intelligibility levels

An intelligibility rating was calculated for each of the ten words based on the number of times they were successfully transcribed in each of the respective tasks by the 40 L1 Chinese raters. For example, the pronoun ‘wǒ’ (I/me) was correctly transcribed 38 out of 40 times during Task 1 and so the corresponding intelligibility rating was 95 per cent. Intelligibility levels are presented as percentage figures in order to facilitate comparison between the ten words since they did not feature equally in Tasks 2 and 3. As outlined in Chapter 3, raters were allowed to listen to randomised audio files a maximum of three times. Performance mistakes such as slips of the tongue and false starts were removed when preparing the audio extracts. I also deleted lengthy pauses in the middle of sentences in Tasks 2 and 3. The focus, therefore, was very much on the intelligibility of the individual words, as opposed to sentence level prosody. The intelligibility levels for each of the ten words are displayed in Table 4.2 while the average intelligibility levels for each of the three tasks are shown in Table 4.3:

Table 4.2: Intelligibility levels for each of the ten monosyllabic words across the three tasks

Monosyllabic word	Intelligibility rating Task 1	Intelligibility rating Task 2	Intelligibility rating Task 3	Overall intelligibility rating
‘wǒ’ (I/me)	38/40=95%	119/120=99.17%	214/218=98.17%	371/378=98.15%
‘nǐ’ (you)	35/40=87.5%	118/120=98.33%	-	153/160=95.63%
‘hē’ (to drink)	23/40=57.5%	37/40=92.5%	32/32=100%	92/112=82.14%
‘dà’ (big)	22/40=55%	70/80=87.5%	-	92/120=76.67%
‘chá’ (tea)	20/40=50%	32/40=80%	11/12=91.67%	63/92=68.48%
‘ròu’ (meat)	14/40=35%	25/40=62.5%	6/8=75%	45/88=51.14%
‘chī’ (to eat)	11/40=27.5%	26/40=65%	8/10=80%	45/90=50%
‘suì’ (years old)	14/40=35%	16/40=40%	27/34=79.41%	57/114=50%
‘xué’ (to study)	2/40=5%	31/40=77.5%	2/2=100%	35/82=42.68%
‘shí’ (ten)	3/40=7.5%	15/40=37.5%	38/58=65.52%	56/138=40.58%

Table 4.3: Average intelligibility ratings for each of the three tasks

	Task 1	Task 2	Task 3
Intelligibility ratings	182/400=45.5%	489/600=81.5%	338/374=90.37%

As can be seen, there are clear differences in the levels of intelligibility depending on which word is being pronounced. For example, the overall average intelligibility rating

for the pronoun ‘wǒ’ (I) is 98.15 per cent while the rating for ‘shí’ (ten) is only 40.58 per cent. Intelligibility levels also depend very much on the nature of the speaking task. For example, in Task 1, the overall intelligibility rating is 45.5 per cent. However, this figure rises to 81.5 per cent in Task 2 when contextual information is present to aid the raters’ comprehension. It is noteworthy that the highest average intelligibility ratings, 90.37 per cent, come in Task 3 when learners are speaking freely at the sentence level. At first glance, such results are surprising given the relatively high degrees of cognitive load involved in answering questions spontaneously compared to reading aloud pre-prepared sentences (Winke, 2007). One explanation is that many of the learners in Task 3 may not actually have been speaking freely at all, but more in pre-fabricated chunks which they could use immediately in simple conversations (Duff et al., 2013, p. 41). I consider the pedagogical implications of such an interpretation for improving the intelligibility of beginner learners in Chapter 7.

4.2.1 Individual intelligibility levels

Alongside the high levels of intra-learner variability already noted, there are also considerable levels of inter-learner variability, as displayed in Table 4.4 overleaf. For example, in Task 1, intelligibility ratings range from 25 per cent (Learners 8, 10, 12 and 18) to 65 per cent (Learner 9). Although learners generally achieve their highest intelligibility ratings during Task 3, four learners (6, 12, 17 and 18) are most intelligible in Task 2. There is also a large discrepancy between the least intelligible pupil (Learner 1 with an overall intelligibility rating of 52.86 per cent) and the most intelligible pupil (Learner 13 who obtains an overall intelligibility rating of 86.84 per cent). As will be discussed in more detail in Chapter 7, the pedagogical implications of such learner variability suggest that there is no ‘one-size-fits-all’ answer to learners’ pronunciation needs and that each learner should be assessed on an individual basis (Derwing & Munro, 2015, p. 169).

Table 4.4: Individual learner intelligibility levels

Learner	Task 1	Task 2	Task 3	Overall
1	7/20=35%	17/30=56.67%	13/20=65%	37/70=52.86%
2	11/20=55%	26/30=86.67%	12/12=100%	49/62=79.03%
3	10/20=50%	20/30=66.67%	14/14=100%	44/64=68.75%
4	12/20=60%	21/30=70%	16/16=100%	49/66=74.24%
5	8/20=40%	22/30=73.33%	4/4=100%	34/54=62.96%

Learner	Task 1	Task 2	Task 3	Overall
6	12/20=60%	24/30=80%	14/18=77.78%	50/68=73.53%
7	6/20=30%	21/30=70%	6/6=100%	33/56=58.93%
8	5/20=25%	26/30=86.67%	14/16=87.5%	45/66=68.18%
9	13/20=65%	27/30=90%	18/20=90%	58/70=82.86%
10	5/20=25%	23/30=76.67%	18/20=90%	46/70=65.71%
11	11/20=55%	19/30=63.33%	28/32=87.5%	58/82=70.73%
12	5/20=25%	27/30=90%	24/28=85.71%	56/78=71.79%
13	10/20=50%	30/30=100%	26/26=100%	66/76=86.84%
14	11/20=55%	26/30=86.67%	21/22=95.45%	58/72=80.56%
15	10/20=50%	28/30=93.33%	17/18=94.44%	55/68=80.88%
16	12/20=60%	27/30=90%	17/18=94.44%	56/68=82.35%
17	9/20=45%	27/30=90%	19/24=79.17%	55/74=74.32%
18	5/20=25%	26/30=86.67%	19/22=86.36%	50/72=69.44%
19	12/20=60%	26/30=86.67%	20/20=100%	58/70=82.86%
20	8/20=40%	26/30=86.67%	18/18=100%	52/68=76.47%

4.3 Overall interrater reliability ratings

40 raters were invited to transcribe the learners' randomised productions in both Chinese characters and *pīnyīn*. This meant that each learner was rated independently by a pair of L1 Chinese listeners. On the rare occasions that the *pīnyīn* transcription did not match the Chinese character, I gave priority to the transcription in Chinese characters and changed the *pīnyīn* transcription accordingly. In order to measure interrater reliability, I focussed solely on the raters' transcriptions of the ten monosyllabic words highlighted in 4.1 and analysed interrater agreement every time there was an intelligibility breakdown - i.e. when a rater transcribed a different word from what the learner had intended to say. An interrater reliability score was calculated on the basis of how many of the breakdowns occurred when both raters agreed upon the nature of the breakdown, as evidenced by identical transcriptions in terms of Chinese characters. Results are displayed in Table 4.5:

Table 4.5: Interrater reliability ratings

	Task 1	Task 2	Task 3
Interrater reliability ratings	64/218= 29.36%	28/111=25.23%	12/36=33.33%

The low levels of unanimity amongst the listeners appear to contradict Munro and Derwing's (2015b) claim that "a particular strength of dictation tasks [...] is a high degree of interlistener reliability" (p. 382). One explanation, which I consider in more detail in Chapter 5, is that learners' productions differ so much from native speaker expectations that processing the utterances often involve a fair amount of guess work. The lack of unanimity amongst the raters can also be seen as dovetailing with the discussion in Chapter 2 in which I problematized the construct of a native Chinese speaker. In other words, it makes sense that when two raters come from different parts of China and speak a localized version of Mandarin, they process the learners' oral productions differently. There is also considerable evidence of different levels of aptitude amongst raters for processing the learners' speech. For example, 105 of the 365 breakdowns (28.77 per cent) occur when the other rater correctly transcribes the intended utterance. Such findings suggest that the L2 speaker should not be automatically blamed for all intelligibility breakdowns as there is a real possibility that responsibility may lie more with the L1 listener (Grant, 2014, pp. 11-12). Having looked at overall intelligibility and interrater reliability ratings, I now turn my attention to an analysis of the specific causes of the intelligibility breakdowns.

4.4 Categorising intelligibility breakdowns

I recognise that listeners are likely to draw on information at many different levels simultaneously in order to make sense of the speech signal (Field, 2008) which I explore in Chapter 5 via interviews with the raters. Nevertheless, in this chapter, I focus solely on the raters' transcriptions and work at the individual syllable level. As I argued in Chapter 3, I adopt the traditional analysis of the Chinese syllable (Norman, 1988; Chen, 1999; Ross & Ma, 2006; Sun, 2006; Xing, 2006; Hu, 2018) with each intelligibility breakdown categorised as either being a result of the tone, or the initial consonant of the syllable or the final part of the syllable deviating from the intended utterance, or a combination of two or all three of the factors. Any examples of listeners transcribing the wrong homophone, leaving blank transcriptions or inserting an extra syllable are also recorded as separate categories.

I devised a simple points scoring system to examine the extent that each intelligibility breakdown could be traced to tones, initials or finals. For instance, if the only difference

between the intended utterance and the rater's transcription is the tone, then the tone would 'earn' three points, while the initial and final would both remain pointless. However, if the breakdown could be traced solely to the initial, then only the initial would be 'awarded' the three points. When a breakdown implicated two elements (e.g. tone and initial) as contributing to the misunderstanding, then these elements would be given one point each. Obviously the element of the syllable which ended up with the lowest number of points would be identified as contributing the least to intelligibility breakdowns. In Table 4.6, I set out this framework in more detail and give examples of each type of breakdown. I recognise that with blank transcriptions (Breakdown 8), it is not always obvious which part of the syllable should be implicated in the breakdown, especially at the sentence level when other words in the sentence may have also been left blank. Nevertheless, I include all three elements of the syllable (tone, initial and final) as contributing to the breakdown since the rater has not been able to match a Chinese word with the learner's intended utterance. In this respect, blank transcriptions are treated exactly like Breakdown 7 when the tone, initial and final all differ from the intended utterance. In a similar vein, I regard instances when raters erroneously add an extra syllable (Breakdown 9) as being attributable to all three elements of the syllable. Although I record any examples of homophones (Breakdown 10), it is impossible to trace the breakdown to any element of the syllable and so in these cases, no points are awarded.

Table 4.6: Classification of intelligibility breakdowns at the monosyllabic level

Type of breakdown	Description	Example	Points
1. Tone only	Only difference from intended utterance is the tone	'shì' instead of 'shǐ'	Tone – 3 Initial – 0 Final – 0
2. Initial only	Only difference from intended utterance is the initial	'mǐ' instead of 'nǐ'	Tone – 0 Initial – 3 Final – 0
3. Final only	Only difference from intended utterance is the final	'rè' instead of 'ròu'	Tone – 0 Initial – 0 Final – 3
4. Tone and initial	Only the tone and initial differ from intended utterance	'shuǐ' instead of 'suǐ'	Tone – 1 Initial – 1 Final – 0
5. Tone and final	Only tone and final differ from intended utterance	'chē' instead of 'chá'	Tone – 1 Initial – 0 Final – 1

Type of breakdown	Description	Example	Points
6. Initial and final	Only initial and final differ from intended utterance	'shu' instead of 'xué'	Tone – 0 Initial – 1 Final – 1
7. Tone, initial and final	Tone, initial and final all differ from intended utterance	'wǒ' instead of 'ròu'	Tone – 1 Initial – 1 Final – 1
8. Blank transcription	Rater leaves a blank transcription	-	Tone – 1 Initial – 1 Final – 1
9. Extra syllable	Rater adds an extra syllable	'shí yī' instead of 'shí'	Tone – 1 Initial – 1 Final – 1
10. Homophone	Transcription features same tone, initial and final as intended utterance	查 'chá' (to investigate) instead of 茶 'chá' (tea)	Tone – 0 Initial – 0 Final – 0

I go through the results of each of the ten words individually, starting with the most intelligible word 'wǒ' (I/me) and finishing with the least intelligible word 'shí' (ten), before summing up the findings. Space precludes discussing every intelligibility breakdown individually although all the intelligibility breakdowns are included in tabular form. Any transcriptions of the sentence level utterances which are grammatically incorrect or contain nonsense words remain untranslated, as do partial transcriptions.

4.4.1 'wǒ' (I/me)

Table 4.7: Overall intelligibility and interrater reliability ratings for 'wǒ'

	Task 1	Task 2	Task 3	Overall rating
Intelligibility rating	38/40=95%	119/120=99.17%	214/218=98.17%	371/378=98.15%
Interrater reliability rating	0/2=0%	0/1=0%	0/4=0%	0/7=0%

Table 4.8: Intelligibility breakdowns featuring 'wǒ' (n=7)

Learner	Task	Intended utterance	Rater's transcription	Type of breakdown	Interrater reliability	Points awarded
7	1	我 wǒ (I/me)	哇 wā (wow!)	5. Tone and final	No	Tone – 1 Initial – 0 Final – 1
12	1	我 wǒ (I/me)	活 huó (to live)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
2	2	我八点上学 Wǒ bā diǎn shàng xué (I go to school at 8 o'clock)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1

Learner	Task	Intended utterance	Rater's transcription	Type of breakdown	Interrater reliability	Points awarded
1	3	我十三岁 Wǒ shí sān suì (I am 13 years old)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final - 1
1	3	我的生日是八月十五日 Wǒ de shēng rì shì bā yuè shí wǔ rì (My birthday is August 15 th)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final - 1
1	3	我的爱好是看书 Wǒ de ài hào shì kàn shū (My hobby is reading books)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final - 1
8	3	我的生日是二月二日 Wǒ de shēng rì shì èr yuè èr rì (My birthday is February 2 nd)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final - 1

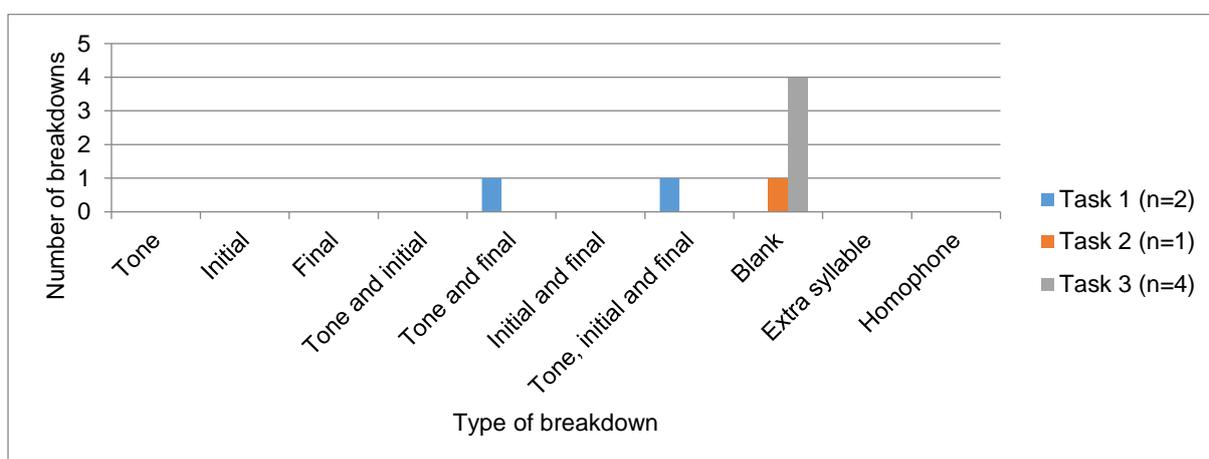


Figure 4.1: Categorising the intelligibility breakdowns of 'wǒ' (n=7)

Table 4.9: Respective contributions of tones, initials and finals to intelligibility breakdowns of 'wǒ'

Task	Tone	Initial	Final
1	2	1	2
2	1	1	1
3	4	4	4
Total	7	6	7

With an overall intelligibility rating of 98.15 per cent, it is clear that the learners generally have very few problems successfully pronouncing 'wǒ'. Moreover, each of the seven breakdowns is successfully transcribed by the other rater. At the local level (Task 1), neither of the breakdowns can be traced solely to tone, although they both implicate tone as a contributory factor, alongside the final (wā – 'wow!') and the initial and final (huó – 'to live'). At the global level in Tasks 2 and 3, all five breakdowns are

a result of blank transcriptions. In light of the high intelligibility levels for ‘wǒ’ in Tasks 2 and 3, it seems reasonable to conclude that the tone sandhi rules discussed in Chapter 3 do not appear to negatively affect the intelligibility of ‘wǒ’ at the sentence level. However, it should be acknowledged that when ‘wǒ’ appears in Tasks 2 and 3, it is always as the first word in the sentence and acts as the subject. As will be discussed in more detail in Chapter 5, the role of grammar and word order provides useful clues for the listeners in deciphering the speech signal and for compensating for non-standard pronunciation. In other words, the high levels of intelligibility for ‘wǒ’ in Tasks 2 and 3 may be partly explained by its position in the sentence and not necessarily by the accuracy of the learners’ pronunciation.

4.4.2 ‘nǐ’ (you)

Table 4.10: Overall intelligibility and interrater reliability ratings for ‘nǐ’

	Task 1	Task 2	Task 3	Overall rating
Intelligibility rating	35/40=87.5%	118/120=98.33%	-	153/160=95.63%
Interrater reliability rating	2/5=40%	0/2=0%	-	2/7=28.57%

Table 4.11: Intelligibility breakdowns featuring ‘nǐ’ (n=7)

Learner	Task	Intended utterance	Rater’s transcription	Type of breakdown	Interrater reliability	Points awarded
1	1	你 nǐ (you)	米 mǐ (rice)	2. Initial only	Yes	Tone – 0 Initial – 3 Final – 0
1	1	你 nǐ (you)	米 mǐ (rice)	2. Initial only	Yes	Tone – 0 Initial – 3 Final – 0
3	1	你 nǐ (you)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
10	1	你 nǐ (you)	米 mǐ (rice)	2. Initial only	No	Tone – 0 Initial – 3 Final – 0
15	1	你 nǐ (you)	泥 ní (mud)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
1	2	你多大? Nǐ duō dà? (How old are you?)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
7	2	你多大? Nǐ duō dà? (How old are you?)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1

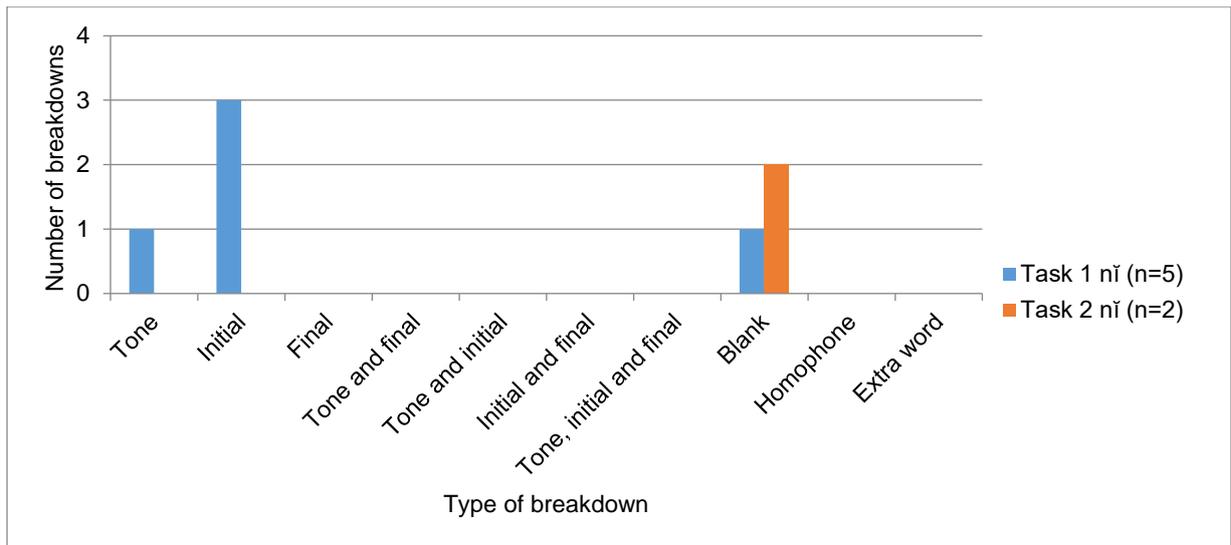


Figure 4.2: Categorising the intelligibility breakdowns of 'nǐ' (n=7)

Table 4.12: Respective contributions of tones, initials and finals to intelligibility breakdowns of 'nǐ'

Task	Tone	Initial	Final
1	4	10	1
2	2	2	2
3	-	-	-
Total	6	12	3

Like 'wǒ', the intelligibility rating for 'nǐ' is very high at the sentence level in Task 2 (98.33 per cent) although this figure falls to 87.5 per cent in Task 1. There are no data available for Task 3. At the local level in Task 1, only one of the five breakdowns can be traced directly to tone with a listener hearing a second tone 'nǐ' (mud) instead of the intended third tone. Tone is implicated in one of the other Task 1 breakdowns since the rater leaves a blank transcription. However, three of the breakdowns, including the only pair which features interrater agreement, do not involve tone at all but can be attributed solely to the initial with raters transcribing 'mǐ' (rice). Both [m] and [n] consonants in Mandarin Chinese are nasal sounds with the only difference being in terms of place of articulation – [n] being dental and [m] being bilabial (Lin, 2007, p. 33). At the sentence level, both breakdowns are a result of blank transcriptions and not directly traceable to tonal errors. As with 'wǒ', the pronoun 'nǐ' appears at the start of the sentence on the three occasions it features in Task 2 and acts as the subject which may contribute to the high levels of intelligibility. It is also interesting to note that similar to 'wǒ', there is no evidence of tone sandhi rules affecting the intelligibility of 'nǐ' at the sentence level.

4.4.3 'hē' (to drink)

Table 4.13: Intelligibility and interrater reliability ratings for 'hē'

	Task 1	Task 2	Task 3	Overall rating
Intelligibility rating	23/40=57.5%	37/40=92.5%	32/32=100%	92/112=82.14%
Interrater reliability rating	6/17=35.29%	0/3=0%	-	6/20=30%

Table 4.14: Intelligibility breakdowns featuring 'hē' (n=20)

Learner	Task	Intended utterance	Rater's transcription	Type of breakdown	Interrater reliability	Points awarded
7	1	喝 hē (to drink)	和 hé (and)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
7	1	喝 hē (to drink)	河 hé (river)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
8	1	喝 hē (to drink)	和 hé (and)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
8	1	喝 hē (to drink)	和 hé (and)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
10	1	喝 hē (to drink)	和 hé (and)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
12	1	喝 hē (to drink)	河 hé (river)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
12	1	喝 hē (to drink)	和 hé (and)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
13	1	喝 hē (to drink)	河 hé (river)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
13	1	喝 hē (to drink)	河 hé (river)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
15	1	喝 hē (to drink)	贺 hè (to congratulate)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
15	1	喝 hē (to drink)	贺 hè (to congratulate)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
16	1	喝 hē (to drink)	河 hé (river)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
18	1	喝 hē (to drink)	和 hé (and)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
18	1	喝 hē (to drink)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1

Learner	Task	Intended utterance	Rater's transcription	Type of breakdown	Interrater reliability	Points awarded
19	1	喝 hē (to drink)	和 hé (and)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
20	1	喝 hē (to drink)	和 hé (and)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
20	1	喝 hē (to drink)	河 hé (river)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
3	2	你喜欢喝茶吗? Nǐ xǐ huan hē chá ma? (Do you like to drink tea?)	你喜欢合唱吗? Nǐ xǐ huan hé chàng ma? (Do you like choirs?)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
7	2	你喜欢喝茶吗? Nǐ xǐ huan hē chá ma? (Do you like to drink tea?)	你... Nǐ...	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
11	2	你喜欢喝茶吗? Nǐ xǐ huan hē chá ma? (Do you like to drink tea?)	你是喜欢车吗? Nǐ shì xǐ huan chē ma? (Do you like vehicles?)	8. Blank transcription	No	Tone - 1 Initial – 1 Final – 1

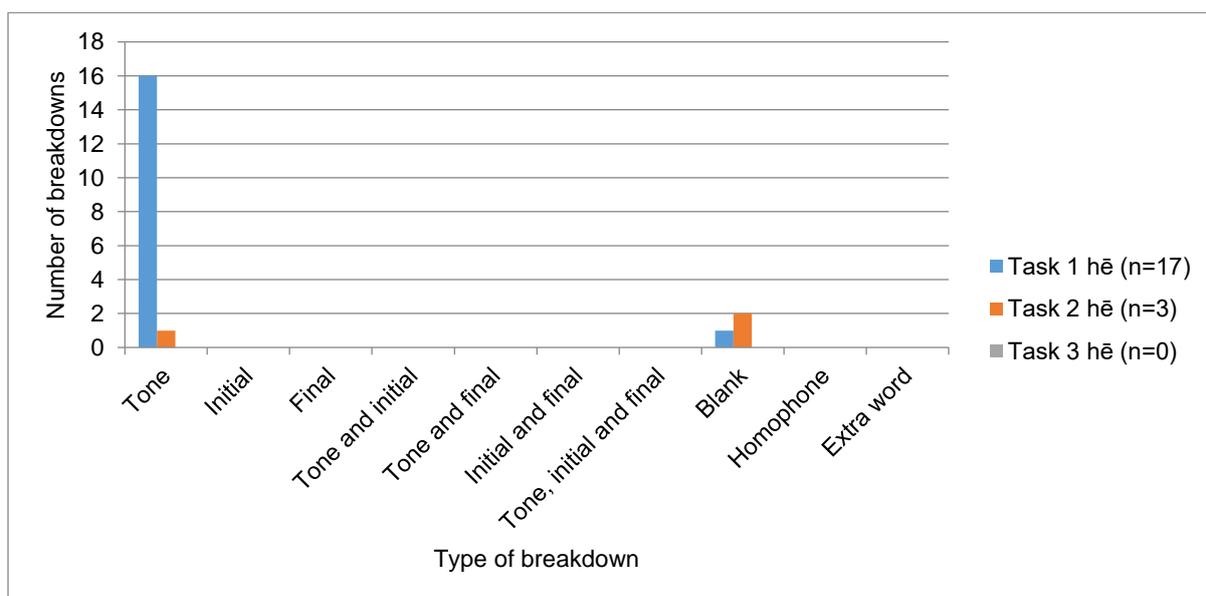


Figure 4.3: Categorising the intelligibility breakdowns of 'hē' (n=20)

Table 4.15: Respective contributions of tones, initials and finals to intelligibility breakdowns of 'hē'

Task	Tone	Initial	Final
1	49	1	1
2	5	2	2
3	0	0	0
Total	54	3	3

The next most intelligible word is 'hē' (to drink) with an overall intelligibility rating of 82.14 per cent across the three tasks. Intelligibility ratings are much lower when a local approach is taken in Task 1 with a score of 57.5 per cent compared to 92.5 per cent and 100 per cent in Tasks 2 and 3 respectively. 16 of the 17 intelligibility breakdowns in Task 1 can be traced solely to tonal confusion. Moreover, 14 of these breakdowns involve hearing the intended first tone as a second tone 'hé' (and/river) while another pair of breakdowns features a falling fourth 'hè' (to congratulate). Problems with tones decrease dramatically at the sentence level with only one breakdown traced directly to tonal confusion in Task 2 (hearing Tone 1 as Tone 2). In this instance, the rater also fails to understand the subsequent word 'chá' (tea) and so does not have the benefit of phrase level context. The two other breakdowns in Task 2 both feature blank transcriptions. It is noteworthy that all 32 instances of 'hē' in Task 3 are transcribed successfully when the learners are speaking freely in response to a question about what they like to drink. Virtually all the problems, therefore, are caused directly by tones, but this is only really evident at the local level.

4.4.4 'dà' (big)

Table 4.16: Intelligibility and interrater reliability ratings for 'dà'

	Task 1	Task 2	Task 3	Overall rating
Intelligibility rating	22/40=55%	70/80=87.5%	-	92/120=76.67%
Interrater reliability rating	6/18=66.67%	2/10=20%	-	8/28=28.57%

Table 4.17: Intelligibility breakdowns featuring 'dà' (n=28)

Learner	Task	Intended utterance	Rater's transcription	Type of breakdown	Interrater reliability	Points awarded
1	1	大 dà (big)	他 tā (he)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
5	1	大 dà (big)	打 dǎ (to hit)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
6	1	大 dà (big)	答 dá (to answer)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
7	1	大 dà (big)	打 dǎ (to hit)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
7	1	大 dà (big)	打 dǎ (to hit)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0

Learner	Task	Intended utterance	Rater's transcription	Type of breakdown	Interrater reliability	Points awarded
8	1	大 dà (big)	嗒 dā (clatter)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
10	1	大 dà (big)	打 dǎ (to hit)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
10	1	大 dà (big)	打 dǎ (to hit)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
12	1	大 dà (big)	答 dá (to answer)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
12	1	大 dà (big)	达 dá (to reach)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
13	1	大 dà (big)	打 dǎ (to hit)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
13	1	大 dà (big)	打 dǎ (to hit)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
17	1	大 dà (big)	打 dǎ (to hit)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
17	1	大 dà (big)	答 dá (to answer)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
18	1	大 dà (big)	嗒 dā (clatter)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
18	1	大 dà (big)	搭 dā (to put up)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
20	1	大 dà (big)	嗒 dā (clatter)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
20	1	大 dà (big)	搭 dā (to put up)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
1	1	他的卧室很大 Tā de wò shì hěn dà (His bedroom is big)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
1	1	你多大? Nǐ duō dà? (How old are you?)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
3	2	他的卧室很大 Tā de wò shì hěn dà (His bedroom is big)	他是我.... Tā shì wǒ....	8. Blank transcription	Yes	Tone – 1 Initial – 1 Final – 1
3	2	他的卧室很大 Tā de wò shì hěn dà (His bedroom is big)	-	8. Blank transcription	Yes	Tone – 1 Initial – 1 Final – 1
5	2	他的卧室很大 Tā de wò shì hěn dà (His bedroom is big)	他的窝是韩的 Tā de wō shì Hán de (His house is Korean)	5. Tone and final	No	Tone - 1 Initial – 0 Final – 1

Learner	Task	Intended utterance	Rater's transcription	Type of breakdown	Interrater reliability	Points awarded
6	2	他的卧室很大 Tā de wò shì hěn dà (His bedroom is big)	泰迪我是衡达 Tàì dí wǒ shì Héng dá (Tài dí, I'm Héng dá)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
6	2	他的卧室很大 Tā de wò shì hěn dà (His bedroom is big)	他第一,我喜欢他 Tā dì yī, wǒ xǐ huan tā (He's number one, I like him)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
7	2	他的卧室很大 Tā de wò shì hěn dà (His bedroom is big)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
7	2	你多大? Nǐ duō dà? (How old are you?)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
17	2	他的卧室很大 Tā de wò shì hěn dà (His bedroom is big)	他的..是...的 Tā de... shì ... de	5. Tone and final	No	Tone - 1 Initial – 0 Final – 1

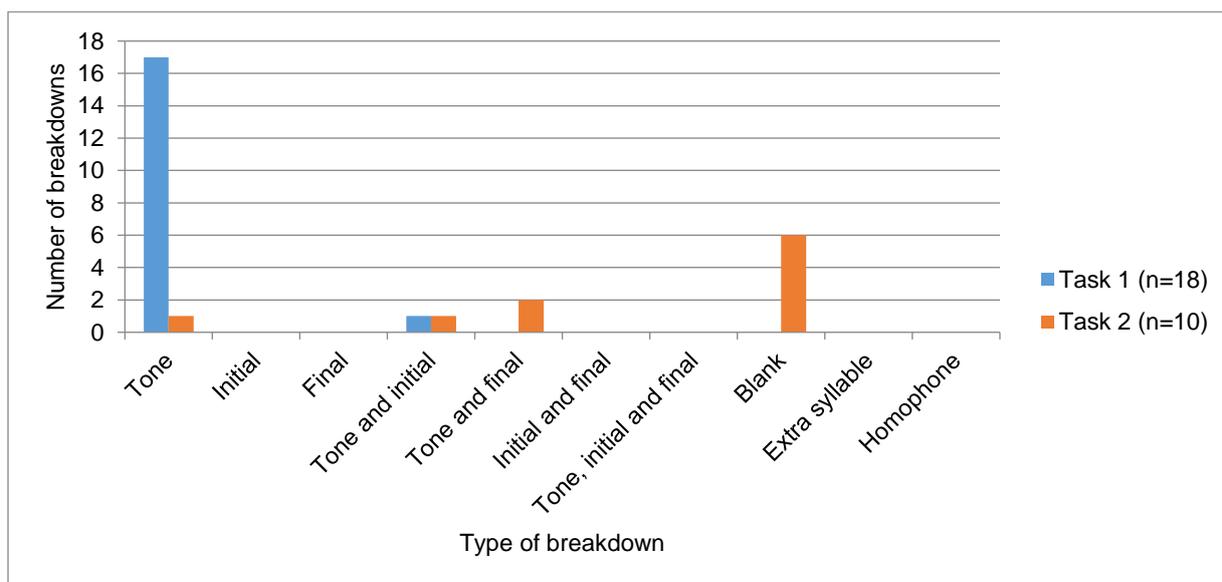


Figure 4.4: Categorising the intelligibility breakdowns of 'dà' (n=28)

Table 4.18: Respective contributions of tones, initials and finals to intelligibility breakdowns of 'dà'

Task	Tone	Initial	Final
1	52	1	0
2	12	7	8
3	-	-	-
Total	64	8	8

Similar to 'hē', the overall intelligibility rating for 'dà' is 76.67 per cent with learners considerably more intelligible at the sentence level in Task 2 (87.5 per cent) than at

the individual word level in Task 1 (55 per cent). As with ‘nǐ’, there are no data available for Task 3. Seventeen of the eighteen breakdowns in Task 1 can be traced directly to tone. Eight of the breakdowns feature confusion between the intended fourth tone and the third tone ‘dǎ’ (to hit), five involve the first tone ‘dā’ (clatter/to put up) while the other four breakdowns directly attributable to tone consist of a rising second tone ‘dá’ (to reach/to answer). Tone is also implicated in the other breakdown ‘tā’ (he). The variety of the raters’ transcriptions suggests that in general, the learners’ tonal production is not very stable.

In Task 2, only one of the breakdowns appears to be traced directly to tone (Tài dí wǒ shì Héng dá - Tài dí, I’m Héng dá). Nevertheless, as with the other intelligibility breakdowns featuring ‘dà’ at the sentence level, the rater is unable to successfully transcribe the rest of the sentence so it is difficult to pinpoint the exact cause of the intelligibility breakdowns with any confidence. Similar to ‘hē’, therefore, the vast majority of breakdowns at the local level in Task 1 can be attributed directly to tone. However, at the sentence level, the learners are not only much more intelligible, but tone plays much less of a definitive role in causing the breakdowns.

4.4.5 ‘chá’ (tea)

Table 4.19: Intelligibility and interrater reliability ratings for ‘chá’

	Task 1	Task 2	Task 3	Overall rating
Intelligibility rating	20/40=50%	32/40=80%	11/12=91.67%	63/92=68.48%
Interrater reliability rating	4/20=20%	0/8=0%	0/1=0%	4/29=13.79%

Table 4.20: Intelligibility breakdowns featuring ‘chá’ (n=29)

Learner	Task	Intended utterance	Rater’s transcription	Type of breakdown	Interrater reliability	Points awarded
3	1	茶 chá (tea)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
3	1	茶 chá (tea)	差 chà (to differ from)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
4	1	茶 chá (tea)	车 chē (vehicle)	5. Tone and final	No	Tone - 1 Initial – 0 Final – 1
5	1	茶 chá (tea)	家 jiā (family)	7. Tone, initial and final	Yes	Tone – 1 Initial – 1 Final – 1

Learner	Task	Intended utterance	Rater's transcription	Type of breakdown	Interrater reliability	Points awarded
5	1	茶 chá (tea)	家 jiā (family)	7. Tone, initial and final	Yes	Tone – 1 Initial – 1 Final – 1
7	1	茶 chá (tea)	查 chá (to investigate)	10. Homophone	No	Tone – 0 Initial – 0 Final – 0
8	1	茶 chá (tea)	夏 xià (summer)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
8	1	茶 chá (tea)	下 xià (down)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
9	1	茶 chá (tea)	差 chà (to differ from)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
10	1	茶 chá (tea)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
11	1	茶 chá (tea)	车 chē (vehicle)	5. Tone and final	Yes	Tone - 1 Initial – 0 Final – 1
11	1	茶 chá (tea)	车 chē (vehicle)	5. Tone and final	Yes	Tone - 1 Initial – 0 Final – 1
14	1	茶 chá (tea)	差 chà (to differ from)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
15	1	茶 chá (tea)	差 chà (to differ from)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
16	1	茶 chá (tea)	桥 qiáo (bridge)	6. Initial and final	No	Tone – 0 Initial – 1 Final – 1
18	1	茶 chá (tea)	差 chà (to differ from)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
18	1	茶 chá (tea)	擦 cā (to wipe)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
19	1	茶 chá (tea)	车 chē (vehicle)	5. Tone and final	No	Tone - 1 Initial – 0 Final – 1
19	1	茶 chá (tea)	差 chà (to differ from)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
20	1	茶 chá (tea)	查 chá (to investigate)	10. Homophone	No	Tone – 0 Initial – 0 Final – 0
1	2	你喜欢喝茶吗? Nǐ xǐ huan hē chá ma? (Do you like to drink tea?)	你喜欢喝酒吗? Nǐ xǐ huan hē jiǔ ma? (Do you like to drink alcohol?)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
3	2	你喜欢喝茶吗? Nǐ xǐ huan hē chá ma? (Do you like to drink tea?)	你喜欢合唱吗? Nǐ xǐ huan hé chàng ma? (Do you like choirs?)	5. Tone and final	No	Tone - 1 Initial – 0 Final – 1

Learner	Task	Intended utterance	Rater's transcription	Type of breakdown	Interrater reliability	Points awarded
4	2	你喜欢喝茶吗? Nǐ xǐ huan hē chá ma? (Do you like to drink tea?)	你喜欢喝酒吗? Nǐ xǐ huan hē jiǔ ma? (Do you like to drink alcohol?)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
7	2	你喜欢喝茶吗? Nǐ xǐ huan hē chá ma? (Do you like to drink tea?)	你... Nǐ...	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
8	2	你喜欢喝茶吗? Nǐ xǐ huan hē chá ma? (Do you like to drink tea?)	你喜欢喝下吗? Nǐ xǐ huan hē xià ma?	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
11	2	你喜欢喝茶吗? Nǐ xǐ huan hē chá ma? (Do you like to drink tea?)	你是喜欢喝酒吗? Nǐ shì xǐ huan hē jiǔ ma? (Do you like to drink alcohol?)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
11	2	你喜欢喝茶吗? Nǐ xǐ huan hē chá ma? (Do you like to drink tea?)	你是喜欢车吗? Nǐ shì xǐ huan chē ma? (Do you like vehicles?)	5. Tone and final	No	Tone - 1 Initial – 0 Final – 1
12	2	你喜欢喝茶吗? Nǐ xǐ huan hē chá ma? (Do you like to drink tea?)	你喜欢喝蚂蚁 Nǐ xǐ huan hē zhà má	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
15	3	我喜欢茶 Wǒ xǐ huan chá (I like tea)	我喜欢...Wǒ xǐ huan...	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1

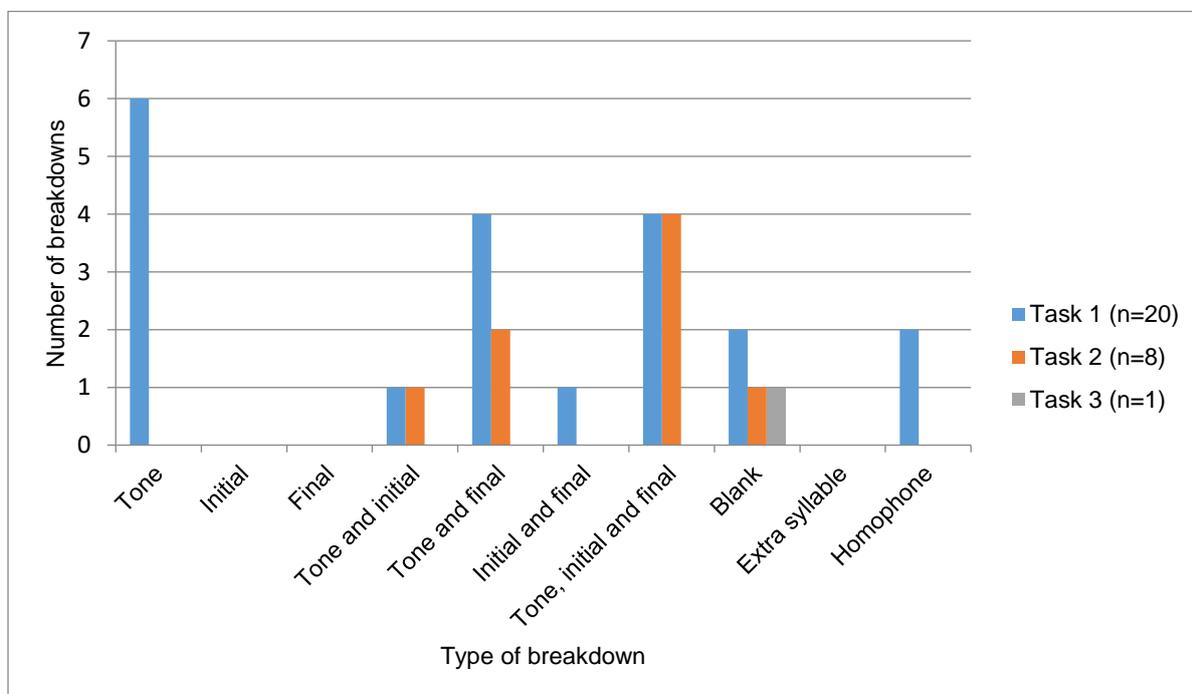


Figure 4.5: Categorising the intelligibility breakdowns of 'chá' (n=29)

Table 4.21: Respective contributions of tones, initials and finals to intelligibility breakdowns of 'chá'

Task	Tone	Initial	Final
1	29	8	11
2	8	6	7
3	1	1	1
Total	38	15	19

The overall intelligibility rating for 'chá' is 68.48 per cent. Intelligibility ratings are lowest in Task 1 (50 per cent), followed by Task 2 (80 per cent) and highest in Task 3 (91.67 per cent) although 'chá' only appears in twelve transcriptions in Task 3. At the local level in Task 1, six of the twenty breakdowns can be traced directly to tone and involve hearing the intended rising tone as a fourth tone 'chà' (to differ from). Tone is implicated as a contributory factor in a further eleven breakdowns, including four transcriptions of 'chē' (vehicle) which also implicate the final 'e' as contributing to the breakdown. There are two pairs of transcriptions which implicate all three elements of the syllable in the misunderstanding: 'jiā' (home) and 'xià' (summer/down), as well as two examples of raters transcribing the wrong homophone – 'chá' (to investigate). There is also one breakdown - 'qiáo' (bridge) - which implicates the initial and final, but not tone, as contributing to the misunderstanding.

In Task 2, none of the eight breakdowns can be traced directly to tone. However, they all implicate tone as a contributory factor. In three of these eight breakdowns, the raters transcribe the rest of the sentence successfully suggesting that the source of the breakdown appears to lie solely in the mispronunciation of 'chá'. On two occasions, raters transcribe 'jiǔ' (alcohol) which implicates the tone, initial and final as causing the breakdown. In the other breakdown, a rater transcribes 'xià' which also implicates the tone, initial and final, but makes no sense in the context. Interestingly, this particular learner's attempt to say 'chá' was transcribed as 'xià' in Task 1 by both raters, suggesting that his mispronunciation of 'chá' has become somewhat fossilized. The eleven successful transcriptions of 'chá' in Task 3 come in response to the question 'nǐ xǐ huan hē shén me?' (what do you like to drink?). The only breakdown, a blank transcription, occurs when the learner omits the verb 'hē' in his answer, highlighting the importance of context for intelligibility at the sentence level. Overall, therefore, tone contributes much more to the breakdowns than initials and finals in Task 1, but at the sentence level in Tasks 2 and 3, the respective contributions are more or less equal.

4.4.6 'ròu' (meat)

Table 4.22: Intelligibility and interrater reliability ratings for 'ròu'

	Task 1	Task 2	Task 3	Overall rating
Intelligibility rating	14/40=35%	25/40=62.5%	6/8=75%	45/88=51.14%
Interrater reliability rating	10/26=38.46%	2/15=13.33%	2/2=100%	14/43=32.56%

Table 4.23: Intelligibility breakdowns featuring 'ròu' (n=43)

Learner	Task	Intended utterance	Rater's transcription	Type of breakdown	Interrater reliability	Points awarded
1	1	肉 ròu (meat)	喔 wo (particle) marker of surprise	7. Tone, initial and final	Yes	Tone – 1 Initial – 1 Final – 1
1	1	肉 ròu (meat)	喔 wo (particle) marker of surprise	7. Tone, initial and final	Yes	Tone – 1 Initial – 1 Final – 1
2	1	肉 ròu (meat)	我 wǒ (I/me)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
3	1	肉 ròu (meat)	热 rè (hot)	3. Final only	No	Tone – 0 Initial – 0 Final – 3
3	1	肉 ròu (meat)	弱 ruò (weak)	3. Final only	No	Tone – 0 Initial – 0 Final – 3
5	1	肉 ròu (meat)	若 ruò (like)	3. Final only	No	Tone – 0 Initial – 0 Final – 3
7	1	肉 ròu (meat)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
7	1	肉 ròu (meat)	乳 rǔ (breast)	5. Tone and final	No	Tone – 1 Initial – 0 Final – 1
8	1	肉 ròu (meat)	我 wǒ (I/me)	7. Tone, initial and final	Yes	Tone – 1 Initial – 1 Final – 1
8	1	肉 ròu (meat)	我 wǒ (I/me)	7. Tone, initial and final	Yes	Tone – 1 Initial – 1 Final – 1
9	1	肉 ròu (meat)	柔 róu (soft)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
10	1	肉 ròu (meat)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
10	1	肉 ròu (meat)	罗 luó (trap)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
11	1	肉 ròu (meat)	哦 ò (Ah!)	6. Initial and final	No	Tone – 0 Initial – 1 Final – 1
11	1	肉 ròu (meat)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1

Learner	Task	Intended utterance	Rater's transcription	Type of breakdown	Interrater reliability	Points awarded
12	1	肉 ròu (meat)	我 wǒ (I/me)	7. Tone, initial and final	Yes	Tone – 1 Initial – 1 Final – 1
12	1	肉 ròu (meat)	我 wǒ (I/me)	7. Tone, initial and final	Yes	Tone – 1 Initial – 1 Final – 1
13	1	肉 ròu (meat)	揉 róu (to rub)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
14	1	肉 ròu (meat)	容 róng (to hold)	5. Tone and final	No	Tone - 1 Initial – 0 Final – 1
15	1	肉 ròu (meat)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
17	1	肉 ròu (meat)	路 lù (road)	6. Initial and final	No	Tone – 0 Initial – 1 Final – 1
18	1	肉 ròu (meat)	柔 róu (soft)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
18	1	肉 ròu (meat)	柔 róu (soft)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
19	1	肉 ròu (meat)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
20	1	肉 ròu (meat)	热 rè (hot)	3. Final only	Yes	Tone – 0 Initial – 0 Final – 3
20	1	肉 ròu (meat)	热 rè (hot)	3. Final only	Yes	Tone – 0 Initial – 0 Final – 3
1	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不希望 Gē ge bù xī wàng (Older brother doesn't hope)	6. Initial and final	No	Tone – 0 Initial – 1 Final – 1
1	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不喜欢 Gē ge bù xǐ huan (Older brother doesn't like)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
3	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不.... Gē ge bù....	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
3	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不虚荣 Gē ge bù xū róng (Older brother is not vain)	5. Tone and final	No	Tone - 1 Initial – 0 Final – 1
4	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不.... Gē ge bù....	8. Blank transcription	Yes	Tone – 1 Initial – 1 Final – 1
4	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不.... Gē ge bù....	8. Blank transcription	Yes	Tone – 1 Initial – 1 Final – 1
5	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不喜欢 Gē ge bù xǐ huan (Older brother doesn't like)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1

Learner	Task	Intended utterance	Rater's transcription	Type of breakdown	Interrater reliability	Points awarded
6	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥.... Gē ge....	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
6	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不轻柔 Gē ge bù qīng róu (Older brother is not gentle)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
8	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不吃鹅 Gē ge bù chī é (Older brother doesn't eat goose)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
8	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不...我 Gē ge bù...wǒ	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
10	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不去楼 Gē ge bú qù lóu (Older brother doesn't go to the building)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
11	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不求偶? Gē ge bù qiú ǒu (Older brother is not seeking a spouse)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
11	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不吃鹅 Gē ge bù chī é (Older brother doesn't eat goose)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
20	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不是柔 Gē ge bù shì róu (Older brother isn't flexible)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
6	3	我喜欢吃鸡肉 Wó xǐ huan chī jī ròu (I like to eat chicken)	我喜欢 Wǒ xǐ huan (I like)	8. Blank transcription	Yes	Tone – 1 Initial – 1 Final – 1
6	3	我喜欢吃鸡肉 Wó xǐ huan chī jī ròu (I like to eat chicken)	我喜欢车酒 Wǒ xǐ huān chē jiǔ (I like vehicles, alcohol)	8. Blank transcription	Yes	Tone – 1 Initial – 1 Final – 1

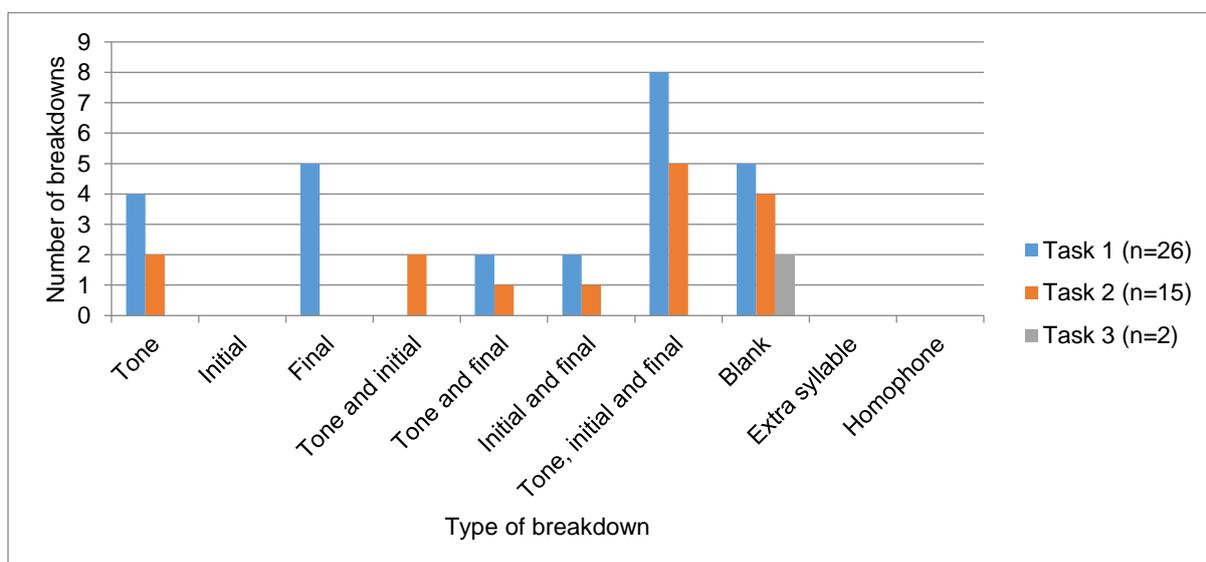


Figure 4.6: Categorising the intelligibility breakdowns of 'ròu' (n=43)

Table 4.24: Respective contributions of tones, initials and finals to intelligibility breakdowns of 'ròu'

Task	Tone	Initial	Final
1	27	15	32
2	18	12	11
3	2	2	2
Total	47	29	45

The overall intelligibility rating for 'ròu' (meat) is 51.14 per cent. The lowest intelligibility ratings come in Task 1 (35 per cent) although this rises to 62.5 per cent and 75 per cent for Tasks 2 and 3 respectively. However, the Task 3 results are slightly skewed by the fact that there are only eight transcriptions of 'ròu'. At the local level in Task 1, four breakdowns can be traced solely to tone with all four transcriptions featuring a rising second tone 'róu' (soft/to rub) instead of the intended fourth tone. Tone is implicated in a further fifteen breakdowns in Task 1 including five blank transcriptions. Five of the 26 breakdowns – made up of three instances of 'rè' (hot) and two transcriptions of 'ruò' (weak/like) - only implicate the final as contributing to the misunderstanding. None of the breakdowns can be traced solely to problems with the initial, although the initial is implicated as a contributory factor in fifteen breakdowns. Perhaps what is most striking about the raters' transcriptions is the sheer range, with thirteen different breakdowns being recorded. There consequently appears to be no real pattern emerging although the most common type of breakdown (n=8) is when the tone, initial and final are all different from the intended utterance. These breakdowns include two pairs of transcriptions where the raters have transcribed 'wǒ' (I/me), and another pair of similar transcriptions with a neutral tone instead of a third tone - 'wo' (marker of surprise).

In Task 2, only two breakdowns 'róu' (gentle/flexible) can be traced directly to tonal confusion. However, tone is implicated in twelve of the other thirteen breakdowns including four blank transcriptions. None of the Task 2 breakdowns can be traced solely to initials or finals, but initials are implicated in twelve of the breakdowns, while finals contribute to eleven of the breakdowns. As with Task 1, there is a wide range of pronunciation problems with nine separate breakdowns recorded. It is difficult to pinpoint the exact cause of the problem as there are only two breakdowns when the rest of the sentence is transcribed correctly. On both these occasions, the raters transcribe 'é' (goose) which differs from the target utterance in terms of tone, initial

and final.

In Task 3, learners are asked about the type of food they like to eat. Three of the four learners who mention ‘ròu’ in this task are understood by both raters, although one learner is completely misunderstood – with both raters leaving a blank transcription. Overall, therefore, it is clear that the pronunciation of ‘ròu’ proves to be challenging for a number of learners. Although learners experience the most difficulties in Task 1, quite a few also find it difficult to be understood at the sentence level. Only a relatively small number of breakdowns can be traced solely to tone or the final, predominantly at the individual word level. At the sentence level, most of the breakdowns implicate all three elements of the syllable.

4.4.7 ‘chī’ (to eat)

Table 4.25: Intelligibility and interrater reliability ratings for ‘chī’

	Task 1	Task 2	Task 3	Overall rating
Intelligibility rating	11/40=27.5%	26/40=65%	8/10=80%	45/90=50%
Interrater reliability rating	10/29=34.48%	4/14=28.57%	0/2=0%	14/45=31.11%

Table 4.26: Intelligibility breakdowns featuring ‘chī’ (n=45)

Learner	Task	Intended utterance	Rater’s transcription	Type of breakdown	Interrater reliability	Points awarded
1	1	吃 chī (to eat)	缺 quē (deficiency)	6. Initial and final	No	Tone – 0 Initial – 1 Final – 1
1	1	吃 chī (to eat)	去 qù (to go)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
2	1	吃 chī (to eat)	车 chē (vehicle)	3. Final only	Yes	Tone – 0 Initial – 0 Final – 3
2	1	吃 chī (to eat)	车 chē (vehicle)	3. Final only	Yes	Tone – 0 Initial – 0 Final – 3
3	1	吃 chī (to eat)	十一 shí yī (eleven)	9. Extra syllable	No	Tone – 1 Initial – 1 Final – 1
3	1	吃 chī (to eat)	十 shí (ten)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
4	1	吃 chī (to eat)	七 qī (seven)	2. Initial only	Yes	Tone – 0 Initial – 3 Final – 0

Learner	Task	Intended utterance	Rater's transcription	Type of breakdown	Interrater reliability	Points awarded
4	1	吃 chī (to eat)	七 qī (seven)	2. Initial only	Yes	Tone – 0 Initial – 3 Final – 0
5	1	吃 chī (to eat)	妻 qī (wife)	2. Initial only	No	Tone – 0 Initial – 3 Final – 0
5	1	吃 chī (to eat)	七 qī (seven)	2. Initial only	No	Tone – 0 Initial – 3 Final – 0
6	1	吃 chī (to eat)	七 qī (seven)	2. Initial only	No	Tone – 0 Initial – 3 Final – 0
6	1	吃 chī (to eat)	期 qī (a period of time)	2. Initial only	No	Tone – 0 Initial – 3 Final – 0
7	1	吃 chī (to eat)	迟 chí (late)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
8	1	吃 chī (to eat)	车 chē (vehicle)	3. Final only	Yes	Tone – 0 Initial – 0 Final – 3
8	1	吃 chī (to eat)	车 chē (vehicle)	3. Final only	Yes	Tone – 0 Initial – 0 Final – 3
10	1	吃 chī (to eat)	车 chē (vehicle)	3. Final only	No	Tone – 0 Initial – 0 Final – 3
10	1	吃 chī (to eat)	撤 chè (to remove)	5. Tone and final	No	Tone – 1 Initial – 0 Final – 1
12	1	吃 chī (to eat)	迟 chí (late)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
12	1	吃 chī (to eat)	迟 chí (late)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
14	1	吃 chī (to eat)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
15	1	吃 chī (to eat)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
16	1	吃 chī (to eat)	七 qī (seven)	2. Initial only	Yes	Tone – 0 Initial – 3 Final – 0
16	1	吃 chī (to eat)	七 qī (seven)	2. Initial only	Yes	Tone – 0 Initial – 3 Final – 0
17	1	吃 chī (to eat)	七 qī (seven)	2. Initial only	No	Tone – 0 Initial – 3 Final – 0
17	1	吃 chī (to eat)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
18	1	吃 chī (to eat)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1

Learner	Task	Intended utterance	Rater's transcription	Type of breakdown	Interrater reliability	Points awarded
18	1	吃 chī (to eat)	似 sì (to seem)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
20	1	吃 chī (to eat)	十 shí (ten)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
20	1	吃 chī (to eat)	史 shǐ (history)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
1	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不希望 Gē ge bù xī wàng (Older brother doesn't hope)	2. Initial only	No	Tone – 0 Initial – 3 Final – 0
1	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不喜欢 Gē ge bù xǐ huan (Older brother doesn't like)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
3	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不.... Gē ge bù....	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
3	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不虚荣 Gē ge bù xū róng (Older brother is not vain)	6. Initial and final	No	Tone – 0 Initial – 1 Final – 1
4	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不.... Gē ge bù....	8. Blank transcription	Yes	Tone – 1 Initial – 1 Final – 1
4	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不.... Gē ge bù....	8. Blank transcription	Yes	Tone – 1 Initial – 1 Final – 1
5	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不喜欢 Gē ge bù xǐ huan (Older brother doesn't like)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
6	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥.... Gē ge....	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
6	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不轻柔 Gē ge bù qīng róu (Older brother is not gentle)	6. Initial and final	No	Tone – 0 Initial – 1 Final – 1

Learner	Task	Intended utterance	Rater's transcription	Type of breakdown	Interrater reliability	Points awarded
8	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不...我 Gē ge bù...wǒ	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
10	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不去楼 Gē ge bù qù lóu (Older brother doesn't go to the building)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
11	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不求偶? Gē ge bù qiú ǒu (Older brother is not seeking a spouse)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
20	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	这是不是肉 Zhè shì bù shì ròu (Is this meat?)	4. Tone and initial	Yes	Tone – 1 Initial – 1 Final – 0
20	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不是柔 Gē ge bù shì róu (Older brother isn't flexible)	4. Tone and initial	Yes	Tone – 1 Initial – 1 Final – 0
6	3	我喜欢吃鸡肉 Wó xǐ huan chī jī ròu (I like to eat chicken)	我喜欢 Wǒ xǐ huan (I like)	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
6	3	我喜欢吃鸡肉 Wó xǐ huan chī jī ròu (I like to eat chicken)	我喜欢车酒 Wǒ xǐ huān chē jiǔ (I like vehicles, alcohol)	3. Final only	No	Tone – 0 Initial – 0 Final – 3

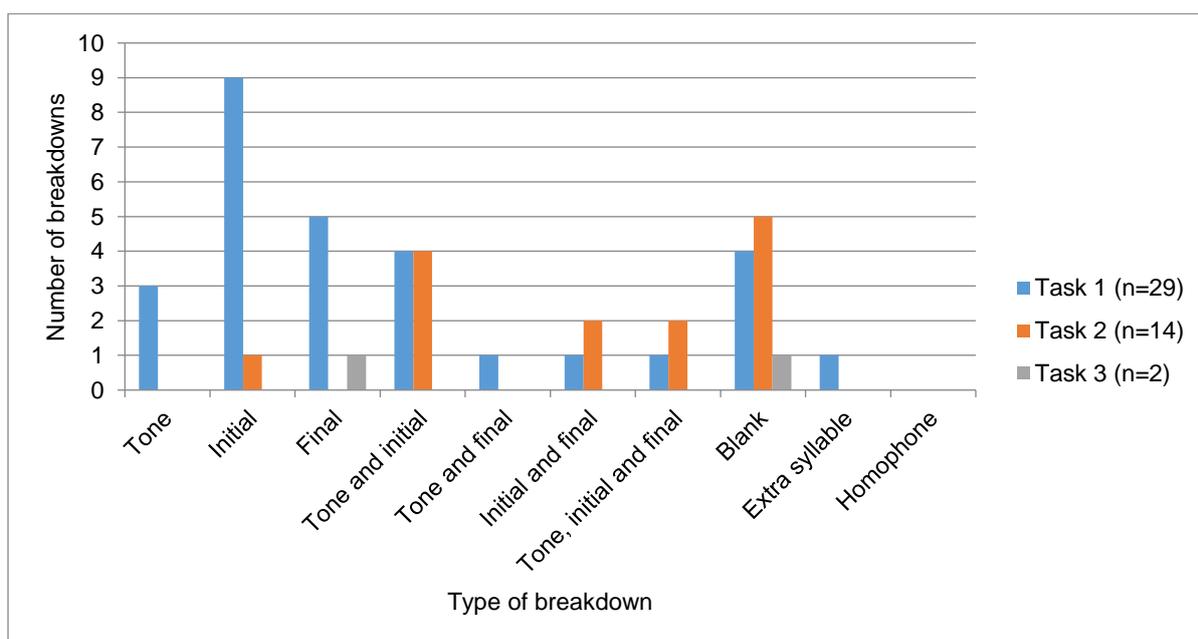


Figure 4.7: Categorising the intelligibility breakdowns of 'chī' (n=45)

Table 4.27: Respective contributions of tones, initials and finals to intelligibility breakdowns of 'chī'

Task	Tone	Initial	Final
1	20	38	23
2	11	16	9
3	1	1	4
Total	32	55	36

The overall ratings for 'chī' (to eat) are 50 per cent. Learners only manage an intelligibility rating of 27.5 per cent in Task 1 although this rises to 65 per cent in Task 2 and 80 per cent in Task 3. The results in Task 3 are slightly misleading given that 'chī' is only transcribed on ten separate occasions. In Task 1, only three of the 29 breakdowns can be directly attributed to tone - 'chī' (late). However, tone is implicated in a further eleven breakdowns, including four blank transcriptions. As with 'roù', the raters' transcriptions are striking for their variety with a total of thirteen different breakdowns. The most common breakdown, occurring on nine occasions, is 'qī' (seven/wife/period of time). At first glance, this breakdown appears to involve the initial only – namely the confusion caused by the similarity in pronunciation between the palatal 'q' initial and the retroflex 'ch' initial (Xing, 2007, p. 89). While this is indeed a factor, as evidenced by two other breakdowns which begin with 'q', this particular breakdown is most likely a result of the learners' incomplete grasp of *pīnyīn* and the false assumption that the 'ī' sound in 'chī' is pronounced exactly like the 'ī' sound in 'qī'. In actual fact, as Shei (2014) points out, although *i* is pronounced as *ee* in most cases, it becomes a central (instead of front) high vowel when following the dental sibilants (*z, c, s*) or the retroflex (*zh, ch, sh, r*) sounds, equivalent to IPA symbol [ɨ] (p. 20). The clear pedagogical implication is that such problematic sounds in *pīnyīn* will need to be taught explicitly in the classroom, especially as this central vowel is not found in English (p. 20). It is a weakness of my classification of intelligibility breakdowns, which I described in section 4.4, that this nuance is not reflected in the tables. The next most common breakdown is 'chē' (vehicle) and occurs five times, including two pairs of transcriptions with interrater reliability. As with 'qī', this breakdown does not implicate tone at all, but can instead be traced directly to the final and the difficulties some of the learners have in producing the [ɨ] sound in 'chī' and their tendency to produce something more similar to the *ir* in the English *sir* instead (p. 21).

In Task 2, none of the fourteen breakdowns can be traced directly to tone, although tone is implicated in eleven of the breakdowns. There are five blank transcriptions which implicate all three elements of the syllable. One breakdown, 'xī' (hope) is traced solely to the initial, although in actual fact it also implicates the final for the same reasons described above when discussing 'qī'. There is also one transcription of 'chē' (vehicle) which is solely attributable to the final. Interestingly, there are no examples of the 'qī' breakdown which is so widespread in Task 1. One reason is evidently down to sentence level context. The intelligibility levels of 'chī' are closely connected to whether the raters are able to correctly transcribe 'roù' as the target sentence is 'gē ge bù chī ròu' (older brother does not eat meat). Indeed, in thirteen of the fourteen breakdowns, the raters also fail to accurately transcribe 'roù' which highlights the importance of context in improving the intelligibility of individual words at the sentence level. As in Task 1, the range of transcriptions is noteworthy with eight different breakdowns.

In Task 3, intelligibility ratings are higher. Four learners have no problems being understood when asked about what they like to eat, although one learner is misunderstood by both raters – one transcribing 'chē' and the other leaving a blank transcription. Overall, therefore, many learners struggle with the pronunciation of 'chī', particularly in Task 1 but also at the sentence level in Task 2. While tone is heavily implicated in many of the breakdowns, initials and finals appear to play an even bigger role, with a number of learners struggling to produce the retroflex 'ch' sound and the central high vowel [i] which is not found in English.

4.4.8 'suì' (age/years old)

Table 4.28: Intelligibility and interrater reliability ratings for 'suì'

	Task 1	Task 2	Task 3	Overall rating
Intelligibility rating	14/40=35%	16/40=40%	27/34=79.41%	57/114=50%
Interrater reliability rating	2/26=7.69%	10/24=41.67%	2/7=28.57%	14/57=24.56%

Table 4.29: Intelligibility breakdowns featuring 'suì' (n=57)

Learner	Task	Intended utterance	Rater's transcription	Type of breakdown	Interrater reliability	Points awarded
1	1	岁 suì (age/years old)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1

Learner	Task	Intended utterance	Rater's transcription	Type of breakdown	Interrater reliability	Points awarded
1	1	岁 suì (age/years old)	水 shuǐ (water)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
2	1	岁 suì (age/years old)	睡 shuì (to sleep)	2. Initial only	No	Tone – 0 Initial – 3 Final – 0
2	1	岁 suì (age/years old)	水 shuǐ (water)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
4	1	岁 suì (age/years old)	随 suí (to follow)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
4	1	岁 suì (age/years old)	水 shuǐ (water)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
5	1	岁 suì (age/years old)	水 shuǐ (water)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
5	1	岁 suì (age/years old)	睡 shuì (to sleep)	2. Initial only	No	Tone – 0 Initial – 3 Final – 0
6	1	岁 suì (age/years old)	随 suí (to follow)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
7	1	岁 suì (age/years old)	虽 suī (although)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
7	1	岁 suì (age/years old)	水 shuǐ (water)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
8	1	岁 suì (age/years old)	睡 shuì (to sleep)	2. Initial only	No	Tone – 0 Initial – 3 Final – 0
8	1	岁 suì (age/years old)	碎 suì (to break into pieces)	10. Homophone	No	Tone – 0 Initial – 0 Final – 0
9	1	岁 suì (age/years old)	水 shuǐ (water)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
10	1	岁 suì (age/years old)	水 shuǐ (water)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
10	1	岁 suì (age/years old)	随 suí (to follow)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
11	1	岁 suì (age/years old)	睡 shuì (to sleep)	2. Initial only	Yes	Tone – 0 Initial – 3 Final – 0
11	1	岁 suì (age/years old)	睡 shuì (to sleep)	2. Initial only	Yes	Tone – 0 Initial – 3 Final – 0
12	1	岁 suì (age/years old)	碎 suì (to break into pieces)	10. Homophone	No	Tone – 0 Initial – 0 Final – 0
12	1	岁 suì (age/years old)	谁 shuí (who)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0

Learner	Task	Intended utterance	Rater's transcription	Type of breakdown	Interrater reliability	Points awarded
13	1	岁 suì (age/years old)	碎 suì (to break into pieces)	10. Homophone	No	Tone – 0 Initial – 0 Final – 0
14	1	岁 suì (age/years old)	最 zuì (most)	2. Initial only	No	Tone – 0 Initial – 3 Final – 0
14	1	岁 suì (age/years old)	睡 shuì (to sleep)	2. Initial only	No	Tone – 0 Initial – 3 Final – 0
17	1	岁 suì (age/years old)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
17	1	岁 suì (age/years old)	水 shuǐ (water)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
18	1	岁 suì (age/years old)	碎 suì (to break into pieces)	10. Homophone	No	Tone – 0 Initial – 0 Final – 0
1	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
1	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹学谁? Mèi mei xué shuí? (Who is younger sister studying?)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
2	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹喝水 Mèi mei hē shuǐ (Younger sister is drinking water)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
4	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	没没... Mèi mèi....	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
4	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	你没吃水 Nǐ méi chī shuǐ (You didn't eat water)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
5	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	你吃了没? Nǐ chī le méi (Have you eaten?)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
5	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
7	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是... Mèi mei shì...	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
7	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹吃笋 Mèi mei chī sūn (Younger sister eats bamboo shoots)	5. Tone and final	No	Tone - 1 Initial – 0 Final – 1

Learner	Task	Intended utterance	Rater's transcription	Type of breakdown	Interrater reliability	Points awarded
9	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
10	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	4. Tone and initial	Yes	Tone – 1 Initial – 1 Final – 0
10	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	秘密是谁? Mì mì shì shuí? (Who is the secret?)	4. Tone and initial	Yes	Tone – 1 Initial – 1 Final – 0
11	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	4. Tone and initial	Yes	Tone – 1 Initial – 1 Final – 0
11	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	4. Tone and initial	Yes	Tone – 1 Initial – 1 Final – 0
12	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
14	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	4. Tone and initial	Yes	Tone – 1 Initial – 1 Final – 0
14	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	4. Tone and initial	Yes	Tone – 1 Initial – 1 Final – 0
15	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
16	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹....Mèi mei...	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
17	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
18	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	你们是谁? Nǐ men shì shuí? (Who are you?)	4. Tone and initial	Yes	Tone – 1 Initial – 1 Final – 0
18	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	你...是谁? Nǐ.... shì shuí? (Who are you?)	4. Tone and initial	Yes	Tone – 1 Initial – 1 Final – 0
19	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	4. Tone and initial	Yes	Tone – 1 Initial – 1 Final – 0

Learner	Task	Intended utterance	Rater's transcription	Type of breakdown	Interrater reliability	Points awarded
19	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	4. Tone and initial	Yes	Tone – 1 Initial – 1 Final – 0
1	3	我十三岁 Wǒ shí sān suì (I am 13 years old)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
9	3	我十三岁 Wǒ shí sān suì (I am 13 years old)	我是 Wǒ shì...	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
10	3	我十三岁 Wǒ shí sān suì (I am 13 years old)	我叫 Wǒ jiào	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
11	3	我十三岁 Wǒ shí sān suì (I am 13 years old)	我学上学 Wǒ xué shàng xué	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
12	3	我十四岁 Wǒ shí sì suì (I am 14 years old)	我是谁 Wǒ shì shuí (Who am I?)	4. Tone and initial	Yes	Tone – 1 Initial – 1 Final – 0
12	3	我十四岁 Wǒ shí sì suì (I am 14 years old)	我是谁 Wǒ shì shuí (Who am I?)	4. Tone and initial	Yes	Tone – 1 Initial – 1 Final – 0
18	3	我十三岁 Wǒ shí sān suì (I am 13 years old)	我是... Wǒ shì..	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1

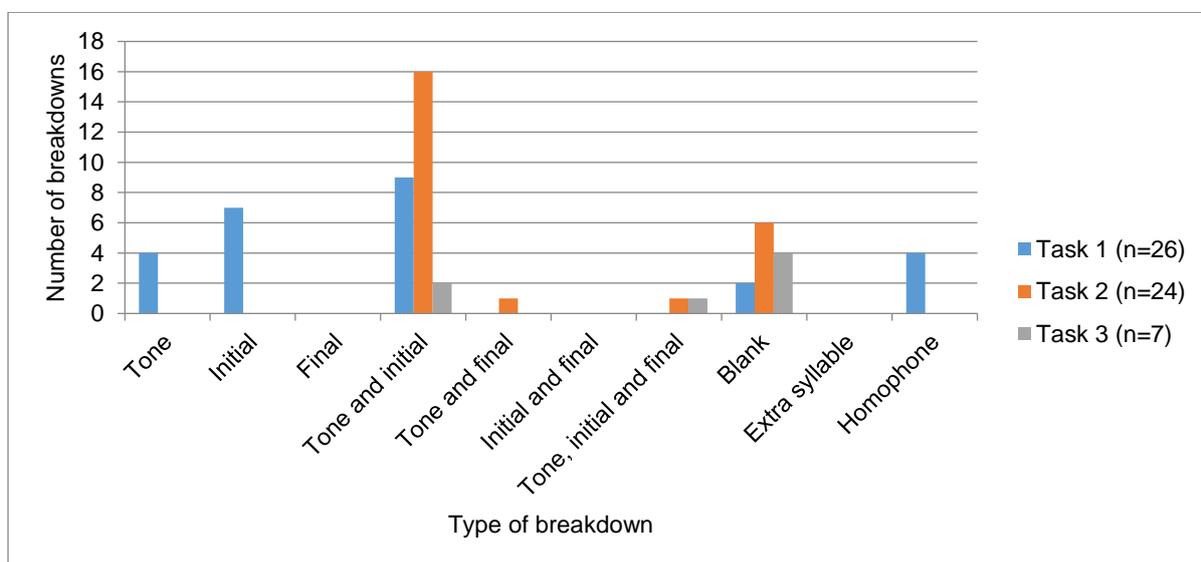


Figure 4.8: Categorising the intelligibility breakdowns of 'sui' (n=57)

Table 4.30: Respective contributions of tones, initials and finals to intelligibility breakdowns of 'sui'

Task	Tone	Initial	Final
1	23	32	2
2	24	23	8
3	7	7	5
Total	54	62	15

As with 'chī', the overall intelligibility rating for 'suì' (years old/age) is 50 per cent. The lowest ratings are for Task 1 (35 per cent). However, in contrast to the other words discussed so far, the intelligibility ratings remain relatively low when learners are reading out sentences in Task 2 (40 per cent). The highest ratings (79.41 per cent) come in Task 3 when learners are speaking spontaneously. In Task 1, four of the breakdowns can be traced directly to tone with three raters transcribing 'suì' (to follow) and one instance of suī (although). Tone is implicated in a further eleven breakdowns including eight transcriptions of 'shuǐ' (water) where the tone has been heard as a third tone and the dental sibilant 's' sound has been confused with a retroflex 'sh' sound (Xing, 2006, p. 89). In a similar vein, there is one instance of 'shuí' (who) where the rater has heard a second tone instead of the intended fourth tone alongside the problems with the intended dental sibilant. Eleven of the 26 Task 1 breakdowns do not implicate tone at all, including four homophones 'suì' (to break into pieces). There are also six instances of the raters transcribing 'shuì' (to sleep) which can be traced solely to the initial – namely the confusion, already noted in 'shuǐ' (water) and 'shuí' (who), between the intended dental sibilant 's' sound and the retroflex 'sh' sound. According to Xing (2006), L1 Chinese speakers often confuse sibilants with retroflexes (p. 93) and so it is perhaps not surprising that the learners' attempts to pronounce 'suì' frequently cause difficulties. It is interesting to note that only two of the 38 breakdowns implicate the final, as evidenced by two blank transcriptions.

In Task 2, there are no breakdowns which can be traced solely to tone. However, all 24 breakdowns implicate tone as a contributory factor including fourteen instances of 'shuí' (who). It should be remembered that there is only one example of a rater transcribing 'shuí' in Task 1. Conversely, there are only two transcriptions of 'shuǐ' (water) in Task 2 compared with eight examples in Task 1 and no transcriptions of 'shuì' (sleep) in Task 2, as opposed to six in Task 1. In order to better understand this phenomenon, it is necessary to look at the whole sentence in Task 2. The learners are attempting to say 'mèi mei shí suì' (younger sister is ten years old). Clearly 'shuǐ' (water) and 'shuì' (sleep) make little sense in this context. However, in thirteen of the fourteen occasions that the raters transcribe 'shuí' (who), they have also transcribed 'shí' (ten) as a fourth tone 'shì' (is) so the sentence now translates as 'who is younger sister?' The trigger for these transcriptions, therefore, appears to be a combination of the poor pronunciation of 'shí' (ten) discussed in more detail in section 4.4.10, and also the

ambiguity surrounding the dental sibilant initial ‘s’, but it also highlights how some of the raters appear to change the tone in ‘suì’ to a rising one at the sentence level, in order for the sentence to make sense. There appears to be considerable evidence, therefore, to suggest that raters adopt a somewhat flexible approach to decoding the speech signal at the sentence level with tonal confusion particularly likely if there is a realistic alternative that makes sense in the context. I explore this line of thought, and in particular the idea that the raters’ transcriptions often go beyond a purely phonetic explanation, in Chapter 5.

In Task 3, the overall intelligibility rating of ‘suì’ is much higher at 79.41 per cent. As part of the role play, learners were asked their ages and most pupils were able to answer intelligibly, using the word ‘suì’. However, there were still seven breakdowns with tone implicated, but not as the sole cause, in all seven cases. Two of the breakdowns feature the transcription ‘shuí’ (who). As with Task 2, this breakdown can be partly traced to hearing the number ‘shí’ (ten) as the verb ‘shì’ (is) earlier in the sentence, as well as a result of confusion surrounding the initial ‘s’ sound. There are also four blank transcriptions although on each occasion, the rater failed to understand other words in the sentence so it is not clear where the actual breakdown occurs. Overall, therefore, it appears that tone plays a significant role in causing intelligibility breakdowns featuring ‘suì’. However, problems deciphering the initial ‘s’, and in particular hearing it as ‘sh’, are arguably even more key when explaining the relatively low levels of intelligibility. Breakdowns which implicate the final, apart from blank transcriptions, are very few in number.

4.4.9 ‘xué’ (to study)

Table 4.31: Intelligibility and interrater reliability ratings for ‘xué’

	Task 1	Task 2	Task 3	Overall rating
Intelligibility rating	2/40=5%	31/40=77.5%	2/2=100%	35/82=42.68%
Interrater reliability rating	10/38=26.32%	0/9=0%	-	10/47=21.28%

Table 4.32: Intelligibility breakdowns featuring 'xué' (n=47)

Learner	Task	Intended utterance	Rater's transcription	Type of breakdown	Interrater reliability	Points awarded
1	1	学 xué (to study)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
1	1	学 xué (to study)	月 yuè (month)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
2	1	学 xué (to study)	说 shuō (to speak)	7. Tone, initial and final	Yes	Tone – 1 Initial – 1 Final – 1
2	1	学 xué (to study)	说 shuō (to speak)	7. Tone, initial and final	Yes	Tone – 1 Initial – 1 Final – 1
3	1	学 xué (to study)	是 shì (to be)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
3	1	学 xué (to study)	舍 shě (to give up)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
4	1	学 xué (to study)	水 shuǐ (water)	7. Tone, initial and final	Yes	Tone – 1 Initial – 1 Final – 1
4	1	学 xué (to study)	水 shuǐ (water)	7. Tone, initial and final	Yes	Tone – 1 Initial – 1 Final – 1
5	1	学 xué (to study)	水 shuǐ (water)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
5	1	学 xué (to study)	书 shū (book)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
6	1	学 xué (to study)	熟 shú (cooked)	6. Initial and final	No	Tone – 0 Initial – 1 Final – 1
6	1	学 xué (to study)	书 shū (book)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
7	1	学 xué (to study)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
8	1	学 xué (to study)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
8	1	学 xué (to study)	树 shù (tree)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
9	1	学 xué (to study)	睡 shuì (to sleep)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
9	1	学 xué (to study)	树 shù (tree)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
10	1	学 xué (to study)	睡 shuì (to sleep)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1

Learner	Task	Intended utterance	Rater's transcription	Type of breakdown	Interrater reliability	Points awarded
10	1	学 xué (to study)	水 shuǐ (water)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
11	1	学 xué (to study)	吹 chuī (to blow)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
11	1	学 xué (to study)	吃 chī (to eat)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
12	1	学 xué (to study)	谁 shuí (who)	6. Initial and final	Yes	Tone – 0 Initial – 1 Final – 1
12	1	学 xué (to study)	谁 shuí (who)	6. Initial and final	Yes	Tone – 0 Initial – 1 Final – 1
13	1	学 xué (to study)	谁 shuí (who)	6. Initial and final	No	Tone – 0 Initial – 1 Final – 1
13	1	学 xué (to study)	水 shuǐ (water)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
14	1	学 xué (to study)	水 shuǐ (water)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
14	1	学 xué (to study)	睡 shuì (to sleep)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
15	1	学 xué (to study)	睡 shuì (to sleep)	7. Tone, initial and final	Yes	Tone – 1 Initial – 1 Final – 1
15	1	学 xué (to study)	睡 shuì (to sleep)	7. Tone, initial and final	Yes	Tone – 1 Initial – 1 Final – 1
16	1	学 xué (to study)	随 suí (to follow)	6. Initial and final	Yes	Tone – 0 Initial – 1 Final – 1
16	1	学 xué (to study)	随 suí (to follow)	6. Initial and final	Yes	Tone – 0 Initial – 1 Final – 1
17	1	学 xué (to study)	谁 shuí (who)	6. Initial and final	No	Tone – 0 Initial – 1 Final – 1
17	1	学 xué (to study)	水 shuǐ (water)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
18	1	学 xué (to study)	谁 shuí (who)	6. Initial and final	No	Tone – 0 Initial – 1 Final – 1
18	1	学 xué (to study)	水 shuǐ (water)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
19	1	学 xué (to study)	靴 xuē (boots)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
19	1	学 xué (to study)	削 xuē (to remove)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0

Learner	Task	Intended utterance	Rater's transcription	Type of breakdown	Interrater reliability	Points awarded
20	1	学 xué (to study)	是 shì (to be)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
1	2	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	我.....赏月 Wǒ.....shǎng yuè	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
2	2	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
3	2	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	我半点想吃 Wǒ bàn diǎn xiǎng chī (I would like to eat at half past)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
3	2	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	我帮点小事 Wǒ bāng diǎn xiǎo shì (I help with little things)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
5	2	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	我八点上课 Wǒ bā diǎn shàng kè (I have a lesson at eight o'clock)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
9	2	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	我八点上 Wǒ bā diǎn shàng	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
10	2	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	我八点上税 Wǒ bā diǎn shàng shuì (I pay taxes at eight o'clock)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
11	2	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	我八点上睡 Wǒ bā diǎn shàng shuì (I go to bed around eight o'clock)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
20	2	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	我八点上水 Wǒ bā diǎn shàng shuǐ (I fill the tank with water at eight o'clock)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1

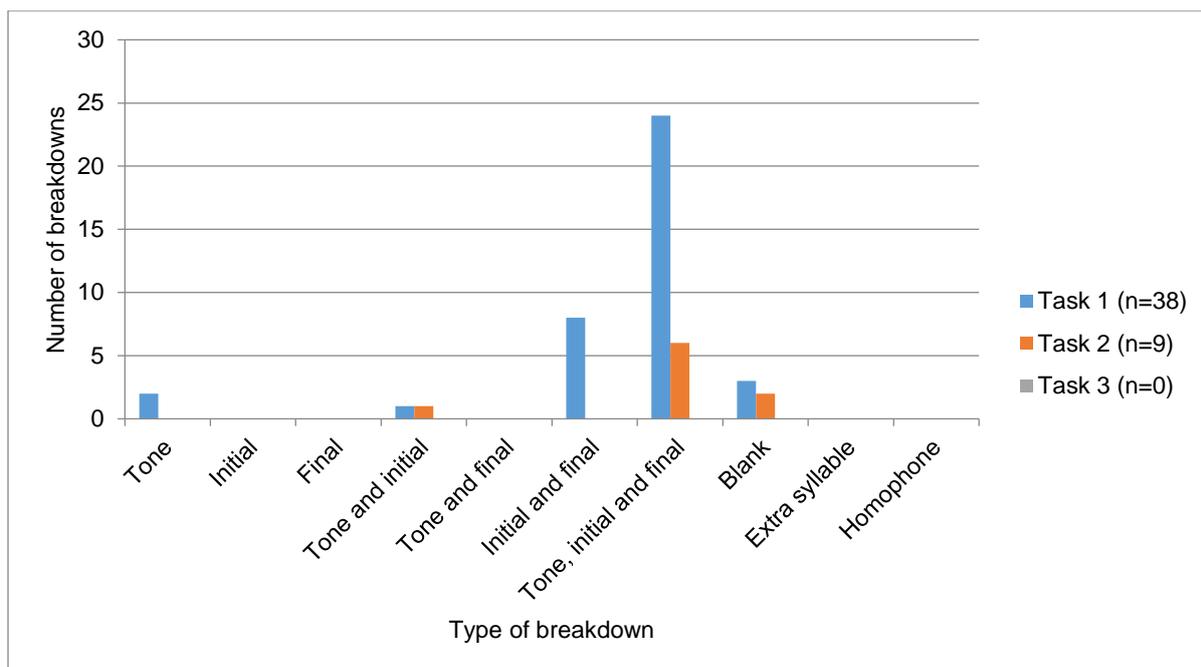


Figure 4.9: Categorising the intelligibility breakdowns of 'xuè' (n=47)

Table 4.33: Respective contributions of tones, initials and finals to intelligibility breakdowns of 'xuè'

Task	Tone	Initial	Final
1	34	36	35
2	9	9	8
3	0	0	0
Total	43	45	43

The overall intelligibility rating of 'xuè' (to study) is 42.68 per cent. In Task 1, it is only correctly transcribed on two occasions which translates into an extremely low intelligibility rating of 5 per cent. This figure rises dramatically at the sentence level to 77.5 per cent. The 100 per cent intelligibility rating for Task 3 is misleading given that this figure is only based on two transcriptions. In Task 1, two of the 38 breakdowns can be traced solely to tonal production – 'xuē' (boots/remove) – with tone implicated in a further 28 breakdowns. None of the breakdowns can be traced solely to initials and finals, although initials are implicated in 36 breakdowns and finals in 35. As with 'ròu' and 'chī', the range of breakdowns is immediately apparent with the breakdowns shared across sixteen different transcriptions, providing more evidence of the need for a highly individualised approach to pronunciation teaching and learning.

The most common breakdown, 'shuǐ' (water) (n=8), is reminiscent of the learners' problems producing 'suì' and implicates all elements of the syllable. Indeed, 28 of the 40 raters fail to recognise the intended palatal 'x' sound and instead transcribe a

retroflex ‘sh’ as the initial. There are also five transcriptions of ‘shuí’ (who) which implicate the initial and final. The most common category of breakdown is when the tone, initial and final are all implicated (n=24). In Task 2, there are only nine breakdowns. None of them can be traced solely to the tone, initial or final with eight of the nine breakdowns implicating all three elements of the syllable in the breakdown. In Task 3, ‘xué’ only appears in one occasion in the context of a learner talking about their favourite school subject ‘shù xué’ (maths) and is successfully transcribed by both raters. Overall, therefore, intelligibility breakdowns featuring ‘xué’ are fairly evenly distributed between the tone, initial and final with the biggest single problem involving the intelligible pronunciation of the initial ‘x’.

4.4.10 ‘shí’ (ten)

Table 4.34: Intelligibility and interrater reliability ratings for ‘shí’

	Task 1	Task 2	Task 3	Overall rating
Intelligibility rating	3/40=7.5%	15/40=37.5%	38/58=65.52%	56/138=40.58%
Interrater reliability rating	14/37=37.84%	10/25=40%	8/20=40%	32/82=39.02%

Table 4.35: Intelligibility breakdowns featuring ‘shí’ (n=82)

Learner	Task	Intended utterance	Rater’s transcription	Type of breakdown	Interrater reliability	Points awarded
1	1	十 shí (ten)	学 xué (to study)	6. Initial and final	No	Tone – 0 Initial – 1 Final – 1
1	1	十 shí (ten)	雪 xuě (snow)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
2	1	十 shí (ten)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
2	1	十 shí (ten)	是 shì (to be)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
3	1	十 shí (ten)	舍 shě (to give up)	5. Tone and final	No	Tone – 1 Initial – 0 Final – 1
4	1	十 shí (ten)	写 xiě (to write)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
5	1	十 shí (ten)	蛇 shé (snake)	3. Final only	No	Tone – 0 Initial – 0 Final – 3
5	1	十 shí (ten)	射 shè (to shoot)	5. Tone and final	No	Tone – 1 Initial – 0 Final – 1

Learner	Task	Intended utterance	Rater's transcription	Type of breakdown	Interrater reliability	Points awarded
6	1	十 shí (ten)	是 shì (to be)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
6	1	十 shí (ten)	蛇 shé (snake)	3. Final only	No	Tone – 0 Initial – 0 Final – 3
7	1	十 shí (ten)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
7	1	十 shí (ten)	婶儿 shěnr (aunt)	9. Extra syllable	No	Tone – 1 Initial – 1 Final – 1
8	1	十 shí (ten)	吓 xià (to frighten)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
8	1	十 shí (ten)	蛇 shé (snake)	3. Final only	No	Tone – 0 Initial – 0 Final – 3
9	1	十 shí (ten)	是 shì (to be)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
9	1	十 shí (ten)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
10	1	十 shí (ten)	蛇 shé (snake)	3. Final only	No	Tone – 0 Initial – 0 Final – 3
10	1	十 shí (ten)	射 shè (to shoot)	5. Tone and final	No	Tone - 1 Initial – 0 Final – 1
11	1	十 shí (ten)	儿 ér (child)	6. Initial and final	No	Tone – 0 Initial – 1 Final – 1
12	1	十 shí (ten)	是 shì (to be)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
12	1	十 shí (ten)	是 shì (to be)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
13	1	十 shí (ten)	是 shì (to be)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
13	1	十 shí (ten)	是 shì (to be)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
14	1	十 shí (ten)	是 shì (to be)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
14	1	十 shí (ten)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
15	1	十 shí (ten)	是 shì (to be)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
15	1	十 shí (ten)	是 shì (to be)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0

Learner	Task	Intended utterance	Rater's transcription	Type of breakdown	Interrater reliability	Points awarded
16	1	十 shí (ten)	是 shì (to be)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
16	1	十 shí (ten)	是 shì (to be)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
17	1	十 shí (ten)	是 shì (to be)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
17	1	十 shí (ten)	是 shì (to be)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
18	1	十 shí (ten)	是 shì (to be)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
18	1	十 shí (ten)	是 shì (to be)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
19	1	十 shí (ten)	是 shì (to be)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
19	1	十 shí (ten)	是 shì (to be)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
20	1	十 shí (ten)	师 shī (teacher)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
20	1	十 shí (ten)	诗 shī (poetry)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
1	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
1	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹学谁? Mèi mei xué shuí? (Who is younger sister studying?)	6. Initial and final	No	Tone – 0 Initial – 1 Final – 1
2	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹喝水 Mèi mei hē shuǐ (Younger sister is drinking water)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
4	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	没没... Méi méi....	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
4	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	你没吃水 Nǐ méi chī shuǐ (You didn't eat water)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
5	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	你吃了没? Nǐ chī le méi (Have you eaten?)	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
5	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1

Learner	Task	Intended utterance	Rater's transcription	Type of breakdown	Interrater reliability	Points awarded
7	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是... Mèi mei shì...	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
7	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹吃笋 Mèi mei chī sǔn (Younger sister eats bamboo shoots)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
9	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
10	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
10	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	秘密是谁? Mì mì shì shuí? (Who is the secret?)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
11	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
11	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
12	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
14	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
14	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
15	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
16	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹四岁 Mèi mei sì suì (Younger sister is four years old)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
16	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹....Mèi mei...	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
17	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1

Learner	Task	Intended utterance	Rater's transcription	Type of breakdown	Interrater reliability	Points awarded
18	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	你们是谁? Nǐ men shì shuí? (Who are you?)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
18	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	你...是谁? Nǐ.... shì shuí? (Who are you?)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
19	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
19	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
1	3	我十三岁 Wǒ shí sān suì (I am 13 years old)	-	8. Blank transcription	No	Tone – 1 Initial – 1 Final – 1
1	3	我的生日是八月十五日 Wǒ de shēng rì shì bā yuè shí wǔ rì (My birthday is 15 th August)	我的中国 Wǒ de zhōng guó....	8. Blank transcription	Yes	Tone – 1 Initial – 1 Final – 1
1	3	我的生日是八月十五日 Wǒ de shēng rì shì bā yuè shí wǔ rì (My birthday is 15 th August)	-	8. Blank transcription	Yes	Tone – 1 Initial – 1 Final – 1
8	3	我十点睡觉 Wǒ shí diǎn shuì jiào (I go to bed at 10 o'clock)	我十二点睡觉 Wǒ shí èr diǎn shuì jiào (I go to be at 12 o'clock)	9. Extra syllable	No	Tone – 1 Initial – 1 Final – 1
9	3	我十三岁 Wǒ shí sān suì (I am 13 years old)	我是 Wǒ shì...	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
10	3	我十三岁 Wǒ shí sān suì (I am 13 years old)	我叫 Wǒ jiào...	7. Tone, initial and final	No	Tone – 1 Initial – 1 Final – 1
11	3	我十三岁 Wǒ shí sān suì (I am 13 years old)	我学上学 Wǒ xué shàng xué	6. Initial and final	No	Tone – 0 Initial – 1 Final – 1
11	3	我的生日是六月十日 Wǒ de shēng rì shì liù yuè shí rì (My birthday is 10 th June)	我的...是要历史 Wǒ de ... shì yào lì shǐ	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
11	3	我十点睡觉 Wǒ shí diǎn shuì jiào (I go to bed at 10 o'clock)	我四点睡觉 Wǒ sì diǎn shuì jiào (I go to bed at 4 o'clock)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0

Learner	Task	Intended utterance	Rater's transcription	Type of breakdown	Interrater reliability	Points awarded
12	3	我十四岁 Wǒ shí sì suì (I am 14 years old)	我是谁 Wǒ shì shuí (Who am I?)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
12	3	我十四岁 Wǒ shí sì suì (I am 14 years old)	我是谁 Wǒ shì shuí (Who am I?)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
14	3	我的生日是十月十六日 Wǒ de shēng rì shì shí yuè shí liù rì (My birthday is 16 th October)	我的生日是十一月十六日 Wǒ de shēng rì shì shí yī yuè shí liù rì (My birthday is 16 th November)	9. Extra syllable	No	Tone – 1 Initial – 1 Final – 1
16	3	我十点睡觉 Wǒ shí diǎn shuì jiào (I go to bed at 10 o'clock)	我四点睡觉 Wǒ sì diǎn shuì jiào (I go to bed at 4 o'clock)	4. Tone and initial	No	Tone – 1 Initial – 1 Final – 0
17	3	我十三岁 Wǒ shí sān suì (I am 13 years old)	我是三岁 Wǒ shì sān suì (I am three years old)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
17	3	我十二点起床 Wǒ shí èr diǎn qǐ chuáng (I get up at 12 o'clock)	我是二年级学生 Wǒ shì èr nián jí xué shēng (I am a second year student)	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
17	3	我十二点起床 Wǒ shí èr diǎn qǐ chuáng (I get up at 12 o'clock)	我是...Wǒ shì	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
17	3	我十二点睡觉 Wǒ shí èr diǎn shuì jiào (I go to bed at 12 o'clock)	我是...Wǒ shì	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
17	3	我十二点睡觉 Wǒ shí èr diǎn shuì jiào (I go to bed at 12 o'clock)	我是...Wǒ shì	1. Tone only	Yes	Tone – 3 Initial – 0 Final – 0
18	3	我十三岁 Wǒ shí sān suì (I am 13 years old)	我是三岁 Wǒ shì sān suì (I am three years old)	1. Tone only	No	Tone – 3 Initial – 0 Final – 0
18	3	我十点睡觉 Wǒ shí diǎn shuì jiào (I go to bed at 10 o'clock)	我是 Wǒ shì	1. Tone only	No	Tone – 3 Initial – 0 Final – 0

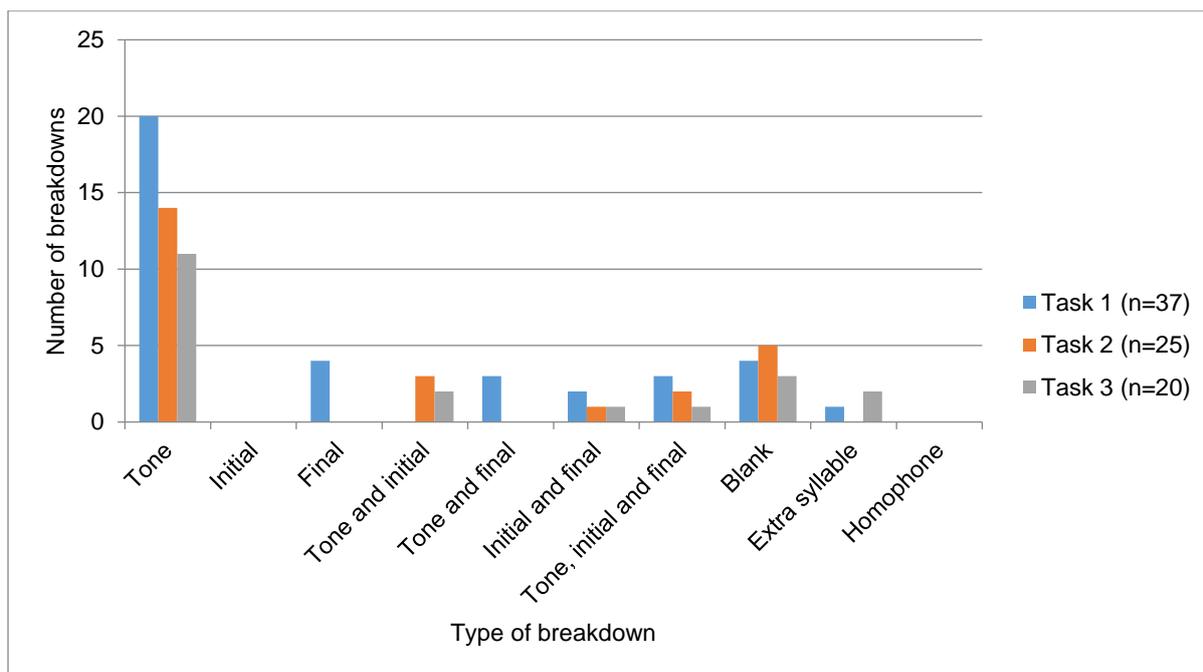


Figure 4.10: Categorising the intelligibility breakdowns of 'shí' (n=82)

Table 4.36: Respective contributions of tones, initials and finals to intelligibility breakdowns of 'shí'

Task	Tone	Initial	Final
1	71	10	25
2	52	11	8
3	41	9	7
Total	164	30	40

With an overall intelligibility rating of 40.58 per cent, the pronunciation of 'shí' (ten) causes the learners the most problems. As with 'xué', intelligibility ratings are extremely low in Task 1 (7.5 per cent). They are still very low in Task 2 (37.5 per cent) although they improve in Task 3 (65.52 per cent) which is based on 58 separate transcriptions, as opposed to forty for Tasks 1 and 2. As can be seen from Table 4.36, most of the breakdowns in all the tasks can be attributed to tone. In Task 1, 'shí' (is) is transcribed on eighteen separate occasions. This particular intelligibility breakdown suggests that a number of the learners confuse the rising second tone with the falling fourth tone. There is also one pair of breakdowns directly traceable to confusion between the first and second tones when both raters transcribe 'shī' (teacher/poetry). Unlike 'xué', which features 28 transcriptions when the intended 'x' initial is transcribed erroneously as 'sh', there are only four transcriptions which go in the other direction and are transcribed with an initial 'x'. In a similar vein, none of the breakdowns in Task 1 involve confusing the retroflex 'sh' initial with the dental sibilant 's' sound which are

so prevalent the other way round when the learners attempt to say 'sui', as discussed in 4.4.8. There are four breakdowns which can be traced solely to the final with the raters transcribing 'shé' (snake). Similar to the confusion between 'chī' and 'chē' discussed in 4.4.7, this breakdown centres around difficulties producing the central high vowel [i] which is not found in English.

At the sentence level in Task 2, 14 of the 25 breakdowns can be traced solely to the tonal confusion between 'shì' and 'shǐ'. As discussed in 4.4.8, this breakdown also has serious consequences for understanding the other words in the sentence since 'shì' (is) completely changes the syntax. There are also five blank transcriptions and two instances of 'chī' being transcribed, which alongside tonal problems, includes confusion between the two retroflex initials 'sh' and 'ch'. In Task 3, 11 of the 20 breakdowns can be attributed directly to the confusion between 'shì' and 'shǐ'. Along with three blank transcriptions, there are also two cases of the raters adding an extra syllable – 'shí yī' (eleven) and 'shí èr' (twelve). There are also two breakdowns featuring problems with the 'sh' retroflex initial, as well as the tone, with the raters transcribing 'sì' (four). Overall, therefore, tone is solely responsible for most of the breakdowns featuring 'shǐ'. Unlike any of the other words discussed in this chapter, this is also the case in Tasks 2 and 3 when the listeners have the benefit of contextual information. Nevertheless, there are also some breakdowns caused by problems with initials and finals, albeit far fewer in number.

4.5 Emerging themes and issues

In light of the small sample size, I can only make claims about the causes of the intelligibility breakdowns in relation to the ten monosyllabic words, the 20 L2 Chinese learners and the 40 L1 Chinese raters featured in this study. Nevertheless, I hope that other teachers of Chinese in Anglophone settings will weigh up the extent to which the situated findings discussed in this chapter resonate with their own teaching contexts. One surprising finding is the low level of interrater reliability discussed in 4.3 suggesting that different L1 Chinese raters process the learners' oral productions differently. Such discrepancies in the rating also highlight that "successful communication depends on the abilities and efforts of both speaker and listener" (Munro, 2011, p. 11).

Based on the aggregate data from all the intelligibility breakdowns across the three tasks, the respective contribution of tones, initials and finals tally as follows:

Table 4.37: Respective contributions of tones, initials and finals to intelligibility breakdowns of all ten monosyllabic words across the three tasks

Task	Tone	Initial	Final
1	311	152	132
2	142	89	64
3	56	24	23
Total	509	265	219

While tone is clearly the single biggest cause of the intelligibility breakdowns in all three tasks, it plays a much more important role at the individual word level in Task 1 compared to Tasks 2 and 3 when the raters are able to exploit wider contextual clues. This certainly lends support to the claim that L1 Chinese speakers may well be “able to understand intended meanings regardless of incorrect tones, simply based on the discourse context” (Duff et al., 2013, p. 49). Although there are some common problems directly traceable to tone, only ‘shí’ being understood as ‘shì’ consistently leads to intelligibility breakdowns at the sentence level in Tasks 2 and 3. Following Munro and Derwing (2015b), I argue that it is these types of sentence level breakdowns, which still take place despite the presence of contextual information, which are most important to flag up in the classroom, since they more closely reflect language interaction in real life communicative situations (p. 381). It is striking that with the exception of ‘shí’, the overall contribution of tone to the intelligibility breakdowns at the sentence level is actually very similar to the contribution of initials and finals. Indeed, if the results from ‘shí’ are removed in Tasks 2 and 3, the points score of tone falls to 90 and 15 respectively. Based on the analysis carried out in this chapter, the vast majority of the intelligibility breakdowns in Tasks 2 and 3 cannot be traced to a single element of the syllable, but usually feature a combination of the tone, initial and final deviating from the intended utterance.

Since I have only focussed on the intelligibility of ten common monosyllabic words, the data are far too limited to establish which tones, initials and finals are most important for intelligibility. Nevertheless, in addition to the confusion surrounding ‘shí’ and ‘shì’, there are a number of common pronunciation errors which cause frequent intelligibility

breakdowns at the sentence level. Amongst the initials, this includes the dental sibilant 's' and the palatal 'x' being heard as a retroflex 'sh'. As for finals, confusion surrounding the pronunciation of 'i' and 'e' often cause problems. While much of the previous research into CSL pronunciation discussed in Chapter 2 has focussed mainly on tones, the findings here suggest that Mandarin teachers should also be placing more emphasis on initials and finals alongside tones. It should also be stressed that, occasionally, the intelligibility breakdowns actually lie outside a purely phonetic explanation since the raters bring their own strategies to the task which is discussed in more detail in the next chapter.

5. Investigating the accentedness, comprehensibility and intelligibility of the learners' L2 Chinese at the sentence level

In this chapter, I address my second research question: “How do L1 Chinese raters process the L2 Chinese speech signal at the sentence level with respect to accentedness, comprehensibility and intelligibility?” As outlined in Chapter 3, the main set of data used to answer this question comes from ratings, transcriptions and interviews carried out with the 40 L1 Chinese raters as they attempt to transcribe the learners' utterances into Chinese. Accentedness refers to “perceived differences in pronunciation as compared with a local variety” (Munro & Derwing, 2015a, p. 14) and is measured via a nine-point Likert scale ranging from “1 = no accent” to “9 = extremely strong accent” (Derwing & Munro, 1997, p. 5). Comprehensibility is defined as the “perceived degree of difficulty experienced by the listener in understanding speech” (Derwing and Munro, 2015a, p. 14) and is also measured via listeners' ratings on a nine-point Likert scale ranging from “1 = extremely easy to understand” to “9 = extremely difficult or impossible to understand” (Derwing and Munro, 1997, p. 5). As in the previous chapter, intelligibility is still understood in general terms as “the extent to which listeners' perceptions match speakers' intentions” (Derwing and Munro, 2015a, p. 14) and is measured via the raters' transcriptions. During the interviews, all the raters are invited to provide explanations for their ratings and transcriptions. Inspired by Munro and Derwing's (2015b) concept of “prioritized pronunciation instruction”, the overall aim of the chapter is to unearth some tentative classroom priorities in the context of teaching Chinese pronunciation to young Anglophone beginner learners. With limited class-time, it will be argued that the priority for teachers should be on helping learners develop highly intelligible, comprehensible pronunciation rather than an unrealistic focus on the elimination of an L2 accent which may not necessarily interfere with the learner's comprehensibility or intelligibility.

5.1 Initial coding framework

Before analysing the interview data, I grouped all the raters' responses to the learners' sentence level utterances (i.e. Tasks 2 and 3) into eight different categories, based on the raters' transcriptions and their comprehensibility and accentedness ratings. The

eight categories are adapted from Munro and Derwing's (2015b) framework of prioritized instruction:

Table 5.1: Eight possible responses to learners' utterances in terms of intelligibility, comprehensibility and accentedness

Category	Intelligibility	Comprehensibility	Accentedness
1	Utterance completely intelligible	Extremely easy to understand (Rating 1)	No noticeable accent (Rating 1)
2	Utterance completely intelligible	Extremely easy to understand (Rating 1)	Accent noticeable (Rating 2-9)
3	Utterance completely intelligible	Some/considerable effort required to process utterance (Rating 2-9)	No noticeable accent (Rating 1)
4	Utterance not (fully) understood	Rater has false impression of easily understanding intended utterance (Rating 1)	No noticeable accent (Rating 1)
5	Utterance completely intelligible	Some/considerable effort required to process utterance (Rating 2-9)	Accent noticeable (Rating 2-9)
6	Utterance not (fully) understood	Rater has false impression of easily understanding intended utterance (Rating 1)	Accent noticeable (Rating 2-9)
7	Utterance not (fully) understood	Some/considerable effort required to process utterance (Rating 2-9)	No noticeable accent (Rating 1)
8	Utterance not (fully) understood	Some/considerable effort required to process utterance (Rating 2-9)	Accent noticeable (Rating 2-9)

(Adapted from Munro & Derwing, 2015b, p. 380 and p. 390)

Only sentences that were awarded an accentedness rating of one were considered as having no noticeable accent and were placed in either Category 1, 3, 4 or 7. Any sentences rated as two or above, therefore, were automatically placed in either Category 2, 5, 6 or 8 and assumed to have some sort of discernible accent. In a similar vein, I only included ratings of one as corresponding to high comprehensibility levels (i.e. belonging to Categories 1, 2, 4 or 6) with any other ratings treated as indicating that at least some effort was required on the part of the listener to process the utterance (i.e. placed in Categories 3, 5, 7 or 8). While it may appear counter-intuitive to effectively lump together all the ratings between two and nine into the same category, I felt such a response was necessary given the subjective nature of the ratings. For example, over the course of the interviews it transpired that ratings of two could mean that a fairly noticeable accent had been perceived or that the rater had been forced to

work quite hard in order to make sense of the speech signal. Even if this was not the case, the rater had still chosen not to award the highest ratings and so had presumably perceived at least some sort of accent and/or difficulty when processing the utterance. In terms of intelligibility, only utterances that were transcribed completely accurately were regarded as having high intelligibility levels and placed in either Category 1, 2, 3 or 5. Any sentences containing an intelligibility breakdown – i.e. when a rater had transcribed a different character from what the speaker had intended to say - were automatically placed in either Category 4, 6, 7 or 8, regardless of whether the breakdown involved a single word or the whole sentence. Since each utterance was rated independently by two raters, I was able to take into account interrater reliability by highlighting how many of the sentences ended up being placed in the same category.

5.2 Overall rater responses to learners' sentence level utterances

Results based on aggregate data from all 40 raters' responses to the learners' sentence level utterances are displayed in Figure 5.1. The partially independent nature of the three speech dimensions is immediately apparent, supporting findings from the field of L2 English pronunciation research (e.g. Munro & Derwing, 1995; Derwing & Munro, 1997) and contradicting Yang's (2016) conclusion that "the reduction of foreign accent [...] is critical in L2 Mandarin Chinese, as it directly affects comprehension" (p. 139). For example, 27.6 per cent of the responses were rated as completely intelligible and extremely easy to understand, yet were considered to retain a noticeable accent (Category 2). The most common type of response (36.2 per cent) came when the utterance was fully understood, but required at least some effort on the part of the listener, with the learners also perceived to have some kind of accent (Category 5). Almost a quarter of responses (24.35 per cent) were judged to have low levels of intelligibility and comprehensibility and high levels of accentedness (Category 8). However, a somewhat messier picture emerged when the low levels of interrater reliability were taken into account. For example, the number of Category 2, 5 and 8 utterances fell to 8.44, 13.31 and 13.96 per cent respectively with no examples of any utterances being placed by both raters in Categories 3, 4, 6 or 7. As discussed in the previous chapter, this relative lack of inter-listener agreement is probably a result of differing levels of aptitude amongst the raters for processing the learners' speech, as

well as a consequence of varying degrees of sensitivity towards the two constructs of comprehensibility and accentedness.

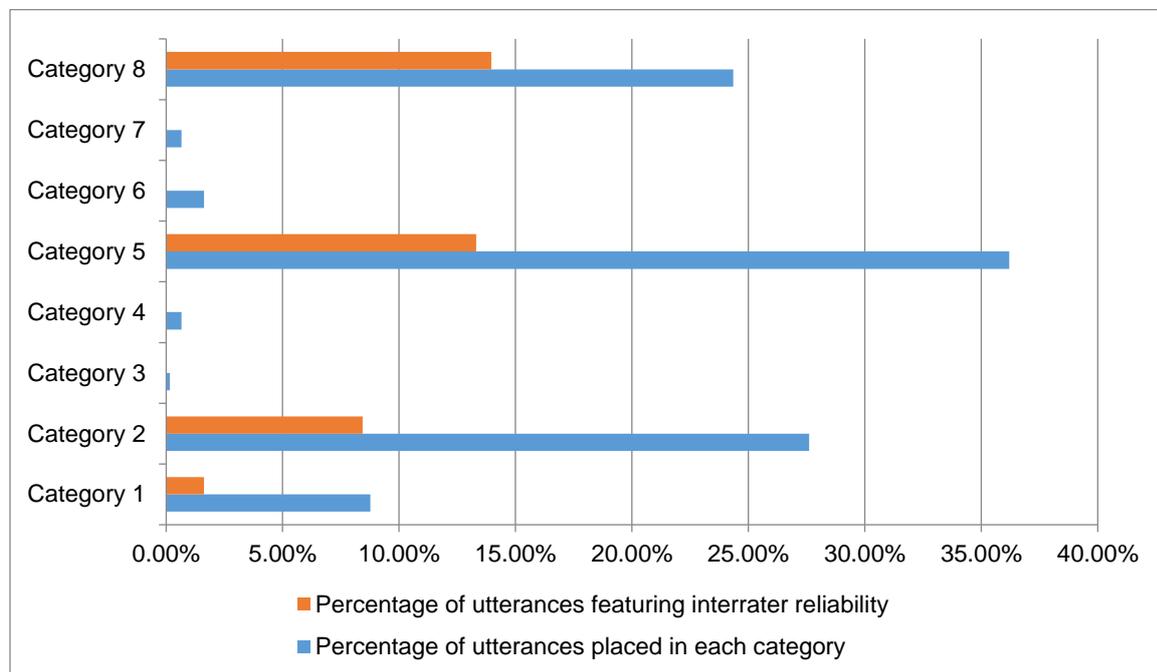


Figure 5.1: Overall rater responses to learners' sentence level utterances in terms of intelligibility, comprehensibility and accentedness

5.3 Interview data

Having provided a general overview of the range of rater responses to the learners' utterances based solely on their transcriptions and ratings, I now turn my attention to an analysis of the interview data. In an attempt to increase the reliability of the study, I focus solely on raters' comments about utterances which feature interrater reliability. I consequently do not consider the handful of utterances placed in Categories 3, 4, 6 or 7. As discussed in Chapter 3, raters' comments are treated very much as opinions rather than facts. The raters unsurprisingly varied in their ability to explain their ratings and transcriptions. In an attempt to encourage their analytical thinking, I occasionally used 'hypothesis-suggesting questions' (for example, 'is it the tone that's causing the problem?') which could be rejected or accepted by the interviewee (Evans, 2009b, p. 129). I recognise that I was consequently heavily involved in the process of data elicitation. Nevertheless, I felt that such an approach was necessary since none of the raters had any formal experience of teaching Chinese as a foreign language. Despite ostensibly equal power relations between interviewer and interviewees, in the sense

that we were all students, I recognise that there was also a possibility that some raters may have provided answers they felt that I wanted to hear in the form of overly lenient ratings or non-critical comments (Kvale & Brinkmann, 2007, p. 34). For example, some raters may have feared that I would regard negative comments about learners' pronunciation as an implicit criticism of my own teaching. Occasionally I supplement their comments by making use of the acoustic software package *Praat* (Boersma & Weenink, 2014).

5.3.1 Category 1 transcriptions

Table 5.2: Number of Category 1 responses across Tasks 2 and 3

	Task 2 (Read aloud)	Task 3 (Role play)	Overall
Total number of Category 1 transcriptions	29/400=7.25%	25/216=11.57%	54/616=8.77%
Total number of Category 1 utterances that feature interrater reliability	2/200=1%	3/108=2.78%	5/308=1.62%

Category 1 utterances were judged to be completely intelligible, very easy to understand with no noticeable accent. Raters unsurprisingly made very few comments when transcribing these utterances, apart from observations such as “this sentence is totally correct”. Perhaps most interesting is the fact that as many as 8.77 per cent of the learners' utterances (and 11.57 per cent of their Task 3 sentences) were judged to belong to this category. Indeed, at first glance, such figures can be seen as endorsing the *nativeness* principle (Levis, 2005) discussed in Chapter 2. For if almost ten per cent of the learners' utterances are judged as virtually indistinguishable from L1 Chinese speakers, it appears realistic to aim for an even higher proportion. Nevertheless, I would urge caution when interpreting the listeners' ratings. As can be seen from Table 5.2, when interrater reliability is taken into account, the percentage of Category 1 utterances falls dramatically to 1.62 per cent. Moreover, three of these five utterances feature a single learner (see Table 5.3). In short, the vast majority of learners did not have any of their utterances rated as a Category 1 sentence by both listeners.

Table 5.3: Category 1 utterances featuring interrater reliability

Learner	Task type	Utterance
11	Read aloud	Nǐ duō dà? (How old are you?)
20	Read aloud	Jiě jie bù kàn shū (Older sister does not read books)
11	Role play	Wǒ jiā yǒu sì kǒu rén (There are four people in my family)
11	Role play	Wǒ xǐ huan chī niú ròu (I like to eat beef)
16	Role play	Wǒ jiā yǒu sì kǒu rén (There are four people in my family)

A closer analysis of the five utterances featured in Table 5.3 revealed that it was possible to produce a Category 1 sentence, despite effectively ignoring the tones. For example, in Figure 5.2, Learner 20 is attempting to say ‘Jiě jie bù kàn shū’ (older sister does not read books).

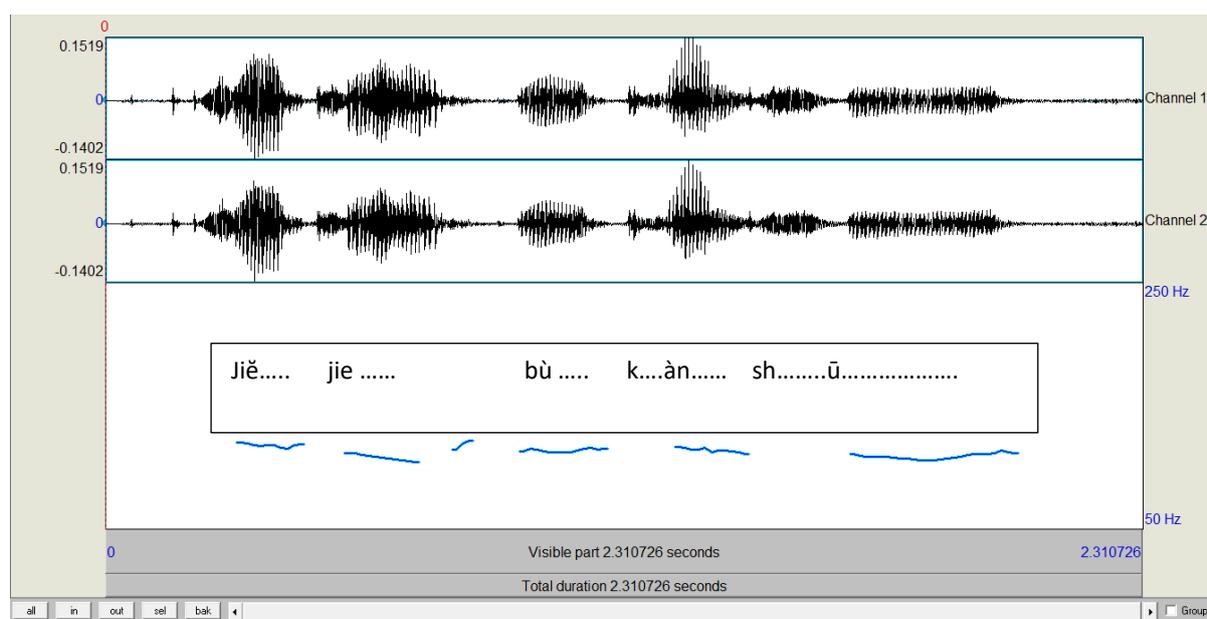


Figure 5.2: Learner 20's generic flat tones (Task 2 Utterance 7)

However, as can be seen from the superimposed pitch track in the lower panel, the tones are virtually non-existent, reminiscent of Chen's (1997) 'level' tones discussed in Chapter 2. Neither of the two raters mentioned the learner's flat tones when discussing this utterance, but since they both awarded the lowest accentedness and highest comprehensibility ratings possible, they evidently found the prosody and segmental sounds to be very natural and were not remotely concerned by the lack of pitch changes, or perhaps did not even notice them. While I am not arguing that

learners can consequently ignore tones, I am providing evidence that it is possible to produce highly comprehensible and intelligible utterances without necessarily producing ‘textbook’ tones, even allowing for major differences between tone production in isolated, canonical form and in natural, connected speech (Tao & Guo, 2008, p. 18).

5.3.2 Category 2 transcriptions

Table 5.4: Number of Category 2 responses across Tasks 2 and 3

	Task 2 (Read aloud)	Task 3 (Role play)	Overall
Total number of Category 2 transcriptions	103/400=25.75%	67/216=31.02%	170/616=27.6%
Total number of Category 2 utterances that feature interrater reliability	19/200=9.5%	7/108=6.48%	26/308=8.44%

From Munro and Derwing’s (2015b) perspective of ‘prioritized instruction’, the fact that learners are heard as having some sort of accent in Category 2 utterances is irrelevant since in these cases, accentedness does not interfere with the more important constructs of intelligibility and comprehensibility. In this respect, Category 2 transcriptions are very much embedded within the *intelligibility* principle discussed in Chapter 2. Focussing on the various causes of accent found in Category 2 utterances, therefore, is a useful exercise only in terms of establishing what should be seen as less critical when teaching pronunciation. As Munro and Derwing (2015b) sum up, “accent reduction is not relevant in prioritized pronunciation teaching, and should not be considered an appropriate goal when classroom time for instruction is limited” (p. 389), although they concede that learners who desire to change their pronunciation in order to approximate a particular model “are free to do so as they please” (p. 389). Although over a quarter of the learners’ utterances belong to Category 2, this figure falls to less than ten per cent, involving 12 of the 20 learners, when interrater reliability is considered. These sentences are highlighted in Table 5.5.

Table 5.5: Category 2 utterances featuring interrater reliability

Learner(s)	Task type	Utterance
2,3,7,11,17	Read aloud	Wǒ bù huì yóu yǒng (I cannot swim)
16,17,19,20	Read aloud	Nǐ duō dà? (How old are you?)

Learner(s)	Task type	Utterance
2,14	Read aloud	Nǐ xǐ huan hē chá ma? (Do you like to drink tea?)
12, 20	Read aloud	Tā de wò shì hěn dà (His bedroom is very big)
8, 14	Read aloud	Wǒ bā diǎn shàng xué (I go to school at 8 o'clock)
13, 19	Read aloud	Nǐ de shēng rì shì jǐ yuè jǐ rì? (When's your birthday?)
11	Read aloud	Jiě jie bù kàn shū (Older sister does not read books)
20	Read aloud	Mèi mei shí suì (Younger sister is 10 years old)
11, 14, 16	Role play	Wǒ xǐ huan hē kē lè (I like to drink coke)
2	Role play	Wǒ de ài hào shì tīng yīn yuè (My hobby is listening to music)
17	Role play	Wǒ xǐ huan hē chá (I like to drink tea)
14	Role play	Wǒ zuì xǐ huan shù xué kè (My favourite subject is Maths)
19	Role play	Wǒ jiā yǒu sì kǒu rén (There are four people in my family)

Distinguishing between segmentals (i.e. individual sounds such as vowels and consonants) and suprasegmentals (i.e. stress, intonation, tone) and focussing solely on the Category 2 transcriptions which featured interrater reliability, I drew up a simple coding framework to analyse the main causes of the accent as perceived by the raters.

Table 5.6: Coding framework for the perceived causes of accentedness

CODE	DEFINITION (Based on Lin, 2007, pp. 309-310)	EXAMPLES FROM INTERVIEWS
1. SEGMENTALS	A speech sound such as a consonant or a vowel	It's like the pronounce of 'duō', particularly the 'd' part [...] I guess the tongue is in the wrong place
2. SUPRASEGMENTALS	A phonological element such as stress or tone that has a span larger than a single segment and is considered to be separable from segments	The tone on 'shí' is a little bit wrong, it should be the second one but he says the fourth one
3. SEGMENTALS AND SUPRASEGMENTALS	The rater's explanation of the accentedness rating includes both segmental and suprasegmental dimensions	The 'zui' is a little bit different – one is the tone and the sound
4. UNSPECIFIED	The rater is unable to provide an explanation for the accentedness rating, or makes no comment	I cannot pin down where is the source but there is a bit of a foreign accent there

As discussed in Chapter 3, I acknowledge that such a dichotomy could be viewed as problematic since the production of segmentals can affect suprasegmentals and vice versa (Zielinski, 2015). Nevertheless, my coding framework was led primarily by the raters' comments and they seemed comfortable making this distinction, even if they never actually used the terms 'segmental' and 'suprasegmental'. Furthermore, if a rater's explanation of a particular accentedness rating included both segmental and suprasegmental dimensions, this would be coded separately (Code 3). Similarly, if a rater referred to a single syllable or word in general terms as being 'different', I assumed that the tone, initial and final were all contributing to the perception of an accent (Code 3). I only coded comments as unspecified (Code 4) if the rater was unable to provide any concrete causes of the accentedness rating, or if they made no comments at all. For example, if the rater said 'tone or something else', this would be coded as 'suprasegmental' (Code 2) and not as 'unspecified' (Code 4). Coding for each of the 52 Category 2 transcriptions can be found in Table 5.7 with overall results displayed in Table 5.8.

Table 5.7: Coding for each of the Category 2 transcriptions (n=52)

Learner	Task Type	Utterance	Rater's comments (edited)	Code
2	Read aloud	Nǐ xǐ huan hē chá ma? (Do you like to drink tea?)	-	4 (Unspecified)
2	Read aloud	Nǐ xǐ huan hē chá ma? (Do you like to drink tea?)	Because in the final words it is like go up but usually we say go down	2 (Suprasegmentals)
2	Read aloud	Wǒ bù huì yóu yǒng (I cannot swim)	The tone [...] not so natural than native but it's good for the foreigners	2 (Suprasegmentals)
2	Read aloud	Wǒ bù huì yóu yǒng (I cannot swim)	Emphasis [...] a little strange so it's a little accent	2 (Suprasegmentals)
2	Role play	Wǒ de ài hào shì tīng yīn yuè (My hobby is listening to music)	I think it's quite easy to understand but the last words yue is not very accurate [...] I think the tone	2 (Suprasegmentals)
2	Role play	Wǒ de ài hào shì tīng yīn yuè (My hobby is listening to music)	Yeah the final one it's 'tīng yīn yuè', it's not 'tīng yīn yuè' so the tone	2 (Suprasegmentals)
3	Read aloud	Wǒ bù huì yóu yǒng (I cannot swim)	I think just some of the tones but then she paused at the correct place so I know like these two words are together [...] so it helps me to understand	2 (Suprasegmentals)
3	Read aloud	Wǒ bù huì yóu yǒng (I cannot swim)	-	4 (Unspecified)
7	Read aloud	Wǒ bù huì yóu yǒng (I cannot swim)	-	4 (Unspecified)
7	Read aloud	Wǒ bù huì yóu yǒng (I cannot swim)	-	4 (Unspecified)

Learner	Task Type	Utterance	Rater's comments (edited)	Code
8	Read aloud	Wǒ bā diǎn shàng xué (I go to school at 8 o'clock)	-	4 (Unspecified)
8	Read aloud	Wǒ bā diǎn shàng xué (I go to school at 8 o'clock)	-	4 (Unspecified)
11	Read aloud	Jiě jie bù kàn shū (Older sister doesn't read books)	It's 'kàn shū' and he has the tone wrong	2 (Suprasegmentals)
11	Read aloud	Jiě jie bù kàn shū (Older sister doesn't read books)	For sister we might say 'jiě jie' so the second word the pronunciation might be a little bit different [...] I mean you need to soften the second word	2 (Suprasegmentals)
11	Read aloud	Wǒ bù huì yóu yǒng (I cannot swim)	This one is 'huì', he said 'huī', the wrong tone	2 (Suprasegmentals)
11	Read aloud	Wǒ bù huì yóu yǒng (I cannot swim)	For the accent I think it's a little bit about the tone like 'bù huì'	2 (Suprasegmentals)
11	Role play	Wǒ xǐ huan hē kē lè (I like to drink coke)	This one is 'kē' and what he said is similar to cola	3 (Segmentals and suprasegmentals)
11	Role play	Wǒ xǐ huan hē kē lè (I like to drink coke)	It's 'hē' in Chinese but he's speaking 'hō' and also it's the tone in 'kē lè'	3 (Segmentals and suprasegmentals)
12	Read aloud	Tā de wò shì hěn dà (His bedroom is very big)	It's easy to understand	4 (Unspecified)
12	Read aloud	Tā de wò shì hěn dà (His bedroom is very big)	-	4 (Unspecified)
13	Read aloud	Nǐ de shēng rì shì jǐ yuè jǐ rì? (When's your birthday?)	Still the last one 'jǐ yuè jǐ rì', he said 'jǐ yuè jǐ rì' or something	2 (Suprasegmentals)
13	Read aloud	Nǐ de shēng rì shì jǐ yuè jǐ rì? (When's your birthday?)	I think the standard pronunciation should be 'jǐ yuè jǐ rì', but he pronounced that as 'jǐ yuè jǐ rì' [...] Yes, I think it's the tones	2 (Suprasegmentals)
14	Read aloud	Nǐ xǐ huan hē chá ma? (Do you like to drink tea?)	The tone of 'nǐ' is a little bit different	2 (Suprasegmentals)
14	Read aloud	Nǐ xǐ huan hē chá ma? (Do you like to drink tea?)	He should be 'hē chá', not 'hè chá' cos even in China, with different regions it should be 'hē chá' so that would be a foreigner accent for me	2 (Suprasegmentals)
14	Read aloud	Wǒ bā diǎn shàng xué (I go to school at 8 o'clock)	'Bā diǎn', 'bà' tone is different, 'xué' said in a different, pronounced x probably in an English way but they don't affect the comprehensibility of the sentence, it's very easy to understand	3 (Segmentals and suprasegmentals)
14	Read aloud	Wǒ bā diǎn shàng xué (I go to school at 8 o'clock)	The tone for 'bā', the person said 'bà', but it's easy to understand	2 (Suprasegmentals)
14	Role play	Wǒ zuì xǐ huan shù xué kè (My favourite subject is Maths)	I cannot pin down where is the source but there is a bit of a foreign accent there	4 (Unspecified)

Learner	Task Type	Utterance	Rater's comments (edited)	Code
14	Role play	Wǒ zuì xǐ huan shù xué kè (My favourite subject is Maths)	The 'zuì' is a little bit different, one is the tone and the sound	3 (Segmentals and suprasegmentals)
14	Role play	Wǒ xǐ huan hē kē lè (I like to drink coke)	Tone on 'wǒ', also there's a pause between 'hē' and 'kē lè', we'd have a pause, if at all, between 'xǐ huan' and 'hē', 'hē kē lè' is a set pattern	2 (Suprasegmentals)
14	Role play	Wǒ xǐ huan hē kē lè (I like to drink coke)	The tone for 'kē lè' is not correct, the person said 'kē lè', the rest is okay	2 (Suprasegmentals)
16	Read aloud	Nǐ duō dà? (how old are you?)	They pronounce the pinyin without any tone or the wrong tone, they have no concept of tone, just with their feeling, so I think I can't say it's wrong, they just don't know what is tone	2 (Suprasegmentals)
16	Read aloud	Nǐ duō dà? (how old are you?)	-	4 (Unspecified)
16	Role play	Wǒ xǐ huan hē kē lè (I like to drink coke)	In this sentence the other tones are right, but the 'kē' is not correct at all	2 (Suprasegmentals)
16	Role play	Wǒ xǐ huan hē kē lè (I like to drink coke)	I think the accent 'kē lè' is wrong. The tone is wrong, 'wǒ xǐ huan' is okay	2 (Suprasegmentals)
17	Read aloud	Nǐ duō dà? (how old are you?)	This sentence is 'nǐ duō dà', it's four, but he said 'nǐ duō dǎ', he used the third tone	2 (Suprasegmentals)
17	Read aloud	Nǐ duō dà? (how old are you?)	He should say 'nǐ duō dà' [...] and he said 'nǐ duō dá'	2 (Suprasegmentals)
17	Read aloud	Wǒ bù huì yóu yǒng (I cannot swim)	He said 'bù huī' but if I said it I would say 'bù huì'	2 (Suprasegmentals)
17	Read aloud	Wǒ bù huì yóu yǒng (I cannot swim)	-	4 (Unspecified)
17	Role play	Wǒ xǐ huan hē chá (I like to drink tea)	This sentence, how to say, he said 'xǐ huan', it's a little difference [...] I guess he can't understand the little difference between the second tone and the third tone	2 (Suprasegmentals)
17	Role play	Wǒ xǐ huan hē chá (I like to drink tea)	-	4 (Unspecified)
19	Read aloud	Nǐ de shēng rì shì jǐ yuè jǐ rì? (When's your birthday?)	His 'jǐ' the tone is wrong, and the 'shēng rì' he pronounced the 'qiàoshéyīn' (retroflex sound) very clearly, normally we wouldn't do that	3 (Segmentals and suprasegmentals)
19	Read aloud	Nǐ de shēng rì shì jǐ yuè jǐ rì? (When's your birthday?)	The pronunciation of 'jǐ' was in the wrong tone but apart from that it was alright	2 (Suprasegmentals)
19	Read aloud	Nǐ duō dà? (how old are you?)	Maybe not very [...] fluent	2 (Suprasegmentals)
19	Read aloud	Nǐ duō dà? (how old are you?)	It's like the pronounce of 'duō', particularly the 'd' part [...] I guess the tongue position is in the wrong place	1 (Segmentals)

Learner	Task Type	Utterance	Rater's comments (edited)	Code
19	Role play	Wǒ jiā yǒu sì kǒu rén (There are four people in my family)	I just can tell he's a foreigner [...] 'jiā' [...] it's not the tone, maybe the mouth	1 (Segmentals)
19	Role play	Wǒ jiā yǒu sì kǒu rén (There are four people in my family)	Very clear but not that fluent but apart from that it's fine	2 (Suprasegmentals)
20	Read aloud	Mèi mei shí suì (Younger sister is 10 years old)	The 'shí', the tone is a little bit wrong, 'cos it should be the second one but he says the fourth one	2 (Suprasegmentals)
20	Read aloud	Mèi mei shí suì (Younger sister is 10 years old)	For the number ten the tone is a bit wrong, it's 'shí suì', he's like 'shī' and it's 'shí' and for the 'suì', 'shī suì', it's 'suì'	2 (Suprasegmentals)
20	Read aloud	Tā de wò shì hěn dà (His bedroom is very big)	I think this one is the pause between the words, it's too equal, sometimes you need a longer pause to make you understand	2 (Suprasegmentals)
20	Read aloud	Tā de wò shì hěn dà (His bedroom is very big)	For the word 'hěn', the tone is wrong. It's 'hěn dà' but he speak like 'hěn dǎ'	2 (Suprasegmentals)
20	Read aloud	Nǐ duō dà? (how old are you?)	The last word, the tone is wrong, he changed the fourth tone into the second	2 (Suprasegmentals)
20	Read aloud	Nǐ duō dà? (how old are you?)	For the word 'dà' the tone is wrong, it should be 'dà' but he said like 'dá' but I can understand	2 (Suprasegmentals)

Table 5.8: Perceived causes of accentedness according to the raters (n=52)

Code	Number of examples (n=52)
1. Segmentals	2
2. Suprasegmentals	33
3. Segmentals and suprasegmentals	5
4. Unspecified	12

As can be seen from Table 5.8, it would appear that for Category 2 utterances, suprasegmental features of the learners' pronunciation impact much more on a speaker's accentedness than segmental features. While individual sounds are mentioned explicitly as the sole cause of accentedness in a particular utterance on only two occasions (Code 1), suprasegmentals are mentioned as the sole cause of the accentedness rating on 33 separate occasions (Code 2). There are also five instances of raters mentioning both segmental and suprasegmental elements as contributing to a perception of accentedness in the same utterance (Code 3). Raters

were unable to provide any sort of explanation on twelve occasions (Code 4).

No patterns emerged when I looked more closely at the seven examples of segmentals (two from Code 1 and five from Code 3) that were highlighted by the raters during the interviews as contributing towards an accent. However, when I examined the 38 cases of suprasegmentals (33 from Code 2 and five from Code 3), it became clear that according to the raters' comments, non-standard tones were mainly responsible for the perception of an accent in Category 2 utterances, as opposed to other prosodic phenomena such as stress and intonation.

Table 5.9: Suprasegmental causes of accentedness

SUBCODE	DEFINITION (based on Lin, 2007, pp. 305-309; Derwing & Munro, 2015, pp. 175-182)	EXAMPLES FROM INTERVIEW	NUMBER OF EXAMPLES (N=38)
INTONATION	Variation in pitch stretched over a phrase or sentence	Because in the final words it is like go up but usually we say go down	1
STRESS	The prominence a particular syllable receives within a word resulting in longer duration, higher pitch, and/or increased volume	For sister we might say 'jiè jie' so the second word the pronunciation might be a little bit different [...] I mean you need to soften the second word	2
PAUSES	A break in an utterance comprised of a silence	I think this one is the pause between the words, it's too equal, sometimes you need a longer pause to make you understand	1
FLUENCY	The degree to which speech flows easily without pauses and other dysfluency markers such as false starts	Maybe not very [...] fluent	2
TONE	A pitch difference or contrast that can distinguish word meaning	This one is 'hui', he said 'hu', the wrong tone	31
TONE AND PAUSE	The rater's explanation of the accentedness refers to both tone and pauses	Tone on 'wǒ', also there's a pause between 'hē' and 'kě lè', we'd have a pause if at all, between 'xǐ huan' and 'hē', 'hē kě lè' is a set pattern	1

These results should be treated with some caution. As noted in Chapter 3, false starts, slips of the tongue and long pauses in the middle of sentences were removed when I was preparing the audio extracts which weakens any claims I can make about sentence level prosody and lack of fluency upon students' accentedness levels. It is also likely that a number of raters did not have the required metalanguage to point out suprasegmental features such as sentence level intonation, rhythm and stress. Moreover, there is a good deal of overlapping between the various subcodes (e.g.

pauses and fluency). In this respect, it could be argued that the contribution of tone to the perception of an accent in Category 2 sentences is even higher than the figures highlighted in Table 5.9. For example, one of the raters mentioned the role of stress yet this could also be interpreted in terms of a learner failing to produce a neutral tone on the second syllable of the disyllabic word ‘jiě jie’ (older sister). On the other hand, five raters commented about learners erroneously producing a rising tone instead of a falling one at the end of questions which could equally be conceptualised in terms of interference of English intonation patterns (Luo, 2017). A clear example of this phenomenon is illustrated in Figure 5.3 when Learner 13 is attempting to pronounce ‘nǐ de shēng rì shì jǐ yuè jǐ rì?’ (When’s your birthday?).

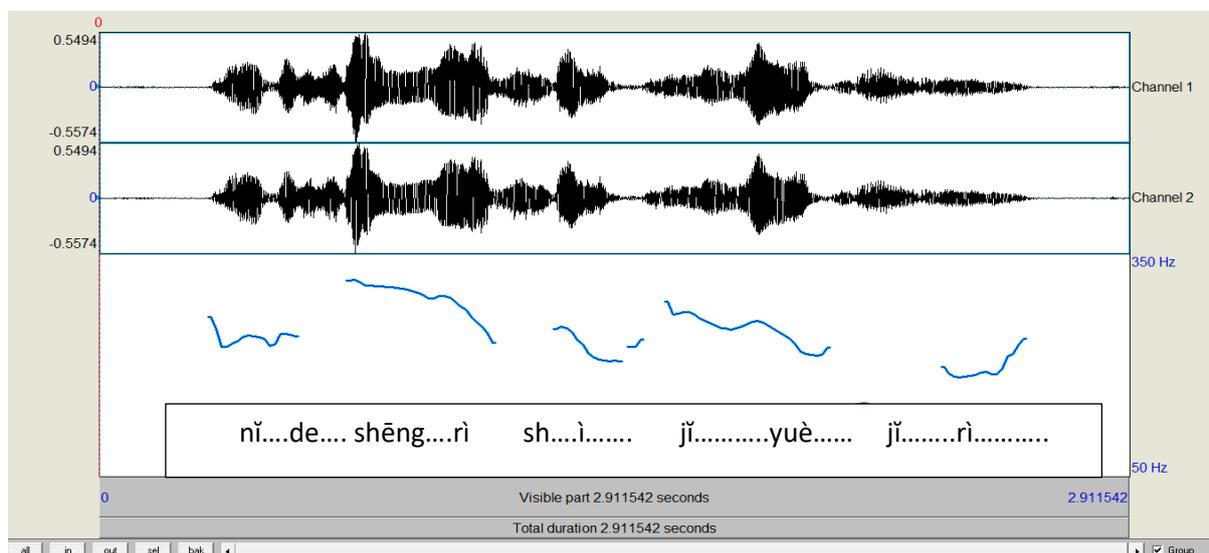


Figure 5.3 Learner 13’s rising tone at the end of the sentence (Task 2 Utterance 6)

Occasionally, raters tended to make more general comments such as ‘the tones are wrong’ rather than provide more detailed feedback about the precise nature of the learners’ tonal production. This may have been due to learners’ tendency to produce tones which were not immediately recognisable as any Chinese tone (Chen, 1997), or it could have been a result of a lack of declarative knowledge on the raters’ part, or even a kind of ‘default setting’ when the raters simply attributed the causes of accent to tone because they could not think of anything else to say. Nevertheless, most of the raters were able to point out specific examples of accented tonal production, raising the validity of the data. It should be emphasised that all these Category 2 utterances were awarded the highest possible comprehensibility and intelligibility ratings. In other words, the suprasegmental causes of accentedness, of which ‘non-standard’ tone

appears to be by far the biggest contributor, have no detrimental effect on the raters' actual understanding or their processing difficulties. In this respect, Category 2 utterances can be treated exactly like their Category 1 counterparts.

5.3.3 Category 5 transcriptions

Table 5.10: Number of Category 5 responses across Tasks 2 and 3

	Task 2 (Read aloud)	Task 3 (Role play)	Overall
Total number of Category 5 transcriptions	150/400=37.5%	73/216=33.8%	223/616=36.2%
Total number of Category 5 utterances that feature interrater reliability	30/200=15%	11/108=10.19%	41/308=13.31%

Category 5 utterances all featured high levels of intelligibility, but were perceived as containing a noticeable accent, as well as requiring some sort of effort to be processed - i.e. with comprehensibility ratings of two or higher. The 41 utterances which feature interrater reliability involved 18 of the 20 learners and are highlighted in Table 5.11:

Table 5.11: Category 5 utterances featuring interrater reliability

Learner(s)	Task type	Utterance
1,3,12,15,18,19	Read aloud	Jiě jie bù kàn shū (Older sister does not read books)
7,9,17,18,19	Read aloud	Gē ge bù chī ròu (Older brother doesn't eat meat)
4,9,10,12	Read aloud	Wǒ xīng qī yī dǎ wǎng qiú (I play tennis on Mondays)
6,7,16	Read aloud	Wǒ bā diǎn shàng xué (I go to school at 8 o'clock)
3,14,18	Read aloud	Nǐ de shēng rì shì jǐ yuè jǐ rì? (When's your birthday?)
2,5,10	Read aloud	Nǐ duō dà? (How old are you?)
6,13	Read aloud	Mèi mei shí suì (Younger sister is 10 years old)
5,17	Read aloud	Nǐ xǐ huan hē chá ma? (Do you like to drink tea?)
9	Read aloud	Tā de wò shì hěn dà (His bedroom is very big)
4	Read aloud	Wǒ bù huì yóu yǒng (I cannot swim)
2,6	Role play	Wǒ shí sān suì (I am 13 years old)
16	Role play	Wǒ shí sì suì (I am 14 years old)
16	Role play	Wǒ de shēng rì shì yī yuè qī rì (My birthday is January 7 th)

Learner(s)	Task type	Utterance
19	Role play	Wǒ de shēng rì shì bā yuè shí wǔ rì (My birthday is August 15 th)
4	Role play	Wǒ xǐ huan jī ròu (I like chicken)
8	Role play	Wǒ bā diǎn qǐ chuáng (I get up at 8 o'clock)
1	Role play	Wǒ zuì xǐ huan yīng wén (My favourite subject is English)
1	Role play	Wǒ xǐ huan hē kā fēi (I like to drink coffee)
9	Role play	Wǒ jiǔ diǎn shuì jiào (I go to bed at 9 o'clock)
12	Role play	Wǒ shí diǎn shuì jiào (I go to bed at 10 o'clock)

In terms of Munro and Derwing's (2015b) concept of 'prioritized pronunciation instruction', learners can conceivably become more comprehensible with instruction. For example, a speaker might be "highly intelligible *with effort* prior to instruction and highly intelligible *with less effort* afterwards" (italics in original) (p. 389). Focussing on the causes of the reduced levels of comprehensibility in Category 5 utterances is consequently a useful exercise, despite the fact that speakers in these cases are already completely intelligible. As with my analysis of the causes of accentedness in Category 2 utterances (see 5.3.2), I initially distinguished between segmentals and suprasegmentals to analyse the sources of difficulty that the raters experienced when listening to the learners' utterances. Coding the raters' comments presented a considerable challenge, as despite the lower comprehensibility ratings, it was not always clear if a rater was making more general comments about a speaker's accent, or discussing pronunciation problems that were genuinely leading to processing difficulties. When in doubt, I erred on the side of caution and coded comments as 'unspecified' (Code 4), unless the raters explicitly referred to increased effort levels, triggered by using words such as 'problem', 'confusion', 'difficulty', 'unclear', 'guess', or by mentioning any other strategies they might have employed to compensate for a non-standard speech signal. As with the Category 2 coding system, raters' comments which included both segmental and suprasegmental dimensions were categorised separately (Code 3). Comments which referred to a particular word without any further elaboration about the precise nature of the processing difficulty (e.g. 'this word I think it's 'shū' (book), actually I just give a guess') were also classified as belonging to Code 3 since on these occasions, I assumed that the tone, initial and final were all contributing to the lower comprehensibility levels. Coding for each of the 82 Category

5 transcriptions can be found in Table 5.12. The overall results are displayed in Table 5.13.

Table 5.12: Coding for each of the Category 5 transcriptions (n=82)

Learner	Task Type	Utterance	Rater's comments (edited)	Code
1	Read aloud	Jiě jie bù kàn shū (Older sister does not read books)	-	4 (Unspecified)
1	Read aloud	Jiě jie bù kàn shū (Older sister does not read books)	This word I think it's 'shū' (book), actually I just give a guess [...] I didn't get the pronunciation at all	3 (Segmentals and suprasegmentals)
1	Role play	Wǒ zuì xǐ huan yīng wén (My favourite subject is English)	-	4 (Unspecified)
1	Role play	Wǒ zuì xǐ huan yīng wén (My favourite subject is English)	-	4 (Unspecified)
1	Role play	Wǒ xǐ huan hē kā fēi (I like to drink coffee)	-	4 (Unspecified)
1	Role play	Wǒ xǐ huan hē kā fēi (I like to drink coffee)	-	4 (Unspecified)
2	Read aloud	Nǐ duō dà? (How old are you?)	Because it is a kind of short sentence and you know there are [...] four tones in Chinese so you know when he pronounces the last word 'da' I'm not sure whether it's the big or other meanings. But maybe when we communicate I can guess what he means according to the conversation	2 (Suprasegmentals)
2	Read aloud	Nǐ duō dà? (How old are you?)	It's the wrong pinyin [...] He says 'de' but its 'dà' [...] but I guess	3 (Segmentals and suprasegmentals)
2	Role play	Wǒ shí sān suì (I am 13 years old)	I'm kind of sure that he said I am 13 years old so I can only give it [a rating of] three	4 (Unspecified)
2	Role play	Wǒ shí sān suì (I am 13 years old)	This one is confused because the word 'shí' it can be 'shì' but he didn't emphasis on that one so I can't know is that the number ten or is [...] I guess it's not three years old	2 (Suprasegmentals)
3	Read aloud	Nǐ de shēng rì shì jǐ yuè jǐ rì? (When's your birthday?)	-	4 (Unspecified)
3	Read aloud	Nǐ de shēng rì shì jǐ yuè jǐ rì? (When's your birthday?)	-	4 (Unspecified)
3	Read aloud	Jiě jie bù kàn shū (Older sister does not read books)	-	4 (Unspecified)
3	Read aloud	Jiě jie bù kàn shū (Older sister does not read books)	It's a bit hard to understand	4 (Unspecified)

Learner	Task Type	Utterance	Rater's comments (edited)	Code
4	Read aloud	Wǒ xīng qī yī dǎ wǎng qiú (I play tennis on Mondays)	-	4 (Unspecified)
4	Read aloud	Wǒ xīng qī yī dǎ wǎng qiú (I play tennis on Mondays)	'Wǎng' [...] the tone is not quite right but I can understand 'qiú' so I can understand it's 'wǎng qiú'	2 (Suprasegmentals)
4	Read aloud	Wǒ bù huì yóu yǒng (I cannot swim)	-	4 (Unspecified)
4	Read aloud	Wǒ bù huì yóu yǒng (I cannot swim)	-	4 (Unspecified)
4	Role play	Wǒ xǐ huan jī ròu (I like chicken)	-	4 (Unspecified)
4	Role play	Wǒ xǐ huan jī ròu (I like chicken)	A little bit confusing with the 'jī ròu' because 'jī' is pronounced a little bit weird and the tone is totally wrong but I understand 'ròu' so 'jī ròu' makes me could understand this sentence	3 (Segmentals and suprasegmentals)
5	Read aloud	Nǐ xǐ huan hē chá ma? (Do you like to drink tea?)	-	4 (Unspecified)
5	Read aloud	Nǐ xǐ huan hē chá ma? (Do you like to drink tea?)	Just need it a little time to understand it [...] I think it's just because his tone is a little different from us	2 (Suprasegmentals)
5	Read aloud	Nǐ duō dà? (How old are you?)	It's still the tone, I need to think a moment and then give the right answer	2 (Suprasegmentals)
5	Read aloud	Nǐ duō dà? (How old are you?)	-	4 (Unspecified)
6	Read aloud	Mèi mei shí suì (Younger sister is 10 years old)	The problem is I think he say the sister 'mèi mei' yeah the tone	2 (Suprasegmentals)
6	Read aloud	Mèi mei shí suì (Younger sister is 10 years old)	-	4 (Unspecified)
6	Read aloud	Wǒ bā diǎn shàng xué (I go to school at 8 o'clock)	It's not only the tone but 'xué' it's the pronunciation [...] it's totally wrong but I can understand [...] because with the word 'shàng' the coming word should be 'xué'	3 (Segmentals and suprasegmentals)
6	Read aloud	Wǒ bā diǎn shàng xué (I go to school at 8 o'clock)	'Shàng xué' he says 'shàng shū' and that will confuse because 'shàng shū' in Chinese is climbing the tree	3 (Segmentals and suprasegmentals)
6	Role play	Wǒ shí sān suì (I am 13 years old)	The problem is 'shí' and also the 'suì' [...] I need to think about it because you know the 'shí' is very similar to 'shì'	3 (Segmentals and suprasegmentals)
6	Role play	Wǒ shí sān suì (I am 13 years old)	-	4 (Unspecified)
7	Read aloud	Gē ge bù chī ròu (Older brother doesn't eat meat)	-	4 (Unspecified)
7	Read aloud	Gē ge bù chī ròu (Older brother doesn't eat meat)	The last word is totally can't understand	3 (Segmentals and suprasegmentals)
7	Read aloud	Wǒ bā diǎn shàng xué (I go to school at 8 o'clock)	-	4 (Unspecified)
7	Read aloud	Wǒ bā diǎn shàng xué (I go to school at 8 o'clock)	-	4 (Unspecified)

Learner	Task Type	Utterance	Rater's comments (edited)	Code
8	Role play	Wǒ bā diǎn qī chuáng (I get up at 8 o'clock)	-	4 (Unspecified)
8	Role play	Wǒ bā diǎn qī chuáng (I get up at 8 o'clock)	The first [time] I listened to this sentence I can't understand this	4 (Unspecified)
9	Read aloud	Gē ge bù chī ròu (Older brother doesn't eat meat)	-	4 (Unspecified)
9	Read aloud	Gē ge bù chī ròu (Older brother doesn't eat meat)	I think I need to guess what the last word means [...] Yeah I think I guessed from the other words	3 (Segmentals and suprasegmentals)
9	Read aloud	Tā de wò shì hěn dà (His bedroom is very big)	I need to quite like kind of guessing	4 (Unspecified)
9	Read aloud	Tā de wò shì hěn dà (His bedroom is very big)	I think the problem is the 'shì' and the 'hěn' [...] 'shì' is fourth tone in Chinese [...] his 'shì' is third tone [...] 'hěn' is third and his 'hěn' is second	2 (Suprasegmentals)
9	Read aloud	Wǒ xīng qī yī dǎ wǎng qiú (I play tennis on Mondays)	I think for this sentence I need to guess what he did on the Monday because if we say 'dǎ wǎng qiú' that says plays tennis [...] but he says 'dǎ wán qiú' maybe I will guess [...] after playing tennis	3 (Segmentals and suprasegmentals)
9	Read aloud	Wǒ xīng qī yī dǎ wǎng qiú (I play tennis on Mondays)	He's like 'qīng qī' so it's like the pronunciation and also the 'wǎng qiú' and he's like 'wàng qiú', the tone and also some part of the pronunciation [...] this one is quite hard to understand	3 (Segmentals and suprasegmentals)
9	Role play	Wǒ jiǔ diǎn shuì jiào (I go to bed at 9 o'clock)	The problem is 'jiǔ' [...] it's quite hard to pronounce	3 (Segmentals and suprasegmentals)
9	Role play	Wǒ jiǔ diǎn shuì jiào (I go to bed at 9 o'clock)	I think I need to guess for the second words because he said 'jiǔ', it's kind of a bit similar to 'zǎo' so may be I will like 'wǒ zǎo diǎn shuì jiào' (I go to bed early)	1 (Segmentals)
10	Read aloud	Wǒ xīng qī yī dǎ wǎng qiú (I play tennis on Mondays)	-	4 (Unspecified)
10	Read aloud	Wǒ xīng qī yī dǎ wǎng qiú (I play tennis on Mondays)	-	4 (Unspecified)
10	Read aloud	Nǐ duō dà? (How old are you?)	-	4 (Unspecified)
10	Read aloud	Nǐ duō dà? (How old are you?)	There are different meanings here so I take some seconds to think about what he's trying to say [...] one of them is how old are you, the second one is your uncle	3 (Segmentals and suprasegmentals)
12	Read aloud	Jiě jie bù kàn shū (Older sister does not read books)	The 'shū' is not so clear [...] the tone	2 (Suprasegmentals)
12	Read aloud	Jiě jie bù kàn shū (Older sister does not read books)	-	4 (Unspecified)

Learner	Task Type	Utterance	Rater's comments (edited)	Code
12	Read aloud	Wǒ xīng qī yī dǎ wǎng qiú (I play tennis on Mondays)	Actually I can't understand when he says Monday 'xīng qī yī' [...] I guess he should have some time or something	3 (Segmentals and suprasegmentals)
12	Read aloud	Wǒ xīng qī yī dǎ wǎng qiú (I play tennis on Mondays)	If he is saying 'xīng qī yī' I think 'xīng' is not right he's saying 'jīng qī' so it should be 'xīng qī'	1 (Segmentals)
12	Role play	Wǒ shí diǎn shuì jiào (I go to bed at 10 o'clock)	-	4 (Unspecified)
12	Role play	Wǒ shí diǎn shuì jiào (I go to bed at 10 o'clock)	I don't understand [...] the pause and the tone	2 (Suprasegmentals)
13	Read aloud	Mèi mei shí suì (Younger sister is 10 years old)	At first I didn't have any expectation what he's going to say so I didn't recognise 'mèi mei' so I tried twice	3 (Segmentals and suprasegmentals)
13	Read aloud	Mèi mei shí suì (Younger sister is 10 years old)	I'm not sure about the subject in this sentence, 'méi mei' if he pronounced as 'mèi mei' it should be sister 'mèi mei' but I can't figure out what he's talking [...] so most of the information is I guessed	2 (Suprasegmentals)
14	Read aloud	Nǐ de shēng rì shì jǐ yuè jǐ rì? (When's your birthday?)	In terms of comprehensibility, 'jǐ yuè jǐ rì' was a bit difficult for me to understand and I thought for a while, but the rest of the sentence is very comprehensible [...], 'yuè' and 'rì', these two are probably quite difficult for native English speakers, 'yuè' and 'rì', it's more about the consonants	1 (Segmentals)
14	Read aloud	Nǐ de shēng rì shì jǐ yuè jǐ rì? (When's your birthday?)	The [...] problem, the person is saying 'shèn rì' a little bit like 'shèn', it should be 'shēng' [...] 'jǐ yuè jǐ rì' the person said 'jǐ yuè jǐ rì'	3 (Segmentals and suprasegmentals)
15	Read aloud	Jiě jie bù kàn shū (Older sister does not read books)	The first time I hear this it maybe has some other means because the first two words are 'jiě jiě', if it is 'jiě jie' he say, the tone maybe different with me, [...] he said 'jiě jiě bù kàn shuō' and I think it means [...] 'jiě jie bù gǎn shuō' (older sister does not dare to speak), so I can't difference the first meaning and the second meaning so I choose to listen twice	3 (Segmentals and suprasegmentals)
15	Read aloud	Jiě jie bù kàn shū (Older sister does not read books)	I think I found the problem for this one like there's no tones, just the first one	2 (Suprasegmentals)
16	Read aloud	Wǒ bā diǎn shàng xué (I go to school at 8 o'clock)	Some words she pronounced well [...] but with 'xué' she pronounced wrong, with the sentence I can try to guess but on its own I can't understand	3 (Segmentals and suprasegmentals)

Learner	Task Type	Utterance	Rater's comments (edited)	Code
16	Read aloud	Wǒ bā diǎn shàng xué (I go to school at 8 o'clock)	'Shàng xué' I think 'xué' he said 'shuǐ', he said something like this 'shuǐ' because if you say 'shàng shuǐ' that means 'cos we use solar system, and then when people say they need to put water in the solar system on the rooftop it's 'shàng shuǐ'. So if it's Chinese person saying that to me, I would be thinking what do you mean, do you go to school or do you work for that but if it's a Westerner I would think, 'cos they don't need to do it, especially if it's in England, people don't use solar systems, so it shouldn't be this, but that's why I had to think	3 (Segmentals and suprasegmentals)
16	Role play	Wǒ shí sì suì (I am 14 years old)	-	4 (Unspecified)
16	Role play	Wǒ shí sì suì (I am 14 years old)	This one, if I guess, he's trying to say 'wǒ shí sì suì', I'm fourteen but because there is a word 'shì', she could be saying 'wǒ shì sì suì' (I am four years old), I don't know, but this is not grammatically correct, in most cases it is not but there can be cases when you say like for example, when a policeman is questioning somebody, 'are you four?', 'Yeah, I am four - wǒ shì sì suì, wǒ bú shì, wǒ bú shì wǒ suì' (I am four, I am not five), but it's kind of rare, so I would think 'wǒ shí sì suì' (I am 14 years old) is more common	2 (Suprasegmentals)
16	Role play	Wǒ de shēng rì shì yī yuè qī rì (My birthday is January 7 th)	But it's hard to understand, I just thought a while, I understand it all but when I first hear it, I can't understand	4 (Unspecified)
16	Role play	Wǒ de shēng rì shì yī yuè qī rì (My birthday is January 7 th)	Most of the tones are not natural but then when I hear the whole sentence I can figure out what he's saying 'cos I guess with the same pronunciation there are not any other words which can fit into this meaning	2 (Suprasegmentals)
17	Read aloud	Gē ge bù chī ròu (Older brother doesn't eat meat)	I [...] not immediately understand [...] he said 'gē ge bù chī ròu'	2 (Suprasegmentals)
17	Read aloud	Gē ge bù chī ròu (Older brother doesn't eat meat)	-	4 (Unspecified)
17	Read aloud	Nǐ xǐ huan hē chá ma? (Do you like to drink tea?)	-	4 (Unspecified)
17	Read aloud	Nǐ xǐ huan hē chá ma? (Do you like to drink tea?)	-	4 (Unspecified)

Learner	Task Type	Utterance	Rater's comments (edited)	Code
18	Read aloud	Gē ge bù chī ròu (Older brother doesn't eat meat)	The key word 'ròu' is not very clear [...] not just the tone, the pronunciation is not very clear also	3 (Segmentals and suprasegmentals)
18	Read aloud	Gē ge bù chī ròu (Older brother doesn't eat meat)	This one I guess [...] Wrong pronunciation about the 'ròu' [...] so it will be confusing, maybe people will think, 'what kind of food he doesn't eat?' [...] he pronounced it like 'yóu'	3 (Segmentals and suprasegmentals)
18	Read aloud	Nǐ de shēng rì shì jǐ yuè jǐ rì? (When's your birthday?)	-	4 (Unspecified)
18	Read aloud	Nǐ de shēng rì shì jǐ yuè jǐ rì? (When's your birthday?)	So the 'shēng rì' pronunciation not very clear	3 (Segmentals and suprasegmentals)
18	Read aloud	Jiě jie bù kàn shū (Older sister does not read books)	-	4 (Unspecified)
18	Read aloud	Jiě jie bù kàn shū (Older sister does not read books)	So this one I guess [...] but the key word sister should be pronounced like 'jiě jie' so the first time I couldn't understand 'cos he pronounced 'jiè jie' so the tone is different [...] but after a second time I can understand and then, 'kàn shū' the tone is a little bit not natural but after a second time I can understand that	2 (Suprasegmentals)
19	Read aloud	Gē ge bù chī ròu (Older brother doesn't eat meat)	-	4 (Unspecified)
19	Read aloud	Gē ge bù chī ròu (Older brother doesn't eat meat)	The 'ròu' was really not clear. I don't think he got the right position of the tongue in the mouth and another one is the tone was a bit dodgy as well	3 (Segmentals and suprasegmentals)
19	Read aloud	Jiě jie bù kàn shū (Older sister does not read books)	His tones are wrong [...] This one is kind of difficult to understand because it's a short sentence [...] I don't know the context	2 (Suprasegmentals)
19	Read aloud	Jiě jie bù kàn shū (Older sister does not read books)	He pronounce 'jiě jie' (older sister) was very weak. I wouldn't understand it if it wasn't in a sentence [...] the pronunciation was more like 'jay' not 'jie'	1 (Segmentals)
19	Role play	Wǒ de shēng rì shì bā yuè shí wǔ rì (My birthday is August 15 th)	-	4 (Unspecified)
19	Role play	Wǒ de shēng rì shì bā yuè shí wǔ rì (My birthday is August 15 th)	A few words were like not pronounced clearly enough but altogether, it still makes sense to me [...] like 'wǒ', 'shēng rì', and same thing with 'bā' and 'rì', it was not clear as we normally say it.	3 (Segmentals and suprasegmentals)

Table 5.13: Perceived causes of lower levels of comprehensibility according to the raters (n=82)

CODE	EXAMPLE FROM INTERVIEWS	NUMBER OF EXAMPLES (n=82)
1. SEGMENTALS	I think I need to guess for the second word because he said 'jiǔ' (nine) it's kind of a bit similar to 'zǎo' (early) so maybe I will like 'wǒ zǎo diǎn shuì jiào' (I go to sleep early), 'wǒ jiǔ diǎn shuì jiào' (I go to bed at nine o'clock) it's a bit similar	4
2. SUPRASEGMENTALS	Most of the tones are not natural but then when I hear the whole sentence I can figure out what he's saying cos I guess with the same pronunciation there are not any other words which can fit into this meaning	16
3. SEGMENTALS AND SUPRASEGMENTALS	The key word 'ròu' (meat) is not very clear, not just the tone, pronunciation also	23
4. UNSPECIFIED	It's a bit hard to understand	39

There are a number of differences with the perceived causes of accentedness discussed in 5.3.2. For example, whereas there are only seven cases of segmentals highlighted by the raters as contributing towards some sort of accent without any concomitant decrease in comprehensibility levels, there are 27 examples of segmentals contributing towards lower levels of comprehensibility (four from Code 1 and 23 from Code 3). Although suprasegmentals are implicated as contributing to processing difficulties on 39 occasions, only 16 of these are as the sole cause (Code 2) compared to 33 in the case of the accentedness ratings for Category 2 utterances. Raters also appear to be less clear about the causes of the lower levels of comprehensibility (Code 4) compared to when they are talking specifically about accentedness (39 as opposed to 12). Some of these differences are obviously linked to a larger dataset (82 Category 5 transcriptions compared to 52 Category 2 transcriptions). However, they also suggest that 'non-standard' pronunciation involving vowels and consonants may have more serious consequences by leading more readily to lower comprehensibility levels as opposed to merely triggering higher levels of accentedness. The increased number of 'unspecified' comments is probably due to the relative salience of accentedness compared to comprehensibility. In other words, raters found it easier to talk about 'differences' as opposed to 'effort levels'.

A handful of the 27 examples of segmentals that were highlighted by raters as contributing to lower comprehensibility levels could be traced solely to the initial and/or final. However, most of the problems involved confusion at the entire word level and

appeared to implicate the tone, initial and final. Words which caused particular problems, as evidenced by the raters' comments, were 'ròu' (meat) (n=5) and 'xué' (to study) (n=4) which, as discussed in Chapter 4, also had relatively low intelligibility levels. In terms of suprasegmentals, all 39 examples could be traced to problematic tonal production, albeit only partially for the 23 examples from Code 3. Indeed, the only other prosodic feature mentioned alongside tone was one instance of an unusual pause. Looking solely at the 16 examples from Code 2, the failure to produce the correct tones on 'mèi mei' (younger sister) (n=2) and an inability to pronounce the rising second tone on 'shí' (ten) (n=2) appeared to cause particular difficulties.

A key question to ask is why the incorrect tones in Category 5 utterances caused lower comprehensibility levels whereas the previously discussed examples involving Category 1 and 2 utterances had no apparent effect upon comprehensibility. One explanation is closely linked to the concept of Functional Load, which has been defined as "a measure of the 'work' done by a speech sound in keeping minimal pairs apart" (Derwing & Munro, 2015, p. 178). For example, in Figure 5.5, Learner 16 is attempting to say 'wǒ shí sì suì' (I am fourteen years old).

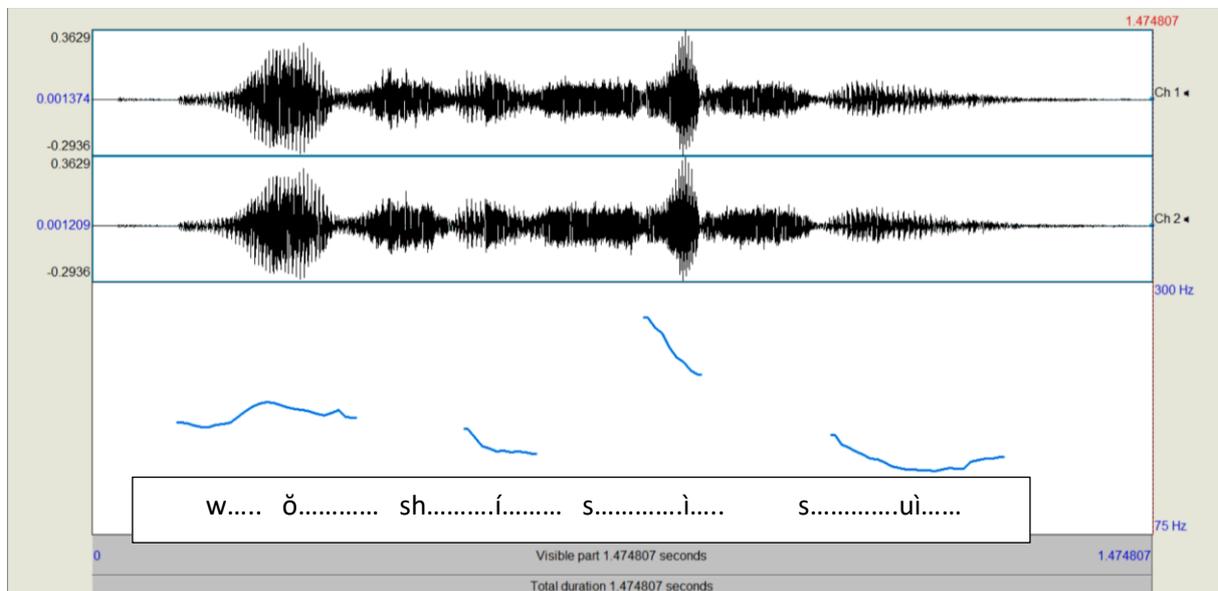


Figure 5.4 Learner 16 attempts to say 'wǒ shí sì suì' (I am 14 years old)

With the possible exception of 'sì' (four), none of the tones appear to be pronounced accurately. However, only the tone on 'shí' is commented upon by the rater as affecting comprehensibility levels due to a genuine choice between 'shí' (ten) and 'shì' (is). In

order to compensate for the non-standard tonal production, the rater has to call upon both world knowledge and grammatical rules:

This one, if I guess, he's trying to say 'wǒ shí sì suì' (I am fourteen years old) but because there is a word 'shì' (is), he could be saying 'wǒ shì sì suì' (I am four years old), but this is not grammatically correct. In most cases it is not but there can be cases when you say like for example, when a policeman is questioning 'are you four?' 'yes, I am four, wǒ shì sì suì', wǒ bú shì wǔ suì' (I am four, I am not five years old), but it's kind of rare, so I think 'wǒ shí sì suì' (I am fourteen years old) is more common.

Another particular source of difficulty is when the lack of standard tonal production results in a keyword, such as the subject of the sentence, being unclear. Unsurprisingly, this has important repercussions for understanding the rest of the utterance. The following comment from one of the raters illustrates the nature of the problem:

I'm not sure about the subject in this sentence, 'méi mei', if he pronounced as 'mèi mei', it should be sister 'mèi mei', but I can't figure out what he's talking and the pronunciation directly influenced the comprehensibility of this sentence so most of the information is I guessed, I'm not sure about this sentence.

Incorrect tones, therefore, clearly played an important role in lowering comprehensibility levels. However, this tended to be only when there were realistic alternatives featuring a different tone with the same segmental sounds, or when the tone on a particularly important word was pronounced ambiguously. Despite the processing difficulties inherent in Category 5 utterances, it should also be stressed that all the transcriptions were completely accurate. In other words, the low levels of comprehensibility did not cause any intelligibility breakdowns. The danger, of course, is that if the listeners are forced to work too hard, they may simply give up and abandon their share of the 'communicative burden' (Lippi-Green, 1997).

5.3.4 Category 8 transcriptions

Table 5.14: Number of Category 8 responses across Tasks 2 and 3

	Task 2 (Read aloud)	Task 3 (Role play)	Overall
Total number of Category 8 transcriptions	109/400=27.25%	41/216=18.98%	150/616=24.35%
Total number of Category 8 utterances that feature interrater reliability	33/200=16.5%	10/108=9.26%	43/308=13.96%

Category 8 utterances all contained at least one intelligibility breakdown with the learners perceived as having some sort of accent, as well as requiring effort to be understood. When interrater reliability is considered, this category has the highest number of examples (86 transcriptions) and includes 16 learners. The 43 intended utterances are highlighted in Table 5.15 below.

Table 5.15: Category 8 transcriptions featuring interrater reliability

Learner(s)	Task type	Utterance
1,4,5,7,10,14,16,18,19	Read aloud	Mèi mei shí suì (Younger sister is 10 years old)
1,3,4,5,6,8,20	Read aloud	Gē ge bù chī ròu (Older brother doesn't eat meat)
3,6,7,18	Read aloud	Wǒ xīng qī yī dǎ wǎng qiú (I play tennis on Mondays)
6,8,16,17	Read aloud	Nǐ de shēng rì shì jǐ yuè jǐ rì? (When's your birthday?)
1,6,7	Read aloud	Tā de wò shì hěn dà (His bedroom is very big)
6,7,16	Read aloud	Jiě jie bù kàn shū (Older sister does not read books)
11	Read aloud	Nǐ xǐ huan hē chá ma? (Do you like to drink tea?)
3	Read aloud	Wǒ bā diǎn shàng xué (I go to school at 8 o'clock)
1	Read aloud	Nǐ duō dà? (how old are you?)
1	Role play	Wǒ jiā yǒu sì kǒu rén (There are four people in my family)
1	Role play	Wǒ de shēng rì shì bā yuè shí wǔ rì (My birthday is 15 th August)
5	Role play	Wǒ jiā yǒu sān kǒu rén (There are three people in my family)
8	Role play	Wǒ de shēng rì shì èr yuè èr rì (My birthday is 2 nd February)
11	Role play	Wǒ de shēng rì shì liú yuè shí rì (My birthday is 10 th June)
4	Role play	Wǒ xǐ huan guǒ zhī (I like fruit juice)
6	Role play	Wǒ xǐ huan chī jī ròu (I like to eat chicken)

Learner(s)	Task type	Utterance
12	Role play	Wǒ shí sì suì (I am 14 years old)
17	Role play	Wǒ shí èr diǎn qī chuáng (I get up at 12 o'clock)
17	Role play	Wǒ shí èr diǎn shuì jiǎo (I go to bed at 12 o'clock)

Having considered accentedness and comprehensibility when discussing Category 2 and 5 utterances (see 5.3.2 and 5.3.3), I now focus specifically on the key construct of intelligibility. In Chapter 4, I found that with the notable exception of ‘shí’ (ten), the overall contribution of tone to the intelligibility breakdowns of ten high frequency monosyllabic words was very similar to the contribution of initials and finals, at least at the sentence level. The aim of the analysis in this section is to delve deeper into the causes of the intelligibility breakdowns of the Category 8 utterances, as evidenced by both the raters’ transcriptions and their comments. Most of the comments are taken from towards the end of the interviews, after I had informed the raters of the learners’ intended utterances. In Table 5.16, I highlight the coding framework I used.

Table 5.16: Coding framework used to analyse the cause of intelligibility breakdowns in terms of raters’ responses to Category 8 utterances

Code	Explanation
1. No understanding	The transcription either makes no sense or is left completely blank/almost completely blank. Listeners are at a loss about how to process the utterance.
2. Wild guess	Raters make a wild guess having understood very little from the speech signal. Their transcriptions may bear little resemblance to the acoustic phonetic content of the original speech signal.
3. Mistaken keyword	A keyword is misunderstood, or simply missed, with dire consequences for understanding the other words in a sentence. Analogous to making an error with a crossword puzzle clue.
4. Context doesn’t help	At least half the characters in a sentence are transcribed accurately so that the intelligibility breakdowns take place despite some wider contextual clues.

I recognise that the above codes frequently overlap. When in doubt about which code to use, I gave priority to the raters’ comments over their transcriptions. For example,

a transcription may have been left completely blank, but if in the interview it became clear that the rater had been misled by misunderstanding a keyword, the breakdown would be coded as ‘mistaken keyword’ (Code 3), as opposed to ‘no understanding’ (Code 1). Similarly, if a rater had managed to successfully transcribe half a sentence correctly, but informed me that this was a result of complete guess work, it would be coded as a ‘wild guess’ (Code 2), as opposed to ‘context doesn’t help’ (Code 4). If a rater did not elaborate upon the underlying causes of a particular intelligibility breakdown during the interview, I made a decision about which code to use based entirely on his/her transcription. Coding for each of the 86 Category 8 transcriptions can be found in Table 5.17. The overall results are displayed in Table 5.18.

Table 5.17: Coding for each of the Category 8 transcriptions (n=86)

Learner	Task Type	Intended Utterance	Rater’s transcription	Rater’s comments (edited)	Code
1	Read aloud	妹妹十岁 Mèi mei shí suì (Younger sister is 10 years old)	-	-	1. No understanding
1	Read aloud	妹妹十岁 Mèi mei shí suì (Younger sister is 10 years old)	妹妹学谁? Mèi mei xué shuí? (Who is younger sister studying?)	-	4. Context doesn’t help
1	Read aloud	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn’t eat meat)	哥哥不希望 Gē ge bù xī wàng (Older brother doesn’t hope)	-	4. Context doesn’t help
1	Read aloud	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn’t eat meat)	哥哥不喜欢 Gē ge bù xǐ huan (Older brother doesn’t like)	It’s really hard [...] don’t sound like anything	4. Context doesn’t help
1	Read aloud	他的卧室很大 Tā de wò shì hěn dà (His bedroom is big)	-	I didn’t hear the voice of ‘wò’ [...] I just hear ‘shì’	3. Mistaken keyword
1	Read aloud	他的卧室很大 Tā de wò shì hěn dà (His bedroom is big)	他头像很大 Tā tóu xiàng hěn dà (His profile picture is big)	-	4. Context doesn’t help
1	Read aloud	你多大? Nǐ duō dà? (How old are you?)	-	Sorry I can’t get it	1. No understanding
1	Read aloud	你多大? Nǐ duō dà? (How old are you?)	你的大 Nǐ de dà	-	4. Context doesn’t help
1	Role play	我的生日是八月十五日 Wǒ de shēng rì shì bā yuè shí wǔ rì (My birthday is 15 th August)	我的中国...Wǒ de Zhōng guó....	I can get the ‘bā yuè shí wǔ rì’ (is 15 th August) but I still cannot get the ‘shēng rì’ (birthday) part	3. Mistaken keyword

Learner	Task Type	Intended Utterance	Rater's transcription	Rater's comments (edited)	Code
1	Role play	我的生日是八月十五日 wǒ de shēng rì shì bā yuè shí wǔ rì (My birthday is 15 th August)	-	Other part sounds okay but the 'shēng rì' (birthday) still sounds like 'xìng gé' (character)	3. Mistaken keyword
1	Role play	我家有四口人 Wǒ jiā yǒu sì kǒu rén (There are four people in my family)	我脚又 Wǒ jiǎo yòu	-	1. No understanding
1	Role play	我家有四口人 Wǒ jiā yǒu sì kǒu rén (There are four people in my family)	我 Wǒ	'Wǒ, wǒ'(I, I) and then that's all	1. No understanding
3	Read aloud	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不.... Gē ge bù....	I can't really understand the last two words	4. Context doesn't help
3	Read aloud	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不虚荣 Gē ge bù xū róng (Older brother is not vain)	-	4. Context doesn't help
3	Read aloud	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	我半点想吃 Wǒ bàn diǎn xiǎng chī (I would like to eat at half past)	I can't really understand although I guess	2. Wild guess
3	Read aloud	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	我帮点小事 Wǒ bāng diǎn xiǎo shì (I help with little things)	It's 'bāng diǎn' (help a little)	3. Mistaken keyword
3	Read aloud	我星期一打网球 Wǒ xīng qī yī dǎ wǎng qiú (I play tennis on Mondays)	我星期一到我家 Wǒ xīng qī yī dào wǒ jiā (I arrive home on Monday)	I'm not quite sure	4. Context doesn't help
3	Read aloud	我星期一打网球 Wǒ xīng qī yī dǎ wǎng qiú (I play tennis on Mondays)	我星期一搭火车 Wǒ xīng qī yī dā huǒ chē (I take the train on Mondays)	The first part is [...] good	4. Context doesn't help
4	Read aloud	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	没没... Méi méi....	It's very difficult to understand [...] If you got 'mèi mèi' (younger sister) I probably understand 'shí suì' (ten years old), yeah if I got 'méi méi' (not, not), I don't have a clue what he's saying	3. Mistaken keyword

Learner	Task Type	Intended Utterance	Rater's transcription	Rater's comments (edited)	Code
4	Read aloud	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	你没吃水 Nǐ méi chī shuǐ (You didn't eat water)	I can only hear 'nǐ méi' (you didn't) the first two characters but the last two I think it's 'chī shuǐ' (eat water) but we don't quite say that, we should say 'hē shuǐ' (drink water) [...] I don't understand this	2. Wild guess
4	Read aloud	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不.... Gē ge bù....	I don't know the last two words [...] I don't think I will guess them	4. Context doesn't help
4	Read aloud	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不.... Gē ge bù....	Sorry I can't understand the last two words	4. Context doesn't help
4	Role play	我喜欢果汁 Wǒ xǐ huan guǒ zhī (I like fruit juice)	我喜欢锅子 Wǒ xǐ huān guō zī (I like hot pot)	-	4. Context doesn't help
4	Role play	我喜欢果汁 Wǒ xǐ huan guǒ zhī (I like fruit juice)	我喜欢故事 Wǒ xǐ huān gù shì (I like stories)	I can't understand the last two words [...] what I understand is 'gù shì' the story but the tone is a little bit annoying, I can't quite understand this	4. Context doesn't help
5	Read aloud	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	你吃了没? Nǐ chī le méi (Have you eaten?)	It's not a sentence [...] I don't think this is a sentence	2. Wild guess
5	Read aloud	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	-	Sorry I don't understand [...] because I don't know what he's talking about	1. No understanding
5	Read aloud	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	东东不吃肉 Dōng Dong bù chī ròu (Dōng Dong doesn't eat meat)	After you tell me 'gē ge' (older brother) I think his pronunciation's okay, I don't know why I heard Dōng Dong)	4. Context doesn't help
5	Read aloud	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不喜欢 Gē ge bù xǐ huan (Older brother doesn't like)	-	4. Context doesn't help
5	Role play	我家有三口人 Wǒ jiā yǒu sān kǒu rén (There are three people in my family)	我在上课 Wǒ zài shàng kè (I'm having a lesson)	I think the 'shàng kè' (having a lesson) [...] the tone is not very good but I can still understand	3. Mistaken keyword

Learner	Task Type	Intended Utterance	Rater's transcription	Rater's comments (edited)	Code
5	Role play	我家有三口人 Wǒ jiā yǒu sān kǒu rén (There are three people in my family)	我将要上课 Wǒ jiāng yào shàng kè (I'm going to have a lesson)	If he's talking about what I've written down his pronunciation and tone has problems and actually I'm not sure whether he's talking about this	2. Wild guess
6	Read aloud	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥.... Gē ge....	I can get 'gē ge' (older brother)	1. No understanding
6	Read aloud	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不轻柔 Gē ge bù qīng róu (Older brother is not gentle)	-	4. Context doesn't help
6	Read aloud	他的卧室很大 Tā de wò shì hěn dà (His bedroom is big)	泰迪我是衡达 Tàì dí wǒ shì Héng dá (Tài dí, I'm Héng dá)	I think it may contain a name, might be, so it's difficult to guess, 'wǒ shì' (I am) is fine	3. Mistaken keyword
6	Read aloud	他的卧室很大 Tā de wò shì hěn dà (His bedroom is big)	他第一,我喜欢他 Tā dì yī, wǒ xǐ huan tā (He's number one, I like him)	Oh yeah, I guess	2. Wild guess
6	Read aloud	你的生日是几月几日? Nǐ de shēng rì shì jǐ yuè jǐ rì? (When's your birthday?)	你的 Nǐ de	I can only hear 'nǐ de'	1. No understanding
6	Read aloud	你的生日是几月几日? Nǐ de shēng rì shì jǐ yuè jǐ rì? (When's your birthday?)	你的香味是用迪奥 Nǐ de xiāng wèi shì yòng dí ào (The perfume you use is Dior)	-	2. Wild guess
6	Read aloud	姐姐不看书 Jiě jie bù kàn shū (Older sister does not read books)	弟弟不看书 Dì dì bù kàn shū (Younger brother does not read books)	The first two word I don't know if it's 'dì dì' (younger brother) or 'jiě jie' (older sister), it's not clear	4. Context doesn't help
6	Read aloud	姐姐不看书 Jiě jie bù kàn shū (Older sister does not read books)	弟弟不看书 Dì dì bù kàn shū (Younger brother does not read books)		4. Context doesn't help
6	Read aloud	我星期一打网球 Wǒ xīng qī yī dǎ wǎng qiú (I play tennis on Mondays)	我 Wǒ	I can only get 'wǒ', I'm sorry	1. No understanding
6	Read aloud	我星期一打网球 Wǒ xīng qī yī dǎ wǎng qiú (I play tennis on Mondays)	我请奇异到...去 Wǒ qǐng Qí Yì dàoqù	I can't understand it	2. Wild guess
6	Role play	我喜欢吃鸡肉 Wǒ xǐ huan chī jī ròu (I like to eat chicken)	我喜欢 Wǒ xǐ huan...	Only 'wǒ xǐ huan' (I like), I didn't get it	4. Context doesn't help

Learner	Task Type	Intended Utterance	Rater's transcription	Rater's comments (edited)	Code
6	Role play	我喜欢吃鸡肉 Wǒ xǐ huan chī jī ròu (I like to eat chicken)	我喜欢车酒 Wǒ xǐ huān chē jiǔ (I like vehicles, alcohol)	-	4. Context doesn't help
7	Read aloud	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是... Mèi mei shì...	The 'shì' tone is different	3. Mistaken keyword
7	Read aloud	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹吃笋 Mèi mei chī sǔn (Younger sister eats bamboo shoots)	That's all my guess	2. Wild guess
7	Read aloud	他的卧室很大 Tā de wò shì hěn dà (His bedroom is big)	他的....很大 Tā de.... hěn dà	It's difficult for me to understand so I just guess some word	4. Context doesn't help
7	Read aloud	他的卧室很大 Tā de wò shì hěn dà (His bedroom is big)	-	I can't even guess [...] I want to write something. I think the last word is handout but that's not a Chinese word and for the first or second part, I can't guess	1. No understanding
7	Read aloud	姐姐不看书 Jiě jie bù kàn shū (Older sister does not read books)不开心 bù kāi xīn		2. Wild guess
7	Read aloud	姐姐不看书 Jiě jie bù kàn shū (Older sister does not read books)	...不开始 bù kāi shǐ	Actually I can write down something but I think it's not the correct thing she wants to say [...] I give up	2. Wild guess
7	Read aloud	我星期一打网球 Wǒ xīng qī yī dǎ wǎng qiú (I play tennis on Mondays)	我星期一....Wǒ xīng qī yī	The first half of the sentence is quite easy to understand but I can't understand the [second] half	4. Context doesn't help
7	Read aloud	我星期一打网球 Wǒ xīng qī yī dǎ wǎng qiú (I play tennis on Mondays)	我星期一的....Wǒ xīng qī yī de.....	Okay I can't hear the last two words	4. Context doesn't help
8	Read aloud	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不吃鹅 Gē ge bù chī é (Older brother doesn't eat goose)	-	4. Context doesn't help
8	Read aloud	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不...我 Gē ge bù...wǒ	I don't know what is it meaning	4. Context doesn't help
8	Read aloud	你的生日是几月几日? Nǐ de shēng rì shì jǐ yuè jǐ rì? (When's your birthday?)	你的 Nǐ de	I can't understand	1. No understanding

Learner	Task Type	Intended Utterance	Rater's transcription	Rater's comments (edited)	Code
8	Read aloud	你的生日是几月几日? Nǐ de shēng rì shì jǐ yuè jǐ rì? (When's your birthday?)	你的哥哥是... Nǐ de xiōng gē shì...	Ah, no, this is too difficult	1. No understanding
8	Role play	我的生日是二月二日 Wǒ de shēng rì shì èr yuè èr rì (My birthday is 2 nd February)	我的生日是... Wǒ de shēng rì shì....	-	4. Context doesn't help
8	Role play	我的生日是二月二日 Wǒ de shēng rì shì èr yuè èr rì (My birthday is 2 nd February)	-	Ah, I don't know [...]	1. No understanding
10	Read aloud	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	He spoke four words and the last word I guess he means who	3. Mistaken keyword
10	Read aloud	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	秘密是谁? Mì mì shì shuí? (Who is the secret?)	It's really hard to understand what he's trying to say	2. Wild guess
11	Read aloud	你喜欢喝茶吗 Nǐ xǐ huan hē chá ma? (Do you like to drink tea?)	你是喜欢喝酒吗 Nǐ shì xǐ huan hē jiǔ ma? (Do you like to drink alcohol?)	-	4. Context doesn't help
11	Read aloud	你喜欢喝茶吗 Nǐ xǐ huan hē chá ma? (Do you like to drink tea?)	你是喜欢车吗? Nǐ shì xǐ huan chē ma? (Do you like vehicles?)	I know it's a question [...] there are two words I can't catch them [...] so I need to guess it from the context and some words	4. Context doesn't help
11	Role play	我的生日是六月十日 Wǒ de shēng rì shì liù yuè shí rì (My birthday is 10 th June)	我的生日是一月十日 Wǒ de shēng rì shì yī yuè shí rì (My birthday is 10 th January)	It's very difficult to understand	4. Context doesn't help
11	Role play	我的生日是六月十日 Wǒ de shēng rì shì liù yuè shí rì (My birthday is 10 th June)	我的...是要历史...Wǒ de ... shì yào lì shǐ	I can catch some words but I couldn't understand the main sentence	1. No understanding
12	Role play	我十四岁 Wǒ shí sì suì (I am 14 years old)	我是谁 Wǒ shì shuí (Who am I?)	-	3. Mistaken keyword
12	Role play	我十四岁 Wǒ shí sì suì (I am 14 years old)	我是谁 Wǒ shì shuí (Who am I?)	I don't know, it sounds like he says two words in this way but I think it's 'wǒ shì shuí'	3. Mistaken keyword
14	Read aloud	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	'Shì' (is) and 'shuí' (who) are pronounced very clearly	3. Mistaken keyword

Learner	Task Type	Intended Utterance	Rater's transcription	Rater's comments (edited)	Code
14	Read aloud	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	I didn't get the 'shí' (ten), I thought it was 'shì' (is)	3. Mistaken keyword
16	Read aloud	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹四岁 Mèi mei sì suì (Younger sister is four years old)	This is difficult even for Chinese, actually I heard he said 'shí' (ten) but in my imagined the foreigner always says 'sì' (four) not 'shí' (ten) so I guessed maybe he says 'sì' (four)	3. Mistaken keyword
16	Read aloud	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹....Mèi mei...	I don't understand	1. No understanding
16	Read aloud	你的生日是几月几日? Nǐ de shēng rì shì jǐ yuè jǐ rì? (When's your birthday?)	你的生日是七月七日 Nǐ de shēng rì shì qī yuè qī rì (Your birthday is 7 th July)	'Qī' (Seven) is hard to understand, I don't know if it's right	4. Context doesn't help
16	Read aloud	你的生日是几月几日? Nǐ de shēng rì shì jǐ yuè jǐ rì? (When's your birthday?)	你的生日是七月七日 Nǐ de shēng rì shì qī yuè qī rì (Your birthday is 7 th July)	I think his tone is more like 'jǐ yuè jǐ rì' (which date), but his pronunciation is more like 'qī yuè qī rì' (7 th July), so he's basically saying 'qī yuè qī rì' so intuitively I just think, oh maybe I'll go with his pronunciation rather than tone	4. Context doesn't help
17	Read aloud	你的生日是几月几日? Nǐ de shēng rì shì jǐ yuè jǐ rì? (When's your birthday?)	你的生日是七月七日 Nǐ de shēng rì shì qī yuè qī rì (Your birthday is 7 th July)	Actually I cannot totally understand [...] I'm not sure about this word 'shēng rì' (birthday) and the date, so I guess he said this but I'm not sure	4. Context doesn't help
17	Read aloud	你的生日是几月几日? Nǐ de shēng rì shì jǐ yuè jǐ rì? (When's your birthday?)	你的 Nǐ de	Oh I failed this one	1. No understanding
17	Read aloud	姐姐不看书 Jiě jie bù kàn shū (older sister does not read books)	姐姐 Jiě jie	I guess he wanted to say the word 'jiě jie' (older sister) but I'm not sure	1. No understanding
17	Read aloud	姐姐不看书 Jiě jie bù kàn shū (Older sister does not read books)	谢谢, 不客气 Xiè xie, bù kè qì (Thanks, my pleasure)	'Bù kàn shū' (doesn't read books), it's quite, quite different	2. Wild guess

Learner	Task Type	Intended Utterance	Rater's transcription	Rater's comments (edited)	Code
17	Role play	我十二点起床 Wǒ shí èr diǎn qǐ chuáng (I get up at 12 o'clock)	我是二年级学生 Wǒ shì èr nián jí xué shēng (I am a second year student)	I can guess what he said [...] but I didn't hear the word 'shēng'	2. Wild guess
17	Role play	我十二点起床 Wǒ shí èr diǎn qǐ chuáng (I get up at 12 o'clock)	我是 Wǒ shì	Wǒ shì (I am) [...] I can't understand it	1. No understanding
17	Role play	我十二点睡觉 Wǒ shí èr diǎn shuì jiào (I go to bed at 12 o'clock)	我是 Wǒ shì	I thought he said 'shì' (am)	1. No understanding
17	Role play	我十二点睡觉 Wǒ shí èr diǎn shuì jiào (I go to bed at 12 o'clock)	我是 Wǒ shì	-	1. No understanding
18	Read aloud	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	你们是谁? Nǐ men shì shuí? (Who are you?)	-	1. No understanding
18	Read aloud	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	你...是谁? Nǐ... shì shuí?	So the 'shì shuí' (is who) I can understand totally, but I'm not sure if he's talking about you guys 'nǐ men' or the name is 'nǐ mèi'	1. No understanding
18	Read aloud	我星期一打网球 Wǒ xīng qī yī dǎ wǎng qiú (I play tennis on Mondays)	我想吃你的黄橙 Wǒ xiǎng chī nǐ de huáng chéng (I would like to eat your yellow orange)	'Huáng chéng' (yellow orange) [...] I know maybe it's the wrong word	2. Wild guess
18	Read aloud	我星期一打网球 Wǒ xīng qī yī dǎ wǎng qiú (I play tennis on Mondays)	我擅长于打网球 Wǒ shàn cháng yú dǎ wǎng qiú (I'm good at playing tennis)	He got the key words so I guess	4. Context doesn't help
19	Read aloud	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	Yeah he said 'shì' (is) I think	3. Mistaken keyword
19	Read aloud	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	Cos 'shì' and 'shì' is really similar	3. Mistaken keyword
20	Read aloud	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不是柔 Gē ge bù shì róu (Older brother isn't flexible)	It's the problem about 'shì' (is) and 'chī' (to eat)	3. Mistaken keyword
20	Read aloud	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	这是不是肉 Zhè shì bú shì ròu (Is this meat?)	It's quite difficult [...] I can only guess, I don't know what he said	2. Wild guess

Table 5.18: Raters' responses to Category 8 utterances (n=86)

CODE	EXAMPLE FROM INTERVIEWS	NUMBER OF EXAMPLES (n=86)
1. NO UNDERSTANDING	'Wǒ, wǒ (I, I) and then that's all'	21
2. WILD GUESS	'I'm guessing – well this is just pure guess'	15
3. MISTAKEN KEYWORD	'Other parts sound okay, but the 'shēng rì' (birthday) still sounds like 'xìng gé' (character)	17
4. CONTEXT DOESN'T HELP	'I can't really understand the last two words'	33

21 of the 86 transcriptions were coded as 'no understanding' (Code 1), covering 12 different sentences, including five cases of 'mèi mei shí suì' (younger sister is ten years old) and four instances of the question 'nǐ de shēng rì shì jǐ yuè jǐ rì?' (when is your birthday?). It was difficult to pinpoint the precise causes of the intelligibility breakdowns since the raters understood virtually nothing of the intended utterances. It seems reasonable to conclude that the intelligibility breakdowns in these sentences resulted from both segmental and suprasegmental features of the learners' pronunciation, and were far more serious than merely pronouncing the wrong tones. The following comment illustrates a genuine sense of powerlessness on the part of one of the raters after hearing Learner 7 attempt to say 'tā de wò shì hěn dà' (his bedroom is very big):

I can't even guess [...] I want to write something. I think the last word is handout but that's not a Chinese word and for the first or second part, I can't guess.

In many respects, the 15 examples of 'wild guesses' (Code 2) are similar to Code 1 sentences, since the raters also have very little idea of what the learners are trying to say. As with the 'no understanding' utterances, the pronunciation problems are so severe that they cannot be narrowed down to one or two individual speech sounds or a suprasegmental feature such as generic flat tones. The sentence most likely to be categorised as a 'wild guess' is 'mèi mei shí suì' (younger sister is 10 years old) (n=4). There are also two cases of 'jiě jie bù kàn shū' (older sister doesn't read books) and 'wǒ xīng qī yī dǎ wǎng qiú' (I play tennis on Mondays). In all 15 examples, the raters' transcriptions are a long way from the intended utterances. For example, one of the

raters transcribed Learner 6's attempt to say 'tā de wò shì hěn dà' (his bedroom is very big) as 'tā dì yī, wǒ xǐ huan tā' (he is number one, I like him) while another rater transcribed Learner 17's attempt to read aloud 'jiě jie bù kàn shū' (older sister does not read books) as 'xiè xie, bù kè qì' (Thanks, my pleasure).

17 transcriptions appeared to be directly traceable to a 'mistaken keyword' (Code 3). Echoing the findings of Chapter 4, eight of the mistaken keywords involved hearing the intended second tone on 'shí' (ten) as a fourth tone 'shì' (am/to be) which subsequently led to misunderstanding the rest of the sentence. The most common breakdown involved the intended utterance of 'mèi mei shí suì' (younger sister is 10 years old) with five transcriptions of 'mèi mei shì shuí' (who is younger sister?). Another keyword which proved problematic was 'shēng rì' (birthday) with transcriptions of 'Zhōng guó' (China) and 'xìng gé' (character) respectively which implicated the tone, initial and final. The following exchange illustrates how misunderstanding 'shēng rì' quickly led to a complete breakdown in understanding, despite the other words in the sentence being pronounced adequately:

Rater: 'Wǒ de Zhōng guó' (my China) I can guess. (rest of the transcription is left blank)

Interviewer: I think she's trying to say 'Wǒ de shēng rì shì bā yuè shí wǔ rì' (my birthday is August 15th).

(Audio transcript is played again)

Rater: Yeah I can get the 'bā yuè shí wǔ rì' (August 15th) but I still cannot get the 'shēng rì' (birthday).

Interviewer: Cos it sounds more like 'Zhōng guó' (China)?

Rater: Yeah 'Shēng guó' something like that.

'Context doesn't help' (Code 4) provided the largest number of examples (n=33) of Category 8 sentences. I recognise that this figure could conceivably be considerably higher since a number of 'mistaken keywords' (Code 3) could also be categorised as belonging to Code 4. The key point is that it is wrong to assume that misunderstandings at word level can be automatically worked out by simply appealing to 'context' to 'save the day' (Field, 2014, p. 37), although this may be more possible with longer texts. There were nine examples of raters accurately transcribing the first

half of the sentence ‘gēge bù’ (older brother does not) and then completely misunderstanding the object ‘chī ròu’ (eat meat). As discussed in Chapter 4, most of the breakdowns involving ‘chī’ (to eat) and ‘ròu’ (meat) went way beyond non-standard tonal production. There were also four instances of raters understanding ‘wǒ xīng qī yī’ (On Mondays, I) but subsequently misunderstanding the rest of the utterance ‘dǎ wǎng qíu’ (play tennis). There were also three cases of raters transcribing ‘nǐ de shēng rì shì qī yuè qī rì’ (your birthday is the 7th July) instead of the intended question ‘nǐ de shēng rì shì jǐ yuè jǐ rì?’ (when is your birthday). It was interesting to note that on one occasion, a rater explicitly prioritised the segmental sounds over the tone when attempting to process the speech signal:

I think it's slightly towards ‘qī’ (seven) but when you say he's trying to say ‘jǐ yuè jǐ rì’ (which date), maybe, but still, I think what he sounds like it's ‘qī yuè qī rì’ (7th July), whereas his tone, I think his tone is more like ‘jǐ yuè jǐ rì’ (which date), but his pronunciation is more like ‘qī yuè qī rì’ (7th July), so he's basically saying ‘qī yuè qī rì’ so intuitively I just think, oh maybe I'll go with his pronunciation rather than tone.

5.4 Concluding comments

In this chapter, I have addressed my second research question by exploring how raters responded to the L2 speech signal at the sentence level in terms of accentedness, comprehensibility and intelligibility. Obviously I need to be cautious about making strong claims based on limited data. The conclusions should consequently be taken in the spirit of an evidence-base for ‘starting a conversation’ with other classroom practitioners. However, focussing on utterances which feature interrater reliability, the following points emerge. Firstly, the main causes of accentedness in Category 2 utterances appeared to be a result of non-standard tonal production. Crucially, the learners’ tones in these examples did not interfere with the more important constructs of comprehensibility and intelligibility. Although I found evidence of tones causing lower levels of comprehensibility in Category 5 utterances, this tended to be only when the tones carried high levels of functional load or featured in a keyword such as the subject of the sentence. I argued that the main cause of processing difficulties could be traced to the individual word level which implicated the tone, initial and final. Encouragingly, raters proved adept at adopting various strategies to compensate for

the non-standard speech signal. However, I noted that in Category 8 utterances, raters were frequently unable to understand individual words, despite wider contextual clues from the rest of the sentence. Again, these individual words tended to implicate the initial, final and tone, as opposed to just the tone. A number of Category 8 intelligibility breakdowns could also be traced to misunderstanding a keyword which often led to a complete misunderstanding of the rest of the sentence, even if the other words had been pronounced relatively accurately. With the notable exception of 'shì' (to be), these breakdowns could often be traced to all three elements of the syllable: initial, final and tone. There was also evidence of blank transcriptions and wild guesses when raters clearly understood very little of the speech signal. In terms of error gravity, learners' pronunciation problems are clearly far more serious than non-standard tone, although non-standard tones are certainly an important aspect of their pronunciation problems. In the next chapter, the focus shifts to the learners and specifically, how aware they are of their own pronunciation errors.

6. Analysis of learners' awareness of their own pronunciation errors

In this chapter, the focus shifts from the raters to the learners' perspectives, as I address my third and final research question: "To what extent are learners aware of their own pronunciation errors both during and after speech production?" As discussed in Chapter 3, I recognise that there is considerable controversy surrounding the role of awareness in SLA and in particular, the role of implicit and explicit forms. Following Schmidt (2001), and in accordance with studies from the field of TESOL (e.g. Saito & Lyster, 2012; Dlasker & Krekeler, 2013), as well as CSL tonal perception and training studies (e.g. So, 2006; Chun et al., 2015), which suggest that explicit corrective feedback can play an important role in improving pronunciation, I am assuming that it is helpful for learners to be consciously aware of their own pronunciation problems as a first step to improving their own intelligibility and comprehensibility levels (Derwing & Munro, 2014). Considering the extent of their awareness regarding any gaps between their own productions and more intelligible forms is consequently a useful exercise in terms of providing insights into the nature of the learners' pronunciation challenges. I initially investigate whether there are any examples of learners self-repairing perceived pronunciation errors during the role play activity. The bulk of the analysis is dedicated to examining the results of the stimulated recall interviews, in which the twenty learners listened to ten selected audio extracts of their own L2 Chinese spoken data and were invited to comment upon any perceived pronunciation errors which they felt may have resulted in intelligibility breakdowns. As with previous chapters, intelligibility breakdowns are defined in general terms as any instance when a rater inaccurately transcribes a learner's intended utterance. I broadly assume that such occurrences are a result of non-standard pronunciation on the part of a learner although I recognise that this is by no means always the case.

6.1 Learners' awareness of their own pronunciation errors during speech production

In order to investigate the extent to which learners were aware of their own pronunciation errors during speech production, I examined whether learners had carried out any self-repairs during the role play activity (Task 3). I define self-repairs

as any changes the learners made to the pronunciation of a syllable or a monosyllabic word, shortly or immediately after the initial production, regardless of whether the alterations actually improved intelligibility levels. Performance mistakes, such as slips of the tongue or false starts were not treated as self-repairs. I decided not to use data from the read-aloud tasks (i.e. Tasks 1 and 2), as it was unclear whether any apparent self-repairs were actually a result of reading, as opposed to pronunciation, difficulties. Although there was some evidence of performance mistakes from several participants, there appeared to be no examples of any attempted self-repairs from any of the learners during Task 3, either towards or away from the intended utterance. This was despite a cumulative total of 157 intelligibility breakdowns at the individual syllable level, featuring 17 of the 20 learners. Such results obviously suggest that learners have very low levels of awareness of their own pronunciation errors during speech production. They are also noticeably different from the findings of Winke's (2007) study in which 32 out of 52 first year learners of Chinese at a major university in the United States "repaired or at least attempted to repair one of their tonal errors during natural speech production" (p. 32).

6.2 Learners' implicit awareness of their own pronunciation errors after speech production

I considered the extent to which learners were aware of their own pronunciation errors after speech production by carrying out stimulated recall interviews with each learner. As discussed in more detail in Chapter 3, I initially focussed on implicit, as opposed to explicit, forms of knowledge. Following Ellis and Shintani (2014), I assume that implicit knowledge is 'procedural' and does not require the learner to have any conscious awareness of linguistic forms, but does require the learner to know intuitively what is correct (p. 13). Each learner was awarded an 'implicit awareness' mark out of ten, translated into a percentage score, based on the number of audio extracts he/she successfully identified as being intelligible or unintelligible in line with the raters' transcriptions, regardless of whether he/she was subsequently able to identify the specific cause of the intelligibility breakdown.

Unlike the focus on learners' 'online' awareness of their pronunciation errors during speech production described in 6.1, 70 per cent of the audio extracts used to measure learners' retrospective awareness of their pronunciation errors after speech production

came from Task 1 – i.e. the read-aloud task featuring individual monosyllabic words, with 24.5 per cent from the read-aloud sentence task (Task 2) and the remaining 5.5 per cent of extracts taken from the role play activity (Task 3), also at the sentence level. This was not only designed to increase the salience of any pronunciation error, but was also due to the fact that at the sentence level, raters' transcriptions were more likely to go beyond a straightforward phonetic explanation, as discussed in Chapter 5. At the start of the interview, all learners were informed that five of the audio extracts contained at least one intelligibility breakdown while five audio extracts had been rated as completely intelligible by both raters. In order to increase the strength of the stimulus, participants were also presented with a written transcript of each intended utterance in both Chinese characters and *pīnyīn*, as well as an English translation. Learners were allowed to listen to each audio extract up to three times although they usually only required a single hearing.

I recognise that comparisons between each learner should not be taken at face value, since some of the extracts inevitably featured pronunciation errors which were more salient than others. Although I attempted to only use extracts which featured interrater reliability (i.e. when both raters had come up with identical transcriptions), this proved impossible. Thus only 34 per cent of the audio extracts which contained intelligibility breakdowns featured interrater reliability with 57 per cent (including ten pairs of homophones) featuring breakdowns which were inaccurately transcribed by both raters, but in different ways. The remaining nine per cent of audio extracts comprised breakdowns which were transcribed accurately by one of the raters, raising suspicions that in these latter cases at least, an intelligibility breakdown may not have been a direct consequence of a learner's pronunciation error but more the fault of a rater, such as lack of concentration (Murphy, 2014). Moreover, audio extracts coded as intelligible, despite featuring 100 per cent interrater reliability, often contained elements of non-standard pronunciation which may well have confused the learners. Despite these important caveats, I argue that the exercise still provided an approximate indicator of learners' implicit awareness levels of their own pronunciation errors. Individual implicit awareness scores, alongside the learners' edited responses, are displayed in tables 6.1 to 6.20 below.

Table 6.1: Learner 1 implicit awareness rating (60 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Implicit awareness mark awarded? (Yes/No)
1	1	你 nǐ (you)	米 mǐ (rice)	米 mǐ (rice)	I'm probably gonna say that's not right	Yes
1	1	岁 suì (age/years old)	-	水 shuǐ (water)	That sounds alright	No
1	1	喝 hē (to drink)	喝 hē (to drink)	喝 hē (to drink)	That doesn't sound right	No
1	1	我 wǒ (I/me)	我 wǒ (I/me)	我 wǒ (I/me)	I'd probably say that's right	Yes
1	1	学 xué (to study)	-	月 yuè (month)	That sounds right	No
1	1	肉 ròu (meat)	喔 wo (particle marker of surprise)	喔 wo (particle marker of surprise)	That's not right	Yes
1	1	吃 chī (to eat)	缺 quē (deficiency)	去 qù (to go)	That sounds right	No
1	2	姐姐不看书 Jiě jie bù kàn shū (Older sister does not read books)	姐姐不看 Jiě jie bù kàn shū (Older sister does not read books)	姐姐不看书 Jiě jie bù kàn shū (Older sister does not read books)	Right	Yes
1	2	我不会游泳 Wǒ bù huì yóu yǒng (I cannot swim)	我不会游泳 Wǒ bù huì yóu yǒng (I cannot swim)	我不会游泳 Wǒ bù huì yóu yǒng (I cannot swim)	I feel like the words on their own, some of them wouldn't work, but together, they kind of cancel each other out, I guess	Yes
1	3	我喜欢喝咖啡 Wǒ xǐ huan hē kā fēi (I like to drink coffee)	我喜欢喝咖啡 Wǒ xǐ huan hē kā fēi (I like to drink coffee)	我喜欢喝咖啡 Wǒ xǐ huan hē kā fēi (I like to drink coffee)	Yeah	Yes

Table 6.2: Learner 2 implicit awareness rating (80 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Implicit awareness mark awarded? (Yes/no)
2	1	你 nǐ (you)	你 nǐ (you)	你 nǐ (you)	That's correct	Yes
2	1	岁 suì (age/years old)	睡 shuì (to sleep)	水 shuǐ (water)	Correct	No
2	1	喝 hē (to drink)	喝 hē (to drink)	喝 hē (to drink)	Correct	Yes
2	1	大 dà (big)	大 dà (big)	大 dà (big)	That's correct	Yes
2	1	我 wǒ (I/me)	我 wǒ (I/me)	我 wǒ (I/me)	Correct	Yes

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Implicit awareness mark awarded? (Yes/no)
2	1	学 xué (to study)	说 shuō (to speak)	说 shuō (to speak)	Wrong	Yes
2	1	肉 ròu (meat)	肉 ròu (meat)	我 wǒ (I/me)	Wrong	Yes
2	1	吃 chī (to eat)	车 chē (vehicle)	车 chē (vehicle)	Correct	No
2	2	我不会游泳 Wǒ bù huì yóu yǒng (I cannot swim)	我不会游泳 Wǒ bù huì yóu yǒng (I cannot swim)	我不会游泳 Wǒ bù huì yóu yǒng (I cannot swim)	I think that's correct	Yes
2	2	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	我.....赏月 Wǒ.....shǎng yuè	-	That's wrong	Yes

Table 6.3: Learner 3 implicit awareness rating (70 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Implicit awareness mark awarded? (Yes/no)
3	1	岁 suì (age/years old)	岁 suì (age/years old)	岁 suì (age/years old)	Right	Yes
3	1	喝 hē (to drink)	喝 hē (to drink)	喝 hē (to drink)	That was right	Yes
3	1	大 dà (big)	大 dà (big)	大 dà (big)	That's wrong	No
3	1	学 xué (to study)	是 shì (to be)	舍 shě (to give up)	Wrong	Yes
3	1	我 wǒ (I/me)	我 wǒ (I/me)	我 wǒ (I/me)	That's right	Yes
3	1	肉 ròu (meat)	热 rè (hot)	弱 ruò (weak)	Probably said that wrong, I think	Yes
3	1	吃 chī (to eat)	十一 shí yī (eleven)	十 shí (ten)	Right	No
3	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	Wrong	No
3	2	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	我半点想吃 Wǒ bàn diǎn xiǎng chī (I would like to eat at half past)	我帮点小事 Wǒ bāng diǎn xiǎo shì (I help with little things)	Wrong	Yes
3	2	我星期一打网球 Wǒ xīng qī yī dǎ wǎng qiú (I play tennis on Mondays)	我星期一到我家 Wǒ xīng qī yī dào wǒ jiā (I arrive home on Monday)	我星期一搭火车 Wǒ xīng qī yī dā huǒ chē (I take the train on Mondays)	That's so wrong	Yes

Table 6.4: Learner 4 implicit awareness rating (50 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Implicit awareness mark awarded? (Yes/no)
4	1	你 nǐ (you)	你 nǐ (you)	你 nǐ (you)	It's correct	Yes
4	1	吃 chī (to eat)	七 qī (seven)	七 qī (seven)	I think it's wrong	Yes
4	1	学 xué (to study)	水 shuǐ (water)	水 shuǐ (water)	It's correct	No
4	1	大 dà (big)	大 dà (big)	大 dà (big)	I think it's wrong	No
4	1	我 wǒ (I/me)	我 wǒ (I/me)	我 wǒ (I/me)	It's correct	Yes
4	1	喝 hē (to drink)	喝 hē (to drink)	喝 hē (to drink)	I think it's wrong	No
4	1	肉 ròu (meat)	肉 ròu (meat)	肉 ròu (meat)	It's correct	Yes
4	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	没没... Méi méi....	你没吃水 Nǐ méi chī shuǐ (You didn't eat water)	It's correct	No
4	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不.... Gē ge bù....	哥哥不.... Gē ge bù....	I think it's correct	No
4	3	我喜欢果汁 Wǒ xǐ huan guǒ zhī (I like fruit juice)	我喜欢锅子 Wǒ xǐ huān guō zī (I like hot pot)	我喜欢故事 Wǒ xǐ huān gù shi (I like stories)	I think it's wrong	Yes

Table 6.5: Learner 5 implicit awareness rating (50 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Implicit awareness mark awarded? (Yes/no)
5	1	岁 suì (age/years old)	水 shuǐ (water)	睡 shuì (to sleep)	Incorrect	Yes
5	1	学 xué (to study)	水 shuǐ (water)	书 shū (book)	Correct	No
5	1	你 nǐ (you)	你 nǐ (you)	你 nǐ (you)	Correct	Yes
5	1	我 wǒ (I/me)	我 wǒ (I/me)	我 wǒ (I/me)	Correct	Yes
5	1	喝 hē (to drink)	喝 hē (to drink)	喝 hē (to drink)	Correct	Yes
5	1	吃 chī (to eat)	妻 qī (wife)	七 qī (seven)	Correct	No
5	1	十 shí (ten)	蛇 shé (snake)	射 shè (to shoot)	Incorrect	Yes
5	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	你吃了没? Nǐ chī le méi (Have you eaten?)	-	Correct	No
5	2	你多大? Nǐ duō dà? (How old are you?)	你多大? Nǐ duō dà? (How old are you?)	你多大? Nǐ duō dà? (How old are you?)	Incorrect	No

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Implicit awareness mark awarded? (Yes/no)
5	2	我不会游泳 Wǒ bù huì yóu yǒng (I cannot swim)	我不会游泳 Wǒ bù huì yóu yǒng (I cannot swim)	我不会游泳 Wǒ bù huì yóu yǒng (I cannot swim)	Incorrect	No

Table 6.6: Learner 6 implicit awareness rating (50 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Implicit awareness mark awarded? (Yes/no)
6	1	你 nǐ (you)	你 nǐ (you)	你 nǐ (you)	Right	Yes
6	1	喝 hē (to drink)	喝 hē (to drink)	喝 hē (to drink)	Wrong	No
6	1	我 wǒ (I/me)	我 wǒ (I/me)	我 wǒ (I/me)	Right I think	Yes
6	1	学 xué (to study)	熟 shú (cooked)	书 shū (book)	Wrong	Yes
6	1	肉 ròu (meat)	肉 ròu (meat)	肉 ròu (meat)	Wrong	No
6	1	吃 chī (to eat)	七 qī (seven)	期 qī (a period of time)	I think right	No
6	1	十 shí (ten)	是 shì (to be)	蛇 shé (snake)	Right	No
6	2	他的卧室很大 Tā de wò shì hěn dà (His bedroom is very big)	泰迪我是衡达 Tàì dí wǒ shì Héng dá (Tài dí, I'm Héng dá)	他第一, 我喜欢他 Tā dì yī, wǒ xǐ huan tā (He's number one, I like him)	Right	No
6	2	你的生日是几月几日? Nǐ de shēng rì shì jǐ yuè jǐ rì? (When's your birthday?)	你的 Nǐ de	你的香味是用迪奥 Nǐ de xiāng wèi shì yòng dí ào (The perfume you use is Dior)	I think it's right at the start and then goes wrong	Yes
6	2	我不会游泳 Wǒ bù huì yóu yǒng (I cannot swim)	我不会游泳 Wǒ bù huì yóu yǒng (I cannot swim)	我不会游泳 Wǒ bù huì yóu yǒng (I cannot swim)	Right	Yes

Table 6.7: Learner 7 implicit awareness rating (40 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Implicit awareness mark awarded? (Yes/no)
7	1	你 nǐ (you)	你 nǐ (you)	你 nǐ (you)	Yeah	Yes
7	1	岁 suì (age/years old)	虽 suī (although)	水 shuǐ (water)	Yeah	No
7	1	喝 hē (to drink)	和 hé (and)	河 hé (river)	Wrong	Yes
7	1	大 dà (big)	打 dǎ (to hit)	打 dǎ (to hit)	Yeah	No
7	1	肉 ròu (meat)	-	乳 rǔ (breast)	Yeah	No
7	1	十 shí (ten)	-	婶儿 shēnr (aunt)	That's right	No

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Implicit awareness mark awarded? (Yes/no)
7	2	你的生日是几月几日? Nǐ de shēng rì shì jǐ yuè jǐ rì? (When's your birthday?)	你的生日是几月几日? Nǐ de shēng rì shì jǐ yuè jǐ rì? (When's your birthday?)	你的生日是几月几日? Nǐ de shēng rì shì jǐ yuè jǐ rì? (When's your birthday?)	No that's wrong	No
7	2	我不会游泳 Wǒ bù huì yóu yǒng (I cannot swim)	我不会游泳 Wǒ bù huì yóu yǒng (I cannot swim)	我不会游泳 Wǒ bù huì yóu yǒng (I cannot swim)	No	No
7	2	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	Yeah	Yes
7	3	我喜欢喝水 Wǒ xǐ huan hē shuǐ (I like to drink water)	我喜欢喝水 Wǒ xǐ huan hē shuǐ (I like to drink water)	我喜欢喝水 Wǒ xǐ huan hē shuǐ (I like to drink water)	Yes	Yes

Table 6.8: Learner 8 implicit awareness rating (60 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Implicit awareness mark awarded? (Yes/no)
8	1	你 nǐ (you)	你 nǐ (you)	你 nǐ (you)	Correct	Yes
8	1	喝 hē (to drink)	和 hé (and)	和 hé (and)	Correct	No
8	1	学 xué (to study)	-	树 shù (tree)	I think it's wrong	Yes
8	1	我 wǒ (I/me)	我 wǒ (I/me)	我 wǒ (I/me)	Correct	Yes
8	1	肉 ròu (meat)	我 wǒ (I/me)	我 wǒ (I/me)	Wrong	Yes
8	1	吃 chī (to eat)	车 chē (vehicle)	车 chē (vehicle)	Right	No
8	1	十 shí (ten)	吓 xià (to frighten)	蛇 shé (snake)	Wrong	Yes
8	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	Wrong	No
8	2	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	Correct	Yes
8	2	姐姐不看书 Jiě jie bù kàn shū (Older sister does not read books)	姐姐不看书 Jiě jie bù kàn shū (Older sister does not read books)	姐姐不看书 Jiě jie bù kàn shū (Older sister does not read books)	Wrong	No

Table 6.9: Learner 9 implicit awareness rating (60 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Implicit awareness mark awarded? (Yes/no)
9	1	你 nǐ (you)	你 nǐ (you)	你 nǐ (you)	Right	Yes
9	1	喝 hē (to drink)	喝 hē (to drink)	喝 hē (to drink)	Yeah, that's right	Yes
9	1	大 dà (big)	大 dà (big)	大 dà (big)	No	No
9	1	我 wǒ (I/me)	我 wǒ (I/me)	我 wǒ (I/me)	I think that's right	Yes
9	1	学 xué (to study)	睡 shuì (to sleep)	树 shù (tree)	No I don't think that's right	Yes
9	1	吃 chī (to eat)	吃 chī (to eat)	吃 chī (to eat)	I think that's right	Yes
9	1	十 shí (ten)	是 shì (to be)	-	I think that's right	No
9	1	肉 ròu (meat)	肉 ròu (meat)	柔 róu (soft)	I think that's wrong	Yes
9	2	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	我八点上...Wǒ bā diǎn shàng...	Right	No
9	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	I think it's right	No

Table 6.10: Learner 10 implicit awareness rating (40 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Implicit awareness mark awarded? (Yes/no)
10	1	岁 suì (age/years old)	水 shuǐ (water)	随 suí (to follow)	That's right	No
10	1	大 dà (big)	打 dǎ (to hit)	打 dǎ (to hit)	Wrong	Yes
10	1	我 wǒ (I/me)	我 wǒ (I/me)	我 wǒ (I/me)	That's right	Yes
10	1	学 xué (to study)	睡 shuì (to sleep)	水 shuǐ (water)	That's right	No
10	1	肉 ròu (meat)	-	罗 luó (trap)	Definitely wrong	Yes
10	1	吃 chī (to eat)	车 chē (vehicle)	撤 chè (to remove)	That's right	No
10	2	我星期一打网球 Wǒ xīng qī yī dǎ wǎng qiú (I play tennis on Mondays)	我星期一打网球 Wǒ xīng qī yī dǎ wǎng qiú (I play tennis on Mondays)	我星期一打网球 Wǒ xīng qī yī dǎ wǎng qiú (I play tennis on Mondays)	Wrong	No
10	2	你多大? Nǐ duō dà? (how old are you?)	你多大? Nǐ duō dà? (how old are you?)	你多大? Nǐ duō dà? (how old are you?)	Wrong	No

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Implicit awareness mark awarded? (Yes/no)
10	3	我家有三口人 Wǒ jiā yǒu sān kǒu rén (There are three people in my family)	我家有三口人 Wǒ jiā yǒu sān kǒu rén (There are three people in my family)	我家有三口人 Wǒ jiā yǒu sān kǒu rén (There are three people in my family)	I think they should be able to recognise it	Yes
10	3	我喜欢喝茶 Wǒ xǐ huān hē chá (I like to drink tea)	我喜欢喝茶 Wǒ xǐ huān hē chá (I like to drink tea)	我喜欢喝茶 Wǒ xǐ huān hē chá (I like to drink tea)	Wrong	No

Table 6.11: Learner 11 implicit awareness rating (80 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Implicit awareness mark awarded? (Yes/no)
11	1	你 nǐ (you)	你 nǐ (you)	你 nǐ (you)	That's right	Yes
11	1	喝 hē (to drink)	喝 hē (to drink)	喝 hē (to drink)	I think that's right	Yes
11	1	大 dà (big)	大 dà (big)	大 dà (big)	I think that's right	Yes
11	1	我 wǒ (I/me)	我 wǒ (I/me)	我 wǒ (I/me)	I think that's right	Yes
11	1	学 xué (to study)	吹 chuī (to blow)	吃 chī (to eat)	I think that's wrong	Yes
11	1	肉 ròu (meat)	哦 ò (Ah!)	-	I think that's wrong	Yes
11	1	吃 chī (to eat)	吃 chī (to eat)	吃 chī (to eat)	I think that's right	Yes
11	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	I think that's right	No
11	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不求偶? Gē ge bù qiú ǒu (Older brother is not seeking a spouse)	哥哥不吃鹅 Gē ge bù chī é (Older brother doesn't eat goose)	I think that's right	No
11	3	我的生日是六月十日 Wǒ de shēng rì shì liù yuè shí rì (My birthday is 10 th June)	我的生日是一月十日 Wǒ de shēng rì shì yī yuè shí rì (My birthday is 10 th January)	我的..是要历史 Wǒ de ... shì yào lì shǐ	That's wrong I think	Yes

Table 6.12: Learner 12 implicit awareness rating (90 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Implicit awareness mark awarded? (Yes/no)
12	1	大 dà (big)	答 dá (to answer)	达 dá (to reach)	Wrong	Yes
12	1	学 xué (to study)	谁 shuí (who)	谁 shuí (who)	Wrong	Yes
12	1	肉 ròu (meat)	我 wǒ (I/me)	我 wǒ (I/me)	I think that's okay	No
12	1	吃 chī (to eat)	迟 chí (late)	迟 chí (late)	I think that's wrong	Yes
12	1	喝 hē (to drink)	河 hé (river)	和 hé (and)	Yeah that's wrong	Yes
12	2	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	Yeah I think it's right	Yes
12	2	他的卧室很大 Tā de wò shì hěn dà (His bedroom is big)	他的卧室很大 Tā de wò shì hěn dà (His bedroom is big)	他的卧室很大 Tā de wò shì hěn dà (His bedroom is big)	I think that's okay	Yes
12	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	Yeah I think that's fine	Yes
12	2	我不会游泳 Wǒ bù huì yóu yǒng (I cannot swim)	我不会游泳 Wǒ bù huì yóu yǒng (I cannot swim)	我不会游泳 Wǒ bù huì yóu yǒng (I cannot swim)	I think that's fine as well	Yes
12	3	我的生日是九月八日 Wǒ de shēng rì shì jiǔ yuè bā rì (My birthday is 8 th September)	我的生日是九月八日 Wǒ de shēng rì shì jiǔ yuè bā rì (My birthday is 8 th September)	我的生日是九月八日 Wǒ de shēng rì shì jiǔ yuè bā rì (My birthday is 8 th September)	I think that's okay	Yes

Table 6.13: Learner 13 implicit awareness rating (60 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Implicit awareness mark awarded? (Yes/no)
13	1	你 nǐ (you)	你 nǐ (you)	你 nǐ (you)	That's alright	Yes
13	1	喝 hē (to drink)	河 hé (river)	河 hé (river)	That was alright I think	No
13	1	大 dà (big)	打 dǎ (to hit)	打 dǎ (to hit)	I think that one was wrong	Yes
13	1	我 wǒ (I/me)	我 wǒ (I/me)	我 wǒ (I/me)	That one was right	Yes
13	1	学 xué (to study)	谁 shuí (who)	水 shuǐ (water)	That one was also right	No
13	1	吃 chī (to eat)	吃 chī (to eat)	吃 chī (to eat)	Yeah that one's fine	Yes

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Implicit awareness mark awarded? (Yes/no)
13	1	十 shí (ten)	是 shì (to be)	是 shì (to be)	That one was wrong	Yes
13	2	我不会游泳 Wǒ bù huì yóu yǒng (I cannot swim)	我不会游泳 Wǒ bù huì yóu yǒng (I cannot swim)	我不会游泳 Wǒ bù huì yóu yǒng (I cannot swim)	I think that one was right as well	Yes
13	3	我喜欢吃巧克力 Wǒ xǐ huan chī qiǎo kè lì (I like to eat chocolate)	我喜欢吃巧克力 Wǒ xǐ huan chī qiǎo kè lì (I like to eat chocolate)	我喜欢吃巧克力 Wǒ xǐ huan chī qiǎo kè lì (I like to eat chocolate)	I think that one was wrong	No
13	3	我最喜欢中文课 Wǒ zuì xǐ huan zhōng wén kè (Chinese is my favourite subject)	我最喜欢中文歌 Wǒ zuì xǐ huan zhōng wén gē (Chinese songs are my favourite)	我最喜欢中文歌 Wǒ zuì xǐ huan zhōng wén gē (Chinese songs are my favourite)	Yeah that was alright	No

Table 6.14: Learner 14 implicit awareness rating (30 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Implicit awareness mark awarded? (Yes/no)
14	1	你 nǐ (you)	你 nǐ (you)	你 nǐ (you)	It sounds wrong	No
14	1	岁 suì (age/years old)	最 zuì (most)	睡 shuì (to sleep)	That sounds right	No
14	1	喝 hē (to drink)	喝 hē (to drink)	喝 hē (to drink)	That sounds okay	Yes
14	1	大 dà (big)	大 dà (big)	大 dà (big)	That sounds wrong	No
14	1	我 wǒ (I/me)	我 wǒ (I/me)	我 wǒ (I/me)	Yeah that sounds fine	Yes
14	1	学 xué (to study)	水 shuǐ (water)	睡 shuì (to sleep)	That sounds fine	No
14	1	十 shí (ten)	是 shì (to be)	是 shì (to be)	That sounds fine	No
14	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	That sounds right to me	No
14	2	他的卧室很大 Tā de wò shì hěn dà (His bedroom is big)	他的卧室很大 Tā de wò shì hěn dà (His bedroom is big)	他的卧室很大 Tā de wò shì hěn dà (His bedroom is big)	I think that's fine	Yes
14	2	姐姐不看书 Jiě jie bù kàn shū (Older sister does not read books)	姐姐不看书 Jiě jie bù kàn shū (Older sister does not read books)	姐姐不敢吃 Jiě jie bù gǎn chī (Older sister does not dare to eat)	That sounds fine	No

Table 6.15: Learner 15 implicit awareness rating (50 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Implicit awareness mark awarded? (Yes/no)
15	1	喝 hē (to drink)	贺 hè (to congratulate)	贺 hè (to congratulate)	Wrong	Yes
15	1	十 shí (ten)	是 shì (to be)	是 shì (to be)	I think they'd probably understand	No
15	1	大 dà (big)	大 dà (big)	大 dà (big)	They'd understand that	Yes
15	1	我 wǒ (I/me)	我 wǒ (I/me)	我 wǒ (I/me)	I think they'd understand that one	Yes
15	1	吃 chī (to eat)	吃 chī (to eat)	-	I think they'd understand	No
15	1	学 xué (to study)	睡 shuì (to sleep)	睡 shuì (to sleep)	I think I'd mark that one wrong	Yes
15	1	岁 suì (age/years old)	岁 suì (age/years old)	岁 suì (age/years old)	No that's wrong	No
15	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	I think I'd mark that right but I'm not sure	No
15	2	你多大? Nǐ duō dà? (How old are you?)	你多大? Nǐ duō dà? (How old are you?)	你多大? Nǐ duō dà? (How old are you?)	I don't think I got that right	No
15	2	我不会游泳 Wǒ bù huì yóu yǒng (I cannot swim)	我不会游泳 Wǒ bù huì yóu yǒng (I cannot swim)	我不会游泳 Wǒ bù huì yóu yǒng (I cannot swim)	I think they'd understand that	Yes

Table 6.16: Learner 16 implicit awareness rating (70 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Implicit awareness mark awarded? (Yes/no)
16	1	你 nǐ (you)	你 nǐ (you)	你 nǐ (you)	Yeah that's great	Yes
16	1	大 dà (big)	大 dà (big)	大 dà (big)	Yeah	Yes
16	1	我 wǒ (I/me)	我 wǒ (I/me)	我 wǒ (I/me)	Yeah	Yes
16	1	学 xué (to study)	随 suí (to follow)	随 suí (to follow)	No	Yes
16	1	吃 chī (to eat)	七 qī (seven)	七 qī (seven)	I think it's wrong	Yes
16	1	肉 ròu (meat)	肉 ròu (meat)	肉 ròu (meat)	Yeah	Yes
16	1	十 shí (ten)	是 shì (to be)	是 shì (to be)	Yeah	No
16	2	你的生日是几月几日? Nǐ de shēng rì shì jǐ yuè jǐ rì? (When's your birthday?)	你的生日是七月七日 Nǐ de shēng rì shì qī yuè qī rì (Your birthday is the 7 th July)	你的生日是七月七日 Nǐ de shēng rì shì qī yuè qī rì (Your birthday is the 7 th July)	Yeah	No

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Implicit awareness mark awarded? (Yes/no)
16	2	姐姐不看书 Jiě jie bù kàn shū (Older sister does not read books)	姐姐不看书 Jiě jie bù kàn shū (Older sister does not read books)	姐姐不看书 Jiě jie bù kàn shū (Older sister does not read books)	Yeah	Yes
16	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹四岁 Mèi mei sì suì (Younger sister is four years old)	妹妹....Mèi mei...	Yeah	No

Table 6.17: Learner 17 implicit awareness rating (80 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Implicit awareness mark awarded? (Yes/no)
17	1	喝 hē (to drink)	喝 hē (to drink)	喝 hē (to drink)	Yeah	Yes
17	1	大 dà (big)	打 dǎ (to hit)	答 dá (to answer)	That's wrong	Yes
17	1	你 nǐ (you)	你 nǐ (you)	你 nǐ (you)	I think they would understand	Yes
17	1	我 wǒ (I/me)	我 wǒ (I/me)	我 wǒ (I/me)	They would understand	Yes
17	1	学 xué (to study)	谁 shuí (who)	水 shuǐ (water)	I think they would understand	No
17	1	十 shí (ten)	是 shì (to be)	是 shì (to be)	It's clear	No
17	1	岁 suì (age/years old)	-	水 shuǐ (water)	It would be hard to recognise it	Yes
17	2	我不会游泳 Wǒ bù huì yóu yǒng (I cannot swim)	我不会游泳 Wǒ bù huì yóu yǒng (I cannot swim)	我不会游泳 Wǒ bù huì yóu yǒng (I cannot swim)	I think they'd understand that	Yes
17	3	我喜欢喝茶 Wǒ xǐ huan hē chá (I like to drink tea)	我喜欢喝茶 Wǒ xǐ huan hē chá (I like to drink tea)	我喜欢喝茶 Wǒ xǐ huan hē chá (I like to drink tea)	Yeah you'd understand	Yes
17	3	我十二点起床 Wǒ shí èr diǎn qǐ chuáng (I get up at 12 o'clock)	我是二年级学生 Wǒ shì èr nián jí xué shēng (I am a second year student)	我是... Wǒ shì	No	Yes

Table 6.18: Learner 18 implicit awareness rating (80 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Implicit awareness mark awarded? (Yes/no)
18	1	你 nǐ (you)	你 nǐ (you)	你 nǐ (you)	That's right	Yes
18	1	喝 hē (to drink)	和 hé (and)	-	That's wrong	Yes
18	1	大 dà (big)	嗒 dā (clatter)	搭 dā (to put up)	That's wrong as well	Yes

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Implicit awareness mark awarded? (Yes/no)
18	1	我 wǒ (I/me)	我 wǒ (I/me)	我 wǒ (I/me)	That's right	Yes
18	1	学 xué (to study)	谁 shuí (who)	水 shuǐ (water)	I think that's right	No
18	1	肉 ròu (meat)	柔 róu (soft)	柔 róu (soft)	That's wrong	Yes
18	1	吃 chī (to eat)	-	似 sì (to seem)	Slightly wrong but it's understood I think	No
18	2	他的卧室很大 Tā de wò shì hěn dà (His bedroom is big)	他的卧室很大 Tā de wò shì hěn dà (His bedroom is big)	他的卧室很大 Tā de wò shì hěn dà (His bedroom is big)	I think that's right	Yes
18	2	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	I think that's okay	Yes
18	2	你多大? Nǐ duō dà? (How old are you?)	你多大? Nǐ duō dà? (How old are you?)	你多大? Nǐ duō dà? (How old are you?)	Yeah I think that's okay	Yes

Table 6.19: Learner 19 implicit awareness rating (80 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Implicit awareness mark awarded? (Yes/no)
19	1	你 nǐ (you)	你 nǐ (you)	你 nǐ (you)	I think that's right	Yes
19	1	岁 suì (age/years old)	岁 suì (age/years old)	岁 suì (age/years old)	I think that's right	Yes
19	1	大 dà (big)	大 dà (big)	大 dà (big)	I think that's right	Yes
19	1	我 wǒ (I/me)	我 wǒ (I/me)	我 wǒ (I/me)	I think that's right	Yes
19	1	学 xué (to study)	靴 xuē (boots)	削 xuē (to remove)	I think that's right	No
19	1	肉 ròu (meat)	肉 ròu (meat)	-	I think that's wrong	Yes
19	1	吃 chī (to eat)	吃 chī (to eat)	吃 chī (to eat)	I think that's right	Yes
19	1	十 shí (ten)	是 shì (to be)	是 shì (to be)	I think that's wrong	Yes
19	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	I think that's right	No
19	2	我星期一打网球 Wǒ xīng qī yī dǎ wǎng qiú (I play tennis on Mondays)	我星期一倒广州 Wǒ xīng qī yī dào Guǎng zhōu (I arrive in Guangzhou on Monday)	我星期一打网球 Wǒ xīng qī yī dǎ wǎng qiú (I play tennis on Mondays)	I don't think a Chinese person would understand	Yes

Table 6.20: Learner 20 implicit awareness rating (70 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Implicit awareness mark awarded ? (Yes/no)
20	1	你 nǐ (you)	你 nǐ (you)	你 nǐ (you)	Yeah	Yes
20	1	岁 suì (age/years old)	岁 suì (age/years old)	岁 suì (age/years old)	Yeah	Yes
20	1	喝 hē (to drink)	和 hé (and)	河 hé (river)	I don't think that's right	Yes
20	1	大 dà (big)	嗒 dā (clatter)	搭 dā (to put up)	Yeah I think that's right	No
20	1	我 wǒ (I/me)	我 wǒ (I/me)	我 wǒ (I/me)	Yeah	Yes
20	1	肉 ròu (meat)	热 rè (hot)	热 rè (hot)	Yeah	No
20	1	吃 chī (to eat)	十 shí (ten)	史 shǐ (history)	No	Yes
20	1	十 shí (ten)	师 shī (teacher)	诗 shī (poetry)	Yeah	No
20	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	Yeah I think that's right	Yes
20	2	他的卧室很大 Tā de wò shì hěn dà (His bedroom is big)	他的卧室很大 Tā de wò shì hěn dà (His bedroom is big)	他的卧室很大 Tā de wò shì hěn dà (His bedroom is big)	I think that's right	Yes

Learners' overall implicit awareness ratings, alongside their overall intelligibility ratings, are displayed in Figure 6.1 below.

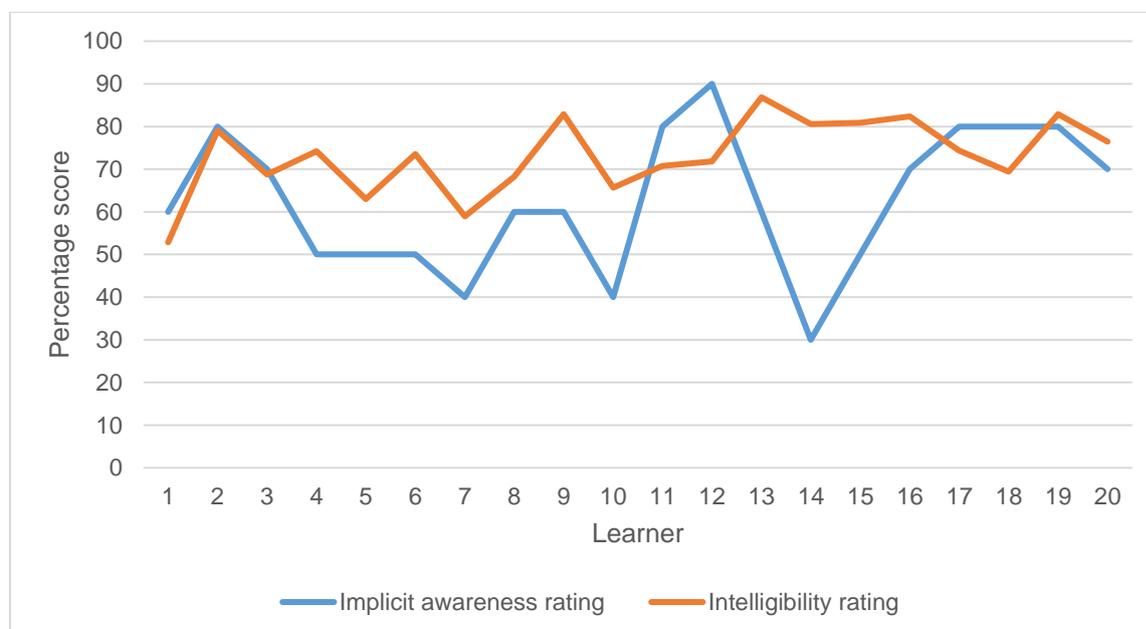


Figure 6.1: Learners' implicit awareness levels of their own pronunciation errors

As can be seen, there is a wide range of inter-learner variability with implicit awareness ratings ranging between 30 per cent (Learner 14) and 90 per cent (Learner 12). The average score is 62.5 per cent with seven of the 20 learners achieving scores of 50 per cent or less. Obviously a score of 50 per cent could as likely be achieved by pure guesswork on the part of the learner, as by any genuine awareness levels of pronunciation errors. In other words, a sizeable number of learners appear to have very little implicit awareness of their own pronunciation errors after speech production. Despite some counter-evidence at the individual level (e.g. Learners 1 and 14), there is also a suggestion of some sort of positive correlation between learners' implicit awareness of their own pronunciation errors and their overall intelligibility levels (see Figure 6.2). Thus the average implicit awareness and overall intelligibility ratings for the ten learners from School A are 56 and 68.75 per cent respectively, as opposed to 69 and 77.62 per cent for the learners from School B.

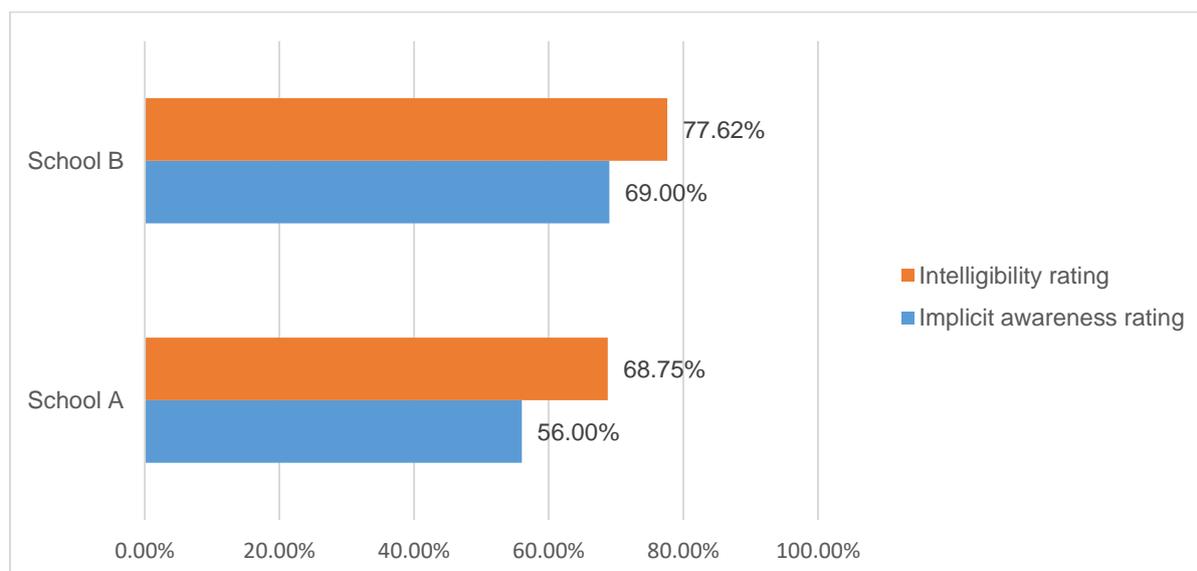


Figure 6.2: Average implicit awareness and intelligibility ratings at the two schools

6.3 Learners' explicit awareness of their own pronunciation errors after speech production

Having looked at learners' implicit awareness of their own pronunciation errors, I now turn my attention to examining their explicit awareness. As discussed in Chapter 3, I regard explicit knowledge as 'declarative', involving some form of metalanguage and occurring when "the learner is consciously aware of linguistic norms" (Ellis & Shintani,

2014, p. 13). Explicit knowledge is important since it can be used to monitor L2 production, although it is frequently “anomalous and inconsistent as learners may have only a partial understanding of a linguistic feature” (p. 13). When calculating learners’ explicit awareness levels of their own pronunciation errors, I focussed solely on the 100 audio extracts which contained at least one intelligibility breakdown – i.e. five extracts per learner. Learners were awarded an ‘explicit awareness’ mark out of five, subsequently turned into a percentage score, according to their ability to explain their own intelligibility breakdowns.

6.3.1 Categorising the intelligibility breakdowns which featured in the stimulated recall interviews

According to the raters’ transcriptions, there was a combined total of 269 syllable level intelligibility breakdowns, including 78 from the 34 audio extracts which featured interrater reliability. In line with the analysis outlined in Chapter 4, each breakdown was categorised as either being a result of the tone, or the initial consonant of the syllable or the final part of the syllable deviating from the intended utterance, or a combination of two or all three of the factors, as evidenced by the raters’ transcriptions. Thus if a rater had transcribed ‘mǐ’ (rice) when the learner had intended to say ‘nǐ’ (you), the breakdown would be attributed solely to problems with the initial ‘n’, whereas if a rater had transcribed ‘shuǐ’ (water), when the learner had attempted to say ‘xué’ (to study), the initial, final and tone would all be implicated as contributing to the breakdown.

As can be seen in Figure 6.3, 26.77 per cent of all 269 breakdowns could be attributed solely to problems with the tone (n=72). The second largest category (n=53) was when the tone, initial and final were all implicated in the breakdown (19.7 per cent). Relatively few breakdowns could be traced solely to the initial or final, (5.2 and 4.83 per cent respectively), although initials and finals were also implicated, alongside tone, in the 48 blank transcriptions (17.84 per cent). Moreover, there were also 36 breakdowns which could be traced to tone and initials (13.38 per cent). When looking only at the 34 audio extracts which featured interrater reliability, the proportion of breakdowns which could be traced solely to tone increased to 43.59 per cent (n=34). The joint second highest category (n=12) implicated the tone and initial and the tone, initial and

final respectively (15.38 per cent). The percentage of breakdowns which could be traced solely to the initial and final was 5.13 per cent (n=4).

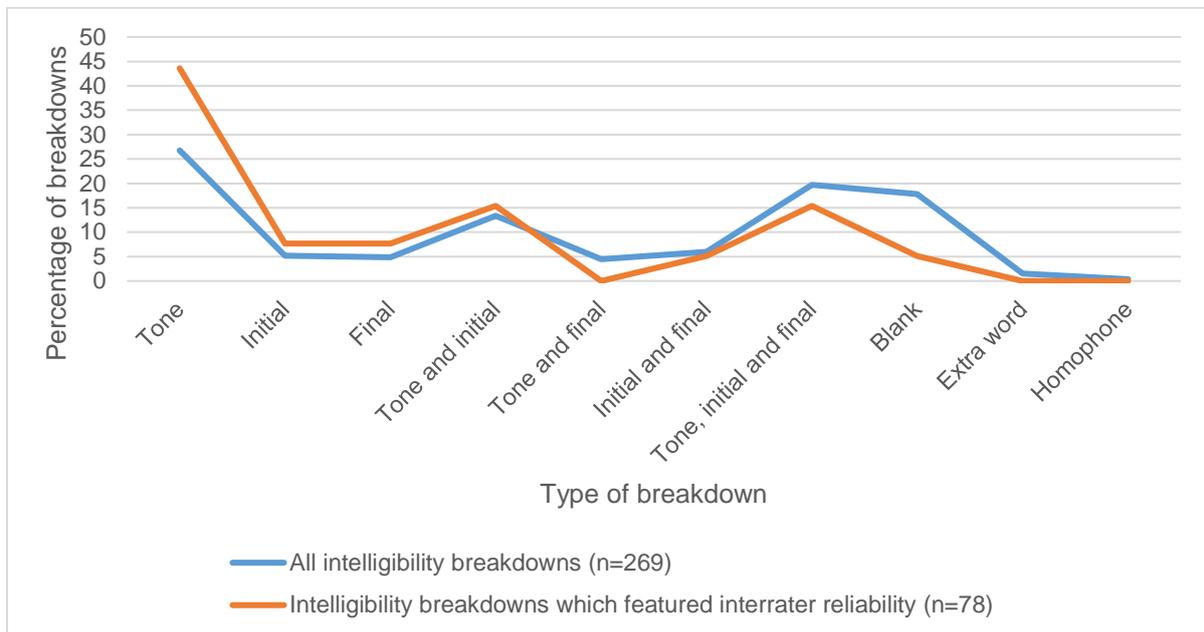


Figure 6.3: Categorising the breakdowns which featured in the stimulated recall interviews

6.3.2 Coding framework used to analyse learners' responses to their own intelligibility breakdowns

Based on the learners' varied responses to listening to audio extracts of their own L2 Chinese spoken data, I drew up the following coding framework. For each code, I provide an example, adapted from the interviews.

1. No recognition of breakdown(s) – the learner erroneously thought his/her original pronunciation was intelligible.

Table 6.21: No recognition of an intelligibility breakdown

Learner's intended utterance	Rater's transcription	Cause of breakdown as evidenced by rater's transcription	Learner's response to audio extract	Cause of breakdown as evidenced by learner's explanation	Explicit awareness mark awarded? (Yes/no)
我最喜欢中文课 Wǒ zuì xǐ huan zhōng wén kè (My favourite lesson is Chinese)	我最喜欢中文歌 Wǒ zuì xǐ huan zhōng wén gē (Chinese songs are my favourite)	kè → gē Initial (k → g) Tone (4 → 1)	Yeah that was alright	No breakdown	No

2. No explanation – the learner recognised that his/her original pronunciation was problematic but was unable to provide any tangible explanation pertaining to the precise cause of the intelligibility breakdown(s).

Table 6.22: No explanation of an intelligibility breakdown

Learner's intended utterance	Rater's transcription	Cause of breakdown as evidenced by rater's transcription	Learner's response to audio extract	Cause of breakdown as evidenced by learner's explanation	Explicit awareness mark awarded? (Yes/no)
我星期一打网球 Wǒ xīng qī yī dǎ wǎng qiú (I play tennis on Monday)	我星期一到我家 Wǒ xīng qī yī dào wǒ jiā (I arrive home on Monday)	dǎ → dào (Tone ⁴ 2/4, final a/ao) wǎng → wǒ (Final ang/o) qiú → jiā (Tone 2/1, initial q/j; final iu/ia)	I pronounced this wrong	No explanation provided	No

3. Inaccurate explanation – the learner recognised that his/her original pronunciation was problematic but his/her explanation of the pronunciation error(s) did not tally with either rater's transcription.

Table 6.23 Inaccurate explanation of an intelligibility breakdown

Learner's intended utterance	Rater's transcription	Cause of breakdown as evidenced by rater's transcription	Learner's response to audio extract	Cause of breakdown as evidenced by learner's explanation	Explicit awareness mark awarded? (Yes/no)
你 nǐ (you)	米 mǐ (rice)	Initial (n → m)	It sounds more flat	Tone (3 → 1), no mention of problem with initial	No

4. Unsuccessful self-repair – the learner recognised that his/her original pronunciation was problematic and provided a self-repair. However, the self-repair took the pronunciation no closer or even further away from the intended utterance.

⁴ Due to tone sandhi rules, the intended tone on 'dǎ' is tone 2 although this is not reflected in the *pīnyīn* transcription.

Table 6.24: Unsuccessful self-repair of an intelligibility breakdown

Learner's intended utterance	Rater's transcription	Cause of breakdown as evidenced by raters' transcriptions	Learner's response to audio extract	Cause of breakdown as evidenced by learner's explanation	Explicit awareness mark awarded? (Yes/no)
学 xué (to study)	随 suí (to follow)	Initial (x → s) Final (ue → ui)	I think it needs to be a bit more like 'shui' (sleep)	No explicit explanation provided	No

5. Successful self-repair - the learner recognised that his/her original pronunciation was problematic and provided a self-repair which took the pronunciation closer to the intended utterance.

Table 6.25: Successful self-repair of an intelligibility breakdown

Learner's intended utterance	Rater's transcription	Cause of breakdown as evidenced by rater's transcription	Learner's response to audio extract	Cause of breakdown as evidenced by learner's explanation	Explicit awareness mark awarded? (Yes/no)
学 xué (to study)	说 shuō (to speak)	Tone 2 → 1 Initial x → sh Final ue → uo	It's not 'shwe', it's 'xue'	No explicit explanation provided	No

6. Partial explanation – the learner recognised that his/her original pronunciation was problematic and provided an incomplete explanation which partially tallied with a rater's transcription.

Table 6.26: Partial explanation of an intelligibility breakdown

Learner's intended utterance	Rater's transcription	Cause of breakdown as evidenced by rater's transcription	Learner's response to audio extract	Cause of breakdown as evidenced by learner's explanation	Explicit awareness mark awarded? (Yes/no)
学 xué (to study)	吹 chuī (to blow)	Tone (2 → 1) Initial (x → ch) Final (ue → ui)	It's wrong because I did the flat tone, but it should be questioning	Tone (2 → 1) but no mention of segmental errors	Yes – half a mark

7. Full explanation – the learner provided a full explanation of the precise nature of the intelligibility breakdown which tallied directly with the rater's transcription.

Table 6.27: Full explanation of an intelligibility breakdown

Learner's intended utterance	Rater's transcription	Cause of breakdown as evidenced by rater's transcription	Learner's response to audio extract	Cause of breakdown as evidenced by learner's explanation	Explicit awareness mark awarded? (Yes/no)
十 shí	是 shì	Tone (2 → 4)	I used angry tone, it's supposed to be going up	Tone (2 → 4)	Yes (full mark)

No credit was given for any Code 1-5 responses in terms of 'explicit awareness' marks. I regarded successful self-repairs, without any further explanation (Code 5), as providing evidence of implicit, as opposed to explicit, awareness. If a learner's response featured an explanation alongside an attempted self-repair, I would prioritize the explanation, with the learners' responses coded accordingly. It should be pointed out that I was the sole judge of whether a self-repair was coded as 'successful' or 'unsuccessful' since the stimulated recall interviews took place after the interviews with the raters. I make no claims that 'successful' self-repairs (Code 5) would have been accurately transcribed by an L1 Chinese rater. However, I am confident that they moved the pronunciation closer to the intended utterance.

In order to obtain a full 'explicit awareness' mark, I insisted on some specific detail regarding the precise nature of the intelligibility breakdown. For example, if the difference between a learner's intended utterance and the raters' transcriptions could be traced solely to the tone, I would award half a mark (Code 6) if the learner simply said 'the tone is wrong'. However, if he/she was able to provide some detail such as 'I did the bouncy tone', the learner would be awarded a full mark (Code 7), as long as his/her explanation matched a rater's transcription. In light of the low levels of interrater reliability already noted, I rewarded learners if their explanations tallied with at least one of the rater's transcriptions. At the sentence level, when raters' transcriptions were less likely to have a straightforward phonetic explanation, I focussed on the ability of a learner to explain at least one breakdown at the individual syllable level. Learners were consequently able to obtain an 'explicit awareness' mark even if they failed to explain all, or indeed most, of the breakdowns in a particular sentence.

6.3.3 Learners' explicit awareness ratings

As with the learners' implicit awareness ratings discussed in section 6.2, I would urge caution when comparing learners' explicit awareness scores. Not only were some pronunciation errors much more salient than others, but they were also much easier to explain than others. For example, it was arguably a lot more straightforward to explain an intelligibility breakdown that was solely attributable to tone than one which implicated the tone, initial and final. Moreover, nine per cent of the extracts featured a breakdown which was accurately transcribed by one of the raters. Nevertheless, I feel that calculating the learners' explicit awareness ratings according to the framework outlined in 6.3.2 could still provide a general indication of their explicit awareness levels of their own pronunciation errors, as well as forming a useful basis for further discussion. Individual explicit awareness scores, alongside the learners' edited responses, are displayed in tables 6.28 to 6.47 below:

Table 6.28: Learner 1 explicit awareness rating (10 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Code	Explicit awareness mark awarded? (Yes/no)
1	1	你 nǐ (you)	米 mǐ (rice)	米 mǐ (rice)	It sounds more flat	3. Inaccurate explanation	No
1	1	岁 suì (age/years old)	-	水 shuǐ (water)	That sounds alright	1. No recognition of breakdown	No
1	1	学 xué (to study)	-	月 yuè (month)	That sounds right	1. No recognition of breakdown	No
1	1	肉 ròu (meat)	喔 wo (particle) marker of surprise	喔 wo (particle) marker of surprise	That's more of a flat tone	6. Partial explanation	Half mark
1	1	吃 chī (to eat)	缺 quē (deficiency)	去 qù (to go)	That sounds right	1. No recognition of breakdown	No

Table 6.29: Learner 2 explicit awareness rating (0 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Code	Explicit awareness mark awarded? (Yes/no)
2	1	岁 suì (age/years old)	睡 shuì (to sleep)	水 shuǐ (water)	Correct	1. No recognition of breakdown	No
2	1	学 xué (to study)	说 shuō (to speak)	说 shuō (to speak)	It's not 'shwe', it's 'xue'	5. Successful self-repair	No
2	1	肉 ròu (meat)	肉 ròu (meat)	我 wǒ (I/me)	It's not 'ro', it's 'rou'	5. Successful self-repair	No
2	1	吃 chī (to eat)	车 chē (vehicle)	车 chē (vehicle)	Correct	1. No recognition of breakdown	No
2	2	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	我.....赏月 Wǒ.....shǎng yuè	-	It's not 'shwe', it's 'xue' and first he said 'wo ban dian'	5. Successful self-repair	No

Table 6.30: Learner 3 explicit awareness rating (0 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Code	Explicit awareness mark awarded? (Yes/no)
3	1	学 xué (to study)	是 shì (to be)	舍 shě (to give up)	Would it be 'xue' instead of 'she'	5. Successful self-repair	No
3	1	肉 ròu (meat)	热 rè (hot)	弱 ruò (weak)	Probably said that wrong, I think [...]the tone	3. Inaccurate explanation	No
3	1	吃 chī (to eat)	十一 shí yī (eleven)	十 shí (ten)	Right	1. No recognition of breakdown	No
3	2	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	我半点想吃 Wǒ bàn diǎn xiǎng chī (I would like to eat at half past)	我帮点小事 Wǒ bāng diǎn xiǎo shì (I help with little things)	I pronounced 'xue' wrong	5. Successful self-repair	No
3	2	我星期一打网球 Wǒ xīng qī yī dǎ wǎng qiú (I play tennis on Mondays)	我星期一到我家 Wǒ xīng qī yī dào wǒ jiā (I arrive home on Monday)	我星期一搭火车 Wǒ xīng qī yī dā huǒ chē (I take the train on Mondays)	I pronounced this wrong	2. No explanation	No

Table 6.31: Learner 4 explicit awareness rating (10 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Code	Explicit awareness mark awarded? (Yes/no)
4	1	吃 chī (to eat)	七 qī (seven)	七 qī (seven)	I think the tone – it's too short	3. Inaccurate explanation	No
4	1	学 xué (to study)	水 shuǐ (water)	水 shuǐ (water)	It's correct	1. No recognition of breakdown	No
4	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	没没... Méi méi....	你没吃水 Nǐ méi chī shuǐ (You didn't eat water)	It's correct	1. No recognition of breakdown	No
4	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不.... Gē ge bù....	哥哥不.... Gē ge bù....	I think it's correct	1. No recognition of breakdown	No
4	3	我喜欢果汁 Wǒ xǐ huan guǒ zhī (I like fruit juice)	我喜欢锅子 Wǒ xǐ huan guō zi (I like hot pot)	我喜欢故事 Wǒ xǐ huan gù shi (I like stories)	I did it too fast and I didn't do the tones properly, like the last two	6. Partial explanation	Half mark

Table 6.32: Learner 5 explicit awareness rating (10 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Code	Explicit awareness mark awarded? (Yes/no)
5	1	岁 suì (age/years old)	水 shuǐ (water)	睡 shuì (to sleep)	I said like 'sui', it's supposed to be 'shui'	4. Unsuccessful self-repair	No
5	1	学 xué (to study)	水 shuǐ (water)	书 shū (book)	Correct	1. No recognition of breakdown	No
5	1	吃 chī (to eat)	妻 qī (wife)	七 qī (seven)	Correct	1. No recognition of breakdown	No

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Code	Explicit awareness mark awarded? (Yes/no)
5	1	十 shí (ten)	蛇 shé (snake)	射 shè (to shoot)	I didn't say the last accent properly [...] the thing on top, the tone	6. Partial explanation	Half mark
5	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	你吃了没? Nǐ chī le méi (Have you eaten?)	-	Correct	1. No recognition of breakdown	No

Table 6.33: Learner 6 explicit awareness rating (0 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Code	Explicit awareness mark awarded? (Yes/no)
6	1	学 xué (to study)	熟 shú (cooked)	书 shū (book)	I just didn't pronounce it correctly at all [...] is it 'xue'?	5. Successful self-repair	No
6	1	吃 chī (to eat)	七 qī (seven)	期 qī (a period of time)	I think right	1. No recognition of breakdown	No
6	1	十 shí (ten)	是 shì (to be)	蛇 shé (snake)	Right	1. No recognition of breakdown	No
6	2	他的卧室很大 Tā de wò shì hěn dà (His bedroom is very big)	泰迪我是衡达 Tài dí wǒ shì Héng dá (Tài dí, I'm Héng dá)	他第一, 我喜欢他 Tā dì yī, wǒ xǐ huan tā (He's number one, I like him)	Right	1. No recognition of breakdown	No
6	2	你的生日是几月几日? Nǐ de shēng rì shì jǐ yuè jǐ rì? (When's your birthday?)	你的 Nǐ de	你的香味是用迪奥 Nǐ de xiāng wèi shì yòng dí ào (The perfume you use is Dior)	I think it's right at the start and then goes wrong [...] 'ji yue ji ri'	5. Successful self-repair	No

Table 6.34: Learner 7 explicit awareness rating (20 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Code	Explicit awareness mark awarded ? (Yes/no)
7	1	岁 suì (age/years old)	虽 suī (although)	水 shuǐ (water)	Yeah	1. No recognition of breakdown	No
7	1	喝 hē (to drink)	和 hé (and)	河 hé (river)	My voice kind of went up a bit [...] it could mean something completely different	7. Full explanation	Yes
7	1	大 dà (big)	打 dǎ (to hit)	打 dǎ (to hit)	Yeah	1. No recognition of breakdown	No
7	1	肉 ròu (meat)	-	乳 rǔ (breast)	Yeah	1. No recognition of breakdown	No
7	1	十 shí (ten)	-	婶儿 shěnr (aunt)	That's right	1. No recognition of breakdown	No

Table 6.35: Learner 8 explicit awareness rating (10 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Code	Explicit awareness mark awarded ? (Yes/no)
8	1	喝 hē (to drink)	和 hé (and)	和 hé (and)	Correct	1. No recognition of breakdown	No
8	1	学 xué (to study)	-	树 shù (tree)	I think it's wrong, I think it's 'shu'	4. Unsuccessful self-repair	No
8	1	肉 ròu (meat)	我 wǒ (I/me)	我 wǒ (I/me)	Wrong – again the tone	6. Partial explanation	Half mark
8	1	吃 chī (to eat)	车 chē (vehicle)	车 chē (vehicle)	Correct	1. No recognition of breakdown	No
8	1	十 shí (ten)	吓 xià (to frighten)	蛇 shé (snake)	It's the wrong tone again, it should be 'shì' instead of 'shǐ'	4. Unsuccessful self-repair	No

Table 6.36: Learner 9 explicit awareness rating (10 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Code	Explicit awareness mark awarded ? (Yes/no)
9	1	学 xué (to study)	睡 shuì (to sleep)	树 shù (tree)	The tone going that way, I don't think it sounds right	6. Partial explanation	Half mark
9	1	十 shí (ten)	是 shì (to be)	-	I think that's right	1. No recognition of breakdown	No
9	1	肉 ròu (meat)	肉 ròu (meat)	柔 róu (soft)	I think I pronounced the word wrong [...] it just doesn't sound right	2. No explanation	No
9	2	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	我八点上学 Wǒ bā diǎn shàng xué (I go to school at eight o'clock)	我八点上... Wǒ bā diǎn shàng...	I'd say it was right	1. No recognition of breakdown	No
9	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	I think it's right	1. No recognition of breakdown	No

Table 6.37: Learner 10 explicit awareness rating (20 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Code	Implicit awareness mark awarded ? (Yes/no)
10	1	岁 suì (age/years old)	水 shuǐ (water)	随 suí (to follow)	That's right	1. No recognition of breakdown	No
10	1	大 dà (big)	打 dǎ (to hit)	打 dǎ (to hit)	I used the bouncy tone for it	7. Full explanation	Yes
10	1	学 xué (to study)	睡 shuì (to sleep)	水 shuǐ (water)	That's right	1. No recognition of breakdown	No
10	1	肉 ròu (meat)	-	罗 luó (trap)	Definitely wrong, it [should be] 'raw'	4. Unsuccessful self-repair	No
10	1	吃 chī (to eat)	车 chē (vehicle)	撤 chè (to remove)	That's right	1. No recognition of breakdown	No

Table 6.38: Learner 11 explicit awareness rating (10 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Code	Explicit awareness mark awarded ? (Yes/no)
11	1	学 xué (to study)	吹 chuī (to blow)	吃 chī (to eat)	It should be the questioning tone and I did the flat tone, I think	6. Partial explanation	Half mark
11	1	肉 ròu (meat)	哦 ò (Ah!)	-	I think the tone isn't great – it should be more angry tone, it sounds a bit flat tone	3. Inaccurate explanation	No
11	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	I think that's right	1. No recognition of breakdown	No
11	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不求偶? Gē ge bù qiú ǒu (Older brother is not seeking a spouse)	哥哥不吃鹅 Gē ge bù chī é (Older brother doesn't eat goose)	I think that's right	1. No recognition of breakdown	No
11	3	我的生日是六月十日 Wǒ de shēng rì shì liù yuè shí rì (My birthday is 10 th June)	我的生日是一月十日 Wǒ de shēng rì shì yī yuè shí rì (My birthday is 10 th January)	我的。。是要历史。。 Wǒ de ... shì yào lì shǐ	I think I like made a mistake around like 'liù yuè shí rì'	2. No explanation	No

Table 6.39: Learner 12 explicit awareness rating (50 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Code	Explicit awareness mark awarded ? (Yes/no)
12	1	大 dà (big)	答 dá (to answer)	达 dá (to reach)	I think the tone's wrong	6. Partial explanation	Half mark
12	1	学 xué (to study)	谁 shuí (who)	谁 shuí (who)	I think I did the bouncing tone but it's the other tone	3. Inaccurate explanation	No
12	1	肉 ròu (meat)	我 wǒ (I/me)	我 wǒ (I/me)	I think that's okay	1. No recognition of breakdown	No

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Code	Explicit awareness mark awarded? (Yes/no)
12	1	吃 chī (to eat)	迟 chí (late)	迟 chí (late)	It's supposed to be the neutral tone and I did the doctor tone, maybe, or something like that [...] it's when it's like that (pointing up)	7. Full explanation	Yes
12	1	喝 hē (to drink)	河 hé (river)	和 hé (and)	Yeah that's wrong cos I think I said the 'hé' for 'and'	7. Full explanation	Yes

Table 6.40: Learner 13 explicit awareness rating (40 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Code	Explicit awareness mark awarded? (Yes/no)
13	1	喝 hē (to drink)	河 hé (river)	河 hé (river)	That was alright I think	1. No recognition of breakdown	No
13	1	大 dà (big)	打 dǎ (to hit)	打 dǎ (to hit)	I did the bouncing tone and that one should be the angry, the slightly lower pitch tone	7. Full explanation	Yes
13	1	学 xué (to study)	谁 shuí (who)	水 shuǐ (water)	That one was also right	1. No recognition of breakdown	No
13	1	十 shí (ten)	是 shì (to be)	是 shì (to be)	I used angry tone, it was supposed to be going up	7. Full explanation	Yes
13	3	我最喜欢中文课 Wǒ zuì xǐ huan zhōng wén kè (Chinese is my favourite subject)	我最喜欢中文歌 Wǒ zuì xǐ huan zhōng wén gē (Chinese songs are my favourite)	我最喜欢中文歌 Wǒ zuì xǐ huan zhōng wén gē (Chinese songs are my favourite)	Yeah that was alright	1. No recognition of breakdown	No

Table 6.41: Learner 14 explicit awareness rating (0 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Code	Explicit awareness mark awarded ? (Yes/no)
14	1	岁 suì (age/years old)	最 zuì (most)	睡 shuì (to sleep)	That sounds right	1. No recognition of breakdown	No
14	1	学 xué (to study)	水 shuǐ (water)	睡 shuì (to sleep)	That sounds fine	1. No recognition of breakdown	No
14	1	十 shí (ten)	是 shì (to be)	是 shì (to be)	That sounds fine	1. No recognition of breakdown	No
14	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	That sounds right to me	1. No recognition of breakdown	No
14	2	姐姐不看书 Jiě jie bù kàn shū (Older sister does not read books)	姐姐不看书 Jiě jie bù kàn shū (Older sister does not read books)	姐姐不敢吃 Jiě jie bù gǎn chī (Older sister does not dare to eat)	That sounds fine	1. No recognition of breakdown	No

Table 6.42: Learner 15 explicit awareness rating (0 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Code	Explicit awareness mark awarded ? (Yes/no)
15	1	喝 hē (to drink)	贺 hè (to congratulate)	贺 hè (to congratulate)	Cos it's the flat tone, it's meant to be [...] the same sound the whole time and I think it was quite fluctuating	3. Inaccurate explanation	No
15	1	十 shí (ten)	是 shì (to be)	是 shì (to be)	I think they'd probably understand	1. No recognition of breakdown	No
15	1	吃 chī (to eat)	吃 chī (to eat)	-	I think they'd understand	1. No recognition of breakdown	No
15	1	学 xué (to study)	睡 shuì (to sleep)	睡 shuì (to sleep)	It sounded a bit flat	3. Inaccurate explanation	No

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Code	Explicit awareness mark awarded ? (Yes/no)
15	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	I think I'd mark that right but I'm not sure	1. No recognition of breakdown	No

Table 6.43: Learner 16 explicit awareness rating (0 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Code	Explicit awareness mark awarded ? (Yes/no)
16	1	学 xué (to study)	随 suí (to follow)	随 suí (to follow)	I think it needs to be a bit more like 'shui', a bit more of an accent, a bit more of a tone	3. Inaccurate explanation	No
16	1	吃 chī (to eat)	七 qī (seven)	七 qī (seven)	I think it's wrong – it's like 'chī' a bit lower	3. Inaccurate explanation	No
16	1	十 shí (ten)	是 shì (to be)	是 shì (to be)	Yeah	1. No recognition of breakdown	No
16	2	你的生日是几月几日? Nǐ de shēng rì shì jǐ yuè jǐ rì? (When's your birthday?)	你的生日是七月七日 Nǐ de shēng rì shì qī yuè qī rì? (Your birthday is the 7 th July)	你的生日是七月七日 Nǐ de shēng rì shì qī yuè qī rì? (Your birthday is the 7 th July)	Yeah	1. No recognition of breakdown	No
16	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹四岁 Mèi mei sì suì (Younger sister is four years old)	妹妹....Mèi mei...	Yeah	1. No recognition of breakdown	No

Table 6.44: Learner 17 explicit awareness rating (30 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Code	Explicit awareness mark awarded ? (Yes/no)
17	1	大 dà (big)	打 dǎ (to hit)	答 dá (to answer)	I didn't do high to low	7. Full explanation	Yes

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Code	Explicit awareness mark awarded ? (Yes/no)
17	1	学 xué (to study)	谁 shuí (who)	水 shuǐ (water)	I think they would understand	1. No recognition of breakdown	No
17	1	十 shí (ten)	是 shì (to be)	是 shì (to be)	It's clear	1. No recognition of breakdown	No
17	1	岁 suì (age/years old)	-	水 shuǐ (water)	It should be going down but I did it up	6. Partial explanation	Half mark
17	3	我十二点起床 Wǒ shí èr diǎn qǐ chuáng (I get up at 12 o'clock)	我是二年级学生 Wǒ shì èr nián jí xué shēng (I am a second year student)	我是... Wǒ shì	I did 'xi shuang' very fast [...] I didn't do it very clearly	4. Unsuccessful self-repair	No

Table 6.45: Learner 18 explicit awareness rating (20 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Code	Explicit awareness mark awarded ? (Yes/no)
18	1	喝 hē (to drink)	和 hé (and)	-	It's meant to be kind of high, kind of sung 'hē' [and I said it] with a like bouncy 'nǐ' tone	6. Partial explanation	Half mark
18	1	大 dà (big)	嗒 dā (clatter)	搭 dā (to put up)	It's meant to be like 'dà'	5. Successful self-repair	No
18	1	学 xué (to study)	谁 shuí (who)	水 shuǐ (water)	I think that's right	1. No recognition of breakdown	No
18	1	肉 ròu (meat)	柔 róu (soft)	柔 róu (soft)	That's wrong [...] it's like the wrong tone	6. Partial explanation	Half mark
18	1	吃 chī (to eat)	-	似 sì (to seem)	Slightly wrong but it's understood I think	1. No recognition of breakdown	No

Table 6.46: Learner 19 explicit awareness rating (10 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Code	Explicit awareness mark awarded ? (Yes/no)
19	1	学 xué (to study)	靴 xuē (boots)	削 xuē (to remove)	I think that's right	1. No recognition of breakdown	No
19	1	肉 ròu (meat)	肉 ròu (meat)	-	I can't do that sound where they make the 'r', it's like the back of your mouth, I can't do that, I like say a normal 'r'	6. Partial explanation	Half mark
19	1	十 shí (ten)	是 shì (to be)	是 shì (to be)	I'm going too high pitched, it just needs to be 'shī' [...] it just sounds wrong	3. Inaccurate explanation	No
19	2	妹妹十岁 Mèi mei shí suì (Younger sister is ten years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	I think that's right	1. No recognition of breakdown	No
19	2	我星期一打网球 Wǒ xīng qī yī dǎ wǎng qiú (I play tennis on Mondays)	我星期一倒广州 Wǒ xīng qī yī dào guǎng zhōu (I arrive in Guangzhou on Monday)	我星期一打网球 Wǒ xīng qī yī dǎ wǎng qiú (I play tennis on Mondays)	I think I'm like one flat tone, I'm not actually paying attention to the tones	3. Inaccurate explanation	No

Table 6.47: Learner 20 explicit awareness rating (0 per cent)

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Code	Explicit awareness mark awarded ? (Yes/no)
20	1	喝 hē (to drink)	和 hé (and)	河 hé (river)	It's not 'hē', it's 'hé' that's how I said it	5. Successful self-repair	No
20	1	大 dà (big)	嗒 dā (clatter)	搭 dā (to put up)	Yeah I think that's right	1. No recognition of breakdown	No

Learner	Task	Intended utterance	Rater 1 transcription	Rater 2 transcription	Learner's response	Code	Explicit awareness mark awarded ? (Yes/no)
20	1	肉 ròu (meat)	热 rè (hot)	热 rè (hot)	Yeah	1. No recognition of breakdown	No
20	1	吃 chī (to eat)	十 shí (ten)	史 shǐ (history)	No, it sounds like 'chī' and not 'chī'	5. Successful self-repair	No
20	1	十 shí (ten)	师 shī (teacher)	诗 shī (poetry)	Yeah	1. No recognition of breakdown	No

Learners' overall explicit awareness ratings, alongside their overall intelligibility and implicit awareness ratings, are displayed in Figure 6.4 below:

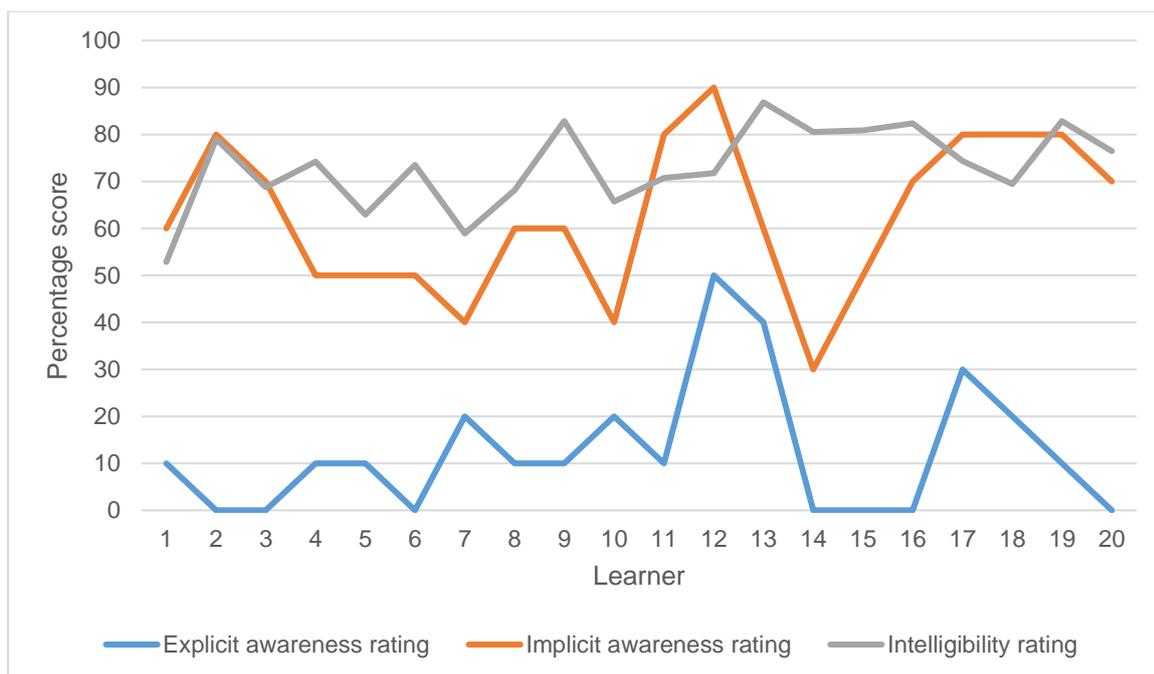


Figure 6.4: Learners' implicit and explicit awareness levels of their own pronunciation errors

As can be seen, overall explicit awareness levels are generally very low with an average score of 12.5 per cent. Seven learners scored zero with the highest mark being 50 per cent (Learner 12). By way of contrast, the average implicit awareness score, discussed in section 6.2, is 62.5 per cent, highlighting a large discrepancy

between the two types of awareness. As with the implicit awareness levels, there appears to be some form of positive correlation between learners' explicit awareness levels of their own pronunciation errors and their overall intelligibility levels, despite some contradictory evidence at the individual level (e.g. Learners 14, 15 and 16). For example, the average explicit awareness scores of learners at School A (Learners 1-10) is a mere nine per cent, compared to 16 per cent for learners from School B (Learners 11-20) while the overall intelligibility levels for the two schools are 68.75 (School A) and 77.62 (School B) per cent respectively (see Figure 6.5).

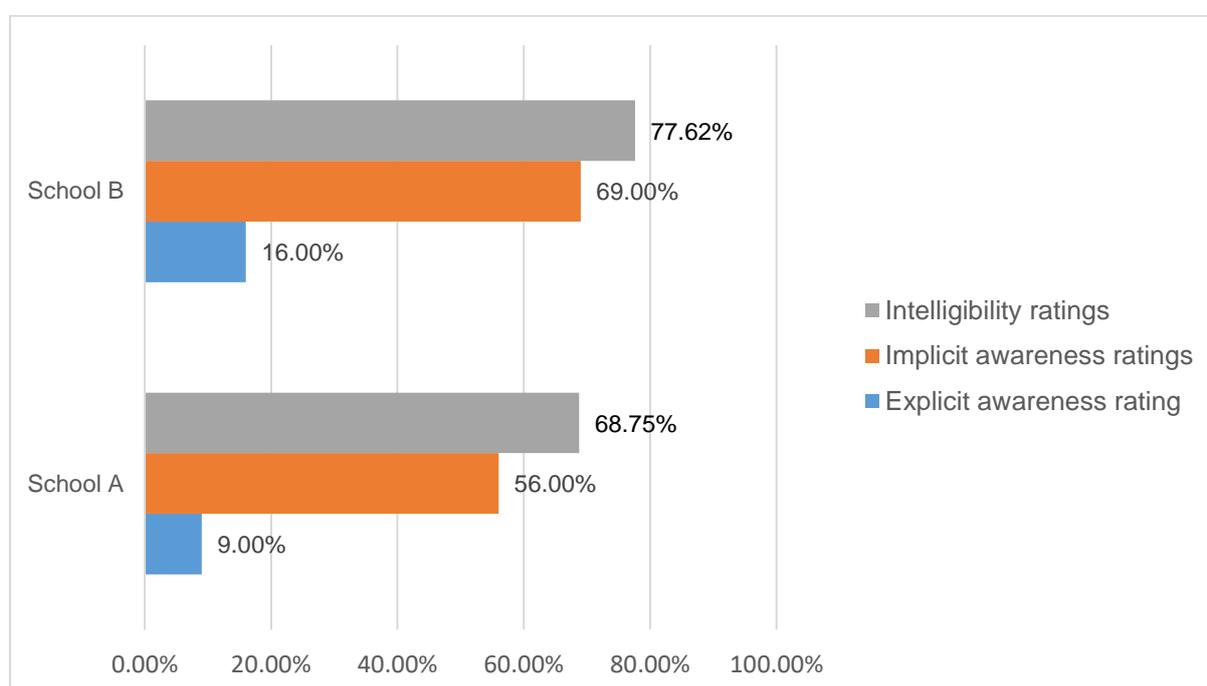


Figure 6.5: Average implicit and explicit awareness and intelligibility ratings at the two schools

6.4 Analysing the explicit awareness coding framework

I now look at the various responses of the learners to their own intelligibility breakdowns in terms of the explicit awareness coding framework (see Figure 6.6). By far the most common response (53 per cent) was when a learner failed to recognise that there had been an intelligibility breakdown (Code 1), highlighting a general lack of both implicit and explicit awareness. 11 per cent of responses were coded as 'inaccurate explanations' since they did not tally in any way with either rater's transcription (Code 3). Ten per cent of responses were coded as successful self-repairs (Code 5) with learners also providing a partial explanation 11 per cent of the

time (Code 6). Only seven per cent of their responses were coded as including a full explanation of an intelligibility breakdown (Code 7). Codes 2 and 4 were very sparingly represented with only 3 and 5 per cent of responses respectively. A slightly different picture emerged when focussing solely on the 34 audio extracts which featured interrater reliability. More positively, learners' ability to provide full explanations of intelligibility breakdowns (Code 7) increased from seven to 11.76 per cent (n=4). However, learners' failure to recognise the existence of an intelligibility breakdown (Code 1) remained virtually identical (52.94 per cent) (n=18), while their tendency to provide an inaccurate explanation rose to 23.53 per cent (n=8). Learners were also less likely to provide partial explanations (Code 6) with only three examples found in the data (8.82 per cent). In the following sections, I consider the learners' responses in more detail. In an attempt to increase the likelihood that any intelligibility breakdowns can be seen as a direct result of their pronunciation errors, I refer solely to learners' responses to the 34 audio extracts which featured interrater reliability. Codes 2 and 4 are consequently not discussed.

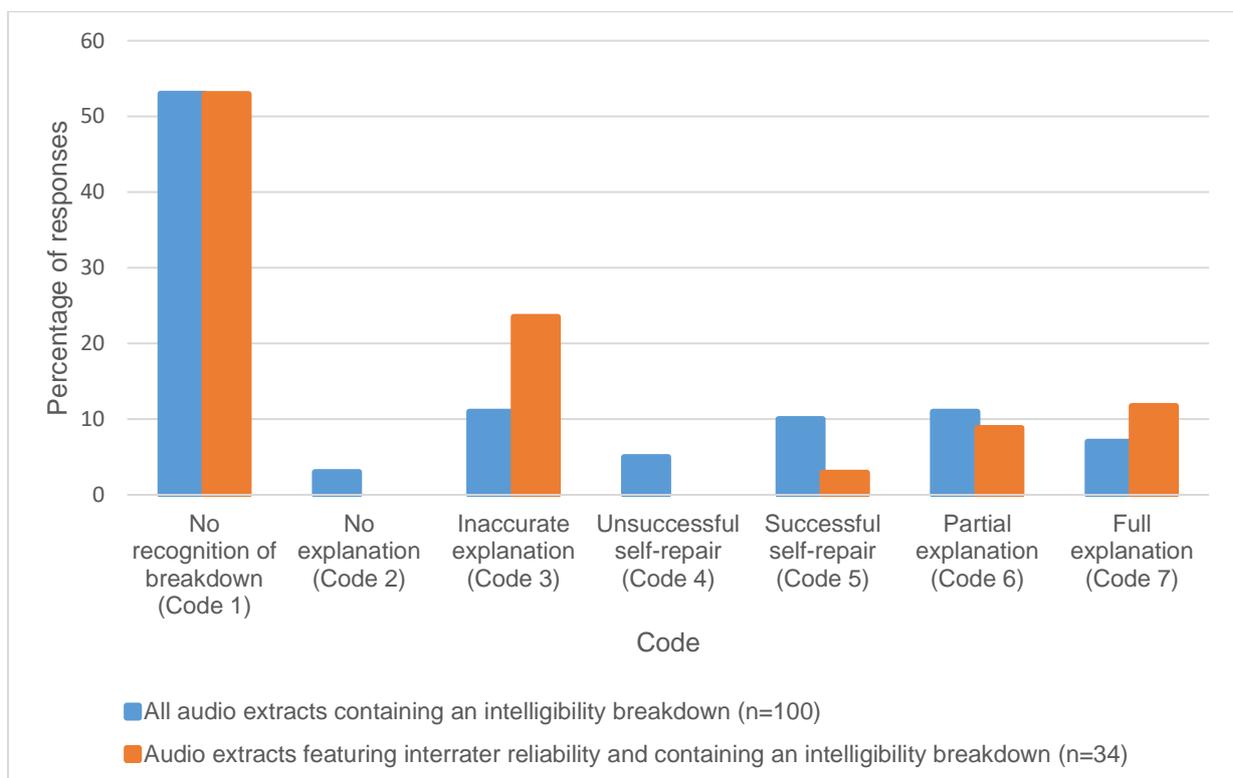


Figure 6.6: Learners' responses to their own intelligibility breakdowns

6.4.1 Code 1 responses – no recognition of breakdown(s)

As previously mentioned, a Code 1 response occurred when a learner listened to an audio recording which contained at least one intelligibility breakdown, but failed to recognise the breakdown and assumed his/her pronunciation was intelligible. I recognise that it was often difficult to tell whether learners were simply guessing or were genuinely confident that they were intelligible when providing Code 1 responses. Either way, they were exhibiting low levels of both implicit and explicit awareness. According to the raters' transcriptions, the 18 Code 1 responses contained a cumulative total of 46 intelligibility breakdowns, accounting for 58.97 per cent of the total number of breakdowns (n=78). A case can be made, therefore, to claim that at a general level at least, learners struggled to recognise the majority of their own pronunciation errors. As illustrated in Figure 6.7 almost half of the breakdowns (43.47 per cent) which triggered a Code 1 response on the part of the learners could be attributed solely to tonal problems (n=20). However, this type of breakdown made up 43.59 per cent of all the breakdowns featured in the stimulated recall interviews which featured interrater reliability. It consequently appears unlikely that breakdowns solely attributable to tone were more prone to being overlooked by the learners than any other types of breakdowns.

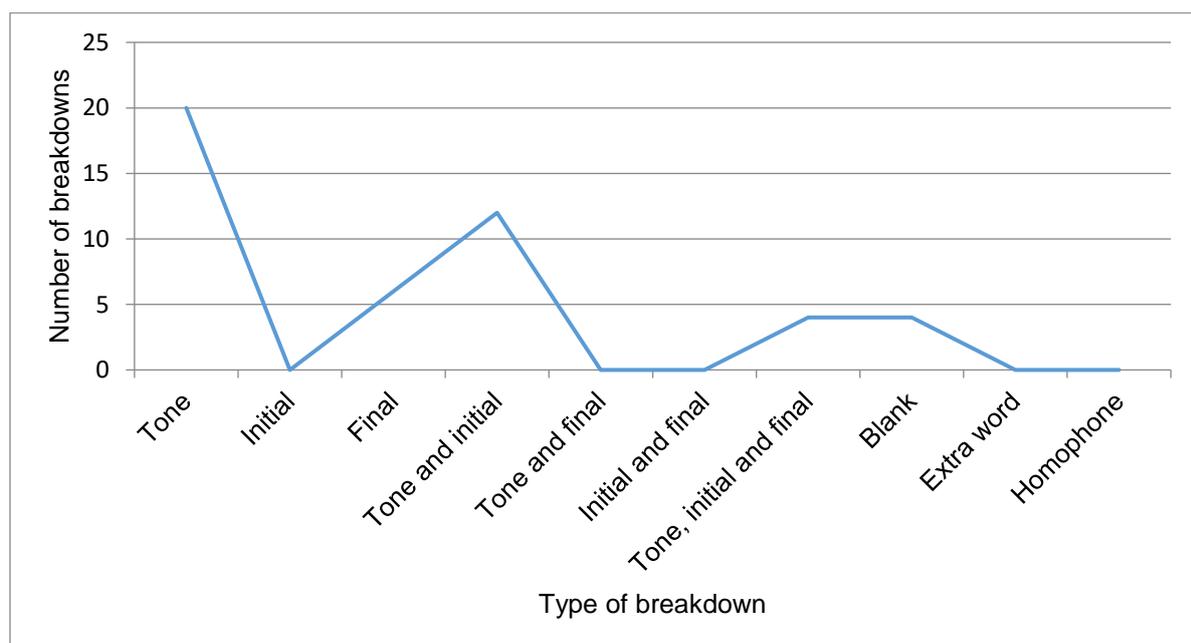


Figure 6.7: Intelligibility breakdowns which triggered a Code 1 response (n=46)

In Table 6.48, I provide more detailed information about each of the 18 Code 1 responses. The table is closely related to some of the most common intelligibility breakdowns discussed in Chapter 4, suggesting a strong link between learners' production and perception problems. The most overlooked breakdown centres on the intended rising tone on 'shí' (ten). Learners 14, 15, 16, and 17 all failed to notice that their pronunciation had led to an intelligibility breakdown. Moreover, these audio extracts were taken from the monosyllabic read-aloud word task (Task 1) so it was very unlikely that the breakdown went beyond a straightforward phonetic explanation. Other evidence which suggested a lack of tonal awareness on the part of some of the learners, both in terms of production and perception, was an inability to successfully produce the intended flat tone (e.g. 'hē' – to drink) (Learners 8 and 13) or falling tone (e.g. 'dà' - big) (Learner 7) and then overlook the fact that there had been a breakdown.

In terms of segmental sounds, it may be unfair to blame Learners 11, 14 and 19 for failing to notice the breakdown partially caused by the dental sibilant 's' sound being heard as a retroflex 'sh' sound - i.e. 'sui' (years old) being transcribed as 'shui' (who). For as I argued in Chapter 4, this particular breakdown appears to be more a result of regional accents on the part of the listeners, as opposed to learners' specific pronunciation problems, although the problem may well have been exacerbated by the learners' general failure to produce a convincing fourth tone. Other problems could be traced to difficulties both producing and then hearing the difference between the final 'e' in 'chē' (vehicle) and the final 'i' of the intended utterance 'chī' (to eat) (Learners 2 and 8). There were also instances of learners failing to notice breakdowns which implicated the tone, initial and final - e.g. 'ròu' (meat) being transcribed as 'wǒ' (I/me) (Learner 12). Given the complete lack of phonological similarities between the two words such an example betrays a huge lack of awareness on the part of the learner. In terms of pedagogical implications, discussed in more detail in Chapter 7, it would clearly be worthwhile for a teacher to raise learners' explicit awareness levels of the most common type of intelligibility breakdowns (e.g. 'shí' and 'shì') as a whole class activity. However, many of the examples highlighted in Table 6.48 are highly individualised and would arguably require individual attention.

Table 6.48: Code 1 responses (n=18)

Learner(s)	Task	Learner's intended utterance	Rater's transcription featuring interrater reliability	Cause of breakdown as evidenced by rater's transcription
14,15,16,17	1	十 shí (ten)	是 shì (to be)	Tone 2 → 4
11,14,19	2	妹妹十岁 Mèi mei shí suì (Younger sister is 10 years old)	妹妹是谁? Mèi mei shì shuí (Who is younger sister?)	Tone 2 → 4 Initial s → sh Tone 4 → 2
2,8	1	吃 chī (to eat)	车 chē (vehicle)	Final i → e
4	1	学 xué (to study)	水 shuǐ (water)	Tone 2 → 3 Initial x → sh Final ue → i
4	2	哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)	哥哥不.... Gē ge bù....	Blank transcriptions implicating tone, initial and final
7	1	大 dà (big)	打 dǎ (to hit)	Tone 4 → 3
8	1	喝 hē (to drink)	和 hé (and)	Tone 1 → 2
12	1	肉 ròu (meat)	我 wǒ (I/me)	Tone 4 → 3 Initial r → w Final ou → o
13	1	喝 hē (to drink)	河 hé (river)	Tone 1 → 2
13	3	我最喜欢中文课 Wǒ zuì xǐ huan zhōng wén kè (Chinese is my favourite subject)	我最喜欢中文歌 Wǒ zuì xǐ huan zhōng wén gē (Chinese songs are my favourite)	Tone 4 → 1 Initial k → g
16	2	你的生日是几月几日? Nǐ de shēng rì shì jǐ yuè jǐ rì? (When's your birthday?)	你的生日是七月七日 Nǐ de shēng rì shì qī yuè qī rì? (Your birthday is the 7 th July)	Tone 3 → 1 Initial j → q
20	1	肉 ròu (meat)	热 rè (hot)	Final ou → e

6.4.2 Code 3 responses – inaccurate explanation of intelligibility breakdown

A Code 3 response to an audio extract took place when a learner recognised that there was some sort of intelligibility breakdown, thereby exhibiting implicit awareness, but subsequently displayed a lack of explicit awareness by providing an inaccurate explanation of the actual cause of the breakdown which did not correspond with the raters' transcriptions. In Table 6.49, I provide more information about the learners' reactions to each of the eight audio extracts which gave rise to a Code 3 response. Each extract is taken from the read-aloud task at the individual word level (Task 1) and features a cumulative total of sixteen intelligibility breakdowns, accounting for 20.51 per cent of all the breakdowns featured in the interviews which contained interrater reliability.

Table 6.49: Code 3 responses (n=8)

Learner	Task	Learner's intended utterance	Rater's transcription featuring interrater reliability	Cause of breakdown as evidenced by rater's transcription	Learner's response to audio extract	Cause of breakdown as evidenced by learner's explanation
1	1	你 nǐ (you)	米 mǐ (rice) (n=2)	Initial (n → m)	It sounds more flat	Tone 3 → 1
4	1	吃 chī (to eat)	七 qī (seven) (n=2)	Initial (ch → q)	I think the tone – it's too short	Tone
12	1	学 xué (to study)	谁 shuí (who) (n=2)	Initial (x → sh) Final (ue → ui)	Yeah that's the wrong tone [...] I think I did the bouncing tone but it's the other tone	Tone
15	1	喝 hē (to drink)	贺 hè (to congratulate) (n=2)	Tone 1 → 4	Cos it's the flat tone, it's meant to be [...] the same sound the whole time and I think it was quite fluctuating	Tone 1 → 3
15	1	学 xué (to study)	睡 shuì (to sleep) (n=2)	Tone 2 → 4 Initial x → sh Final ue → ui	It sounded a bit flat	Tone 2 → 1
16	1	学 xué (to study)	随 suí (to follow)	Initial x → s Final ue → ui	I think it needs to be a bit more like 'shui', a bit more of an accent, a bit more of a tone	Tone
16	1	吃 chī (to eat)	七 qī (seven) (n=2)	Initial ch → q	I think it's wrong, it is 'chī' a bit lower (learner provides a successful self-repair)	Pitch is too high
19	1	十 shí (ten)	是 shì (to be) (n=2)	Tone 2 → 4	I think I'm going too high pitched, it should just be 'shī', it just sounds wrong	Pitch is too high

It is noteworthy that all eight explanations from the learners referred either to the tone or pitch of the utterance being the cause of the breakdown as opposed to segmental issues. However, according to the raters' transcriptions, five of the breakdowns did not involve tone at all and instead could be traced to issues surrounding the production and perception of the initials 'm' and 'n', 'ch' and 'q' and 'x' and 'sh', as well as the finals 'ue' and 'ui'. Although learners' use of the wrong tone was directly implicated in two of the audio extracts which brought about a Code 3 response (hē/hè and shí/shì), and partially implicated in another example (xué/shuì), the learners failed to accurately describe their original tonal production on all four occasions. They also used their own metalanguage to describe tones as 'bouncy', 'flat', 'fluctuating' or 'higher' although it was not always obvious which tone they were referring to. For example, Learner 12 opined 'I think I did the bouncing tone but it's the other tone', suggesting that he was only aware of two separate tones in the Mandarin sound system. While Code 3

responses only involved six of the 20 learners (Learners 15 and 16 provided two Code 3 responses respectively), their comments provided more evidence of low levels of awareness regarding their own pronunciation errors.

6.4.3 Code 5 responses – successful self-repairs

A Code 5 response to an audio extract occurred when a learner noticed that his/her original pronunciation was suspect and subsequently provided a self-repair which improved the original pronunciation attempt. I considered any Code 5 responses as providing evidence of implicit, but not explicit, awareness. Responses were only categorised as ‘Code 5’ if the learner did not provide any further explanation about the cause of the breakdown. Although there were ten examples of Code 5 responses in the interviews, only one of them featured an audio extract which contained interrater reliability and is highlighted below:

Table 6.50: Code 5 response (n=1)

Learner	Task	Learner’s intended utterance	Rater’s transcription	Cause of breakdown as evidenced by rater’s transcription	Learner’s response to audio extract	Cause of breakdown as evidenced by learner’s explanation
2	1	学 xué (to study)	说 shuō (to speak)	Tone 2 → 1 Initial x → sh Final ue → uo	It’s not ‘shwe’, it’s ‘xue’	No explicit explanation provided

6.4.4 Code 6 responses – partial explanations

A Code 6 response came about when a learner realised that his/her original pronunciation was inaccurate and subsequently gave an incomplete explanation which partially matched a rater’s transcription. Learners, therefore, arguably provided evidence of some explicit awareness regarding the nature of their pronunciation error. The three examples found in the data, are all from Task 1 and feature the intended utterance of ‘ròu’ (meat). All three of the partial explanations refer solely to tone and not to any segmental issues. I recognise that there is a risk that I was giving credit for generic answers (e.g. ‘the tone’s wrong’) when in actual fact, a learner may have had little idea about the exact cause of the problem.

Table 6.51: Code 6 responses (n=3)

Learner	Task	Learner's intended utterance	Rater's transcription	Cause of breakdown as evidenced by rater's transcription	Learner's response to audio extract	Cause of breakdown as evidenced by learner's explanation
1	1	肉 ròu (meat)	喔 wo (particle) marker of surprise	Tone 4 → 0 Initial r → w Final ou → o	That's more of a flat tone	Wrong tone but no mention of which tone it should have been or the segmental issues
8	1	肉 ròu (meat)	我 wǒ (I/me)	Tone 4 → 3 Initial r → w Final ou → o	Wrong – again the tone	Wrong tone but no mention of which tone it should have been or the segmental issues
18	1	肉 ròu (meat)	柔 róu (soft)	Tone 4 → 2	That's wrong [...] it's like the wrong tone	Learner recognises the tonal error but cannot elaborate upon the precise nature of error

6.4.5 Code 7 responses – full explanations

Code 7 responses were when a learner not only recognised that his/her original utterance contained an intelligibility breakdown, but went on to provide a full explanation of the source of the breakdown which fully matched the raters' transcriptions. There were four examples in the sample, all from the read-aloud task, accounting for 10.26 per cent of all the breakdowns which featured in the interviews. Such figures obviously demonstrate some level of explicit awareness. However, the Code 7 responses only involved three of the 20 learners. Moreover, they all referred to breakdowns which were solely attributable to tone. While these types of breakdowns made up the majority of the breakdowns featured in the interviews, it should be remembered that 56.41 per cent of the audio extracts also featured breakdowns which implicated, at least partially, initials and finals.

It is interesting to note that as in the Code 3 responses, learners used their own metalanguage to describe the tones. While it was usually clear which tone they were referring to (e.g. 'bouncy/bouncing' tone for Tone 3, 'angry' tone for Tone 4), two of the three Code 7 responses revealed a degree of confusion. For example, Learner 12 said that he had 'done the doctor tone' instead of the intended 'neutral' tone. When I pressed the learner to explain what he meant by the 'doctor' tone, he used a gesture to indicate a rising second tone. I therefore gave him the benefit of the doubt and

awarded him an explicit awareness mark, even though the class teacher subsequently informed me that she used the term ‘doctor’ tone to describe a first tone (i.e. high and flat). In a similar vein, Learner 13 described the ‘angry’ tone as ‘the slightly lower pitch tone’ when it is usually described as containing quite a significant falling pitch change.

Table 6.52: Code 7 responses (n=4)

Learner	Task	Learner's intended utterance	Rater's transcription	Cause of breakdown as evidenced by rater's transcription	Learner's response to audio extract	Cause of breakdown as evidenced by learner's explanation
10	1	大 dà (big)	打 dǎ (to hit)	Tone 4 → 3	I used the bouncy tone for it	Tone 4 → 3
12	1	吃 chī (to eat)	迟 chí (late)	Tone 1 → 2	It's supposed to be the neutral tone and I did the doctor tone, maybe, or something like that [...] it's when it's like that (pointing up)	Tone 1 → 2
13	1	大 dà (big)	打 dǎ (to hit)	Tone 4 → 3	I did the bouncing tone and that should be the angry tone, the slightly lower pitch tone	Tone 4 → 3
13	1	十 shí (ten)	是 shì (to be)	Tone 2 → 4	I used angry tone, it's supposed to be going up	Tone 2 → 4

6.5 Conclusion

In this chapter I considered learners' levels of awareness of their own pronunciation errors, both during and after speech production. I found no evidence of any self-repairs, either successful or unsuccessful, during the role play activity, suggesting that learners have very low levels of awareness of their own pronunciation errors during extemporaneous speech. While there was limited evidence of awareness of pronunciation errors after speech production, this was much more likely to be at the implicit, as opposed to the explicit, level. During the stimulated recall interviews, learners were not able to provide any evidence of explicit awareness of pronunciation errors which involved segmental problems. Thus all the explanations they provided of their own intelligibility breakdowns referred solely to tone. Although it was difficult to compare learners' performances due to the fact that some pronunciation errors were more salient than others, I did unearth some correlation between their awareness

levels and overall intelligibility levels. One pedagogical implication, which I discuss in the next chapter, will be to raise their awareness levels of their own pronunciation errors, at both implicit and explicit levels.

7. Evidence-informed perspectives for teaching pronunciation to young Anglophone beginner learners of Chinese

The aim of this chapter is to position the key findings of my study in relation to the broader theoretical and research evidence in the literature. More specifically, the focus throughout is on establishing evidence-informed teaching priorities with reference to the *Intelligibility Principle* (Levis, 2005). In light of the case study nature of the research design I cannot generalise from the discussion to other contexts. Nevertheless, by highlighting the pedagogical implications of the main findings, my aim is to indicate their relevance to teachers and researchers working in similar contexts. Moreover, from a methodological perspective, the coding systems I developed to investigate listeners' responses to the L2 Chinese speech signal and the learners' awareness of their own pronunciation errors provide a new tool for other researchers in the field.

A major finding is that while non-standard tones frequently contribute to the perception of a foreign accent, they do not always affect the more important constructs of intelligibility and comprehensibility. Moreover, learners' pronunciation problems cannot be simply traced to tones but frequently involve segmental issues as well. While I interpret most findings as indicating a need for more explicit instruction, particularly in light of the low levels of awareness surrounding learners' own pronunciation errors, I also recognise the need to develop learners' implicit knowledge of Chinese since it is this type of knowledge that underpins their ability to communicate fluently and confidently (Ellis, 2005, p. 214). In section 7.4 of this chapter, I attempt to reconcile this apparent tension with reference to the weak interface position (Ellis, 1993) and assume that explicit knowledge can facilitate the processes of noticing and noticing-the-gap (Schmidt, 1990, 2001).

This chapter first considers nine key findings that have emerged from my analysis of the case study data and interprets their significance with reference to the literature before outlining the pedagogical implications for each in turn. The final section of the chapter frames the discussion within the wider debate around the role of implicit and explicit knowledge in instructed second language acquisition in order to indicate how my research on Anglophone pupils' learning of Chinese pronunciation reflects key perspectives in that debate.

7.1 Key findings and their significance

7.1.1 All learners are considerably more intelligible at the sentence level than the individual word level

Evidence

In the first research question, I focussed on the intelligibility of ten high frequency monosyllabic words at the individual word and at the sentence level in two separate read-aloud tasks. At the individual word level (Task 1), the average intelligibility rating was 45.5 per cent yet when the same words appeared in sentences (Task 2), the intelligibility rating increased dramatically to 81.5 per cent.

Interpretation

It seems self-evident that the presence of wider contextual information at the sentence level aids intelligibility. Interviews with raters discussed in Chapter 5 support this common-sense view. It should also be noted that similar findings can be found in the field of L2 English pronunciation research. For example, Ou, Yeh and Chuang (2012) found large differences in intelligibility scores, depending on whether they used a local approach in which individual words were transcribed (43 per cent incorrect) or a global approach in which sentences containing the same words of interest were included (12 per cent incorrect) (as cited in Munro & Derwing, 2015b, p. 381).

Pedagogical implications

Given that curriculum time for teaching modern foreign languages in UK secondary schools is generally at a severe premium, there is a clear need for prioritization and compromise (Macaro, Graham, & Woore, 2016). Following Munro and Derwing (2015a), I would recommend prioritizing pronunciation errors affecting global (i.e. sentence level) intelligibility as opposed to local (i.e. individual word level) intelligibility to better reflect the demands of 'real life' when words are usually contextualised by other words, the situation or the physical environment (p. 18). Such an approach does not mean that pronunciation errors from Task 1 can be dismissed as unimportant since they can provide valuable clues about L2 learning processes and the underlying features of global intelligibility (Munro & Derwing, 2015b, p. 381). Nevertheless, it is

important to realise that only some of these errors will lead to intelligibility breakdowns at the sentence level. For example, while 16 intelligibility breakdowns for 'hē' (to drink) can be traced directly to tonal confusion in Task 1, only one breakdown directly implicates tone in Task 2 when the raters have, in theory at least, the benefit of sentence level context.

7.1.2 A majority of learners are most intelligible during the role-play activity as opposed to the read-aloud tasks

Evidence

In Task 3, when the learners engaged in a simple role-play exercise also at the sentence level, the overall intelligibility rating of the ten high frequency monosyllabic words rose from 81.5 to 90.37 per cent.

Interpretation

Caution is needed about drawing firm conclusions about learners' overall intelligibility levels based on the nature of the production task. There was a much smaller dataset in Task 3 (n=374) compared to Task 2 (n=600) since many of the learners struggled to produce grammatically correct answers in the role play activity. It is also possible that learners used avoidance strategies in Task 3 (Schachter, 1974) and steered clear of difficult words they knew were hard to pronounce. Moreover, there were no examples of 'nǐ' (you) or 'dà' (big) in the Task 3 data, and intelligibility levels were probably artificially inflated by the high frequency of the personal pronoun 'wǒ' (I) which had a very high intelligibility rating. Nevertheless, it is still surprising that a majority of learners were most intelligible in arguably the most cognitively demanding of the three production tasks. Such a finding, for example, would appear to contradict Winke's (2007) claim that the heightened saliency in read aloud contexts may make tonal accuracy artificially high (p. 25).

Although it is plausible that learners struggled with the cognitive demands of the read-aloud tasks, thus impacting negatively upon their intelligibility levels, such an explanation is not completely satisfactory. For instance, all learners were given time to prepare, practice and consult with classmates beforehand while any performance

mistakes such as false starts and slips of the tongue were removed from the data. It should also be stressed that none of the read aloud tasks featured any unusual vocabulary or difficult syntactic structures. Moreover, both read aloud tasks were presented in Chinese characters and *pīnyīn*, alongside an English translation, in an attempt to further reduce the cognitive demands placed on the learners.

Given the similarities between *pīnyīn* and the English writing systems, it is highly likely that learners focussed on the *pīnyīn* as opposed to the characters during the read-aloud tasks. It might be expected that learners would automatically link letters and groups of letters to the sounds they represented in the L1 causing intelligibility breakdowns (Macaro, Graham, & Woore, 2016, p. 46). Although there was some evidence of this phenomenon in Task 1 - e.g. eight examples of raters transcribing a learner's intended utterance of 'chī' (to eat) as 'qī' (seven) - it should be noted that there was limited evidence of a deleterious effect of *pīnyīn* on learners' intelligibility at the sentence level in Task 2, probably due to the supporting presence of wider contextual clues (Finding 1). For example, none of the raters transcribed 'chī' as 'qī' in the Task 2 sentence 'Gē ge bù chī ròu' (older brother doesn't eat meat).

Ultimately it is impossible to provide a single explanation for learners' high intelligibility levels in Task 3 based on limited data. One explanation worth considering is that I modelled the competent pronunciation of numerous key words in the original questions which may have subsequently increased learners' intelligibility levels. Such an interpretation dovetails with Nguyen and Macken's (2008) finding that L2 pronunciation is influenced by the distance in discourse to an L1 speaker's model although I recognize that I am not an L1 Chinese speaker. Another possibility is that on many occasions, learners were not actually speaking spontaneously in Task 3 but rather accessing their limited repertoire of formulaic responses. Formulaic expressions have the advantage of reducing the cognitive load of producing language (Ellis, 2008, p. 77), as well as tending to be "fluently articulated" and "non-hesitant" (Myles, Hooper, & Mitchell, 1998, p. 325) which may have helped increase intelligibility levels.

Pedagogical implications

While it is difficult to gauge the extent that learners' utterances in Task 3 were 'formulaic sequences', it certainly makes sense to ensure that beginner learners develop a rich repertoire of formulaic expressions which they can mobilise for

immediate use alongside a rule-based competence (Ellis & Shintani, 2014, p. 22; Duff et al, 2013, p. 43). This approach would be particularly helpful for those learners who struggled to provide grammatically correct answers to the questions. Furthermore, catering to learners' fluency could also increase their 'Willingness to Communicate' (MacIntyre, Clement, Dörnyei, & Noels, 1998; MacIntyre, 2007) which is likely to enhance their levels of self-confidence and motivation.

7.1.3 L1 Chinese raters frequently disagreed about the precise nature of an intelligibility breakdown, or even that there had been an intelligibility breakdown

Evidence

Each learner was independently rated by two L1 Chinese listeners. Focussing solely on their transcriptions of ten high frequency monosyllabic words across the three production tasks, I calculated an interrater reliability score based on how many times both raters agreed upon the nature of any intelligibility breakdowns as evidenced by identical transcriptions. The overall interrater score was a mere 28.49 per cent. Moreover, 28.77 per cent of breakdowns occurred when the other rater successfully transcribed the learner's intended utterance. Such low levels of unanimity amongst the listeners appear to contradict Munro and Derwing's (2015b) claim that "a particular strength of dictation tasks [...] is a high degree of interlistener reliability" (p. 382).

Interpretation

Although all the raters claimed not to have any formal experience of teaching CSL, it is likely that they had varying degrees of familiarity with heavily accented L2 Chinese which may have affected intelligibility levels (Gass & Varonis, 1984). It is also probable that different raters processed the same learner's oral productions differently since they often spoke localised versions of Mandarin themselves. For example, a number of breakdowns could be partially traced to a rater hearing the dental sibilant 's' as a retroflex 'sh' sound (Xing, 2006, p. 89). In Chapter 5, I also unearthed evidence of certain raters applying specific strategies (for example, by appealing to grammatical rules and world knowledge) to compensate for a non-standard L2 speech signal. It seems highly probable, therefore, that raters had varying degrees of aptitude for

processing the L2 speech signal which could partially explain the low levels of interrater reliability. Perhaps surprisingly, there was little evidence of raters transcribing different homophones which might also have been expected to contribute to the lack of inter-listener agreement. Orton (2008) for example, comments that “there may be more than 20 words all pronounced exactly the same, and half a dozen common words for many of the most commonly encountered syllables, two or three of which might be real possibilities in an utterance” (p. 31).

It should also be acknowledged that interviews with raters were carried out in similar, but not identical, conditions. For example, while all 40 raters used the same equipment (i.e. my own laptop and headphones) and were only allowed to listen to each utterance a maximum of three times, interviews took place at different times of day in different locations. It seems likely, therefore, that those listeners who carried out the transcription tasks in the morning may well have brought higher levels of concentration to the activity than those who were interviewed in the afternoon. Although the interviews typically took place in empty university classrooms, there were varying degrees of background noise. I recognise that this limitation should be better controlled in future studies by booking spaces designed for listening experiments such as sound-proofed rooms (Munro & Derwing, 2015a, p. 25). However, it should also be emphasised that on the very rare occasions that raters complained of being distracted by outside noise, I simply replayed the audio extract. Overall, therefore, the low levels of interrater reliability lend support to Murphy’s (2014) claim that intelligibility is influenced by a range of listener factors including their familiarity with the speaker’s accent, receptivity, attentiveness, level of fatigue and familiarity with the topic being spoken about (pp. 258-9).

Pedagogical implications

One clear pedagogical implication is that the L2 speaker should not be automatically blamed for all intelligibility breakdowns as there is a real possibility that responsibility may lie more with the L1 listener (Grant, 2014, pp. 11-12). Simply making the learners aware of this fact may help improve their levels of self-confidence and their willingness to communicate. Although a major task is to provide learners with a pronunciation model that is highly intelligible and comprehensible, it also makes sense for the teacher to spend time teaching learners some of the key features of different L1

Chinese accents to help prepare them for real-life interaction outside the classroom. Learners also need to be taught specific strategies to promote intelligibility during conversations with L1 Chinese speakers such as the use of gestures when ordering food at a restaurant to avoid confusion between ‘sì’ (four) and ‘shí’ (ten).

7.1.4 Learners displayed high levels of inter-learner variability

Evidence

There were striking levels of inter-learner variability across all three research questions (RQs). For example, in the first RQ, there was a large discrepancy between the least intelligible pupil (52.86 per cent) and the most intelligible pupil (86.84 per cent). In the second RQ, eight learners did not produce any sentences which were independently judged by both their L1 Chinese raters to be highly intelligible and comprehensible while Learner 11 produced six such utterances. Meanwhile in the third RQ, implicit awareness ratings ranged from 30 to 90 per cent. These diverse learning trajectories echo findings from the wider field of L2 pronunciation research (e.g. Munro & Derwing, 2008).

Interpretation

The range of inter-learner variability is perhaps surprising, given that at first glance, all twenty learners have much in common in terms of age, length of instruction and absence of any family links with China. It is also highly likely that all learners had limited exposure to Chinese outside the classroom. For example, none of the learners had visited China at the time of data collection. The role of the individual teacher undoubtedly played an important role. Indeed, it should be noted that learners at School A had much lower average intelligibility levels (68.75 per cent) than learners at School B (77.62 per cent). Nevertheless, as discussed in Chapter 3, there are large differences between the two schools so perhaps these results are not overly surprising. Moreover, there is also considerable evidence of high levels of inter-learner variability amongst learners at the same school. For example, Learner 1 had an overall intelligibility rating of 52.86 per cent while Learner 9, also at School A, had an overall intelligibility rating of 82.86 per cent. It is likely that individual aptitude for pronunciation is an important factor although I recognise that I do not have sufficient evidence to

support this claim. It is true that numerous studies point to the important role of aptitude amongst adult learners and L2 pronunciation (e.g. Purcell and Suter, 1980; Abrahamsson and Hyltensstam, 2008; Hu, Ackermann, Martin, Erb, Winkler, & Reiterer, 2013). However, none of these studies have focussed on CSL and all focus on a learner's accent as opposed to their intelligibility levels (Derwing and Munro, 2015, p. 52).

Pedagogical implications

It is beyond the scope of this study to provide a definitive answer to why there is so much inter-learner variability amongst the learners' L2 Chinese pronunciation. However, the clear pedagogical implication is that each learner should be assessed individually. Some learners are already highly intelligible at the sentence level while others are struggling to make much sense at all. In terms of comprehensibility, it would appear that all learners could benefit from instruction since even the most intelligible learners are only having a minority of their sentences rated by both L1 Chinese listeners as being highly comprehensible. Following Munro and Derwing (2015b), priority in the classroom should be on the most common pronunciation errors with individualised instruction provided for the more idiosyncratic errors (p. 391).

7.1.5 Accentedness, comprehensibility and intelligibility are partially independent speech dimensions

Evidence

In the second research question, I focussed on how the L1 Chinese raters processed the learners' sentence level utterances in terms of accentedness, comprehensibility and intelligibility. When taking the ratings of both raters into account, the following findings emerged:

- 1.62 per cent of learners' sentence level utterances were rated as highly intelligible and comprehensible with no noticeable accent

- 8.44 per cent of learners' sentence level utterances were rated as highly intelligible and comprehensible, yet were considered to retain a noticeable accent
- 13.31 per cent of learners' sentence level utterances were rated as highly intelligible yet required effort to be processed and were also considered to retain a noticeable accent
- 13.96 per cent of learners' sentence level utterances contained at least one intelligibility breakdown, required effort to be processed and were also considered to retain a noticeable accent

Interpretation

There is some evidence, therefore, to suggest that accentedness, comprehensibility and intelligibility are partially independent speech dimensions. Such a finding has long been established in the field of L2 English pronunciation research (e.g. Munro & Derwing, 1995; Derwing & Munro, 1997) although differs from Yang's (2016) conclusion that foreign accent directly affects the comprehensibility of L2 Chinese speech production. The relatively low levels of inter-rater agreement also support Finding 3 and suggest that alongside intelligibility, different raters have varying degrees of sensitivity towards the two constructs of accentedness and comprehensibility.

Pedagogical implications

Similar to Finding 1, in terms of setting classroom pronunciation priorities, there is a need to focus on what matters most – i.e. non-standard pronunciation which affects global comprehensibility and/or intelligibility should be tackled ahead of non-standard pronunciation which only affects accentedness (Munro & Derwing, 2015b, p. 391). Indeed, based on the data from this study, producing highly comprehensible and intelligible speech appears to be an eminently achievable goal while producing accent free utterances is much less realistic. Although learners could be encouraged to adopt a particular regional accent with high social prestige (e.g. a northern version of Mandarin based on the Beijing dialect), I would suggest that this should only be after they have achieved a threshold level of comprehensibility and intelligibility.

7.1.6 Non-standard tones do not necessarily lead to lower levels of comprehensibility and intelligibility

Evidence

Focussing solely on raters' comments about utterances which had been judged by both raters as being highly intelligible and comprehensible, non-standard tonal production emerged as by far the most common cause of a perceived L2 accent. Out of 52 examples, tone was mentioned as contributing to a perception of an L2 accent on 32 occasions whereas segmentals were only referred to on seven occasions. There was very limited evidence of other suprasegmental features such as sentence level intonation contributing to a perception of an L2 accent.

Interpretation

Caution is needed about accepting raters' comments as facts. There is a possibility that some raters attributed the main cause of accent to tone because they could not think of anything else to say. For instance, it is likely that other suprasegmental features such as sentence level intonation, rhythm and stress also played a role (Orton & Scrimgeour, 2019) but the raters may not have had the required metalanguage to point out these phenomena. Nevertheless, a number of raters were able to provide specific examples of heavily accented tones not affecting comprehensibility or intelligibility raising the validity of the data. Perhaps these results are, to some extent, to be expected since L1 Chinese are highly skilled in processing non-standard tones during their interactions with other L1 Chinese from different parts of the country (Duff et al., 2013, p. 49).

Pedagogical implications

A key question for a teacher is how to respond to incorrect tones in the classroom. If they do not appear to interfere with intelligibility and comprehensibility, I would advocate ignoring them, particularly if the learner is producing more spontaneous or pushed output, as opposed to merely practising more familiar language (Macaro, Graham, & Woore, 2016, p. 20). There is certainly a danger of killing a learner's fragile confidence if a teacher is overly strict on tones (Duff et al., 2013, p. 48). While I also

recognise the danger of being overly lenient, particularly as I am very familiar with my own students' mispronunciations (Foote et al., 2016, p. 192), the evidence from this study suggests that L1 raters do not automatically regard L2 learners' non-standard tones as barriers to communication.

7.1.7 Few intelligibility breakdowns at the sentence level can be traced solely to tone

Evidence

When focussing on sentences which had been rated by both raters as containing intelligibility breakdowns, I found a considerable amount of blank transcriptions and wild guesswork when raters had clearly understood very little of the intended utterance (36 out of 86 transcriptions). Many of the intelligibility breakdowns could be traced to problems with individual words, despite wider contextual clues from the rest of the sentence (n=33), as well as frequent occasions when raters appeared to make guesses based on a misunderstanding of a key word (n=17). With the exception of 'shí' (ten) being transcribed as 'shì' (is), raters' failure to understand key words - e.g. 'shēngri' (birthday) understood as 'Zhōngguó' (China) – often implicated initials, finals and tone in the breakdown.

Interpretation

The evidence would suggest that learners' pronunciation problems cannot be simply traced to tones, but usually include segmental features as well. It should also be noted that understanding 'shí' (ten) as 'shì' (is) completely changes the syntax of the sentence and has serious consequences for interpreting the other words in the sentence. Thus although tone plays a major role in this particular breakdown, it also provides further evidence that raters are prepared to overrule phonological evidence from the rest of the sentence and/or make guesses based on a misunderstanding of a key word (Field, 2008).

Pedagogical implications

Given that many of the intelligibility breakdowns at the sentence level cannot be traced to a single element of a word, it would make sense for both segmental sounds and

lexical tone to be taught together as opposed to prioritising one above the other. In other words, rather than teaching tones separately, it would appear more useful to focus on word-level recognition and incorporate pronunciation practice into the teaching of oral vocabulary as opposed to spending too much time on phoneme-level inventories (Field, 2014). Indeed, it is difficult to separate tones from segmental sounds as the vast majority of syllables carry a lexical tone and cannot be separated (Orton, 2016). Such an approach chimes with calls from researchers in the field of L2 English pronunciation to regard the separation of segmental from suprasegmental features as an ‘artificial instructional dichotomy’ (Celce-Murcia et al., 2010; Zielinski, 2015).

7.1.8 Learners have low levels of awareness of their own pronunciation errors, both during and after speech production

Evidence

There were no examples of any self-repairs from any of the learners, either successful or unsuccessful, during the role play activity. The average explicit awareness mark, based on the learners’ ability to explain their own intelligibility breakdowns after speech production, was a mere 12.5 per cent. Their average implicit awareness mark, awarded according to learners’ ability to judge whether they thought a particular utterance was intelligible or not, was 62.5 per cent. However, as previously noted, a score of 50 per cent could as likely be achieved by pure guesswork on the part of the learner, as by any genuine awareness levels of their own pronunciation errors.

Interpretation

It is clear that a majority of learners had very low levels of awareness of their own pronunciation errors, both during and after speech production, at both the implicit, and particularly the explicit, level. It should also be acknowledged that on the handful of occasions when learners were able to provide a full explanation of a particular pronunciation error, they tended to use their own metalanguage to describe their inaccurate tonal production (e.g. “I did the bouncing tone and that should be the angry tone”), suggesting that “the right kind of metalanguage [...] can help learners to form new concepts” (Couper, 2011, p. 176).

Pedagogical implications

Although I recognise that the relationship between production and perception is a complex one (Wang, Jongman, & Sereno, 2003), it would seem obvious that learners need guidance in ‘noticing the gap’ between their own productions and more intelligible forms as a first step towards more intelligible pronunciation (Derwing & Munro, 2014, p. 46). There are a number of innovative approaches that could be adopted exploiting the use of technology. For example, as discussed in Chapter 2, Chun et al., (2015) provided convincing evidence that learner-created tone visualisations could be useful in terms of learners’ acquisition of Chinese tones, by providing a more precise picture of L2 learners’ tonal difficulties. It should also be possible to raise awareness of pronunciation errors by involving learners in peer assessment activities in which they listen to recordings of their peers’ speaking productions and attempt to point out any instances of problematic pronunciation. It also appears sensible to encourage the further development of learners’ own use of metalanguage to raise their levels of phonological awareness (Couper, 2011).

7.1.9 Learners who are more intelligible are generally more aware of their own pronunciation errors

Evidence

The overall intelligibility of learners at School A was 68.75 per cent whereas their average overall awareness mark (i.e. an average of the implicit and explicit awareness scores) was 32.5 per cent. At School B, conversely, the overall intelligibility of learners was 77.62 per cent while the overall awareness mark was 42.5 per cent.

Interpretation

It would seem plausible that an increased awareness of pronunciation errors is likely to contribute to higher intelligibility levels. However, there are a number of important caveats. Firstly, as noted in Chapter 6, it is difficult to compare learners’ performances since some pronunciation errors were more salient than others. Secondly, there is some counter-evidence at the individual level. For example, Learner 14 had a relatively high overall intelligibility rating (80.56 per cent) but one of the lowest overall

awareness ratings (15 per cent). Thirdly, and perhaps most importantly, correlation does not imply causation. In other words, many other factors may be at play in contributing to the general higher levels of intelligibility of learners at School B.

Pedagogical implications

As with Finding 8, it would appear that learners need help in raising awareness of their specific pronunciation errors as a matter of urgency. The pedagogical implications drawn in 7.1.8 are consequently equally relevant here. It should also be stressed that once learners have become more aware of their own pronunciation errors, they should subsequently work on their physical control over the pronunciation of the target feature in a range of contexts (Yates & Zielinski, 2014, p. 66), even if perception does not always precede production (Sheldon & Strange, 1982).

7.2 So what?

As Evans (2009a) rightly observes, anyone carrying out a small-scale qualitative enquiry needs to engage with the overhanging ‘so what’ question:

The research in question is only a drop in the ocean of experience and so what possible significance can the highly individual and localised findings of my experience have for anyone else? (p. 112)

With this warning very much in mind, I recognise that I can only make claims about L2 Chinese pronunciation in relation to this specific group of 20 learners. Moreover, the pedagogical implications I have drawn remain tentative and can only provide ‘provisional specifications’ as opposed to prescriptive ‘recipes for success’. Nevertheless, I would like to highlight three general conclusions from the discussion so far which are potentially significant beyond the specific empirical context of my study. Firstly, given the paucity of research into the intelligibility of young Anglophone beginner learners of Chinese at the secondary school level, it could be argued that all the nine key findings represent ‘new’ knowledge which I hope will inspire further studies by teachers and researchers working in similar contexts. Secondly, many of the findings - e.g. the high levels of inter and intra-learner variability, the partially

independent nature of accentedness, comprehensibility and intelligibility, and the learners’ low levels of awareness of their own pronunciation errors – are, at a conceptual level at least, by no means unique to the field of CSL pronunciation research. Thirdly, one of the most oft-cited challenges of learning CSL - lexical tone - does not appear to be as critical for sentence-level intelligibility as might be expected, given the overriding focus on tone in the CSL pronunciation literature discussed in Chapter 2. Based on the evidence from this study, therefore, it appears that the field of CSL has much to gain from adopting a more ‘universalist’ stance, and engaging with key principles from instructed second language acquisition, as opposed to pursuing a more ‘essentialist’ route which holds that “the Chinese language is unique and so is its learning and teaching” (Han, 2016, p. 242). In the following section, I pursue this idea in more detail with reference to the relationship between implicit and explicit forms of L2 knowledge.

7.3 Explicit and implicit knowledge in instructed second language acquisition

As highlighted in Table 7.1, I have interpreted the majority of the findings in terms of indicating a need for more explicit forms of instruction. Such a view dovetails with more recent studies from the field of TESOL which suggest that explicit corrective feedback can play an important role in improving pronunciation (e.g. Saito & Lyster, 2012; Dlasker & Krekeler, 2013):

Table 7.1: Pedagogical implications promoting implicit and explicit knowledge

Pedagogical approaches promoting implicit knowledge	Pedagogical approaches promoting explicit knowledge
<ul style="list-style-type: none"> • Cater to learners’ fluency through the teaching of formulaic language which learners can use as unanalysed chunks (Finding 2) • Deprioritise pronunciation errors which only present themselves at the local level (Finding 1) • Deprioritise pronunciation errors which only affect accentedness (Findings 5 and 6) 	<ul style="list-style-type: none"> • Explicit focus on pronunciation errors which lower comprehensibility and/or intelligibility levels at the sentence level (Findings 1 and 5) • Prioritise the most common pronunciation errors with individualised instruction provided for the more idiosyncratic errors (Finding 3) • Teach learners some of the key features of different accents in China (Finding 4) • Teach learners specific conversational strategies to promote intelligibility (Finding 4)

Pedagogical approaches promoting implicit knowledge	Pedagogical approaches promoting explicit knowledge
	<ul style="list-style-type: none"> • Focus on word-level recognition and incorporate pronunciation practice into the teaching of oral vocabulary (Finding 7) • Draw learners' attention to differences between their own productions and more intelligible forms (Findings 8 and 9)

However, it is now increasingly accepted that instruction needs to be mainly targeted at developing implicit knowledge of the L2 since it is this type of knowledge which underpins the ability to communicate smoothly and with confidence (Ellis, 2005, p. 214). Indeed, Munro and Derwing (2015b) caution that “a common critique of contemporary pronunciation teaching is that it is excessively formS-focussed as opposed to form-focussed” (p. 393). I engage with this apparent contradiction with reference to the so-called interface issue, which remains one of the central topics in the field of SLA (Suzuki & DeKeyser, 2017). The key debate concerns the nature of the relationship between implicit and explicit forms of L2 knowledge. Broadly speaking there are three main positions which I set out in Table 7.2:

Table 7.2: Summary of the three main interface positions

Position	Main claims	Pedagogical implications
Non-interface position (Krashen, 1981; Paradis, 1994)	<ul style="list-style-type: none"> • Explicit and implicit L2 knowledge involve different acquisition mechanisms • Stored in different parts of the brain • Accessed in performance by means of different processes: automatic versus controlled • Explicit knowledge cannot transform directly into implicit knowledge 	<ul style="list-style-type: none"> • Nothing, or very little, to be gained by instruction aimed at explicit knowledge • At best can be used to help learners monitor their production when they are focussed on form and have sufficient time to access the knowledge
Strong interface position (DeKeyser, 1998)	<ul style="list-style-type: none"> • Explicit knowledge can transform into implicit knowledge through practice • Learners can first learn a rule as a declarative fact and then construct an implicit representation 	<ul style="list-style-type: none"> • Helpful (and maybe necessary for older learners) to first develop learners' explicit knowledge and then help them to proceduralize this through practice

Position	Main claims	Pedagogical implications
Weak interface position (R. Ellis, 1993)	<ul style="list-style-type: none"> • Explicit knowledge evolves into implicit knowledge but only if the learner is ready to acquire the targeted feature • Explicit knowledge can facilitate cognitive processes such as noticing and noticing-the-gap (Schmidt, 1990) and thereby facilitate the long-term development of implicit knowledge 	<ul style="list-style-type: none"> • Teaching explicit knowledge can help learners attend to grammatical forms in the input and thereby facilitate the acquisition of implicit knowledge over time

(Adapted from Ellis & Shintani, 2014, p. 12 and pp. 94-5)

Current thinking would appear to support some sort of interface position although there is still considerable disagreement about the nature of the connection between implicit and explicit forms of L2 knowledge (DeKeyser, 2015; R. Ellis, 2008). Citing numerous studies (e.g. Pica, 1985; Carroll, Robert, & Swain, 1992; Alanen, 1995; Gass, Svetics, & Lemilin, 2004; Kim & Han, 2007), Han and Finneran (2014) argue convincingly that the results of instruction appear to be more pronounced for lexical and phonological aspects than for morphosyntactic learning, leaving open the intriguing possibility that each of the three interface positions has some validity:

Assuming that explicit knowledge and implicit knowledge [...] are present in SLA yet without taking a categorical stance on the source of implicit knowledge, we proffer the argument that for instructed L2 learners, there is not just a singular relationship between explicit and implicit knowledge, but several *co-existing* relationships – a strong interface (for some linguistic elements), a weak interface (for some others), and no interface (for others) – and that each of these can be multi-faceted (p. 371).

While recognising that I do not have sufficient evidence from this study to espouse a particular position, R Ellis’s (1993) weak interface model of L2 acquisition appeals to my own “sense of plausibility” (Prabhu, 1990) and appears compatible with some of the findings of this study, particularly in terms of encouraging learners to pay attention to specific formal features in the input so that they are more likely to ‘notice the gap’ between these features and less intelligible ones they may use in their own output (Findings 8 and 9). However, it would also appear sensible to provide a counterbalance of implicit instruction, to cater for more incidental learning and also to

develop the ability to communicate more fluently and confidently (Ellis, 2003). Leaning very heavily on De Graaf and Housen (2009), I provide more details about how I am interpreting the distinction between explicit and implicit forms of instruction in Table 7.3:

Table 7.3: Implicit and explicit forms of instruction

Implicit instruction	Explicit instruction
<ul style="list-style-type: none"> attracts attention to language meaning 	<ul style="list-style-type: none"> directs attention to language form
<ul style="list-style-type: none"> language serves primarily as a tool for communication 	<ul style="list-style-type: none"> language serves as an object of study
<ul style="list-style-type: none"> delivered spontaneously and incidentally (e.g. in an otherwise communication-oriented activity) 	<ul style="list-style-type: none"> predetermined and planned (e.g. as the main focus and goal of a teaching activity)
<ul style="list-style-type: none"> unobtrusive (minimal interruption of communication of meaning) 	<ul style="list-style-type: none"> obtrusive (interruption of communication of meaning)
<ul style="list-style-type: none"> presents target forms in context 	<ul style="list-style-type: none"> presents target forms in isolation
<ul style="list-style-type: none"> no rule explanation or directions to attend to forms to discover rules; no use of metalanguage 	<ul style="list-style-type: none"> use of rule explanation or directions to attend to forms to discover rules; use of metalinguistic terminology
<ul style="list-style-type: none"> encourages free use of target form 	<ul style="list-style-type: none"> involves controlled practice of target form

(Adapted from De Graaf & Housen, 2009, p. 737, as cited in Ellis & Shintani, 2014, p. 84)

Returning to the specific context of the present study, a key practical question presents itself about how such a balance might be achieved when faced with limited curriculum time and limited exposure to Chinese outside the classroom. While I recognise that the particular emphasis of an individual lesson will vary, I agree with Orton and Scrimgeour (2019) that there should be a regular segment of lesson time (e.g. fifteen minutes a week) dedicated to an explicit focus on pronunciation (p. 37). This might involve targeting learners' pronunciation difficulties using some of the activities I outlined earlier in the chapter (e.g. drawing learners' attention to differences between their own productions and more intelligible forms via peer assessment activities) or providing learners with clear instructions to help them produce particularly challenging target features which are critical for intelligibility (e.g. the difference between 'shì' and 'shǐ'). However, it is equally important that learners are provided with significant opportunities for implicit learning. One obvious approach is to ensure that there is

extensive Chinese input in every lesson (Doughty & Long, 2003; Ellis, 2005). Every effort should consequently be made to create meaningful spoken interaction in class, starting with natural communications between teacher and learners (e.g. simple classroom instructions) and including inter-learner pair and group work (e.g. carrying out role plays) (Orton & Scrimgeour, 2019, pp. 39-41). Given the lack of curriculum time, it is also crucial that learners are guided to receive Chinese input outside the classroom (Ellis, 2005, p. 218). There is now a wealth of online material available ranging from catchy songs aimed specifically at introducing everyday vocabulary to subtitled Chinese films. Not only do such materials provide excellent opportunities “for flows of Chinese to be listened to without demands to perform” (Orton & Scrimgeour, 2019, p. 33), but they can also encourage incidental learning (Ellis & Shintani, 2014, p. 24).

7.4 Conclusion

In this chapter, I have attempted to provide some evidence-informed perspectives for teaching pronunciation to young Anglophone beginner learners of Chinese. While acknowledging the unique linguistic and pedagogic challenges of teaching and learning L2 Chinese pronunciation, I have adopted a broadly ‘universalist’ approach and demonstrated that a number of the key findings from this study can be linked to similar findings from the more established field of L2 English pronunciation research (e.g. Munro & Derwing, 1995; Derwing & Munro, 1997). One of the most robust findings involved the very low levels of awareness amongst the learners of their own pronunciation errors. Engaging with well-established principles from the wider field of instructed second language acquisition, I proposed that a healthy balance of both implicit and explicit instruction, in line with the weak-interface position (Ellis, 1993) could be a helpful pedagogic response. I also argued that the most serious pronunciation problems generally ran far deeper than a failure to produce a particular tone, but could be frequently traced to segmental sounds as well. Moreover, there were numerous examples of non-standard tones having no effect upon learners’ comprehensibility or intelligibility levels. This does not mean, of course, that tones can simply be ignored, but perhaps they are not as crucial for communication as appears to be tacitly assumed in much of the CSL literature, provided that the segmental sounds are correctly pronounced.

8. Conclusion

Set within the context of teaching and learning Chinese at two secondary schools in the North of England and adopting a case study research design, the overarching aim of this study was to develop research-informed insights into the nature of the pronunciation challenges facing beginner learners of Chinese. Following Derwing and Munro (2015), I differentiated between accentedness, comprehensibility and intelligibility, taking the view that the focus in the classroom should be on helping learners produce highly intelligible and comprehensible Chinese, regardless of whether they were perceived as having some sort of L2 accent. I also investigated the extent to which learners were aware of their own pronunciation errors, both during and after speech production. In this concluding chapter, I initially remind readers of the most important research findings and their concomitant pedagogical implications, before considering the study's limitations, reflecting upon the study's wider significance and making suggestions for future research.

8.1 Summary of findings

As discussed in more detail in Chapter 7, high levels of both intra and inter-learner variability emerged from the data. All learners were considerably more intelligible at the sentence level than the individual word level while a majority of learners were most intelligible during the role-play activity. There was a large discrepancy between the least and most intelligible pupils. Accentedness, comprehensibility and intelligibility proved to be partially independent speech dimensions. It was therefore common to be rated as being completely intelligible and highly comprehensible, yet still be considered to retain a noticeable accent. Heavily accented tones did not necessarily lead to lower levels of comprehensibility and intelligibility. Furthermore, most intelligibility breakdowns could be traced to problems with individual words which usually implicated segmental sounds as well as tone. All learners demonstrated low levels of awareness of their own pronunciation errors both during and after speech production. Learners who were more intelligible were generally more aware of their own pronunciation errors. There were also low levels of interrater reliability with the L1 Chinese raters frequently disagreeing about the precise nature of an intelligibility breakdown, or that there had even been an intelligibility breakdown. Moreover,

different raters often displayed varying levels of sensitivity towards the constructs of accentedness and comprehensibility.

8.2 Pedagogical implications

In response to the high levels of intra-learner variability, I recommended prioritising pronunciation errors affecting ‘global’ as opposed to ‘local’ intelligibility to better reflect the demands of real life communication when words are usually contextualised (Munro & Derwing, 2015b). I also argued that learners should develop a rich repertoire of ‘formulaic sequences’ which could potentially not only increase their intelligibility levels but also their ‘Willingness to Communicate’ (MacIntyre, 2007). In light of the high levels of inter-learner variability, I called for learners to be assessed individually with priority in the classroom given to the most common pronunciation errors (Munro & Derwing, 2015b). Since many of the intelligibility breakdowns at the sentence level could not be traced to a single element of a word, I suggested teaching both segmental sounds and lexical tone together as opposed to prioritising one above another. Such an approach dovetails with calls from researchers in the field of L2 English pronunciation to regard the separation of segmental from suprasegmental features as an ‘artificial instructional dichotomy’ (Celce-Murcia et al., 2010; Zielinski, 2015). Given the learners’ low levels of awareness of their own pronunciation errors, I argued that they needed explicit guidance to ‘notice-the-gap’ between their own productions and more intelligible forms (Derwing & Munro, 2014, p. 46). Nevertheless, I also pointed out that it was important not to neglect more implicit forms of instruction since it is ultimately this type of knowledge which underpins the ability to communicate smoothly and with confidence (Ellis, 2005, p. 214).

8.3 Limitations of study

This study contains a number of limitations. Firstly, I recognise that the speaking tasks were not carried out under identical conditions. As I noted in Chapter 3, some learners were recorded at the front of the class while their classmates worked silently on a separate writing task. Others, however, were recorded in an adjacent office when another teacher was able to supervise the rest of the class. In a similar vein, I also acknowledge that the interviews and transcription tasks with the 40 L1 Chinese raters

did not always take place in identical conditions, although I was always present to monitor the raters as they listened to the audio extracts. As discussed in Chapter 7, I recognise that this limitation should be better controlled in future studies by booking spaces designed for listening experiments such as sound-proofed rooms (Munro & Derwing, 2015a, p. 25). However, it should also be emphasised that on the very rare occasions that raters complained of being distracted by outside noise, I simply replayed the audio extract.

As discussed in Chapter 6, it was difficult to compare learners' performances in terms of their awareness levels of their own pronunciation errors, since the audio extracts featured in the stimulated recall interviews often contained pronunciation errors which were more salient than others. Moreover, audio extracts coded as intelligible, despite featuring 100 per cent inter-rater reliability, often contained elements of non-standard pronunciation which may well have confused the learners. I also recognise that the raters varied in their ability to explain the decisions behind their ratings and transcriptions. Some raters, for example, may have attributed the main cause of accent to tone because they could not think of anything else to say. Furthermore, as discussed in Chapter 3, in order to simplify the transcription task for the raters, I had removed any unnaturally long pauses in the middle of sentences which weakens any claims that can be made about the influence of sentence level prosody upon students' intelligibility and comprehensibility levels.

8.4 The study's contribution to research

From a methodological perspective, this study is highly unusual within the field of CSL pronunciation research as it is inspired by the *Intelligibility* Principle as opposed to the *Nativeness* Principle (Levis, 2005). The focus, throughout, has consequently been on the promotion of intelligible speech, regardless of how native-like it sounds in stark contrast to much of the existing CSL pronunciation research which appears to be more concerned with an unrealistic focus on developing native-like accent. Moreover, the vast majority of previous CSL pronunciation studies have been carried out in the context of teaching and learning Chinese at North American universities, with empirical studies focussing on the pronunciation of Anglophone school learners of Chinese conspicuous by their absence.

A further contribution centres on the broadening of focus away from a general preoccupation with tones to an inclusion of segmental challenges. There appears to be an assumption that Chinese initials and finals are much easier to acquire than tones which has led to segmental features being largely neglected in the CSL pronunciation literature. Rather than merely focussing on the 'end product' of what raters actually understood, I also addressed how L1 Chinese raters went about making sense of the L2 speech signal which remains a very under-researched topic. My analysis of learners' awareness of their own pronunciation errors, both during and after speech production, also represents an extremely rare attempt to gain a deeper insight into the nature of the learners' pronunciation challenges from the learners' perspectives.

8.5 Suggestions for future research

I recognise that this study has only scraped the surface in terms of establishing research-informed insights into the nature of beginner learners' pronunciation challenges. Moreover, the case study nature of this research design makes it impossible to make claims about the L2 Chinese pronunciation of learners beyond the 20 participants featured in this study. An obvious next step would be to encourage other Chinese teachers and researchers to carry out similar intelligibility oriented studies with other L2 Chinese learners in similar learning contexts. In particular, there is an urgent need to establish precisely which phonological structures are most important for global level intelligibility and comprehensibility, as well as to widen the focus to include a more thorough analysis of the role of sentence level prosody and in particular the interference of L1 English intonation patterns. It would be particularly useful to investigate the potential of Mobile Assisted Language Learning (MALL) as a tool to help learners raise awareness of their own pronunciation errors and to improve their intelligibility. For instance, the findings from this study certainly suggest that it could be helpful for learners to use online tools to record themselves producing an output which they could then listen to and compare with a sample reading to raise awareness of the gap between their pronunciation and more intelligible forms.

It would also be helpful to include a more theoretical framework which could help teachers make more informed choices about which pronunciation errors they should prioritise in the classroom. One concept well worth exploring in this regard is the notion

of 'Functional Load' which refers to the amount of 'work' done by a speech sound in keeping minimal pairs apart (Derwing & Munro, 2015, p. 178). It is highly likely that pronunciation errors featuring high functional load items would cause much greater problems for intelligibility than low functional load errors (Munro & Derwing, 2006). It would also be useful to investigate the relationship between the learners' overall intelligibility ratings and the nature of the speaking task in greater depth. A longitudinal research design would also be particularly beneficial to help pinpoint problematic areas which are unlikely to improve without explicit intervention (Munro & Derwing, 2015b, p. 386).

This study also raised a number of questions about the specific role of the L1 Chinese raters. I interpreted the low interrater reliability partially in terms of raters having different levels of aptitude for processing the L2 speech signal although I recognise that this is currently a matter of conjecture. It certainly appears likely that some of the intelligibility breakdowns are more the responsibility of the listener as opposed to the speaker (Grant, 2014). It would also be useful to investigate the extent to which L1 raters process the same L2 speech signal differently depending on which localised version of Mandarin they speak themselves, in addition to a deeper focus on the precise strategies they use when processing the learners' Chinese utterances. There is also an urgent need to investigate the effects of various pedagogical interventions on learners' L2 Chinese pronunciation within the context of UK secondary schools. My calls for a satisfactory balance of both implicit and explicit forms of instruction, while compatible with some of the findings from this study, are based on my own 'sense of plausibility' (Prabhu, 1990) as well as well-established principles from the wider field of instructed second language acquisition, as opposed to empirical evidence from the CSL classroom.

8.6 Concluding comments

The field of CSL is now exploding out of the confines of university sinology departments into more mainstream learning environments (Lo Bianco, 2016). Despite this exciting new reality, learning outcomes at the secondary school level in Anglophone settings are generally disappointing (Orton & Scrimgeour, 2019). One obstacle to future growth is the lack of research into the Chinese learning experiences

of school-based learners. A key question for the CSL research community will be to ascertain the extent to which learning Chinese, with its particular intrinsic linguistic challenges for Anglophone learners, requires the creation of a “specifically Chinese pedagogy” (Orton, 2011). The evidence from this study would suggest a more ‘universalist’ as opposed to an ‘essentialist’ stance is appropriate (Han, 2016), at least as far as acquiring an intelligible version of the Chinese sound system is concerned. At a conceptual level, I was able to successfully apply Derwing and Munro’s (2015) framework to the context of young Anglophone beginner learners of Chinese, despite it being originally developed with reference to the L2 English pronunciation of adult immigrants in Canada. Moreover, one of the most notoriously difficult aspects of CSL – lexical tone – did not appear to play such a crucial role in promoting sentence level intelligibility as might be expected given its prominence in the CSL pronunciation research literature. While not denying that producing and perceiving Chinese tones can be problematic for many beginner CSL learners, I take the view that it is high time to knock tones off their pedestal and give equal attention in the classroom to segmental sounds. It is my hope that other Chinese teachers will read the situated findings of this case study and be motivated to carry out their own intelligibility-based research. Together we can help create a more evidence-informed CSL pedagogy and thereby cement the position of Chinese on the curricula of schools in the UK and in other Anglophone settings.

References

- Abrahamsson, N., & Hyltenstam, K. (2008). The robustness of aptitude effects in near-native second language acquisition. *Studies in Second Language Acquisition*, 30(4), 481-509. doi: 10.1017/s027226310808073x
- Audacity. (Version 2.0.3) [Computer software]. Retrieved from <http://audacity.sourceforge.net/>
- Becker, C., & Roos, J. (2016). An approach to creative speaking activities in the young learners' classroom. *Education Inquiry*, 7(1), 9-26. doi: 10.3402/edui.v7.27613
- BERA. (2011). Ethical guidelines for educational research. London: BERA.
- Block, D. (2003). *The social turn in second language acquisition*. Edinburgh: Edinburgh University Press.
- Boersma, P., & Weenink, D. (2014). Praat: doing phonetics by computer [Computer program]. Version 5.3.77, Retrieved from <http://www.praat.org/>
- Borg, S. (2010). State-of-the-art-article: Language teacher research engagement. *Language Teaching*, 43(4), 391-429. doi: 10.1017/S0261444810000170
- British Academy. (2019). *Languages in the UK: a call for action*. London. Retrieved from <https://www.thebritishacademy.ac.uk/sites/default/files/Languages-UK-2019-academies-statement.pdf>
- British Council. (2015a). *The teaching of Chinese in the UK*. Retrieved from http://www.britishcouncil.org/sites/britishcouncil.uk2/files/alcantara_full_report_jun15.pdf
- British Council. (2015b). *Language Trends 2014/15: The state of language learning in primary and secondary schools in England*. Retrieved from https://www.britishcouncil.org/sites/default/files/language_trends_survey_2015.pdf
- British Council. (2016). *Language Trends 2015/16: The state of language learning in primary and secondary schools in England*. Retrieved from https://www.britishcouncil.org/sites/default/files/language_trends_survey_2016_0.pdf
- British Council. (2018). *Language trends 2018: language teaching in primary and secondary schools in England*. Retrieved from https://www.britishcouncil.org/sites/default/files/language_trends_2018_report.pdf
- British Council. (2020). Mandarin Excellence programme for schools in England. Retrieved from <https://www.britishcouncil.org/education/schools/support-for-languages/partnerships-courses-resources/mandarin-excellence-programme>
- Burns, A. (2005). Action research: an evolving paradigm? *Language Teaching*, 38, 57-74. doi:10.1017/S0261444805002661

- Busby, E. (2017). £10m Mandarin schools programme reaches less than third of target half-way through. *The Times Educational Supplement*, Oct. 18, 2017. Retrieved from <https://www.tes.com/news/ps10m-mandarin-schools-programme-reaches-less-third-target-half-way-through>
- Celce-Murcia, M., Brinton, D.M., Goodwin, J.M., with Griner, B. (2010). *Teaching pronunciation: a course book and reference guide* (2nd Ed.). New York, NY: Cambridge University Press.
- Chen, Q. (1997). Toward a sequential approach for tonal error analysis. *Journal of the Chinese Language Teachers Association*, 32(1), 21-39.
- Chen, P. (1999). *Modern Chinese: history and sociolinguistics*. Cambridge: Cambridge University Press.
- Chen, Y. (2018). More and more British children are learning Chinese – but there are problems with the teaching. *The Conversation*, June 6, 2018. Retrieved from <https://theconversation.com/more-and-more-british-children-are-learning-chinese-but-there-are-problems-with-the-teaching-91424>
- Chun, D. M., Jiang, Y., Meyr, J., & Yang, R. (2015). Acquisition of L2 Mandarin Chinese tones with learner-created tone visualizations. *Journal of Second Language Pronunciation*, 1(1), 86–114. doi: 10.1075/jslp.1.1.04chu
- CILT. (2007). *Mandarin Language Learning Research Study*. London. Retrieved from <http://dera.ioe.ac.uk/6645/1/DCSF-RW019.pdf>
- Collins, B., & Mees, I. (2008). *Practical phonetics and phonology. A resource book for students*. (2nd ed.). London: Routledge.
- Cook, V. (1999). Going beyond the native speaker in language teaching. *TESOL Quarterly*, 33(2), 185-209.
- Cook, V. (2016). *Second language learning and language teaching* (4th ed.). London: Routledge.
- Couper, G. (2011). What makes pronunciation teaching work? Testing for the effect of two variables: Socially constructed metalanguage and critical listening. *Language Awareness*, 20(3), 159-182. doi: 10.1080/09658416.2011.570347
- Creswell, J. (2003). *Research design: qualitative, quantitative, and mixed methods approaches*
- DeKeyser, R. (2015). Skill Acquisition Theory. In B. VanPatten & J. Williams (Eds.), *Theories in Second Language Acquisition*, (pp. 94–112). New York: Routledge.
- Department for Education (2015). Modern foreign languages: GCSE subject content. Retrieved from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/485567/GCSE_subject_content_modern_foreign_langs.pdf
- Derwing, T., & Munro, M. (1997). Accent, comprehensibility and intelligibility: evidence from four L1s. *Studies in Second Language Acquisition*, 19: 1-16. doi: 10.1017/s0272263197001010

- Derwing, T., & Munro, M. (2005). Second language accent and pronunciation teaching: a research-based approach. *TESOL Quarterly*, 39(3), 379-397. doi: 10.2307/3588486
- Derwing, T., & Munro, M. (2009). Putting accent in its place: rethinking obstacles to communication. *Language Teaching*, 42(4), 476-490. doi: 10.1017/s026144480800551x
- Derwing, T., & Munro, M. (2014). Myth 1: once you have been speaking a second language for years, it's too late to change your pronunciation. In L. Grant (Ed.), *Pronunciation myths: applying second language research to classroom teaching* (pp. 34-55). Ann Arbor: University of Michigan Press.
- Derwing, T., & Munro, M. (2015). *Pronunciation fundamentals: evidence-based perspectives for L2 teaching and research*. Amsterdam: John Benjamins.
- Derwing, T., Munro, M., & Wiebe, G. (1997). Pronunciation instruction for 'fossilized' learners: Can it help? *Applied Language Learning*, 8(2), 217-235.
- Derwing, T., Munro, M., & Wiebe, G. (1998). Evidence in favor of a broad framework for pronunciation instruction. *Language Learning*, 48(3), 393-410. doi: 10.1111/0023-8333.00047
- Derwing, T., Rossiter, M., & Munro, M. (2002). Teaching native speakers to listen to foreign-accented speech. *Journal of Multilingual and Multicultural Development*, 23(4), 245-259. doi: 10.1080/01434630208666468
- Diamantidaki, F., Pan, L., & Carruthers, K. (Eds.) (2018). *Mandarin Chinese teacher education: issues and solutions*. London: UCL IOE Press.
- Dlaska, A., & Krekeler, C. (2013). The short-term effects of individual corrective feedback on L2 pronunciation. *System*, 41(1), 25-37. doi: 10.1016/j.system.2013.01.005
- Dörnyei, Z. (2007). *Research methods in applied linguistics*. Oxford: Oxford University Press.
- Doughty, C., & Long, M. (2003). Optimal psycholinguistic environments for distance foreign language learning. *Language Learning and Technology* 7(3): 50–80.
- Duanmu, S. (2007). *The phonology of standard Chinese* (2nd ed.). Oxford: Oxford University Press.
- Duff, P. (2008). *Case study research in applied linguistics*. New York: Routledge.
- Duff, P. (2012). How to carry out case study research. In A. Mackay, & S. Gass (Eds.). *Research methods in second language acquisition: A Practical Guide* (pp. 95-116). Chichester: Wiley-Blackwell.
- Duff, P., Anderson, T., Ilnyckyj, R., VanGaya, E., Wang, R., & Yates, E. (2013). *Learning Chinese: linguistic, sociocultural, and narrative perspectives*. Berlin: De Gruyter.
- Ellis, R. (1993). Second language acquisition and the structural syllabus. *TESOL Quarterly* 27(1), 91-113.

- Ellis, R. (2005). Principles of instructed language learning. *System*, 33, 209-224. doi:10.1016/j.system.2004.12.006
- Ellis, R. (2008). *The study of second language acquisition*. (2nd ed.). Oxford: Oxford University Press.
- Ellis, R. (2012). *Language teaching research & language pedagogy*. Chichester: Wiley-Blackwell.
- Ellis, R., & Barkhuizen, G. (2005). *Analysing learner language*. Oxford: Oxford University Press.
- Ellis, R., & Shintani, N. (2014). *Exploring language pedagogy through second language acquisition research*. London: Routledge.
- Evans, M. (2009a). Reliability and validity in qualitative research. In E. Wilson (Ed.), *School-based research: a guide for education students* (pp. 112-124). London: Sage Publications.
- Evans, M. (2009b). Analysing qualitative data. In E. Wilson (Ed.), *School-based research: a guide for education students* (pp. 125-136). London: Sage Publications.
- Everson, M. & Xiao, Y. (Eds.) (2009). *Teaching Chinese as a foreign language: theories and applications*. Boston: Cheng & Tsui Company.
- Field, J. (2005). Intelligibility and the listener: the role of lexical stress. *TESOL Quarterly*, 39(3), 399-423. doi: 10.2307/3588487
- Field, J. (2008). *Listening in the language classroom*. Cambridge: Cambridge University Press.
- Field, J. (2014). Myth 3: Pronunciation teaching has to establish in the minds of language learners a set of distinct consonant and vowel sounds. In L. Grant (Ed.), *Pronunciation myths: applying second language research to classroom teaching* (pp. 80-106). Ann Arbor: University of Michigan Press.
- Foote, J.A., Trofimovich, P., Collins, L., & Urzúa, F.S. (2016). Pronunciation teaching practices in communicative second language classes. *The Language Learning Journal*, 44(2), 181-196. doi: 10.1080/09571736.2013.784345
- Forbes, K. (2016). Cross-linguistic transfer of foreign language writing strategies: developing first and foreign language writing through metacognitive strategy use. Ph.D. dissertation, The University of Cambridge, Cambridge.
- Friedman, D. (2012). How to collect and analyse qualitative data. In A. Mackey, & S. Gass (Eds.). *Research methods in second language acquisition: a practical guide* (pp. 180-200). Chichester: Wiley-Blackwell.
- Gass, S., & Mackey, A. (2000). *Stimulated recall methodology in second language research*. Mahwah, NJ: Lawrence Erlbaum.
- Gass, S., & Varonis, E. (1984). The effect of familiarity on the comprehensibility of nonnative speech. *Language Learning*, 34(1), 65-89.

- Golombek, P., & Rehn Jordan, S. (2005). Becoming 'black lambs' not 'parrots': a poststructuralist orientation to intelligibility and identity. *TESOL Quarterly*, 39(3), 513-533.
- GovUK. (2018). Find and compare schools in England. Retrieved from <https://www.gov.uk/school-performance-tables>
- GovUK. (2019). Find postgraduate teacher training courses. Retrieved from <https://www.gov.uk/find-postgraduate-teacher-training-courses>
- Grant, L. (2014). Prologue to the myths: what teachers need to know. In L. Grant (Ed.), *Pronunciation myths: applying second language research to classroom teaching* (pp. 1-33). Ann Arbor: University of Michigan Press.
- Hahn, L. (2004). Primary stress and intelligibility: research to motivate the teaching of suprasegmentals. *TESOL Quarterly*, 38(2), 201-223. doi: 10.2307/3588378
- Han, Z. and Finneran, R. (2014). Re-engaging the interface debate: strong, weak, none, or all? *International Journal of Applied Linguistics*, 24(3), 370-389. doi: 10.1111/ijal.12034
- Han, Z. (2016). Research meets practice: Holding off and holding on. *Chinese as a Second Language*, 51(3), 236-251. doi: 10.1075/csl.51.3.01han
- Hazel, W. (2018). GCSE results: language entries rise for first time since 2013. *The Times Educational Supplement*, Aug. 23, 2018. Retrieved from <https://www.tes.com/news/gcse-results-language-entries-rise-first-time-2013>
- Hu, B. (2010). The challenges of Chinese: a preliminary study of UK learners' perceptions of difficulty. *The Language Learning Journal*, 38(1), 99-118.
- Hu, B. (2018). *Manual for teaching and learning Chinese as a foreign language*. London and New York: Routledge.
- Hu, X., Ackermann, H., Martin, J.A., Erb, M., Winkler, S., & Reiterer, S.M. (2013). Language aptitude for pronunciation in advanced second language (L2) learners: Behavioural predictors and neural substrates. *Brain and Language*, 127(3), 366-376. doi: 10.1016/j.bandl.2012.11.006
- Hyman, L. M., & VanBik, K. (2004). Directional rule application and output problems in Hakha Lai tone. *Language and Linguistics*, 5(4), 821-861.
- Isaacs, T. (2008). Towards defining a valid assessment criterion of pronunciation proficiency in non-native English speaking graduate students. *The Canadian Modern Language Review / La revue canadienne des langues vivantes*, 64(4), 555-580.
- Jenkins, J. (2000). *The phonology of English as an international language*. Oxford: Oxford University Press.
- Kan, Q., Owen, N., & Bax, S. (2018). Researching mobile-assisted Chinese-character learning strategies among adult distance learners. *Innovation in Language Learning and Teaching*, 12(1), 56-71. doi: 10.1080/17501229.2018.1418633

- Ke, C. (2012). Research in second language acquisition of Chinese: where we are, where we are going. *Journal of the Chinese Language Teachers Association*, 47(3), 43-113.
- Ke, P. (2016). Chinese as a Foreign Language in K-12 Education. In J. Ruan, C. Leung & J. Zhang (Eds.), *Chinese language education in the United States* (pp. 123-140). Cham, Heidelberg, New York, Dordrecht, and London: Springer.
- Kim, S. (2017). Effects of listeners' communicative experiences in Thai English on the intelligibility of Thai English. *English Teaching*, 72(3), 69-90.
doi:10.15858/engtea.72.3.201709.69
- Krashen, S. (1985). *The input hypothesis: issues and implications*. London and New York: Longman.
- Kvale, S., & Brinkmann, S. (2009). *InterViews: Learning the craft of interviewing research*. (2nd ed.). Thousand Oaks, CA: Sage Publications.
- Lamb, T., & Simpson, M. (2003). Escaping from the treadmill: practitioner research and professional autonomy. *Language Learning Journal*, 28, 55-63.
- Levis, J. (2005). Changing concepts and shifting paradigms in pronunciation teaching. *TESOL Quarterly*, 39(3), 369-377. doi: 10.2307/3588485
- Li, C. & Thompson, S. (1977). The acquisition of tone in Mandarin-speaking children. *Journal of Child Language*, 4(2): 185-99.
- Li, D. (2006). Chinese as a Lingua Franca in Greater China. *Annual Review of Applied Linguistics*, 26, 149-176. doi: 10.1017/S0267190506000080
- Lightbown, P. (2000). Classroom SLA research and language teaching. *Applied Linguistics*, 21, 431-62.
- Lin, Y-H. (2007). *The sounds of Chinese*. Cambridge: Cambridge University Press.
- Lindemann, S. (2010). Who's "unintelligible"? The perceiver's role. *Issues in Applied Linguistics*, 18(2), 223-232.
- Lippi-Green, R. (1997). *English with an accent: language, ideology, and discrimination in the United States*. London: Routledge.
- Lo Bianco, J. (2011). Chinese: The gigantic up-and-comer. In L. Tsung & K. Cruickshank (Eds.), *Teaching and learning Chinese in global contexts: multimodality and literacy in the new media age* (pp. xiii-xxiv). London: Continuum.
- Lo Bianco, J. (2016). Foreward. In R. Moloney & H. Xu (Eds.), *Exploring innovative pedagogy in the teaching and learning of Chinese as a foreign language* (pp. v-viii). Singapore, Heidelberg, New York, Dordrecht, and London: Springer.

- Luo, C. (2014). One-third of Chinese do not speak Putonghua, says Education Ministry. *South China Morning Post*, Sep. 22, 2014, Retrieved from <https://www.scmp.com/news/china-insider/article/1598040/3-10-chinese-citizens-do-not-speak-putonghua-says-education>
- Luo, S. (2017). The effect of pitch interplay on English-speakers of Mandarin. *Chinese as a Second Language*, 52(1), 28-54. doi: 10.1075/csl.52.1.02luo
- MAC (2017). *Partial review of the shortage occupation list: review of teachers*. London. Retrieved from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/585998/2017_01_26_MAC_report_teachers_SOL.pdf
- Macaro, E. (2003). Second language teachers as second language classroom researchers. *Language Learning Journal*. 27, 43-51.
- Macaro, E. (2010). Conclusions. In E. Macaro (Ed.), *The Continuum companion to second language acquisition* (pp. 300-305). London: Continuum.
- Macaro, E., Graham, S. & Woore, R. (2016). *Improving foreign language teaching: towards a research-based curriculum and pedagogy*. London and New York: Routledge.
- MacIntyre, P.D., Clément, R., Dörnyei, Z., & Noels, K.A. (1998). Conceptualizing willingness to communicate in a L2: A situational model of L2 confidence and affiliation. *The Modern Language Journal*, 82(4), 545-562. doi: 10.1111/j.1540-4781.1998.tb05543.x
- MacIntyre, P.D. (2007). Willingness to communicate in the second language: Understanding the decision to speak as a volitional process. *The Modern Language Journal*, 91(4), 564-576. doi: 10.1111/j.1540-4781.2007.00623.x
- McDonald, E. (2011). *Learning Chinese, turning Chinese: challenges to becoming Sinophone in a globalised world*. New York: Routledge.
- McGinnis, S. (1997). Tonal spelling versus diacritics for teaching pronunciation of Mandarin Chinese. *The Modern Language Journal*. 81(2), 228-236.
- Merriam, S. (2009). *Qualitative research: a guide to design and implementation*. San Francisco: Jossey-Bass.
- Miracle, W. (1989). Tone production of American students of Chinese: a preliminary acoustic study. *Journal of the Chinese Language Teachers Association*, 24(3), 49-65.
- Munro, M. (2008). Foreign accent and speech intelligibility. In J. Hansen Edwards & M. Zampini (Eds.), *Phonology and second language acquisition* (pp. 193-218). Amsterdam: John Benjamins.

- Munro, M. (2011). Intelligibility: buzzword or buzzworthy? In J. Levis & K. LeVelle (Eds.). *Proceedings of the 2nd Pronunciation in Second Language Learning and Teaching Conference*, Sept. 2010. (pp. 7-16), Ames, IA: Iowa State University.
- Munro, M., & Derwing, T. (1995). Foreign accent, comprehensibility and intelligibility in the speech of second language learners. *Language Learning*, 45(1), 73-97. doi: 10.1111/j.1467-1770.1995.tb00963.x
- Munro, M., & Derwing, T. (2006). The functional load principle in ESL pronunciation instruction: an exploratory study. *System*, 34(4), 520-531. doi: 10.1016/j.system.2006.09.004
- Munro, M., & Derwing, T. (2008). Segmental acquisition in adult ESL learners: a longitudinal study of vowel production. *Language Learning*, 58(3), 479-502.
- Munro, M., & Derwing, T. (2011). The foundations of accent and intelligibility in pronunciation research. *Language Teaching*, 44(3), 316-327.
- Munro, M., & Derwing, T. (2015a). A prospectus for pronunciation research in the 21st century: a point of view. *Journal of Second Language Pronunciation* 1(1), 11-42. doi: 10.1075/jslp.1.1.01mun
- Munro, M., & Derwing, T. (2015b). Intelligibility in research and practice: teaching priorities. In M. Reed & J. Levis (Eds.) *The handbook of English pronunciation* (pp. 377-396). Chichester: Wiley-Blackwell.
- Murphy, J. (2014). Intelligible, comprehensible, non-native models in ESL/EFL pronunciation teaching. *System*, 42, 258-269.
- Myles, F., Hooper, J., & Mitchell, R. (1998). Rote or rule? Exploring the role of formulaic language in classroom foreign language learning. *Language Learning*, 48, 323-63.
- Myles, F., Mitchell, R., & Hooper, J. (1999). Interrogative chunks in French L2: a basis for creative construction? *Studies in Second Language Acquisition*, 21(1), 49-80.
- Neal, R. (2013). Teaching and learning Mandarin tones in an English secondary school. Unpublished MEd dissertation, The University of Cambridge, Cambridge.
- Neal, R. (2018). Investigating the intelligibility of Anglophone young beginner learners of Mandarin Chinese. In F., Diamantidaki, P. Lin, & K. Carruthers (Eds.), *Mandarin Chinese teacher education: issues and solutions* (pp. 128-141). London: UCL IOE Press.
- Nguyen, H., & Macken, M. (2008). Factors affecting the production of Vietnamese Tones. A study of American learners. *Studies in Second Language Acquisition*, 30, 49-78.
- Norman, J. (1988). *Chinese*. New York: Cambridge University Press.

- OFSTED. (2008). *Every language matters. An evaluation of the extent and impact of initial training to teach a wider range of world languages*. London. Retrieved from <http://dera.ioe.ac.uk/8173/>
- Ortega, L. (2009). *Understanding second language acquisition*. London: Hodder Arnold.
- Orton, J. (2008). *Chinese language education in Australian schools*. Melbourne: University of Melbourne and the Confucius Institute Melbourne.
- Orton, J. (2011). Educating Chinese language teachers – some fundamentals. In L. Tsung & K. Cruickshank (Eds.), *Teaching and learning Chinese in global contexts: multimodality and literacy in the new media age* (pp. 151-164). London: Continuum.
- Orton, J. (2016). *Building Chinese language capacity in Australia*. Sydney: Australia China Research Institute. Retrieved from https://www.australiachinarelations.org/sites/default/files/20032%20ACRI%20Jane%20Orton%20-%20Chinese%20Language%20Capacity_web_0.pdf
- Orton, J. and Scrimgeour, A. (2019). *Teaching Chinese as a Second Language: The way of the learner*. New York and London: Routledge.
- Osbourne, C., Zhang, Q., & Zhang, G. (2018). Which is more effective in introducing Chinese characters? An investigative study of four methods used to teach CFL beginners. *The Language Learning Journal*, doi:10.1080/09571736.2017.1393838
- Pachler, N., Evans, M., Redondo, A., & Fisher, L. (2014). *Learning to teach foreign languages in the secondary school* (4th ed.). London: Routledge.
- Pavlenko, A. (2003). I never knew I was a bilingual: reimagining teacher identities in TESOL. *Journal of Language, Identity & Education*, 2(4), 251-268.
- Phillips, D., & Burbules, N. (2000). *Postpositivism and Educational Research*. Oxford: Rowman & Littlefield.
- Pickering, L. (2012). Second language speech production. In S. Gass, & A. Mackey (Eds.), *The Routledge handbook of second language acquisition* (pp. 335-348). New York: Routledge.
- Prabhu, N. (1990). There is no best method – why? *Tesol Quarterly*, 24(2), 161-176.
- Purcell, E.T., & Suter, R.W. (1980). Predictors of pronunciation accuracy: A re-examination. *Language Learning*, 30(2), 271-287. doi: 10.1111/j.1467-1770.1980.tb00319.x
- Rajagopalan, K. (2010). The soft ideological underbelly of the notion of intelligibility in discussions about ‘World Englishes’. *Applied Linguistics*, 31(3), 465-470. doi: 10.1093/applin/amq014

- Rogers, C., & Dalby, J. (2005). Forced-choice analysis of segmental production by Chinese-accented English speakers. *Journal of Speech, Language, and Hearing Research*, 48(2), 306-322.
- Rosell-Aguilar, F., & Kan, Q. (2015). Design and user evaluation of a mobile application to teach Chinese characters. *The JALT CALL Journal*, 11(1), 19-40.
- Ross, C., & Ma, J. (2006). *Modern Mandarin Chinese grammar: a practical guide*. Abingdon: Routledge
- Saito, K., & Lyster, R. (2012). Effects of form-focused instruction and corrective feedback on L2 pronunciation development of /l/ by Japanese learners of English. *Language Learning*, 62(2), 595-633.
doi: 10.1111/j.1467-9922.2011.00639.x
- Schachter, J. (1974). An error in error analysis. *Language Learning*, 27, 205-14.
- Schmidt, R. (1990). The role of consciousness in second language learning. *Applied Linguistics*, 11 (2), 17-46.
- Schmidt, R. (2001). Attention. In P. Robinson (Ed.), *Cognition and second language instruction* (pp. 3-32). Cambridge: Cambridge University Press.
- SCLF (2020). Swire Chinese Language Foundation: Our Centres. Retrieved from <https://www.swireclf.org/our-centres/>
- Selinker, L. (1972). Interlanguage. *International Review of Applied Linguistics*, 10: 209-31.
- Setter, J., & Jenkins, J. (2005). State-of-the-art-review article. *Language Teaching*, 38(1), 1-17.
- Shei, C. (2014). *Understanding the Chinese language – a comprehensive linguistic introduction*. Abingdon: Routledge.
- Sheldon, A., & Strange, W. (1982). The acquisition of /r/ and /l/ by Japanese learners of English: Evidence that speech production can precede perception. *Applied Psycholinguistics*, 3(3), 243-261. doi: 10.1017/s0142716400001417
- Shen, X. (1989). Toward a register approach in teaching Mandarin tones. *Journal of the Chinese Language Teachers Association*, 24(3), 27-47.
- Smith, L.E. and Nelson, C.E. (1985). International intelligibility of English: directions and resources. *World Englishes* 3, 333–342.
- So, C.K.Lai (2006). Effects of L1 prosodic background and AV training on learning Mandarin tones by speakers of Cantonese, Japanese, and English. Ph.D. dissertation. Simon Fraser University.

- Stake, R. (2005). Qualitative case studies. In N. Denzin, & Y. Lincoln (Eds.), *Handbook of qualitative research* (2nd ed.), (pp. 435-454). Thousand Oaks, CA: Sage Publications.
- Sun, C. (2006). *Chinese – A Linguistic Introduction*. Cambridge: Cambridge University Press.
- Suzuki, Y. and DeKeyser, R. (2017). The interface of explicit and implicit knowledge in a second language: insights from individual differences in cognitive aptitudes. *Language Learning*, 67(4), 747-790. doi: 10.1111/lang.12241
- Taber, K. (2002). Intense, but it's all worth it in the end: The co-learner's experience of the research process. *British Educational Research Journal*, 28(3): 435-457.
- Taber, K. (2007). *Classroom-based research and evidence-based practice. A guide for teachers*. London: Sage Publications.
- Tao, L. & Guo, L. (2008). Learning Chinese tones: a developmental account. *Journal of the Chinese Language Teachers Association*, 43(2), 17-46.
- Timmis, I. (2002). Native-speaker norms and international English: a classroom view. *ELT Journal*, 56, 240-249. doi: 10.1093/elt/56.3.240
- Triskova, H. (2011). The structure of the Mandarin syllable: why, when and how to teach it. *Archiv Orientalni*, 79(1):99-134.
- Tsung, L. & Cruickshank, K. (Eds.) (2011), *Teaching and learning Chinese in global contexts: multimodality and literacy in the new media age*. London: Continuum.
- Turner, C. (2018). A-level results day 2018: Chinese overtakes German for first time. *The Telegraph*, Aug. 16, 2018, Retrieved from <https://www.telegraph.co.uk/education/2018/08/16/chinese-a-level-overtakes-german-first-time-becoming-uks-third/>
- US Department of State (2019). Foreign language training: foreign service institute. Retrieved from <https://www.state.gov/key-topics-foreign-service-institute/foreign-language-training/>
- VanPatten, B., & Benati, A. (2010). *Key terms in second language acquisition*. London: Continuum.
- Wang, Y., Spence, M., Jongman, A., & Sereno, J. (1999). Training American listeners to perceive Mandarin tones. *Journal of Acoustical Society of America*, 106(6), 3649-3658.
- Wang, Y., Jongman, A., & Sereno, J. (2003). Acoustic and perceptual evaluation of Mandarin tone productions before and after perceptual training. *Journal of Acoustical Society of America*, 113(2), 1033-1043.

- Wei, L., & Hua, Z. (2011). Changing hierarchies in Chinese language education for the British Chinese learners. In L. Tsung, & K. Cruickshank (Eds.), *Teaching and Learning Chinese in Global Contexts: Multimodality and Literacy in the New Media Age* (pp. 11-28). London: Continuum.
- White, C. (1981). Tonal pronunciation errors and interference from English intonation. *Journal of the Chinese Language Teachers Association*, 16(2), 27-56.
- Winke, P. (2007). Tuning into tones: The effect of L1 background on L2 Chinese learners' tonal production. *Journal of the Chinese Language Teachers Association*, 42(3), 21-55.
- Wonho Yoo, I. (2014). Nonnative teachers in the expanding circle and the ownership of English. *Applied Linguistics*, 35(1), 82-86. doi:10.1093/applin/amt043
- Wood, C., & Busby, E. (2018). A-level results day 2018: Chinese overtakes German among students for first time, amid decline in languages. *Independent*, Aug. 16, 2018, Retrieved from <https://www.independent.co.uk/news/education/education-news/a-level-results-day-chinese-german-modern-foreign-languages-decline-students-a8494156.html>
- Xie, Y. (2015). The acquisition of Mandarin basic vowels by American students: a comparison study of disyllabic words and sentences. *Journal of the Chinese Language Teachers Association*, 50(1), 43-59.
- Xing, J. (2006). *Teaching and learning Chinese as a foreign language: a pedagogical grammar*. Hong Kong: Hong Kong University Press.
- Yang, C. (2013). Acquiring the pitch patterns of L2 Mandarin Chinese. *Chinese as a Second Language Research*, 2(2), 221-242.
- Yang, C. (2014). Acquisition of Mandarin lexical tones: the effect of global pitch tendency. *Contemporary Foreign Language Studies* 408(12): 77-91.
- Yang, C. (2016). *The acquisition of L2 Mandarin prosody*. Amsterdam: John Benjamins.
- Yang, C. & Chan, M. (2010). The perception of Mandarin Chinese tones and intonation by American learners. *Journal of the Chinese Language Teachers Association*, 49(1): 117-145.
- Yates, L., & Zielinski, B. (2009). Give it a go: Teaching pronunciation to adults. Sydney: AMEP Research Centre. Retrieved from http://www.ameprc.mq.edu.au/__data/assets/pdf_file/0006/276135/interactive_sm.pdf
- Yazan, B. (2015). Key concepts in ELT: intelligibility. *ELT Journal*, 69(2), 202-204.

- Yin, R. (2003). *Case study research: design and methods* (3rd ed.). Thousand Oaks, CA: Sage.
- Yip, M. (2002). *Tone*. Cambridge: Cambridge University Press.
- Zhang, G., & Li, L. (2010). Chinese language teaching in the UK: present and future. *The Language Learning Journal*, 38(1), 87-97.
- Zhang, H. (2010). Phonological universals and tonal acquisition. *Journal of the Chinese Language Teachers Association*, 45(1), 39-65.
- Zhang, H. (2013). The second language acquisition of Mandarin Chinese tones by English, Japanese and Korean speakers. Ph.D. dissertation, University of North Carolina at Chapel Hill.
- Zhang, H. (2014). The third tone: allophones, sandhi rules and pedagogy. *Journal of the Chinese Language Teachers Association*, 49(1), 117-145.
- Zhang, H. (2016). Dissimilation in the second language acquisition of Mandarin Chinese tones. *Second Language Research*, 32(3), 427-452. doi: 10.1177/0267658316644293
- Zhang, H. (2018). *Second language acquisition of Mandarin Chinese tones*. Leiden: Brill.
- Zhou, Y. (2014). Understanding language anxiety and ways to alleviate it in Mandarin classrooms. *Journal of the Chinese Language Teachers Association*, 49(3), 49-64.
- Zhu, X., & Yu, B. (2010). *Jinbù 1*. Harlow: Heinemann.
- Zhu, X., & Yu, B. (2011). *Jinbù 2*. Harlow: Heinemann.
- Zielinski, B. (2006). The intelligibility cocktail: an interaction between speaker and listener ingredients. *Prospect: An Australian Journal of TESOL*, 21(1), 22-45.
- Zielinski, B. (2008). The listener: no longer the silent partner in reduced intelligibility. *System*, 36(1), 69-84. doi:10.1016/j.system.2007.11.004
- Zielinski, B. (2015). The segmental/suprasegmental debate. In M. Reed & J. Levis (Eds.) *The handbook of English pronunciation* (pp. 397-412). Chichester: Wiley-Blackwell.
- Zielinski, B., & Yates, L. (2014). Myth 2: Pronunciation instruction is not appropriate for beginning-level learners. In L. Grant (Ed.), *Pronunciation Myths: Applying Second Language Research to Classroom Teaching* (pp. 56-79). Ann Arbor: University of Michigan Press.

Appendix A: Letter to parents/carers seeking permission for their child to take part in the study

The letter below is very similar to the one I used although some small changes, such as the Head of Department's name, have been made in order to preserve anonymity.

March, 2016

Dear Parent/Carer

I am currently studying for a part-time PhD in Education at the Faculty of Education at Cambridge University. For my doctoral thesis I intend to investigate students' spoken Chinese. This will involve recording students speaking Chinese during March 2016 and interviewing them about their experiences of learning Chinese.

The interviews and speaking tasks will take place at school. All transcripts of the interviews will be anonymous. The project will not affect the students' progress in their studies but will, I hope, provide useful information to support the teaching of spoken Chinese. I hope to present my research findings at conferences for Chinese language teachers and in journals/book format for language teaching professionals.

If you have any concerns or questions regarding this research, please contact Mrs Hughes (Director of MFL). I would also be very grateful if you could indicate your consent by completing the form below and returning it via your child either to Mrs Hughes or myself.

Yours faithfully,

Mr R Neal

Mandarin Chinese Teacher

.....
Student's Name.....

Form.....

I am happy for my child to take part in Mr Neal's research project into students' spoken Chinese. I understand that their participation in the research is entirely voluntary, protected by confidentiality, not part of any formal class assessment and may be ended at any moment by their choice.

Signature.....

Name.....

Date.....

Appendix B: Speaking tasks used to elicit L2 Chinese speech samples

Task 1 Read aloud the following ten words

1. 你 nǐ (you)
2. 岁 suì (years old)
3. 喝 hē (to drink)
4. 大 dà (big)
5. 我 wǒ (I)
6. 茶 chá (tea)
7. 学 xué (to learn)
8. 肉 ròu (meat)
9. 吃 chī (to eat)
10. 十 shí (ten)

Task 2 Read aloud the following ten sentences

1. 妹妹十岁 Mèi mei shí suì (Younger sister is 10 years old)
2. 哥哥不吃肉 Gē ge bù chī ròu (Older brother doesn't eat meat)
3. 你喜欢喝茶吗? Nǐ xǐ huan hē chá ma? (Do you like to drink tea?)
4. 他的卧室很大 Tā de wò shì hěn dà (His bedroom is very big)
5. 我八点上学 Wǒ bā diǎn shàng xué (I go to school at 8 o'clock)
6. 你的生日是几月几日? Nǐ de shēng rì shì jǐ yuè jǐ rì? When's your birthday?

7. 姐姐不看书 Jiě jie bú kàn shū (Older sister doesn't read books)
8. 我星期一打网球 Wǒ xīng qī yī dá wǎng qiú (I play tennis on Mondays)
9. 你多大? Nǐ duō dà? (How old are you?)
10. 我不会游泳 Wǒ bú huì yóu yǒng (I cannot swim)

Task 3 Role-play activity

Task 3 took the form of a role-play in which I asked a range of questions about topics already covered in class, such as life at school and daily routine. Learners were expected to answer without any recourse to notes and were not given the list of questions in advance. Below is a list of some of the questions I typically used.

1. 你叫什么? What's your name?
2. 你多大? How old are you?
3. 你的生日是几月几日? When's your birthday?
4. 你家有几口人? How many people are there in your family?
5. 你的爱好是什么? What are your hobbies?
6. 你几点起床? What time do you get up?
7. 你几点睡觉? What time do you go to bed?
8. 你最喜欢吃什么? What's your favourite food?
9. 你最喜欢喝什么? What's your favourite drink?
10. 你最喜欢什么课? What's your favourite subject?

Appendix C: Classification of pronunciation errors at the monosyllabic level

Type of breakdown	Description	Example	Points
1. Tone only	Only difference from intended utterance is the tone	'shì' instead of 'shí'	Tone – 3 Initial – 0 Final - 0
2. Initial only	Only difference from intended utterance is the initial	'mǐ' instead of 'nǐ'	Tone – 0 Initial – 3 Final – 0
3. Final only	Only difference from intended utterance is the final	'rè' instead of 'ròu'	Tone – 0 Initial – 0 Final - 3
4. Tone and initial	Only the tone and initial differ from intended utterance	'shuǐ' instead of 'suì'	Tone – 1 Initial – 1 Final - 0
5. Tone and final	Only tone and final differ from intended utterance	'chē' instead of 'chá'	Tone – 1 Initial – 0 Final – 1
6. Initial and final	Only initial and final differ from intended utterance	'shuǐ' instead of 'xué'	Tone – 0 Initial – 1 Final - 1
7. Tone, initial and final	Tone, initial and final all differ from intended utterance	'wǒ' instead of 'ròu'	Tone – 1 Initial – 1 Final – 1
8. Blank transcription	Rater leaves a blank transcription	-	Tone – 1 Initial – 1 Final – 1
9. Extra syllable	Rater adds an extra syllable	'shí yī' instead of 'shí'	Tone – 1 Initial – 1 Final – 1
10. Homophone	Transcription features same tone, initial and final as intended utterance	查 'chá' (to investigate) instead of 茶 'chá' (tea)	Tone – 0 Initial – 0 Final - 0

Appendix D: Coding framework used to analyse the perceived causes of accentedness

CODE	DEFINITION (Based on Lin, 2007, pp. 309-310)	EXAMPLES FROM INTERVIEWS
1. SEGMENTALS	A speech sound such as a consonant or a vowel	It's like the pronounce of 'duō', particularly the 'd' part [...] I guess the tongue is in the wrong place
2. SUPRASEGMENTALS	A phonological element such as stress or tone that has a span larger than a single segment and is considered to be separable from segments	The tone on 'shí' is a little bit wrong, it should be the second one but he says the fourth one
3. SEGMENTALS AND SUPRASEGMENTALS	The rater's explanation of the accentedness rating includes both segmental and suprasegmental dimensions	The 'zui' is a little bit different – one is the tone and the sound
4. UNSPECIFIED	The rater is unable to provide an explanation for the accentedness rating, or makes no comment	I cannot pin down where is the source but there is a bit of a foreign accent there

Appendix E: Coding framework used to analyse the perceived causes of lower levels of comprehensibility

CODE	DEFINITION (Based on Lin, 2007, pp. 309-310)	EXAMPLE FROM INTERVIEWS
1. SEGMENTALS	A speech sound such as a consonant or a vowel	I think I need to guess for the second word because he said 'jiǔ' (nine) it's kind of a bit similar to 'zǎo' (early) so maybe I will like 'wǒ zǎo diǎn shuì jiào' (I go to sleep early), 'wǒ jiǔ diǎn shuì jiào' (I go to bed at nine o'clock) it's a bit similar
2. SUPRASEGMENTALS	A phonological element such as stress or tone that has a span larger than a single segment and is considered to be separable from segments	Most of the tones are not natural but then when I hear the whole sentence I can figure out what he's saying cos I guess with the same pronunciation there are not any other words which can fit into this meaning
3. SEGMENTALS AND SUPRASEGMENTALS	The rater's explanation of the accentedness rating includes both segmental and suprasegmental dimensions	The key word 'ròu' (meat) is not very clear, not just the tone, pronunciation also
4. UNSPECIFIED	The rater is unable to provide an explanation for the accentedness rating, or makes no comment	It's a bit hard to understand

Appendix F: Coding framework used to analyse the perceived causes of intelligibility breakdowns

Code	Explanation	Example from the interviews
1. No understanding	The transcription is left completely blank, or almost completely blank apart from the subject/one or two characters. Listeners are at a complete loss about how to process the utterance.	Wǒ, wǒ (I, I) and then that's all
2. Wild guess	Raters make a wild guess having understood very little from the speech signal. Their transcriptions may bear little resemblance to the acoustic phonetic content of the original speech signal.	I'm guessing – well this is just pure guess
3. Mistaken keyword	A keyword is misunderstood, or simply missed, with dire consequences for understanding the other words in a sentence. Analogous to making an error with a crossword puzzle clue.	Other parts sound okay, but the 'shēng rì' (birthday) still sounds like 'xìng gé' (character)
4. Context doesn't help	At least half the characters in a sentence are transcribed accurately so that the intelligibility breakdowns take place despite some wider contextual clues.	I can't really understand the last two words

Appendix G: Coding framework used to analyse learners' responses to their own intelligibility breakdowns

Code 1: No recognition of breakdown(s)

Learner's intended utterance	Rater's transcription	Cause of breakdown as evidenced by rater's transcription	Learner's response to audio extract	Cause of breakdown as evidenced by learner's explanation	Explicit awareness mark awarded? (Yes/no)
我最喜欢中文课 wǒ zuì xǐ huan zhōng wén kè (My favourite lesson is Chinese)	我最喜欢中文歌 wǒ zuì xǐ huan zhōng wén gē (Chinese songs are my favourite)	kè → gē Initial (k → g) Tone (4 → 1)	That's alright	No breakdown	No

Code 2: No explanation of breakdown(s)

Learner's intended utterance	Rater's transcription	Cause of breakdown as evidenced by rater's transcription	Learner's response to audio extract	Cause of breakdown as evidenced by learner's explanation	Explicit awareness mark awarded? (Yes/no)
我星期一打网球 wǒ xīng qī yī dá wǎng qiú (I play tennis on Monday)	我星期一到我家 wǒ xīng qī yī dào wǒ jiā (I arrive home on Monday)	dá → dào (Tone 2/4, final a/ao) wǎng → wǒ (Final ang/o) qiú → jiā (Tone 2/1, initial q/j; final iu/ia)	That's so wrong	No explanation provided	No

Code 3: Inaccurate explanation

Learner's intended utterance	Rater's transcription	Cause of breakdown as evidenced by rater's transcription	Learner's response to audio extract	Cause of breakdown as evidenced by learner's explanation	Explicit awareness mark awarded? (Yes/no)
你 nǐ (you)	米 mǐ (rice)	Initial (n → m)	That's wrong – it sounds more flat.	Tone (3 → 1), no mention of problem with initial	No

Code 4: Unsuccessful self-repair

Learner's intended utterance	Rater's transcription	Cause of breakdown as evidenced by rater's transcriptions	Learner's response to audio extract	Cause of breakdown as evidenced by learner's explanation	Explicit awareness mark awarded? (Yes/no)
学 xué (to study)	随 suí (to follow)	Initial (x → s) Final (ue → ui)	I think it needs to be a bit more like '睡 shuì' (sleep)	No explicit explanation provided	No

Code 5: Successful self-repair

Learner's intended utterance	Rater's transcription	Cause of breakdown as evidenced by rater's transcription	Learner's response to audio extract	Cause of breakdown as evidenced by learner's explanation	Explicit awareness mark awarded? (Yes/no)
肉 ròu (meat)	我 wǒ (I)	Tone (4 → 3) Initial (r → w) Final (ou → o)	I think it's wrong 'cos it's not 'wǒ', it's 'ròu'	No explicit explanation provided	No

Code 6: Partial explanation

Learner's intended utterance	Rater's transcription	Cause of breakdown as evidenced by rater's transcription	Learner's response to audio extract	Cause of breakdown as evidenced by learner's explanation	Explicit awareness mark awarded? (Yes/no)
学 xué (to study)	吹 chuī (to blow)	Tone (2 → 1) Initial (x → ch) Final (ue → ui)	It's wrong because I did the flat tone, but it should be questioning	Tone (2 → 1) but no mention of segmental errors	Yes – half a mark

Code 7: Full explanation

Learner's intended utterance	Rater's transcription	Cause of breakdown as evidenced by rater's transcription	Learner's response to audio extract	Cause of breakdown as evidenced by learner's explanation	Explicit awareness mark awarded? (Yes/no)
十 shí	是 shì	Tone (2 → 4)	I used angry tone, it's supposed to be going up	Tone (2 → 4)	Yes (full mark)