English proficiency, intelligibility, and participation of multilingual speakers in Australia

Helen L. Blake
Bachelor of Arts
Bachelor of Speech Pathology (Honours)
Certificate in Teaching English to Speakers of Other Languages (TESOL)

Submitted to Charles Sturt University in fulfilment of the requirements for the degree of Doctor of Philosophy

March, 2019
# Table of Contents

Certificate of Authorship ................................................................. 6  
Acknowledgements ........................................................................ 7  
Ethical Approval ........................................................................... 8  
Abstract ......................................................................................... 9  
Publications and Conference Papers Arising from this Research .......... 11  
Preface ............................................................................................ 15  
Note on Style .................................................................................. 17  
Statements from Co-Authors Confirming the Authorship Contribution of the Doctoral Candidate ................................................................. 18  

## Part One: General Introduction ...................................................... 27  
Chapter 1: Orientation to This Doctoral Research ................................. 28  
Background ..................................................................................... 32  
Benefit of this Research .................................................................. 36  
Purpose of this Thesis ...................................................................... 37  
Methodology ................................................................................... 42  
Chapter 2: Theoretical Framework ..................................................... 49  
Paper 1 ........................................................................................... 52  

Blake, H. L., & McLeod, S. (2018). The International Classification of Functioning, Disability and Health: Considering individuals from a perspective of health and wellness. Perspectives of the ASHA Special Interest Groups, 3(17), 69-77. doi:10.1044/persp3.SIG17.69  

## Part Two: The Relationship between the Spoken English Proficiency of Multilingual Speakers and their Participation in Australian Society .......... 72  
Introduction to Part Two .................................................................. 73  
Chapter 3: Paper 2 .......................................................................... 75  

Chapter 4: Paper 3


Chapter 5: Paper 4


Chapter 6: Paper 5


doi:10.1080/2050571X.2019.1585681

**Part Three: English Intelligibility Enhancement for Multilingual Speakers** ...

Introduction to Part Three ................................................................. 241

Chapter 7: Paper 6


Chapter 8: Paper 7


Chapter 9: Paper 8


**Part Four: Conclusions and Contributions of this Doctoral Research** .......

Chapter 10: Conclusions and Contributions ................................................................. 315

Summary of Key Findings with Reference to the Research Questions ........... 318

Implications of this Research ................................................................................. 322
List of Tables

Table I.  Summary of Parts, Chapters, and Papers in this Doctoral Research ........39
Table II. Summary of ICF Components Investigated in Each Paper ...................50
Table III. Change Over Time in the Five Most Common Languages Other Than English
Spoken in Australian Homes ..............................................................................120
List of Figures

Figure 1. Three Topics Addressed Throughout This Thesis..............................29
Certificate of Authorship

I hereby declare that this submission is my own work and to the best of my knowledge and belief, understand that it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at Charles Sturt University or any other educational institution, except where due acknowledgement is made in the thesis. Any contribution made to the research by colleagues with whom I have worked at Charles Sturt University or elsewhere during my candidature is fully acknowledged. I agree that this thesis be accessible for the purpose of study and research in accordance with normal conditions established by the Executive Director, Library Services, Charles Sturt University or nominee, for the care, loan and reproduction of thesis, subject to confidentiality provisions as approved by the University.

Helen L. Blake
March, 2019
Acknowledgements

I would like to express my appreciation to all those who have contributed directly or indirectly to the completion of this doctoral research. I must begin by thanking my supervisory team at Charles Sturt University, Professor Sharynne McLeod and Doctor Sarah Verdon. I could not have asked for supervisors who were more knowledgeable, supportive, and generous. You are both phenomenal role models for women in academia and I am forever grateful for the opportunity to work with you on this thesis and into the future.

Special thanks to other colleagues from Charles Sturt University who have enriched my PhD journey and provided advice, support, and friendship: Kate Crowe, Sarah Masso, Suzanne Hopf, Anna Cronin, Nicole McGill, Audrey Wang, Gail Fuller, Lisa McLean, and Van Tran. I also gratefully acknowledge the financial support of the Operating Funds for Higher Degree by Research Students at Charles Sturt University that enabled me to present the results of this research at various national and international conferences. I believe these experiences informed and enriched this thesis.

Thank you to staff and students at The University of Newcastle where I conducted some of this research, in particular Associate Professor Sally Hewat, Annemarie Laurence, Joanne Walters, Louise Pavey, and Alexandra Uy. Thank you to my new colleagues at the University of Technology Sydney, especially Professor Bronwyn Hemsley who encouraged me to undertake doctoral research from the beginning.

Special thanks to my family and friends, Annemarie, Belinda, Greg, Karen, Kath, and Silvia, and to my parents for their continued support and faith in me. Thanks to my dog Shura for his companionship, walks that cleared my head and allowed me time to reflect, and for his palpable love of life that never ceases to inspire me.

Finally, thank you to the multilingual speakers who generously participated in this research. My goal in working with multilingual speakers has always been to support their communication in order to improve their participation and I would be extremely grateful if this research contributed to that outcome.
Ethical Approval

Ethical approval for this research was obtained from Charles Sturt University Human Research Ethics Committee (protocol number 2016/039) and The University of Newcastle Human Research Ethics Committee (approval number H-2016-0096).
Abstract

Proficiency in Spoken English has implications for the ability of multilingual speakers to participate in vocational, educational, and social activities in English-dominant countries. A key component of spoken language proficiency is intelligibility, a relative measure of how much of an individual’s speech is understood by their listener. This doctoral research aimed to investigate the relationship between multilingual speakers’ English proficiency, intelligibility, and participation in Australian society and provide insight into whether intelligibility enhancement is an effective intervention to improve English intelligibility in multilingual speakers.

This doctoral research contains four parts presented as a series of eight publications; one encyclopaedia entry and seven journal articles. Part One provides an orientation to the thesis and includes a literature review (Paper 1) describing the World Health Organization’s International Classification of Functioning, Disability and Health (ICF) and its application to speech, language, and hearing. The ICF provided the theoretical framework for this research and ensured a holistic focus on participation.

Part Two (Papers 2 to 5) examines the participation of multilingual speakers in Australia from the perspective of their English proficiency and intelligibility. Paper 2 analysed data from over 19 million people in the 2006 and 2011 censuses to explore the relationship between spoken English proficiency and education, employment, and income. Multilingual residents who spoke English very well were more likely to have postgraduate qualifications, full-time employment and high income than monolingual English-speaking Australians. Paper 3 analysed data from Building a New Life in Australia: The Longitudinal Study of Humanitarian Migrants to examine 2,399 refugees’ English proficiency and how it facilitated or hindered self-sufficiency (e.g., knowing how to look for a job) and successful settlement in Australia. Oral English proficiency proved a statistically significant predictor of self-sufficiency, explaining 21% of the variance while controlling for confounding variables such as age and education. Paper 4 analysed survey data from 137 multilingual students enrolled at 14 Australian universities regarding perceptions of the impact of spoken English proficiency and intelligibility on participation, not only at university, but in society. While participants reported spoken English proficiency impacted participation, they indicated a lack of awareness of intelligibility influencing spoken language proficiency. The amount of time multilingual students had spent studying English had less effect on outcomes than the amount of time they had spent speaking English in conversations.
with native speakers. Paper 5 further explored university students’ perspectives of English intelligibility through qualitative analysis. Data included open-ended comments from the survey in Paper 4, as well as semi-structured interviews with six students and one faculty member from one university. Motivations for improving intelligibility were career aspirations and meeting their own and others’ expectations. Barriers to intelligible speech included lack of self-awareness of intelligibility and use of ineffective strategies (e.g., fast speech rate to disguise pronunciation difficulties). Facilitators of intelligible speech were support from others, beneficial strategies (e.g., confirming listener understanding), and opportunities to practice.

Part Three (Papers 6, 7, and 8) examines intelligibility enhancement, an intervention designed to improve English intelligibility in multilingual speakers. Paper 6 presented an overview of intelligibility enhancement. Paper 7 used a retrospective record review of 175 client records from a university clinic providing intelligibility enhancement to describe characteristics of multilingual speakers who sought support for English intelligibility. The results highlighted the broad range of factors contributing to multilingual speakers’ intelligibility in English (e.g., substitutions/deletions, speaking volume, and time spent using English in conversations). Paper 8 used a multiple-baseline single-case experimental design with two multilingual university students and demonstrated the effectiveness of the Intelligibility Enhancement Assessment and Intervention Protocols. Following intervention, both participants displayed increased performance across the speech/intelligibility instruments in the protocol.

Part Four of the thesis presents conclusions and contributions of this research. This research has shown that multilingual speakers: were successfully participating in Australian society, while also contributing to Australia’s economic and social prosperity; perceived a strong relationship between their English proficiency and their successful participation in society; lacked awareness of their intelligibility and its importance to their spoken language proficiency; valued intervention to support their intelligibility in English; and achieved positive outcomes after participating in intervention with an SLP using the Intelligibility Enhancement Assessment and Intervention Protocols (Blake, 2019a, 2019b). This doctoral research provides a new and significant contribution to knowledge of English proficiency, intelligibility, and participation in multilingual speakers in Australia. The findings provide insights for communities, universities, and individuals, as well as for SLPs who support multilingual speakers in intelligibility enhancement or other contexts of speech-language pathology in Australia and other language-dominant countries.
Publications in the Order they appear in this Doctoral Research


Additional Publications

Editorial

Clinical Guideline and Position Paper


Conference Papers and Posters (peer reviewed, published abstracts)


**Professional Development Workshop Presentation**

Preface

“Do you know what an accent is? It’s a sign of bravery.” Amy Chua

I truly believe my entire work and life experience has led me to conducting this research. Growing up in a small country town, I was always fascinated by languages and at the time, the far off possibility of travelling overseas. My first step was to complete a Bachelor of Arts where I majored in English and German along with minors in French and Spanish. My experiences as a learner of additional languages informed my approach to helping multilingual speakers with their proficiency and intelligibility in English.

When I completed my first degree, my path took an alternative, although as it turned out, relevant direction when I joined the Royal Australian Air Force (RAAF) as an air traffic controller. Over the following 15 years in the RAAF, I worked in numerous training and training management roles where my interest in language continued to develop. I was also deployed for a short time to South-East Asia where I saw the effect of English proficiency on the success of aviation transmissions and the resulting safety implications. The investigation into one of the most widely known accidents in aviation history in Tenerife, Canary Islands in 1977, revealed English proficiency was one of several contributing factors that resulted in the collision of two Boeing 747 planes and the loss of 583 lives (Read & Knoch, 2011).

Aviation transmissions use standardised phraseology unless it cannot serve the intention of the message and then plain language is used. As a trainer, I was always fascinated not only by the effect of pilots’ and my students’ English proficiency on the success of transmissions, but also by their use of language, in particular their syntax and semantics. If a question was not posed in a specific way, an unexpected answer might be received or doubt might be created for either party.

When I left the RAAF, I travelled to England, completed a Teaching English to Speakers of Other Languages Certificate and worked in England and Poland teaching general English. I was frequently moved by my students’ motivation and gratitude for their English language education. They strongly believed that learning English would allow them to improve their lives by participating in further education, more lucrative employment, and potential emigration. I also worked in an aviation college teaching aviation English to air traffic controllers from countries that spoke a language other than English. The International Civil Aviation Organisation regulated that all international aviation transmissions be in English by 2008 and many countries such as Kazakhstan,
Mongolia, Algeria, and Georgia were rushing to comply. People from these countries usually came to the college in England to study; however, I was sent to Kazakhstan twice to teach. My experiences teaching aviation English reinforced my growing interest in the implications of English proficiency not only on individuals, but also on society.

When I returned to Australia, I completed a speech-language pathology degree at The University of Newcastle with honours investigating multilingual speakers’ communication skills in job interviews (Blake, Hewat, & Spencer, 2011). After graduation, I was employed as a project officer for a University of Newcastle Teaching and Learning Project Grant to establish a clinic to provide intelligibility enhancement services to multilingual staff and students. I worked for eight years as the clinical educator in the Speech Intelligibility Clinic training speech-language pathology students to provide this intervention. I continue to be moved by my clients’ motivation and gratitude for the service we provide.

During my PhD, I continued working one day a week in the Speech Intelligibility Clinic at The University of Newcastle. I decided to undertake a PhD investigating the intelligibility of multilingual speakers as there is a minimal evidence base to support assessment and intervention for intelligibility enhancement with multilingual speakers. Anecdotally, there is a lack of understanding among potential service providers as to what intelligibility enhancement involves but a high level of interest among potential recipients of such services. I acknowledge that my own professional and personal life experiences as well as the culture of my profession as a speech-language pathologist have influenced my approach to this research. I continue to enjoy working with multilingual speakers and am excited about the possibility of my research making a difference in their lives.

References


Note on Style

Style

This thesis included seven papers and one encyclopedia entry embedded in three parts and ten chapters. The papers were submitted to and published in a range of journals from a variety of disciplines including speech-language pathology, clinical linguistics, and bilingualism in order to increase the reach for this research as well as to learn how to write for a range of audiences. Consequently, there were differences in language and style among the eight papers that reflect the requirements of the nominated publisher. The formatting of tables and figures throughout the thesis may not be consistent with APA guidelines because they were formatted in the style of the journal to which they were submitted. Tables and figures included in thesis Parts only (i.e., not included in one of the papers) were notated with Roman numerals (I-III). Tables and figures that were included in published or submitted manuscripts were noted with numerals as per publisher requirements. The reference lists outside of the published articles were single-spaced in accordance with Charles Sturt University’s guidelines for doctoral research submission.

Note on terminology

The term Intelligibility Enhancement was capitalised when referring to the protocols created by the doctoral candidate during her candidature (Blake, 2019a, 2019b). When the term intelligibility enhancement was not capitalised, it referred to any program that could also be termed accent modification, accent reduction, or pronunciation training. Differences in multilingual speakers’ pronunciation perceived as an accent are influenced by speakers’ home languages and therefore, do not reflect a disorder. Intelligibility Enhancement uses non-medical, non-judgemental terminology to ensure multilingual speakers are not pathologised: clients/speakers rather than patients, differences rather than disorders, and substitutions, distortions, and deletions rather than errors. In Australia, speech-language pathologists are known as speech pathologists.

Spelling and Language Conventions

The overall doctoral research adhered to the Publication Manual of the American Psychological Association (6th edition), but using Australian/British English spelling. However, as per publisher requirements, the seven papers and one encyclopedia entry adhered to the spelling, language, style, and transcription requirements of the journal in which they were/are to be published.
Statements from Co-Authors Confirming the Authorship Contribution of the Doctoral Candidate

Paper 1

As co-authors of the paper entitled *The International Classification of Functioning, Disability and Health: Considering individuals from a perspective of health and wellness*, we confirm that Helen L. Blake has made the following contributions:

- Conceptualisation of the paper
- Review and interpretation of the literature
- Writing, editing, and revision of the manuscript

Furthermore, we agree to the inclusion of the paper in this doctoral research submitted for examination.

Name: Helen L. Blake  
Date: June, 2018

Name: Sharynne McLeod  
Date: June, 2018
Paper 2

As co-authors of the paper entitled *The relationship between spoken English proficiency and participation in higher education, employment and income from two Australian censuses*, we confirm that Helen L. Blake has made the following contributions:

- Conceptualisation of the paper
- Review and interpretation of the literature
- Identification of key variables for analysis from a large scale data set
- Analysis of data
- Interpretation of findings
- Writing, editing, and revision of the manuscript

Furthermore, we agree to the inclusion of the paper in this doctoral research submitted for examination.

Name: Helen L. Blake  
Date: June, 2018

Name: Sharynne McLeod  
Date: June, 2018

Name: Sarah Verdon  
Date: June, 2018

Name: Gail Fuller  
Date: June, 2018
Paper 3

As co-authors of the paper entitled *The impact of oral English proficiency on humanitarian migrants’ experiences of settling in Australia*, we confirm that Helen L. Blake has made the following contributions:

- Conceptualisation of the paper
- Review and interpretation of the literature
- Identification of key variables for analysis from a large scale data set
- Analysis of data
- Interpretation of findings
- Writing, editing, and revision of the manuscript

Furthermore, we agree to the inclusion of the paper in this doctoral research submitted for examination.

Name: Helen L. Blake  
Date: June, 2018

Name: Sharynne McLeod  
Date: June, 2018

Name: Laura Bennetts Kneebone  
Date: July, 2018
Paper 4

As co-authors of the paper entitled *Multilingual university students’ perceived English proficiency, intelligibility, and participation*, we confirm that Helen L. Blake has made the following contributions:

- Conceptualisation of the paper
- Review and interpretation of the literature
- Design of the research questionnaire
- Collection of data
- Analysis of data
- Interpretation of findings
- Writing, editing, and revision of the manuscript

Furthermore, we agree to the inclusion of the paper in this doctoral research submitted for examination.

Name: Helen L. Blake
Date: June, 2018

Name: Sharynne McLeod
Date: June, 2018

Name: Sarah Verdon
Date: June, 2018
Paper 5

As co-authors of the paper entitled Exploring multilingual speakers’ perspectives on their intelligibility in English, we confirm that Helen L. Blake has made the following contributions:

- Conceptualisation of the paper
- Review and interpretation of the literature
- Design of the research questionnaire
- Collection of data
- Analysis of data
- Interpretation of findings
- Writing, editing, and revision of the manuscript

Furthermore, we agree to the inclusion of the paper in this doctoral research submitted for examination.

Name: Helen L. Blake
Date: June, 2018

Name: Sharynne McLeod
Date: June, 2018

Name: Sarah Verdon
Date: June, 2018
Paper 6

As co-authors of the paper entitled *Intelligibility enhancement*, we confirm that Helen L. Blake has made the following contributions:

- Conceptualisation of the paper
- Review and interpretation of the literature
- Writing, editing, and revision of the manuscript

Furthermore, we agree to the inclusion of the paper in this doctoral research submitted for examination.

Name: Helen L. Blake
Date: June, 2018

Name: Sharynne McLeod
Date: June, 2018
Paper 7

As co-authors of the paper entitled *Speech-language pathologists' support for multilingual speakers’ English intelligibility and participation informed by the ICF*, we confirm that Helen L. Blake has made the following contributions:

- Conceptualisation of the paper
- Review and interpretation of the literature
- Design of the research questionnaire
- Collection of data
- Analysis of data
- Interpretation of findings
- Writing, editing, and revision of the manuscript

Furthermore, we agree to the inclusion of the paper in this doctoral research submitted for examination.

Name: Helen L. Blake
Date: June, 2018

Name: Sharynne McLeod
Date: June, 2018
Paper 8

As co-authors of the paper entitled *Intelligibility Enhancement Assessment and Intervention: A single-case experimental design with two multilingual university students*, we confirm that Helen L. Blake has made the following contributions:

- Conceptualisation of the paper
- Review and interpretation of the literature
- Design of the intervention program
- Collection of data
- Analysis of data
- Interpretation of findings
- Writing, editing, and revision of the manuscript

Furthermore, we agree to the inclusion of the paper in this doctoral research submitted for examination.

Name: Helen L. Blake
Date: June, 2018

Name: Sharynne McLeod
Date: June, 2018

Name: Sarah Verdon
Date: June, 2018
Part One

General Introduction
Chapter 1: Orientation to This Doctoral Research

English Proficiency

In the last 50 years, English has become the first truly global language with more multilingual speakers speaking English as an additional language than native English speakers (Hung, 2007). Tangible figures are impossible to determine; however, Ethnologue (Simons & Fennig, 2018) estimates over 378 million people speak English as their home language and over 743 million speak it as an additional language. There are also new varieties of English in the Outer Circle (Kachru, 1986) (countries where English plays an important second language role), such as Singaporean English and South Asian English. These varieties differ in pronunciation, vocabulary, and word order to an extent that may affect mutual intelligibility (Hung, 2007). Some linguists have called for one variety of English, such as General British English or General American English to be chosen as a standard (Hung, 2007). There is little doubt that in order for English to remain a global language, people speaking the different varieties must be mutually intelligible (Rajadurai, 2007), but that does not necessitate imitation of native speakers (Jenkins, 2000) or standardisation. Imitating native speaker speech would be “unreasonable, inappropriate, and unrealistic” (Rajadurai, 2007, p. 94). A more reasonable suggestion proposes international intelligibility rather than conformity as the aim (Hung, 2007).

Globalisation has led to a clear need for effective communication skills specifically in English. In multilingual international environments such as education, business, and the aviation industry, English acts as a lingua franca, facilitating cross-cultural communication (Rajadurai, 2007; Riemer, 2002). For example, lack of proficiency or intelligibility of spoken English by multilingual air traffic controllers or pilots can be revealed in high stress situations, such as those that have led to aviation disasters in Tenerife and Zagreb (Read & Knoch, 2009) where hundreds of passengers and crew died. Therefore, intelligibility in English contributes to an individual’s power, autonomy, and access as participants in a globalised world, and in some environments, the ability to effectively and intelligibly communicate in English can be a matter of life and death.
**Synopsis**

This doctoral thesis presented new knowledge about supporting multilingual speakers’ intelligibility in English. This was a doctoral thesis presented by publication containing seven papers and one encyclopedia entry embedded within 10 chapters and four parts. The first and last of the four parts of the thesis introduced and concluded the thesis. The first, second, and third parts included the embedded journal articles.

Three interrelated topics concerning multilingual speakers were addressed throughout the thesis: (1) English proficiency, (2) intelligibility, and (3) participation (see Figure 1). Textured cells in Figure 1 indicate specific focus on topics within individual chapters; however, all three topics underlie discussion in every chapter and converge in the conclusion presented in Chapter 10. For example, in Chapter 3, intelligibility was included as an element of spoken English proficiency, but was not specifically addressed. The triangular shape of the figure represents the change from an entire population sample to the left of the figure (Chapter 3), to a focus on two multilingual participants in the final study (Chapter 9).

![Figure 1. Three Topics Addressed Throughout This Thesis.](image)
Part One: General Introduction

Part One provided an orientation to the thesis and general introduction to the topic. Chapter 1 described the background, benefit, purpose, research questions, and methodology of the thesis and introduced the aims and different methods employed in each of the individual papers. All of the topics introduced in this chapter were revisited in more detail throughout the thesis in the individual chapters. Chapter 2 included a literature review (Paper 1) that described the International Classification of Functioning, Disability and Health (ICF) (World Health Organization, WHO, 2001) and its application to speech (including intelligibility), language, and hearing. The ICF provided the theoretical framework for this research, ensuring a focus on multilingual speakers’ participation.

Part Two: The Relationship between the English Proficiency of Multilingual Speakers and their Participation in Australian Society

Part Two (Papers 2 to 5) examined the relationship between the English proficiency and intelligibility of multilingual speakers and their participation in Australian society. Part Two presented three quantitative papers and one qualitative paper. A mixed methods research design was selected to enable the current research to draw on the strengths of both quantitative and qualitative approaches to answer the research questions identified. This approach allowed consideration of both large-scale statistical evidence regarding the effect of English proficiency and intelligibility on multilingual speakers’ participation, as well as the richer context of multilingual speakers’ own experiences. Analysis of data from two existing Australian Government data sets provided the unique opportunity to include a broader context to the thesis.

Part Two began by describing the entire Australian population and narrowed in focus to multilingual university students. Paper 2 (Chapter 3) analysed data from the 2006 and 2011 Australian censuses to explore the relationship between the spoken English proficiency of 19 million Australian residents and their educational level, employment, and income. Paper 3 (Chapter 4) analysed data from Building a New Life in Australia (BNLA): The Longitudinal Study of Humanitarian Migrants (Department of Social Services, DSS, 2015) to examine 2,399 refugees’ English proficiency and how their spoken English proficiency facilitated or hindered their self-sufficiency and successful settlement in Australia. Paper 4 (Chapter 5) analysed survey data from 137 multilingual students enrolled at 14 Australian universities regarding their perceptions of the impact of their spoken English proficiency and intelligibility on their participation, not only at university, but also in society. The survey was designed
specifically for this study. Paper 5 (Chapter 6) explored the perspectives of multilingual university students regarding their intelligibility in English through qualitative analysis of comments from the survey analysed in Paper 4 along with semi-structured interviews with six multilingual university students and one faculty member. Participants described their motivation for seeking support for their intelligibility in English as well as their perceptions of facilitators and barriers to improving their intelligibility.

**Part Three: English Intelligibility Enhancement for Multilingual Speakers**

Part Three (Papers 6, 7, and 8) examined intelligibility enhancement, an intervention that aims to improve multilingual speakers’ intelligibility in English. Paper 6 (Chapter 7) presented an overview of intelligibility enhancement in an encyclopaedia entry intended as a non-technical reference for students new to the field of communication sciences as well as for educated general readers. Paper 7 (Chapter 8) used a retrospective record review of 175 client records from a clinic providing intelligibility enhancement to describe who sought support for their intelligibility and why. Paper 8 (Chapter 9) used a multiple-baseline single-case experimental design (SCED) with two multilingual university students to determine the effectiveness of the Intelligibility Enhancement Assessment and Intervention Protocols (Blake, 2019a, 2019b) developed by the doctoral candidate during her candidature.

**Part Four: Conclusions and Contributions of this Doctoral Research**

Chapter 10 presented a summary of the new knowledge regarding multilingual speakers’ English proficiency, intelligibility, and participation realised as a result of this research. Key contributions were presented with reference to the research questions that were designed to develop a greater understanding of multilingual speakers’ English proficiency and intelligibility as well as their experiences of participating in Australia as an English-dominant country. This chapter presented key implications at the level of government, community, individuals, speech-language pathology practice, and theory as well as addressed limitations of the research and directions for future research.

It is expected that this doctoral research will assist providers of intelligibility enhancement (e.g., speech-language pathologists, educators) and future researchers in determining appropriate assessments, establishing goals and priorities for intervention, and designing studies and intervention plans. Situating multilingual speakers within the context of their participation in a language-dominant society, should also facilitate a better understanding of motivations for seeking support for intelligibility and ensure clinicians, as well as others consider multilingual speakers in a holistic way.
Background

Multilingual Speakers

Many people throughout the world are multilingual, in that they are able to speak and understand more than one language (Simons & Fennig, 2018). For the purpose of this thesis multilingualism is defined as the ability to understand and/or produce two or more languages in either an oral, written, or manual form with at least a functional level of proficiency, irrespective of the age of acquisition of the languages (Grech & McLeod, 2012; International Expert Panel on Multilingual Children's Speech, 2012). Multilingual individuals who do not speak English as their home language have been described as non-native speakers of English, speakers of English as a Second Language, and speakers of English as a Foreign Language; however, these terms may be perceived as negative as they emphasise otherness. In this research, the term multilingual speaker referred to someone for whom English was not their home language as this term attempts to recognise and celebrate an individual’s communication skills and frame them in a positive manner. The term home language was used to refer to the main language that was spoken at home and included the concepts of native language, first language, and heritage language. An individual’s home language often carries their cultural identity (Tong & Cheung, 2011).

Accent, Intelligibility, and Comprehensibility

Three interconnected terms were used throughout this research to discuss the speech of multilingual speakers in a language other than their home language: accent, intelligibility, and comprehensibility. Accent is defined as a distinctive manner of pronunciation influenced by the speaker’s home language or dialect (Derwing & Munro, 1997); by which definition everyone who speaks a language, has an accent (Rajadurai, 2007).

Intelligibility is defined as a relative measure of how much of a speaker’s message is understood by a listener (Munro & Derwing, 1995; Weismer, 2008). Intelligibility is an essential element of spoken language proficiency (Miller, 2013) and is therefore important for all people including those seen in other contexts of speech-language pathology such as people with apraxia of speech, dysarthria, and speech sound disorders. In multilingual speakers, accent and intelligibility are the result of a difference rather than a disorder (American Speech-Language-Hearing Association, ASHA, 2019), an argument that has been reiterated throughout the chapters in this
Regardless of the strength of an accent, it may not necessarily interfere with intelligibility (Derwing & Munro, 1997).

*Comprehensibility* refers to the listener’s perception of intelligibility that can be negatively affected by the effort required to understand an utterance (Derwing & Munro, 2015; Neuliep, Hintz, & McCroskey, 2005). These key terms were elaborated on in the papers that followed in Parts Two and Three of this thesis.

**Intelligibility Enhancement**

Intervention to improve the intelligibility of the English speech of multilingual speakers described in this thesis is known as *intelligibility enhancement*. Similar interventions have been called accent improvement, accent modification, accent reduction, and pronunciation training (Fritz & Sikorski, 2013). Techniques and materials that exist for enhancing intelligibility include self-help programs, computerised resources, and structured programs facilitated by professionals such as speech-language pathologists (SLPs), linguists, language teachers, and acting, elocution, or voice coaches. Enhancing intelligibility is within the scope of practise for SLPs in the US (ASHA, 2019), Canada (Speech-Language and Audiology Canada, 2015), and Australia (Speech Pathology Australia, SPA, 2015). Multilingual speakers may be motivated to seek intelligibility enhancement because they believe their intelligibility in their additional language(s) is negatively affecting their employment performance, educational advancement, or participation in everyday activities (ASHA, 2019). SLPs may receive referrals in many different contexts. SLPs employed in health services may be approached by multilingual medical staff seeking intelligibility enhancement, school-based SLPs may receive requests to support multilingual students or their teachers (i.e., to learn how to support the student), and SLPs in private practise may receive requests from people wishing to improve their intelligibility in English. Part Three of this research defined intelligibility enhancement, interrogated the client files of a university clinic providing intervention to describe those multilingual speakers who seek support for their intelligibility in English and why, and used the Intelligibility Enhancement Assessment and Intervention Protocols (Blake, 2019a; 2019b) to conduct a study using a SCED to determine whether the protocols changed multilingual university students’ intelligibility in English.

**Multilingual Speakers’ Participation**

The Universal Declaration of Human Rights (UN General Assembly, 1948) asserts that everyone, regardless of their race, language, national origin, or gender has certain rights, including the right to freely move within their own country, to leave or
return to their own country, the right to seek asylum from persecution in other countries, the right to employment and favourable remuneration, the right to education and equal opportunity to develop their full potential, and the right to be free to participate in the cultural and social life of their community (Office of the High Commissioner for Human Rights, OHCHR, 2018). Participation is defined as involvement in a life situation (WHO, 2001) and includes the opportunity for individuals to have their views on improving their lives and community heard as well as the opportunity to influence their own future and make decisions that will affect it (OHCHR, 2018). Without participation, people cannot experience the rights and freedoms that the Universal Declaration of Human Rights aims to guarantee (OHCHR, 2018). Part Two of this doctoral research discussed multilingual speakers’ participation in domains based on these measures of progress: education, employment, and social activities.

**The Australian Context**

Situating this doctoral research in Australia offered the opportunity to consider the participation of multilingual speakers in a language-dominant country with high levels of cultural and linguistic diversity. Although many minority world countries with a dominant language (including Australia, England, France, Germany, Ireland, Italy, and Spain) aim to integrate multilingual speakers economically, linguistically, and socially (Collins, 2013; Moyer, 2004; Vázquez, Terraza-Núñez, Vargas, Rodriguez, & Lizana, 2011), monolingual speakers in these countries are less likely to recognise the benefits of multilingualism (Pietiläinen, 2011) and therefore have been described as having a “monolingual mindset” (Clyne, 2008, p. 348). The findings of this doctoral research regarding multilingual speakers’ participation in Australia may therefore, provide insights that are relevant and applicable for other language-dominant countries, including those countries where the dominant language is other than English.

Although Australia is predominately English speaking, it is also “a microcosm of minority ethnolinguistic communities” (McLeod, 2014, p. 209). The percentage of people reporting they speak a language other than English at home continues to increase; from 20.5% in 2011 to 22.2% in 2016 (Australian Bureau of Statistics, ABS, 2018b). While other English-speaking countries such as the US and Canada have a second major language, Australia does not. In 2016, there were over 300 separately identified languages spoken in Australian homes. Although 22.2% of Australians speak a language other than English at home, the most common of these languages, Mandarin is only spoken by 2.5% of the population (ABS, 2018b). Other commonly spoken languages are Arabic, Cantonese, Vietnamese, and Italian (ABS, 2018b). Australia has a
higher proportion of overseas-born residents (26%) than New Zealand (23%), Canada (22%), the US (14%), and the UK (13%) (ABS, 2017). However, 11% of the overseas-born residents who arrived in the last 25 years reported they did not speak English well, or at all (ABS, 2017). Chapter 3 of this thesis provided greater detail regarding Australia’s linguistic diversity and the spoken English proficiency of Australia’s multilingual residents using data from the 2006 and 2011 Australian censuses.

Government agencies, health and education providers, and community groups have concluded that people who speak a language other than English at home may be disadvantaged when accessing health programs and services in Australia (ABS, 2014; Zhou, 2016). While just under one quarter of Australians spoke a language other than English at home in 2016 (ABS, 2018b), 44.0% (n = 2,158,374) of those people reported speaking English less than very well (ABS, 2018a). English language skills have been found to be a barrier to accessing formal health services. Zhou (2015) analysed 2011 Australian census data and the Survey of Disability, Ageing and Carers and reported a substantial gap in disability services between people who mainly speak a language other than English at home and those who speak English at home. Although people from culturally and linguistically diverse backgrounds had a similar level of disability to the rest of the population, they had a greater rate of profound and severe disability and therefore required more assistance undertaking core activities (Zhou, 2015).

Researchers in the US have similarly found that multilingual speakers with lower English proficiency were more likely to experience barriers to accessing medical care (Battle, 2012; Chin, Kang, Kim, Martinez, & Eckholdt, 2006; Shi, Lebrun, & Tsai, 2009). Additionally, when multilingual patients were acutely ill, they had diminished capacity to understand medical jargon in English (Chin et al., 2006). Multilingual speakers therefore require support to ensure that their proficiency in English does not negatively impact their health outcomes and subsequently their ability to participate in other domains of society.

Australia is a multicultural society where the government and the general population support multiculturalism. A large majority (85%) of Australians surveyed in the Social Cohesion Report believe multiculturalism is good for Australia and recognise its positive contribution to economic development (Scanlon Foundation, 2014). The Australian Government states it is committed to encouraging the economic and social participation of both temporary and permanent residents from multicultural backgrounds while harnessing the advantages of linguistic diversity and potential for strengthening overseas cultural, trade, and economic opportunities through those
individuals who return to their home county (Department of Home Affairs, 2018). Key drivers for social integration for multilingual migrants in Australia are education, English skills, and employment (McClelland & Lindwall, 2015). The papers in Part Two of this research described Australia’s cultural and linguistic diversity and both temporary and permanent multilingual residents’ participation in Australian society with particular reference to their spoken English language competence and intelligibility.

**Benefit of this Research**

This doctoral research is of benefit to Australia because it provides insight into multilingual speakers’ participation in society at a time when Australia’s economy is benefiting from international students, Australia’s multilingualism is increasing, international asylum seekers are escaping conflict and persecution, and governments’ policies on immigration are renewing debate around migration, assimilation, and cultural diversity in Australia and around the world.

The doctoral research is aligned with Australian Government Strategic Research Priorities (Department of Industry and Science, 2013) by addressing three of five priorities identified in the government’s Strategic Research Priorities: Planning Framework for Research in Australia’s National Interest:

“Priority 2. Promoting population health and wellbeing: Identify strategies to maximise social and economic participation in order to build resilient communities.
Priority 4. Securing Australia’s place in a changing world: Develop a comprehensive understanding of the Asia Pacific region including cultural, demographic and social change.
Priority 5. Lifting productivity and economic growth: Identify the skills required to effectively engage with our region and the world and how to develop them.” (Department of Industry and Science, 2013, p.3)

This doctoral research also addresses a need for local and international research in cross-cultural issues (International Expert Panel on Multilingual Children's Speech, 2012; National Health and Medical Research Council, 2006; SPA, 2016; World Health Organization & World Bank, 2011). SPA (2016) called for research to support clinicians, stating “Australian speech pathologists will benefit from local research addressing cross-cultural issues” (p. 20). Australia’s National Health and Medical Research Council (NHMRC, 2006) saw broader benefits for Australia from ‘an evidence base built on culturally competent research that can inform policy, planning, education and capacity building, and evaluation; and measures to build a culturally
competent workforce” (p. 28). Both organisations called for further research into cultural competence within Australian health services, noting that individuals and groups from culturally and linguistically diverse backgrounds were regularly excluded from research due to the challenges and additional investment required to ensure their participation (NHMRC, 2006; SPA, 2016). The findings presented in this doctoral research answer this call for local research in cross-cultural issues and provide recommendations for speech-language pathology practice, as well as for the Australian Government, community, and individuals within the community.

This doctoral research may also be of benefit internationally. In a globalised world, a country’s economic prosperity increasingly depends on maximising the participation of its multilingual speakers; however, many language-dominant countries also have a “monolingual mindset” (Clyne, 2008, p. 348) that may restrict that participation. The findings from this research may inform policies, plans, and attitudes regarding multilingual speakers in language-dominant countries, even where the dominant language is other than English (e.g., German, Turkish, Spanish, and Vietnamese). Additionally, the papers in this thesis advocate for the use of the ICF for all people and not just individuals with disorders. This focus on physical, mental, and social well-being with respect to participation may be of benefit to multilingual speakers and those who support them in any country.

**Purpose of this Thesis**

The purpose of this doctoral research was to investigate the relationship between multilingual speakers’ proficiency and intelligibility in English and their participation in Australian society and to provide insight into whether intelligibility enhancement was an effective intervention to enhance the English intelligibility of multilingual speakers.

**Research Questions**

The eight papers within this thesis were designed to address the following research questions:

1. What is the relationship between spoken English proficiency and participation in Australian society (e.g., employment, education, and access to services)? (Papers 2, 3, 4, 5, and 7)
2. What are multilingual speakers’ perceptions of the relationship between their English proficiency and their participation in society?
   (Papers 3, 4, 5, 7, and 8)

3. Which multilingual speakers seek support for their intelligibility in English?
   (Papers 4, 5, 7, and 8)

4. What factors should be considered in providing English intelligibility enhancement assessment and intervention for multilingual speakers?
   (Papers 1, 2, 3, 4, 5, 6, 7, and 8)

5. Can Intelligibility Enhancement intervention improve multilingual speakers’ intelligibility in English?
   (Paper 8)

A summary of the parts, chapters, and papers that comprise this doctoral research was provided in Table I below along with each paper’s aims, participants, methods, and connection to the doctoral research questions.
<table>
<thead>
<tr>
<th>Thesis part</th>
<th>Chapter</th>
<th>Paper</th>
<th>Chapter/paper title</th>
<th>Research question(s) addressed</th>
<th>Aims of the chapter/paper</th>
<th>Participants</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>1</td>
<td>1</td>
<td>Introduction and orientation to this doctoral research</td>
<td>1. Provide a general introduction to the research topic, themes, background, purpose, research questions, and methodology of this thesis</td>
<td>1. Introduce the theoretical framework used in this thesis</td>
<td>19,855,288 people in Australia</td>
<td>Literature review</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>The International Classification of Functioning, Disability and Health: Considering individuals from a perspective of health and wellness (Blake &amp; McLeod, 2018)</td>
<td>2. Describe the World Health Organization’s (2001) International Classification of Functioning, Disability and Health (ICF) and its application to speech, language, and hearing</td>
<td>2006 Census: 19,855,288 people in Australia</td>
<td>Secondary data analysis using TableBuilder and TableBuilder Pro (ABS, 2015) and Excel ©</td>
<td></td>
</tr>
<tr>
<td>Two</td>
<td>3</td>
<td>2</td>
<td>The relationship between spoken English proficiency and participation in higher education, employment and income from two Australian censuses (Blake, McLeod, Verdon, &amp; Fuller, 2018)</td>
<td>1. Describe the spoken English proficiency of the Australian population</td>
<td>2011 Census: 21,507,717 people in Australia</td>
<td>Secondary data analysis using IBM SPSS Statistics Version 24.0 (IBM, 2016) and STATA Version 13.1 (StataCorp, 2013)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>The impact of oral English proficiency on humanitarian migrants’ experiences of settling in Australia (Blake, Bennets Kneebone, &amp; McLeod, 2019)</td>
<td>2. Describe humanitarian migrants’ self-reported English proficiency (i.e. understanding, speaking, etc.)</td>
<td>2,399 Australian humanitarian migrants from the first wave of BNLA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thesis part</td>
<td>Chapter</td>
<td>Paper</td>
<td>Chapter/paper title</td>
<td>Research question(s) addressed</td>
<td>Aims of the chapter/paper</td>
<td>Participants</td>
<td>Method</td>
</tr>
<tr>
<td>-------------</td>
<td>---------</td>
<td>-------</td>
<td>---------------------</td>
<td>---------------------------------</td>
<td>---------------------------</td>
<td>--------------</td>
<td>--------</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>4</td>
<td>Multilingual university students’ perceived English proficiency, intelligibility, and participation (Blake, Verdon, &amp; McLeod, 2019)</td>
<td>1. Describe multilingual university students’ self-reported English proficiency (i.e., understanding, speaking, reading, and writing), as well as their levels of confidence and difficulty communicating in English 2. Investigate the association between participants’ perceived English skills and personal and environmental factors (e.g., home language, age, and gender) 3. Explore whether participants’ spoken English impacts their participation in academic, social, and vocational activities in Australia 4. Detail strategies participants use to support their spoken English</td>
<td>137 multilingual university students from 14 Australian universities</td>
<td>Quantitative analysis of data collected from a purpose-designed survey using IBM SPSS Statistics Version 24.0 (IBM, 2016) with descriptive statistics and non-parametric statistical analysis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>5</td>
<td>Exploring multilingual speakers’ perspectives on their intelligibility in English (Blake, Verdon, &amp; McLeod, 2019)</td>
<td>1. motivation for seeking Intelligibility Enhancement in English, and 2. perceptions of barriers and facilitators to improving their intelligibility in English</td>
<td>137 multilingual university students from 14 Australian universities, and 7 multilingual speakers who had completed Intelligibility Enhancement</td>
<td>Qualitative thematic analysis of open-ended survey responses as well as from 7 semi-structured interviews using NVivo (QSR International, 2015)</td>
<td></td>
</tr>
<tr>
<td>Thesis part</td>
<td>Chapter</td>
<td>Paper</td>
<td>Chapter/paper title</td>
<td>Research question(s) addressed</td>
<td>Aims of the chapter/paper</td>
<td>Participants</td>
<td>Method</td>
</tr>
<tr>
<td>------------</td>
<td>---------</td>
<td>-------</td>
<td>---------------------</td>
<td>-------------------------------</td>
<td>---------------------------</td>
<td>-------------</td>
<td>--------</td>
</tr>
<tr>
<td>Three</td>
<td>7</td>
<td>6</td>
<td>Intelligibility enhancement (Blake &amp; McLeod, 2019)</td>
<td>4</td>
<td>1. Define intelligibility enhancement</td>
<td></td>
<td>Literature review</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>7</td>
<td>Speech-language pathologists’ support for multilingual speakers’ English intelligibility and participation informed by the ICF (Blake &amp; McLeod, 2019)</td>
<td>1</td>
<td>1. Describe Personal Factors of multilingual speakers who attended the clinic (e.g., gender and age)</td>
<td>175 client records from the Speech Intelligibility Clinic</td>
<td>Retrospective record review of client records with quantitative analysis of data using descriptive statistics and non-parametric statistical analysis using IBM SPSS Statistics Version 24.0 (IBM, 2016)</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>8</td>
<td>Intelligibility Enhancement Assessment and Intervention: A single-case experimental design with two multilingual university students (Blake, McLeod, &amp; Verdon, 2019)</td>
<td>2</td>
<td>1. Determine whether the Intelligibility Enhancement Assessment and Intervention Protocols (Blake, 2019a; Blake, 2019b) changed multilingual university students’ intelligibility in English. Specifically, their:</td>
<td>2 multilingual research higher degree students</td>
<td>Multiple-baseline single-case design with direct inter-subject replication</td>
</tr>
<tr>
<td>Four</td>
<td>10</td>
<td></td>
<td>Conclusions and contributions of this doctoral research</td>
<td>All</td>
<td>1. Summarise the key contributions of this doctoral research associated with the research aims, to literature, theory and its implications to policy and practice</td>
<td></td>
<td>Literature review</td>
</tr>
</tbody>
</table>
Methodology

Mixed methods were used in this doctoral research. In mixed methods, the researcher frames the research within philosophy and theory, collects and analyses both qualitative and quantitative data in response to the research questions, and integrates the two forms of data and results (Creswell, 2018).

Philosophical Worldview

The research described in this thesis was conducted within a pragmatic philosophical worldview. Pragmatism is a problem-oriented philosophy that takes the view that the best research methods are those that help to most effectively answer the research questions (Creswell, 2018). This worldview was based on the doctoral candidate’s own beliefs and experiences, the orientation of the profession/discipline, the potential audience for this research, the possible benefits to multilingual speakers, and the views of advisors. Pragmatism acknowledges that research occurs in social, historical, and political contexts and because it is possible to have different assumptions within these contexts, multiple methods of data collection and analysis are also possible (Creswell, 2018). Employing both qualitative and quantitative approaches can enhance the integrity of findings as each method has its own strengths and weaknesses. Therefore, combining them allowed the doctoral candidate to offset weaknesses and draw on strengths as well as use one approach to help explain the findings of the other (Bryman, 2012). In this research, a mixed methods design allowed for the factual evidence relating to multilingual speakers’ English proficiency, intelligibility, and participation determined through a quantitative approach to be supported by the vivid contextual understanding of multilingual speakers’ own experiences obtained by the qualitative approach.

Mixed Methods

The chapters in this doctoral research reported on discrete studies that combined to describe the English proficiency, intelligibility, and participation of multilingual speakers. Each study had a separate method designed to answer the research questions applicable to that study. The quantitative research design included survey research (Chapters 3, 4, and 5), retrospective research (Chapter 8), and experimental research (Chapter 9). The qualitative research design reported in Chapter 6 focused on a smaller number of qualitative responses from both the survey reported in Chapter 5 and additional semi-structured interviews to help explain the initial quantitative surveys.
The surveys in Chapters 3, 4, and 5 were used to answer descriptive questions (e.g., the percentage of the population who spoke a language other than English at home), questions about the relationship between variables (e.g., whether there was a relationship between English proficiency and income), and to help make inferences about how the results of the sample might generalise to the broader population of interest (Creswell, 2018) (e.g., to multilingual speakers in other language-dominant countries). Advantages of using a survey method included the economy of design and rapid data collection from a large number of participants (Creswell, 2018). Disadvantages included the inability to determine if relationships were causal (Bryman, 2012). For example, individual census records are confidential so data are aggregated; therefore, only descriptive results were able to be reported in Chapter 3. The survey in Chapter 5 was created specifically for this research and was informed by the Checklist for Reporting Results of Internet E-Surveys (CHERRIES) (Eysenback, 2004).

The retrospective approach used in Chapter 8 is common in many health-related disciplines and is emerging as a tool in the field of speech-language pathology (Wilkinson, 2016). The retrospective record review used existing client data from a clinic that provided intelligibility enhancement in English to multilingual speakers. The review investigated the complex issues around the clients, the intervention, and related variables in order to improve understanding of the barriers and facilitators to multilingual speakers’ ability to participate in society. While the review highlighted the lack of data collected by the clinic relating to the environmental factors affecting multilingual speakers’ participation, this limitation was able to be addressed using a qualitative approach in Chapter 6.

An experimental approach was used in Chapter 9 to determine whether the Intelligibility Enhancement Assessment and Intervention Protocols (Blake, 2019a; Blake, 2019b) changed multilingual university students’ intelligibility in English. This study was described using the Single-Case Reporting guideline In BEhavioural interventions (SCRIBE), designed to guide authors in reporting SCEDs with clarity, completeness, accuracy, and transparency (Tate et al., 2016).

**Data Collection, Analysis, and Integration**

The quantitative and qualitative data were collected sequentially in phases. Quantitative methods are suited to finding answers to questions that demand a numerical answer, such as “How many males versus females sought intelligibility enhancement?” These methods are also appropriate for determining the factors that predict a phenomenon, such as whether spoken English proficiency affects participation
in education. Quantitative methods are useful for hypothesis testing (Muijs, 2010), such as determining change in intelligibility in English after intervention for intelligibility enhancement. The use of qualitative methods confirmed the focus remained on the participants’ voices in the data collection, analysis, and writing up of the results (Given, 2015). Data integration occurred at several stages because the qualitative data informed the quantitative discussion and vice versa. For example, the quantitative data from the retrospective record review of client files in Chapter 8 informed the semi-structured interview questions focusing on environmental factors in the qualitative method for Chapter 6. Furthermore, the qualitative findings informed the Intelligibility Enhancement Assessment and Intervention Protocols (Blake, 2019a; 2019b) investigated in Chapter 9.

Quantitative data analysis employed descriptive statistics, non-parametric analysis, and regression analysis using SPSS® Statistical program for the social sciences (Version 24.0) (IBM, 2016) and Stata statistical software release 13.1 (StataCorp, 2013). Descriptive statistics were used to determine the frequency of responses for categorical variables \( n \) and \( % \) or for continuous variables \( M \) and \( SD \). Data were tested for normality through Kolmogorov-Smirnov and Shapiro-Wilk Tests. As the data were not normally distributed, non-parametric tests were used to explore relationships between variables: Chi-square test for independence, Mann-Whitney U test, Kruskal-Wallis test, Wilcoxon Signed Rank Test, and Spearman rho. Three linear regression analyses were performed in Chapter 4 utilising a self-sufficiency scale created by combining participants’ responses to seven questions.

The qualitative data analysis in Chapter 6 was approached using an inductive thematic analysis informed by Braun and Clarke (2006). This method enabled generation of themes from within the qualitative data, rather than a pre-defined framework being imposed on interpretation of the data (Braun & Clarke, 2006). NVivo - 11 computer software (QSR International, 2015) was used to collate and analyse qualitative data. Further details of the methods used for each of the research studies are described within the respective papers and in Table I above.

**Ethical Considerations Working with Multilingual Speakers**

A pragmatic worldview also influenced the doctoral candidate’s considerations of the ethical dimensions of working with multilingual speakers. House and Howe (1999) suggest that within this worldview researchers consider that social interactions are laden with power, individuals’ perceptions of themselves and the world are important, and the goal of research should be a more just and democratic society.
Before commencing this doctoral research, the researchers acknowledged potential and existing dependent or unequal relationships with multilingual participants in the applications for ethical approval submitted to human research ethics committees at the two universities where the research was undertaken. The nature of these relationships were specified as well as the steps taken to ensure that relationships did not impair the participants’ free and voluntary consent and participation in the research (Chapters 6 and 9). These steps included recruitment of potential participants by a third party with no existing or potential relationship and the use of consent forms that clearly stated participants had the right to withdraw their consent for ongoing participation at any time without impairing their existing or foreseeable future relationships with the doctoral candidate and the clinic where the research was undertaken. The steps taken to acknowledge and address potential power over participants were also intended to encourage them to freely report their self-perceptions of their English communication skills and their participation in Australian society.

Moving Forward

In undertaking this research, the doctoral candidate sought to contribute to a more just and democratic society by addressing an identified need for research in cross-cultural issues, by providing further evidence of the value of multilingualism in order to support advocacy and anti-discrimination efforts, and by increasing the knowledge base of professionals (including SLPs) working with multilingual speakers in different contexts and in different countries around the world.

References


StataCorp. (2013). *Stata statistical software: Release 13.1*. College Station, TX: StataCorp LP.


Chapter 2: Theoretical Framework

In this research, The International Classification of Functioning, Disability and Health (ICF) (WHO, 2001) provided a theoretical framework to investigate potential underlying restrictions that multilingual speakers’ proficiency and intelligibility in English may impose on key areas of their lives as well as to inform assessment and intervention for intelligibility enhancement. The ICF provided a structured way to consider potential activities, barriers, and facilitators to multilingual speakers’ intelligibility in English. Consequently, the ICF guided assessment and intervention for intelligibility enhancement that enabled consideration of all factors relating to an individual’s intelligibility in English, not just their accent.

In the current chapter, Paper 1 described the ICF and its application to speech, language, and hearing. Paper 1 was an invited contribution (with Sharyne McLeod) to a special issue of Perspectives of the ASHA Special Interest Groups. Paper 1 was intended to provide a general overview of the purpose, development, contents, and coding of the ICF as an introduction to the papers that followed in the special issue. As noted in Paper 1, the ICF was designed as a framework for research, social policy, educational, and clinical use to enhance and support the participation of all people, recognising that people are not homogenous (WHO, 2001). The writing of this paper provided an opportunity to highlight that the ICF is intended for use with all people, not just those with a disability and therefore, is appropriate to be used to consider communication in non-traditional speech-language pathology domains, such as the English intelligibility of multilingual speakers.

In the current doctoral research, the ICF was used as a research tool, a statistical tool, and a clinical tool (Threats, 2006). As a research tool, the ICF acted as a broad framework that framed the research questions, informed the aims for each study with a focus on participation, and guided the classification of potential activities, barriers, and facilitators to multilingual speakers’ intelligibility in English. The ICF informed the creation of instruments for data collection; for example, the questions for the survey and semi-structured interviews in Chapters 5 and 6 (Papers 4 and 5) concerning perceived barriers and facilitators to improving intelligibility. The ICF assisted in the analysis and interpretation of the data in Chapters 4, 5, 6, 8, and 9 (Papers 3, 4, 5, 7, and 8). As a statistical tool, the ICF was used in coding in the qualitative analysis in Chapter 6 (Paper 5). As a clinical tool, the ICF provided a framework to inform assessment and intervention for multilinguals speakers seeking to enhance their intelligibility in English.
Using the ICF helped to identify the broad range of functioning and contextual factors relevant to planning holistic and integrated SLP assessment and intervention protocols that aimed to facilitate full participation in society (Chapters 8 and 9). Table II below presents a summary of the ICF components investigated in each of the papers. All components of the ICF were considered throughout this doctoral research with the aim of viewing multilingual speakers’ English proficiency, intelligibility, and participation in a holistic way.

Table II
Summary of ICF Components investigated in each paper

<table>
<thead>
<tr>
<th>Part</th>
<th>Chapter</th>
<th>Paper</th>
<th>Paper title</th>
<th>Primary ICF components investigated</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>2</td>
<td>1</td>
<td>The International Classification of Functioning, Disability and Health framework: Considering individuals from a perspective of health and wellness</td>
<td>All ICF components</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>2</td>
<td>The relationship between spoken English proficiency and participation in higher education, employment and income from two Australian censuses</td>
<td>Body Functions Activities and Participation Personal Factors</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>3</td>
<td>The impact of oral English proficiency on humanitarian migrants’ experiences of settling in Australia</td>
<td>Body Functions Activities and Participation Personal Factors</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>4</td>
<td>Multilingual university students’ perceived English proficiency, intelligibility and participation</td>
<td>Body Functions Activities and Participation Environmental Factors Personal Factors</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>5</td>
<td>Exploring multilingual speakers’ perspectives on their intelligibility in English</td>
<td>Body Functions Activities and Participation Environmental Factors Personal Factors</td>
</tr>
<tr>
<td>Three</td>
<td>7</td>
<td>6</td>
<td>Intelligibility enhancement</td>
<td>Body Functions Activities and Participation Personal Factors</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>7</td>
<td>Speech-language pathologists’ support for multilingual speakers’ English intelligibility and participation informed by the ICF</td>
<td>All ICF components</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>8</td>
<td>Intelligibility Enhancement Assessment and Intervention: A single-case experimental design with two multilingual university students</td>
<td>All ICF components</td>
</tr>
</tbody>
</table>
References


This is an accepted manuscript of an article published by the American Speech-Language-Hearing Association in Perspectives of the ASHA Special Interest Groups on 1 January 2018, available online: [https://pubs.asha.org/doi/10.1044/persp3.SIG17.69](https://pubs.asha.org/doi/10.1044/persp3.SIG17.69)
The International Classification of Functioning, Disability and Health Framework: Considering Individuals from a Perspective of Health and Wellness

Helen L. Blake
Sharynne McLeod
Charles Sturt University, Bathurst, Australia

ORCID
Helen L. Blake http://orcid.org/0000-0003-10414613
Sharynne McLeod http://orcid.org/0000-0002-7279-7851

Corresponding author:
Helen L. Blake
Charles Sturt University
Panorama Ave, Bathurst, NSW, 2795 Australia
Tel: +61-437472336
Email: heblake@csu.edu.au

Sharynne McLeod
Charles Sturt University
Panorama Ave, Bathurst, NSW, 2795 Australia
Tel: +61-2 63384463
Email: smcleod@csu.edu.au

Tags: World Health Organization, ICF, ICF-CY, communication, participation
Abstract

Purpose: This article describes the World Health Organization’s International Classification of Functioning, Disability and Health (ICF) and its application to speech, language, and hearing. The article describes the ICF, its purpose, development, contents, and coding. It also discusses how the framework is being used by speech-language pathologists and audiologists in clinical practice and research to investigate body structures and their functions and any restrictions these may place on an individual’s ability to participate in activities.

Conclusion: The ICF framework was developed to present a holistic person-centered approach for people of all ages, across all nations, health care disciplines, services, and time from a perspective of health and wellness. Therefore, it is an appropriate framework for the professions of speech-language pathology and audiology for use with people in relation to their communication and/or hearing. The acceptance of the ICF as a biopsychosocial framework for practice and research marks a transition in thinking from the professions’ previous focus on handicap to a focus instead that considers individuals and society from a perspective of health and wellness.
The World Health Organization’s (WHO) International Classification of Functioning, Disability and Health (ICF) is misunderstood to only concern people with disabilities, when in reality, it is about all people (WHO, 2001). Health is defined as “the state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity” (WHO, 2018, para. 1). Consequently, the ICF framework was developed to present a holistic person-centered approach for people of all ages, across all nations, health care disciplines, services, and time from a perspective of health and wellness. Therefore, it is an appropriate framework for the professions of speech-language pathology and audiology for use with clients in relation to their communication and/or hearing. This article will discuss the purpose, development, contents, and coding of the ICF as well as describe how the framework is being used in speech-language pathology and audiology clinical practice and research. This discussion will provide context for the papers that follow in this special issue of Perspectives that are based on this multi-dimensional framework.

**Purpose**

WHO has a family of international classifications that can be used as tools to describe and compare the health of populations across disciplines and around the world. The ICF was developed by WHO to provide a standard language and framework to classify functioning and disability from the perspective of health and wellness (WHO, 2001). It was intended for use by everyone connected with an individual’s health, education, and wellbeing such as governments, health care professionals, and researchers to allow comparison of data across countries, services, and time. This multipurpose framework may be used for educational and clinical use, in research and statistics, and as a social policy tool (WHO, 2001). The ICF is particularly helpful for guiding clinical practice in speech-language pathology and audiology, because it classifies individuals’ strengths and difficulties along with contextual barriers and
facilitators, leading to the creation of a helpful profile of functioning, disability, and health (Washington, 2007). The ICF is based on a biopsychosocial rather than a medical model of practice; therefore, it is appropriate for rehabilitation of chronic health conditions (Audiology Australia, 2014) such as hearing loss, stroke, Parkinson’s disease, and cancer.

Notwithstanding the above, the ICF is not only intended to be used to discuss disability, but is also appropriate for discussions of functioning for individuals from a health and wellness perspective. The ICF does not classify individuals, but individuals’ health characteristics in the context of life situations and environmental impacts (WHO, 2001). It can be used to describe health and health-related states at the level of an individual or a population and enables consistent collection of data to inform population-based statistics (see Madden, Choi, & Sykes, 2003; Okawa & Ueda, 2008) that will be internationally comparable (WHO, 2013).

Development

In 1980, WHO published the first edition of the International Classification of Impairments, Disabilities and Handicaps (ICIDH; WHO, 1980) to supplement the International Classification of Diseases (WHO, 2001). The ICIDH was the first classification to include the consequences of disease and made a distinction between the functional and social impacts of impairment (WHO, 2001). Data were classified separately with distinct codes rather than in a hierarchy as in the International Classification of Diseases. The development of the ICIDH included consultation with various groups, particularly those concerned with rehabilitation (WHO, 2001).

In 1993, WHO began the process of revising the ICIDH with the aim to create a multi-purpose, culturally applicable and simple to use classification that could be used beside others in the WHO family of international classifications (WHO, 2001). Two drafts of the ICIDH-2 were field tested in more than 50 countries by 1800 experts in
disciplines that included education, health insurance, and labor groups. In 2001, the World Health Assembly endorsed the final draft with the title International Classification of Functioning, Disability and Health (ICF; WHO, 2001). By comparing the titles, the differences between the two classification systems (ICIDH and ICF) becomes apparent: “Impairments” became “Functioning” and “Handicaps” became “Health”. The content of the ICF will be discussed in the following section.

The International Classification of Functioning, Disability and Health: Children and Youth Version (ICF-CY; WHO, 2007) was derived from the ICF when it became apparent the classification system could not effectively describe all aspects of functioning for developing children (Simeonsson, Björck-Åkessön, & Lollar, 2012). The ICF-CY was developed by a group of pediatric experts in collaboration with scholars and practitioners from around the world and was designed for use with infants, toddlers, children, and adolescents from birth to 18 years of age. The beta version was extensively field tested in various countries and within numerous disciplines before the final version was published in 2007. The ICF-CY provides an effective structure for considering children with communication disability, because it assists in labelling, linking, and unravelling the complexities of their disorders (McLeod, 2006; McLeod & Threats, 2008). Additionally, examining the complex interaction of the ICF-CY components can assist in selecting appropriate goals for intervention (McLeod & Threats, 2008).

Although the ICF-CY conforms to the structure of the ICF, it contains 237 new codes: an additional 33 codes in Body Functions, seven in Body Structures, 168 in Activities and Participation, and 29 in Environmental Factors (McLeod & Threats, 2008). These new codes have subsequently been incorporated into ICF updates and WHO is working towards merging the ICF and ICF-CY into one comprehensive
classification that will adequately address all aspects of functioning across an individual’s lifespan (WHO, 2017a).

The World Report on Disability (WHO & World Bank, 2011) adopted the ICF as a conceptual framework. The report was produced with the aim to report on the prevalence of disabilities in the world and provide recommendations for action both at national and international levels (WHO & World Bank, 2011). The report’s recommendations were aligned with the ICF in that they were aimed at removing barriers and promoting the participation of people with disability. The recommendations included enabling access to mainstream services, investing in programs and services, creating national strategies in consultation with people with disabilities, increasing public awareness of disability, and providing funding for programs, services, and research (WHO & World Bank, 2011). The report also recommended that countries use the ICF to create definitions and design data collection while including all domains of the classification in order to ensure a standard for health statistics that would be comparable across the world (WHO & World Bank, 2011). The positive framing, well-defined structure, and specific guidelines for use may mean the ICF is adopted by more organizations and countries not only for clinical, research, and statistical applications, but also for use as a social policy tool.

Content

The ICF has two primary parts, each containing two components. Part 1 describes Functioning and Disability and contains the components of Body Functions and Structures and Activities and Participation. Body Functions and Structures refer to the physiological functions of body systems and their anatomical parts (e.g., mental functions such as the reception and expression of spoken language). Activities and Participation refer to the execution of tasks and the individual’s involvement in life situations (e.g., using public transport, engaging in social relationships, playing sport).
Part 2 describes Contextual Factors and contains the components of Environmental Factors and Personal Factors. Environmental Factors refer to the physical, social and attitudinal environment where people conduct their lives (e.g., physical and emotional support given to an individual, attitudes to an individual) and can act as either barriers or facilitators to participation or as both (WHO, 2001). Personal Factors refer to the features of an individual that are not part of their health state (e.g., gender, age, race, education, coping styles) and therefore, are not coded in the ICF (WHO, 2001). The components of the framework interact as shown in Figure 1. An individual’s functioning may involve the complex interaction of components in either direction; therefore, describing all components independently before investigating the causal links between them is recommended (WHO, 2001).

![Figure 1. Interactions between the components of the ICF. Reprinted with permission from World Health Organization. (2007). International classification of functioning, disability, and health: ICF. Geneva, Switzerland: Author.](image)

**Coding Using the ICF**

The ICF allows for the classification of an individual’s health and health-related state by the use of codes to create a profile. This profile can be used across time to
determine if an individual’s functional skills are improving and what changes can be made to his or her environment to help him or her meet his or her goals. It is important to note that the profile does not replace assessment results or clinical data, rather it provides a summary of an individual’s functioning in a common language (Simeonsson et al., 2012). Each of the two components of the ICF (e.g., Body Functions and Structures) contains various domains (e.g., Voice and speech functions), and each domain contains categories (e.g., Articulation functions) that are the units of classification. Once the appropriate category code is selected (e.g., b320 for Articulation functions), one or more qualifier codes (ranging from 0 indicating No problem to 4 indicating a Complete problem) are added after a decimal point to indicate the extent of the functioning or disability for the Body Functions and Structures, and for the Activities and Participation components. For example, a code of b320.2 would indicate a moderate problem in articulation functioning (e.g., producing speech sounds).

Qualifier codes are also used to indicate the level of either facilitator or barrier for Environmental Factors; however, a plus sign is used to denote a facilitator and the decimal point indicates a barrier. For example, a code of e310+2 would classify the physical and emotional support provided by immediate family as a moderate facilitator.

**Relevant Domains for Speech-Language Pathology and Audiology**

An individual’s functioning can be affected at a biological, psychological and sociological level; therefore, all components of the ICF should be considered when creating an individual’s profile. Consequently, many domains of the ICF are relevant to speech-language pathology and audiology (Threats & Worrall, 2004). Each domain is described in a separate chapter within its component. Three core chapters are directly relevant to communication: Voice and speech functions within Body Functions, Structures involved in voice and speech within Body Structures, and Communication within the Activities and Participation component. Additional chapters that also have
relevance to speech-language pathology and audiology include: Body Functions: Mental functions, Sensory functions and pain, and Functions of the cardiovascular, haematological, immunological and respiratory systems; Body Structures: Structures of the nervous system, The eye, ear and related structures, and Structures related to movement; Activities and Participation: Learning and applying knowledge, Interpersonal interactions and relationships, and Community, social and civic life; and Environmental Factors: Support and relationships, Attitudes, and Services, systems and policies (McLeod, 2006; Neumann & Romonath, 2012; Threats & Worrall, 2004).

**The ICF in Practice and Research**

The ICF is the specified framework in the United States in the Scope of Practice for speech-language pathology and audiology (American Speech-Language-Hearing Association [ASHA], 2018) and is endorsed and/or employed by professional associations around the world including the International Association of Logopedics and Phoniatrics, the Irish Association of Speech and Language Therapists, the Royal College of Speech and Language Therapists, Speech-Language and Audiology Canada, Audiology Australia, and Speech Pathology Australia. The widespread implementation of the classification demonstrates its perceived relevance to the professions of speech-language pathology and audiology and highlights the continuing need for resources and information about the ICF for both clinicians and researchers.

Before the development of the ICF, clinicians may have focused on the speech, language, swallowing or hearing problems rather than holistically considering individuals and the contexts in which they live. The ICF can be used to assist clinicians to approach assessment and intervention in a holistic and structured way, to identify or create instruments for assessment, to document functioning to provide baseline and outcome measures, and to encourage input from relevant informants (e.g., family, teachers, and other professionals; Simeonsson et al., 2012). The ICF can also be used to
advocate for clients, demonstrating the importance of communication skills by showing how they affect an individual in the Activity and Participation domains (Threats & Worrall, 2004).

Most of what clinicians already do to improve individuals’ communicative functioning can readily be documented using the ICF (Threats & Worrall, 2004). During a case history, biomedical questions can provide details of Body Functions and Structures, whereas psychosocial questions can provide information on the consequences of the health condition in relation to Environmental barriers, Activity limitations, and restrictions on Participation (Audiology Australia, 2014). Therefore, effective client-centered care requires all domains of functioning and disability to be addressed in an intervention.

The ICF has been extensively used as a framework for working with people with a communication disability. The framework has been used in rehabilitation for people with aphasia (Martin, Thompson, & Worrall, 2007), assessment of functioning in patients with head and neck cancer (Tschiesner et al., 2009), the functioning of people with stroke postdischarge from hospital (Pajalic, Karlsson, & Westergren, 2006), the consequences of stuttering (Yaruss & Quesal, 2004), cognitive function in people with Parkinson’s disease (Koerts, Leenders, & Brouwer, 2009), intervention for people with ataxic dysarthria (Stocks, Dacakis, Phyland, & Rose, 2009), enhancing education and training programs for caregivers of people with dementia (Byrne & Orange, 2005), rehabilitation of traumatic brain injury (Koskinen, Hokkinen, Sarajuuri, & Alaranta, 2007), daily functioning and attitudes to impairment in children with cochlear implants or hearing aids (Anmyr, Olsson, Larson, & Freijd, 2011), outcome measures for children with developmental disabilities (Majnemer, 2012), assessment and intervention for children with developmental language disorders (Westby & Washington, 2017) and speech sounds disorders (McLeod & Baker, 2017; McLeod & McCormack, 2007),
support for children with cleft lip and palate (Neumann & Romonath, 2012), rehabilitation of older adults with acquired hearing impairment (Hickson & Scarinci, 2007), factors affecting the use of hearing aids in older adults (Stephens, Vetter, & Lewis, 2003), and third-party disability (Grawburg, Howe, Worrall, & Scarinci, 2013). The ICF can also be used to consider communication in nontraditional speech-language pathology and audiology domains from a perspective of health and wellness. For example, multilingual adults seeking Intelligibility Enhancement do not have a disability; however, the ICF has been used to investigate the Environmental Factors that may impact on their participation in activities (Blake & McLeod, 2018; Blake, Verdon, & McLeod; 2018).

Additionally, many assessments are informed by the ICF including Therapy Outcome Measures (Enderby & John, 2015), Focus on the Outcomes of Children Under Six (Thomas-Stonell et al., 2012) for considering children’s communicative participation, the Intelligibility in Context Scale for measuring children’s speech intelligibility (McLeod, Harrison, & McCormack, 2012), the Voice Handicap Index (Jacobson et al., 1997), the WHO Disability Assessment Schedule II for measuring functional health status in the adults with acquired hearing loss (Chisolm, Abrams, McArdle, Wilson, & Doyle, 2005), and the SATIS-Stroke to measure satisfaction with activities and participation for people with chronic stroke (Bouffioulx, Arnould, & Thonnard, 2008). In summary, the framework has been applied to many different aspects of functioning in individuals of all ages in various contexts, whereas the common language provided by the ICF can facilitate the translation of important research into clinical practice (Threats & Worrall, 2004).

ICF core sets have been developed and validated for certain health conditions that have a high impact on individuals’ functioning (Ustun, Chatterji, & Kostanjsek, 2004). For example, there are core sets for people with stroke (Geyh et al., 2004), head
and neck cancer (Tschiesner et al., 2007), hearing loss (Granberg, Möller, Skagerstrand, Möller, & Danermark, 2014), and traumatic brain injury (Bernabeu et al., 2009). The core sets contain a limited number of preselected ICF categories linked to the health condition and aim to make the ICF easier to apply in daily clinical practice (Ustun et al., 2004).


This article describes the ICF and its purpose, development, contents, and coding. The above discussion of the use of the framework in speech-language pathology and audiology clinical practice and research not only highlights the appropriateness of the ICF as a framework for our professions, but also demonstrates its ongoing potential. The continued use of the ICF as a classification and framework in speech-language pathology and audiology offers the potential to enhance clinical practice and research outcomes by supporting clients in a holistic manner in any context to achieve their participation goals.
References


patients with chronic stroke. *Journal of Rehabilitation Medicine, 40,* 836-843. doi:10.2340/16501977-0272


Part Two

The Relationship between the Spoken English Proficiency of Multilingual Speakers and their Participation in Australian Society
Introduction to Part Two

Part Two (Chapters 3, 4, 5, and 6) of this doctoral research focused on the topic of participation in multilingual speakers. Specifically, the papers in Chapters 3 to 6 examined the relationship between the English proficiency and intelligibility of multilingual speakers and their participation in Australian society. Part Two began by describing the entire Australian population (Chapter 3) and narrowed in focus to multilingual university students (Chapters 5 and 6).

The first two papers in Part Two drew on existing data collected in two Australian Government data sets. Chapter 3 reported on the analysis of data from the Australian Census of Population and Housing (ABS, 2017) that collects key characteristic data on every person in Australia and the place they are staying in, on one night. Chapter 4 reported on the analysis of data from Building a New Life in Australia, The Longitudinal Study of Humanitarian Migrants (BNLA) (Department of Social Services, DSS, 2015), a longitudinal research project investigating how humanitarian migrants settle into living in Australia. The doctoral candidate was provided with the opportunity to work alongside a statistician from the Australian Government Department of Social Services to analyse the new BNLA dataset and write Paper 3, the first journal article published from the BNLA dataset. The use of these existing datasets had a number of benefits, including access to data from a diverse range of participants, and the statistical power of drawing upon large-scale, and in the case of the Census, entire population datasets to explore and describe the English proficiency of Australia’s multilingual population and the effect of English proficiency on their participation. The use of secondary data also came with a number of limitations as the doctoral candidate had no control over the questions that were asked and the way in which they were asked. These two chapters provided a national context for the remainder of the thesis and demonstrated the benefits of multilingualism, the importance of English proficiency on participation in education and the workforce, and highlighted the need for support for those with limited English proficiency attempting to participate in an English-dominant society.

The final two chapters in Part Two focused on participation within the context of multilingual university students. These two chapters (Chapters 5 and 6) introduced a specific focus on the topic of intelligibility (i.e., not just as an element of spoken language proficiency) that continued throughout the remainder of the thesis. Additionally, Part Three continued the focus on multilingual university students.
Chapter 5 reported on an analysis of survey data from 137 multilingual students enrolled at 14 Australian universities regarding their perceptions of the impact of their spoken English proficiency and intelligibility on their participation, not only at university, but also in society. The survey was designed specifically for this study and survey questions relating to participation were informed (with permission from DSS) by the Wave 1 survey questions from the BNLA (Chapter 4). Chapter 6 presented Paper 5 that explored the perspectives of multilingual university students regarding their intelligibility in English through qualitative analysis of comments from the same survey, along with semi-structured interviews with six multilingual university students and one faculty member. Participants described their motivation for seeking support for their intelligibility in English as well as their perceptions of facilitators and barriers to improving their intelligibility.

The statistical methods used to analyse the data in Part Two included both quantitative and qualitative methods and were described within the individual papers.

References


This is the authors accepted manuscript of an article published as the version of record in *International Journal of Speech-Language Pathology ©Taylor & Francis Ltd 2018 Informa UK Limited, trading as Taylor & Francis Group,*

[https://doi.org/10.1080/17549507.2016.1229031](https://doi.org/10.1080/17549507.2016.1229031)

Taylor & Francis has granted permission for the accepted manuscript to appear in this PhD thesis.
The relationship between spoken English proficiency and participation in higher education, employment, and income from two Australian censuses

Helen L. Blake, Sharynne McLeod, Sarah Verdon and Gail Fuller
Charles Sturt University

Helen L. Blake (corresponding author) orcid.org/0000-0003-1041-4613
Research Institute for Professional Practice, Learning and Education (RIPPLE)
Charles Sturt University, Panorama Ave, Bathurst 2795, Australia.
Phone: 61 437 472336. Email heblake@csu.edu.au

Sharynne McLeod orcid.org/0000-0002-7279-7851
Charles Sturt University

Sarah Verdon orcid.org/0000-0002-7503-5860
Charles Sturt University

Gail Fuller (no orcid id)
Charles Sturt University

Keywords: multilingual; participation; cultural and linguistic diversity; English proficiency; intelligibility enhancement, spoken language proficiency
Abstract

Purpose: Proficiency in the language of the country of residence has implications for an individual’s level of education, employability, income and social integration. This paper explores the relationship between the spoken English proficiency of residents of Australia on census day and their educational level, employment and income to provide insight into multilingual speakers’ ability to participate in Australia as an English-dominant society.

Method: Data presented are derived from the 2006 and 2011 Australian censuses of over 19 million people.

Result: The proportion of Australians who reported speaking a language other than English at home was 21.5% in the 2006 census and 23.2% in the 2011 census. Multilingual speakers who also spoke English very well were more likely to have post-graduate qualifications, full-time employment and high income than monolingual English speaking Australians. However, multilingual speakers who reported speaking English not well were much less likely to have post-graduate qualifications or full-time employment than monolingual English speaking Australians.

Conclusion: These findings provide insight into the socioeconomic and educational profiles of multilingual speakers which will inform the understanding of people such as speech-language pathologists who provide them with support. The results indicate spoken English proficiency may impact participation in Australian society. These findings challenge the “monolingual mind-set” by demonstrating that outcomes for multilingual speakers in education, employment and income are higher than for monolingual speakers.

Keywords: multilingual; participation; cultural and linguistic diversity; English proficiency; intelligibility enhancement, spoken language proficiency
Introduction

Culturally competent speech-language pathologists should develop an understanding of the social history of their clients in order to provide appropriate assessment and intervention services (Battle, 2012). Clinicians need to understand the community and context in which they work, even before they understand the people who become their clients. This understanding is particularly imperative in Australia where few services are provided in languages other than English, and a mismatch exists between the languages of speech-language pathologists and the languages spoken in the general population (Verdon, McLeod, & McDonald, 2014).

Many developed nations with a dominant language, such as Australia, England, Germany, Italy and Spain, have worked to integrate multilingual speakers linguistically, socially and economically (Collins, 2013; Moyer, 2004; Vázquez, Terraza-Núñez, Vargas, Rodríguez, & Lizana, 2011). Nevertheless, monolingual speakers in countries with a dominant language such as England, France, Germany, Ireland, Italy, and Spain are less likely to recognise the benefits of multilingualism (Pietiläinen, 2011) and have been described as having a “monolingual mindset” (Clyne, 2008). Multilingualism has been found to have cognitive benefits for the individual in working memory and increasing skills for task switching, attentional control, metalinguistic awareness, abstract and symbolic representation and problem solving (Adesope, Lavin, Thompson, & Ungerleider, 2010; Bialystok, 2009; Goriot, Denessen, Bakker, & Droop, 2015). Multilingualism may also benefit the societies which embrace it, both culturally and economically.

Proficiency in the language of the country of residence has implications for an individual’s ability to participate in education and remunerative employment (Chiswick, Lee, & Miller, 2006; Hwang, Xi, & Cao, 2010) and to integrate socially (Becchetti, Pelloni, & Rossetti, 2008; Pagan, 2015). Unemployment, economic hardship, decrease
in socioeconomic status, and lack of access to educational services can negatively affect new migrants’ mental health and impact on their ability to adapt and participate in society (Murray, Davidson, & Schweitzer, 2008). Language skills are key to integration, allowing participation in further education, employment and social life (McClelland & Lindwall, 2015).

The Universal Declaration of Human Rights states that everyone, regardless of race, ethnicity or gender has the right to justice and equality before the law, to equal opportunity to develop their full potential and to be free to participate in the cultural and social life of their community (Office of the High Commissioner for Human Rights, 2015). Participation is defined as involvement in a life situation (World Health Organization, 2001) and includes the opportunity to have your views on improving your life and your community heard and belief that you can influence your own future and make decisions which will affect it (Office of the High Commissioner for Human Rights, 2015). Benefits of participation include access to education, employment, and social integration. Without participation, people cannot experience the rights and freedoms that the Universal Declaration of Human Rights aims to guarantee (Office of the High Commissioner for Human Rights, 2015).

**Australia’s Multicultural Context**

Australia, as an English-dominant country with high levels of cultural and linguistic diversity, offers an opportunity to consider the participation of multilingual speakers. Australia’s rich diversity is evidenced in the variety of languages, ancestries and birthplaces reported by its population (Australian Bureau of Statistics, ABS, 2013a). Historically, more people migrate to Australia than emigrate to other countries. For example, in February 2016, 10,830 people stated they were permanent arrivals in Australia, while 7,390 Australian residents stated their intention to permanently depart from Australia (ABS, 2016). Therefore, the cultural and linguistic diversity of
Australia’s resident population has been continually reshaped by new migrants (ABS, 2015a). Migration to Australia is changing, with migrants originating from different countries over time and migrating in higher numbers. In the 2011 census, 26.9% of Australia's population reported being born overseas. By 30 June 2014, the proportion increased to 28.1% (6.6 million people), the highest rate in 120 years (ABS, 2015a). Migration now contributes over half of population growth (ABS, 2015a). The source countries for migration are changing from European to Asian countries. Over the last 10 years, the proportion of the population who were born in the UK decreased from 5.6% in 2004 to 5.2% in 2014. Conversely, proportions increased for people born in New Zealand (from 2.1% to 2.6%), China (from 1.0% to 1.9%) and India (from 0.7% to 1.7%) (ABS, 2015a).

In 2015-2016, up to 190,000 permanent places will be available for migrants to settle in Australia (Department of Immigration and Border Protection, 2015). This includes up to 128,550 places for skilled migrants, including employer sponsored, general skilled and business categories; 57,400 places for family migrants sponsored by immediate family members; 565 places for special eligibility migrants, including former permanent residents who have maintained close business, cultural or personal ties with Australia; and 3,485 permanent child visa places (Department of Immigration and Border Protection, 2015).

Resident Australians have a more positive attitude to immigration than people in other western countries. A majority (85%) of Australians surveyed in the Scanlon Foundation's Mapping of Social Cohesion Report (2014) believed that multiculturalism was good for Australia and that the immigration intake was about right or too low. In the same year, US and European surveys found disapproval of immigration in the range of 60 to 75% (Scanlon Foundation, 2014). Notwithstanding this, recent research from The Alfred Deakin Institute for Citizenship and Globalisation found one in five
Australians experience racial discrimination; however, anti-discrimination efforts focusing on the benefits of diversity can succeed in reducing racist attitudes and racial discrimination (Elias, 2016).

Migration appears central to Australia’s future prosperity. By 2050, the Migration Council Australia (2015) estimates that migrants will contribute on average 10% more to Australia's economy than existing residents and that migration will add $1,625 billion to Australia’s Gross Domestic Product (GDP) and 15.7% to the workforce participation rate. In order to effectively communicate in a globalised world, a country needs to develop multilingual and multicultural competence (Tong & Cheung, 2011). Migrants, especially those from non-English speaking backgrounds, have language skills which contribute to Australia’s ability to function and succeed in the global economy (Department of Immigration and Border Protection, 2014b).

Language.

Linguistic diversity is increasing in Australia and the languages spoken are changing. The proportion of people who speak a language other than English at home is also increasing in line with the decrease in migration from the UK. Almost half (49%) of migrants who arrived before the 2006 census spoke a language other than English, compared to 67% of those who arrived after the 2006 census. Conversely, migrants’ English proficiency is decreasing with 51% of migrants who arrived before the 2006 census reporting speaking English very well and 2.6%, not at all. Of the migrants who arrived after 2006, 43% reported speaking English very well and 3.1% not at all (ABS, 2013a). Notwithstanding this, migrants view language skills as key to their integration, allowing them to participate in further education, employment and social life by building community relationships in their new country (Choi & Ziegler, 2015; Edele, Seuring, Kristen, & Stanat, 2015).
Participation in Higher Education

Australia is the fourth most popular destination for international students wishing to improve their English after the UK, the US and Canada (English Australia, 2014, May 7). Attracting international students is important to the Australian economy. It is estimated that in 2014-15, international education supported over 130,000 full time equivalent employees and contributed $17.1 billion to Australia’s GDP (Deloitte Access Economics, 2016). In January 2015, there were 291,002 full-fee paying international students enrolled at Australian universities, colleges and schools, an increase of 10.3% on the previous year (Department of Education and Training, 2015). The largest number of enrolments was in higher education with the majority of higher education students originating from China (34.4%) and India (11.8%). English Language Intensive Courses for Overseas Students (ELICOS) made up 15.4% of total enrolments, an increase of 11.7% from 2014. Just over a quarter (26.7%) of students enrolled in ELICOS were from China (DET, 2015). Historically, many (over 90% in 2012) of these Chinese students remain in Australia after their courses to participate in further study (English Australia, 2014).

The English language proficiency of multilingual students has been a concern of staff at Australian universities and the subject of media scrutiny (Andrade, 2010; Benzie, 2010; Besser & Cronau, 2015, April 20; Birrell, 2006; Moon, 2003, October 21; Parker & McMillan, 2007). Much of the discussion has centred around declining standards in higher education associated with multilingual speakers, without recognising not only that many international students often perform well, but also that some Australian students do not succeed in higher education (Benzie, 2010). Appropriate support for English proficiency in multilingual university students in Australia is an ongoing issue (DEEWR, 2009).
Participation in Employment

Employers across all industry groups consistently rate communication skills as the most important selection criterion, above academic results and teamwork skills (Cotton, 2001; DEEWR, 2009; Graduate Careers Australia, 2015; Waldron & Lavitt, 2000).

Multilingualism may have conflicting effects on university graduates’ employability when skills in additional languages are balanced against proficiency in English. In a qualitative study of undergraduate international students in the US, most believed their multilingual skills would help them to be competitive in the job market, especially if they were fluent in a language widely used in the US, such as Spanish or Chinese (Sangganjanavanich, Lenz, & Cavazos, 2011). Multilingual graduates reported actively seeking positions in companies focused on the global economy to highlight their skills. However, lack of English proficiency inhibited their communication in both written applications and job interviews with more than half discouraged when applying, once they were informed that proficiency in English was a job requirement (Sangganjanavanich et al., 2011).

Income

Not only does English proficiency affect employability, it also influences income which may subsequently impact on quality of life. Migrants’ proficiency in the language of their adopted country has been correlated with their income (Chiswick et al., 2006; Hwang et al., 2010). Hwang, Xi, and Cao (2010) investigated 2000 US census data on migrants from 20 language groups. The average income of migrants was significantly higher when they integrated into a multicultural community than when they settled in a segregated community (Hwang et al., 2010). A similar inspection of the interrelationship between English proficiency and income and employment in Australia is warranted.
The Australian Census

This study draws on data from the Australian Bureau of Statistics’ (ABS) Census of Population and Housing (2006, 2011), the largest statistical collection in Australia. The objective of the census is to not only accurately record the number of people in Australia on census night (Tuesday, 8 August, 2006 and Tuesday, 9 August, 2011), but also to describe the characteristics of the people and their dwellings. The data obtained are used by government, private and public organisations, and individuals to inform policy and planning (ABS, 2013b). A range of products can be accessed via the ABS website to assist with analysing and interpreting census data. For example, users can read analytical articles, access statistics based on location (QuickStats), or use TableBuilder, an online self-help tool which allows users to construct tables on census variables (ABS, 2013b). The strengths of the census dataset are that it is an entire population survey and it is accessible. The scope of the census is extensive because everyone in Australia on census night must legally complete a form, including overseas visitors, but excluding foreign diplomats and their families and Australians who are out of the country. The data cover the whole population and extensive effort is put into census form design, collection procedures and processing to reduce errors and ensure internal consistency and that the data are comparable with other ABS datasets. The census questions are tested on focus groups consisting of people representing the diversity of the Australian population to ensure that they are easy to understand and answer, even on behalf of others. Additional field tests are conducted in various cities and rural locations (ABS, 2011b). The limitations of using this dataset are that the individual census records are confidential so data are aggregated, which limits some forms of statistical analysis. If there is no one in a dwelling or forms are incomplete, answers are imputed; however, information is available from the ABS about response and error rates. Data topics are limited because there must be a demonstrated national
need for data on a topic for policy development, planning and program monitoring (ABS, 2013b).

Census questions allow data to be collected on individuals, families and dwellings. Questions for individuals provide demographic data such as sex, date of birth and residential address. Several questions provide a profile of Australia’s cultural and linguistic diversity such as country of birth, ancestry, and language spoken at home. If a language other than English is spoken at home, a follow-up question probes how well the person speaks English: very well, well, not well, not at all (ABS, 2011a). Additional questions provide data on education (highest year of schooling, highest qualification, current attendance), employment (full-time or part-time, occupation, industry), and income (total wages, pensions, allowances). Questions on families provide data about composition, combined income and employment status and questions on dwellings provide data about dwelling structure, mortgage and rent (ABS, 2011a).

**Aims**

This paper will compare data from two national censuses (2006 and 2011) to document participation by the culturally and linguistically diverse population of Australia. Specifically:

1. To describe the spoken English proficiency of the Australian population.
2. To explore the relationship between spoken English proficiency and multilingual speakers’ participation in Australian society ascertained by considering higher education qualifications attained, employment status and income.
3. To explore differences/similarities between spoken English proficiency and speakers’ age and sex.
Method

Participants

2006 Census.

In the 2006 Census, there were 19,855,288 people in Australia, an increase of 6%, or just over 1 million people, since the 2001 census. Of these, 49.4% were male and 50.6% were female. The median age was 37 years (an increase from 35 years in the 2001 census) with children aged 0-14 years comprising 19.8% of the population and 13.3% of the population aged over 65 years. The most common countries of birth after Australia (70.9%) were England (4.3%), New Zealand (2.0%), China (1.0%), Italy (1.0%) and Vietnam (0.8%). The five most common languages other than English spoken at home were Italian (1.6%), Greek (1.3%), Cantonese (1.2%), Arabic (1.2%), and Mandarin (1.1%). Educational institutions were attended by 23.1% of people in Australia. Of these, 37.0% of people attended a primary school, 27.8% secondary school and 25.6% a tertiary or technical institution at the time of census collection. The most common occupations in Australia were professionals (19.8%), clerical and administrative workers (15.0%), technicians and trade workers (14.4%), managers (13.2%), and labourers (10.5%). The proportion of the labour force who were employed full-time was 60.7%, while 27.9% were employed part-time and 5.2% were unemployed. The median weekly personal income for people aged over 15 years was $466, a rise of 24% from the 2001 census (ABS, 2015b).

2011 Census.

In the 2011 Census, there were 21,507,717 people in Australia. Of these, 49.4% were male and 50.6% were female. The median age was 37 years with 19.3% of the population aged 0-14 years and 14.0% of the population aged over 65 years. The most common countries of birth after Australia (69.8%) were England (4.2%), New Zealand (2.2%), China (1.5%), India (1.4%) and Italy (0.9%) (ABS, 2015b). Over 300 languages
were spoken in Australian households (ABS, 2012). The five most common languages spoken at home after English were Mandarin (1.6%), Italian (1.4%), Arabic (1.3%), Cantonese (1.2%) and Greek (1.2%). Educational institutions were attended by 30.2% of people in Australia. Of these, 27.0% of people attended primary school, 20.5% secondary school and 21.6% a tertiary or technical institution at the time of census collection. The most common occupations in Australia were professionals (21.3%), clerical and administrative workers (14.7%), technicians and trade workers (14.2%), managers (12.9%), and community and personal service workers (9.7%). The proportion of the labour force who were employed full-time was 59.7%, while 28.7% were employed part-time and 5.6% were unemployed. The median weekly personal income for people aged over 15 years was $577 (ABS, 2015b).

Data Analysis

The data were derived using TableBuilder Pro, an online tool subscribed to by Charles Sturt University that allows users to construct data tables on Australian census variables of interest (ABS, 2015c). As noted above, individual census records are confidential so data are aggregated, therefore only descriptive results are presented in this paper. Notwithstanding this, significance testing is not critical in this study, because the full population is analysed rather than generalising from a sample. Cross-tabulations were produced to display the number and percentage of people for each of the English proficiency categories (speaks English only; speaks other language and speaks English very well; well; not well; or not at all) compared with higher education qualifications (postgraduate degree; graduate diploma and graduate certificate; bachelor degree; advanced diploma and diploma; or certificate) employment (employed, worked full-time; employed, worked part-time; employed, away from work; unemployed, looking for full-time work; unemployed, looking for part-time work; or not in the labour force) and income (negative income; nil income; $1-$20,799; $20,800-$51,999; $52,000-
In order to facilitate comparison between the 2006 and 2011 census, nine separate income categories in each census were combined to create the three categories between $1 and $103,999. Proficiency in English was also compared with age in five year groups and sex (male or female).

**Result**

**English Proficiency**

In the 2006 census, 78.5% of Australians reported speaking *English only* at home and 21.5% reported speaking a language other than English. Of those who spoke a language other than English at home, 8.8% reported that they also spoke English *very well*, 4.3% spoke English *well*, 2.2% spoke English *not well*, and 0.6% did not speak English at all (see Table I). In the 2011 census, 76.8% of Australians reported speaking *English only* at home, while 23.2% reported speaking a language other than English. Of those who spoke a language other than English at home, 10.3% reported that they also spoke English *very well*, 5.0% spoke English *well*, 2.4% spoke English *not well*, and 0.7% did not speak English at all (see Table I).

[Table I near here]

**Higher Education**

Speakers’ English proficiency was compared with their non-school educational qualifications and in general, people who spoke a language other than English at home and spoke English *very well* or *well* were more likely to have a high educational qualification than those who spoke *English only* (see Table II). In the 2006 census, postgraduate degrees were held by 1.8% of people who spoke *English only*, 5.5% of people who spoke another language and spoke English *very well*, 3.4% of people who spoke English *well*, 0.5% of people who spoke English *not well*, and 0.1% of people who did not speak English at all. In the 2011 census, postgraduate degrees were held by 2.4% of people who spoke *English only*, 7.9% of people who spoke another language
and spoke English very well, 5.4% of people who spoke English well, 0.8% of people who spoke English not well, and 0.1% of people who did not speak English at all (see Table II). A similar pattern was found for bachelor’s degrees, advanced diplomas and diplomas (see Table II).

A different pattern was found for certificate level qualifications with monolingual English speakers more likely to hold these qualifications than people who spoke another language (see Table II). In the 2006 census, certificate level qualifications were held by 15.1% of people who spoke English only, 11.3% of people who spoke another language and spoke English very well, 9.9% of people who spoke English well, 5.0% of people who spoke English not well, and 1.5% of people who did not speak English at all (see Table II). In the 2011 census, certificate level qualifications were held by 16.6% of people who spoke English only, 11.0% of people who spoke another language and spoke English very well, 10.2% of people who spoke English well, 5.2% of people who spoke English not well, and 1.4% of people who did not speak English at all (see Table II).

**Employment**

Speakers’ English proficiency was compared with their labour force status and people who only spoke English at home were less likely to have full-time employment than people who spoke a language other than English and spoke English very well (see Table III). In the 2006 census, full-time employment was undertaken by 31.6% of people who spoke English only, 35.1% of people who spoke another language and spoke English very well, 24.4% of people who spoke English well, 12.9% of people who spoke English not well, and 3.6% of people who did not speak English at all (see Table III). In the 2011 census, full-time employment was undertaken by 31.6% of people who spoke English only, 36.1% of people who spoke another language and
spoke English very well, 25.0% of people who spoke English well, 12.6% of people who spoke English not well, and 3.5% of people who did not speak English at all (see Table III).

[Table III near here]

A different pattern was found for part-time employment with people who only spoke English at home just as likely to have part-time employment as people who spoke a language other than English and spoke English very well (see Table III). In the 2006 census, part-time employment was undertaken by 14.7% of people who spoke English only, 14.4% of people who spoke another language and spoke English very well, 12.1% of people who spoke English well, 7.1% of people who spoke English not well, and 2.2% of people who did not speak English at all (see Table III). In the 2011 census, part-time employment was undertaken by 15.2% of people who spoke English only, 15.2% of people who spoke another language and spoke English very well, 14.4% of people who spoke English well, 8.4% of people who spoke English not well, and 2.7% of people who did not speak English at all (see Table III).

Australians who spoke a language other than English but spoke English not well or not at all were less likely to be in the labour force than other Australians (see Table III). In the 2006 census, 26.3% of people who spoke English only at home were not in the labour force, 24.7% of people who spoke another language and spoke English very well, 42.0% of people who spoke English well, 57.3% of people who spoke English not well, and 50.4% of people who did not speak English at all (see Table III). In the 2011 census, 26.3% of people who spoke English only were not in the labour force, 24.1% of people who spoke another language and spoke English very well, 39.7% of people who spoke English well, 55.4% of people who spoke English not well, and 46.8% of people who did not speak English at all (see Table III).
Income

Speakers’ English proficiency was compared with their individual income (see Table IV). People who spoke a language other than English at home and spoke English very well were more likely to have a high income than monolingual people who reported speaking English only. In the 2006 census, income between $52,000 and $103,999 was received by 12.8% of people who spoke English only, 13.5% of people who spoke another language and spoke English very well, 6.0% of multilingual people who spoke English well, 1.9% of people who spoke English not well, and 0.4% of people who did not speak English at all (see Table IV). In the 2011 census, 5.9% of people who spoke English very well were in the highest income bracket of $104,000 or more, compared to 5.6% of English only speakers. Income between $52,000 and $103,999 was received by 17.5% of people who spoke English only, 19.4% of people who spoke another language and spoke English very well, 9.9% of people who spoke English well, 3.1% of people who spoke English not well, and 0.8% of people who did not speak English at all (see Table IV).

A different pattern was found in the low income bracket with the percentage of people who spoke English well, not well or not at all higher than English only speakers. In the 2006 census, income between $1 and $20,799 was received by 27.6% of people who spoke English only, 24.9% of people who spoke another language and spoke English very well, 38.8% of people who spoke English well, 51.1% of people who spoke English not well, and 40.3% of people who did not speak English at all (see Table IV). In the 2011 census, income between $1 and $20,799 was received by 22.5% of people who spoke English only, 20.3% of people who spoke another language and spoke English very well, 31.3% of people who spoke English well, 43.4% of people
who spoke English *not well*, and 32.0% of people who did not speak English at all (see Table IV).

**Age and Sex**

Speakers’ English proficiency was compared with their age in five-year groups and their sex (see Supplementary Appendix). In most age groups there was minimal difference between the percentage of men versus women who spoke *English only* at home or another language and English *very well*. For example, in the 2011 census in the 25 to 29 years age group, 68.4% of men and 69.9% of women spoke *English only* and 15.9% of men and 15.8% of women spoke another language and English *very well*. However, the percentage of women who spoke English *not well* or *not at all* was higher in age groups over 35 years of age. For example, in the 2011 census, in the 40 to 44 years age group, 1.7% of men and 2.6% of women spoke English *not well* and 0.2% of men and 0.3% of women did not speak English at all. A similar pattern was found in the 2006 census. In the 40 to 44 year age group, 77.2% of men and 77.7% of women spoke *English only*, 10.0% of men and women spoke another language and English *very well*, 1.9% of men and 2.7% of women spoke English *not well* and 0.2% of men and 0.3% of women did not speak English at all (see Supplementary Appendix).

**Discussion**

This study compared data from the 2006 and 2011 national censuses in order to describe the spoken English proficiency of the Australian population, to explore the relationship between spoken English proficiency and multilingual speakers’ participation in Australian society by considering higher education qualifications attained, employment status and income, and to consider the relationship between spoken English proficiency and age and sex.
English Proficiency

The proportions of self-reported spoken English proficiency of Australians who speak another language at home did not change appreciably between 2006 and 2011; however, it was apparent from the data that linguistic diversity increased. Although Australia remains a predominately English-speaking country, the percentage of people reporting that they speak a language other than English at home increased from 21.5% in 2006 to 23.2% in 2011, continuing an upward trend from the censuses in 1996 (18.0%) and 2001 (20.0%) (ABS 2015b). Australia is also “a microcosm of minority ethnolinguistic communities” (McLeod, 2014, p. 209). Although 23.2% of Australians reported speaking a language other than English at home in the 2011 census, the most common of these languages, Mandarin was only spoken by 1.6% of the population (ABS 2015b). Other predominantly English-speaking countries like the US and Canada have a second major language. In the 2007 US census, 20.0% of people reported speaking a language other than English at home and the most common of these languages, Spanish, was spoken by 12.3% of the population (Shin & Kominski, 2010). In Canada, where English and French are recognised as official languages, 57.8% of the population reported English as their home language in the 2011 census, while 21.7% reported French (Statistics Canada, 2012).

Increasing linguistic diversity is beneficial to Australia. The basic principles which underpin a country’s prosperity include increased technology and investment, strong institutions and economic policies, an educated workforce and participation in the global economy (International Monetary Fund, 2008). Communication in a globalised world can facilitate commerce and education as well as access to media (mainstream, independent or social) (IMF, 2008). Individuals with multilingual skills can facilitate that international communication and therefore are integral to a nation’s successful participation in global activity.
**Higher Education**

When English proficiency was compared with non-school educational qualifications, multilingual speakers who reported proficiency in spoken English were more likely to have high educational qualifications (postgraduate or bachelor degrees, advanced diplomas and diplomas) than monolingual English speakers. A similar relationship was found in both the 2006 and 2011 censuses. These findings align with an expectation that migrants in any country are likely to have high proficiency in the language of the country of residence, if the immigration policy focuses on younger migrants with higher levels of education and exposure to the destination language in their country of origin (Chiswick et al., 2006). Additionally, many cultures that are represented in Australia, such as the Chinese and Vietnamese cultures, highly value education and scholarship, confer high status on teachers and are willing to expend time, energy and money ensuring their children participate in a good education (Chan & Chen, 1992; Jacob, 1992).

**Employment**

When English proficiency was compared with labour force status, multilingual speakers who had a high level of proficiency in English were more likely to have full-time employment and just as likely to have part-time employment as monolingual English speakers. However, Australians who spoke a language other than English and had poor or no spoken English were less likely to be in the labour force than other Australians. A similar relationship was found in both the 2006 and 2011 censuses.

The economies of developed countries such as Australia are increasingly centred on communication-based employment (Ruben, 2000). The Australian labour market requires workers who are more highly skilled, hold higher educational qualifications and have good communication skills in English. From 2010 to 2014, the largest employment growth was seen in the most highly skilled occupational groups (groups
which require good communication skills) which include professionals, technicians and trade workers, community and personal service workers and managers (Department of Employment, 2015). Conversely, relatively lower skilled groups such as labourers experienced a decline in job opportunities (Department of Employment, 2015). This trend is expected to continue, which means people with limited communication skills in English may find it increasingly difficult to find a job. The findings highlight the importance of supporting English proficiency to ensure everyone has the opportunity to participate in employment in order to influence their own future and contribute to society.

**Income**

Speakers’ English proficiency was compared with their individual income and multilingual speakers with a high level of proficiency in English were more likely to have a high income than monolingual English speakers. A similar relationship was found in both the 2006 and 2011 censuses. These findings likely result from migrants having different demographic characteristics to existing Australian residents. Because of Australia’s focus on the skilled migration program, many migrants have higher education, higher skills and higher work force participation rates than existing Australian residents (Migration Council Australia, 2015). Therefore, they can expect to receive a higher income. Australians who spoke a language other than English and had poor or no spoken English were more likely to be in the low income bracket than other Australians. This is not unexpected given the similar findings for employment and reinforces the need to support the language skills of these Australians. Support will not only ensure they can actively participate in society, but also that they have the capacity to engage in employment to gain financial independence and self-sufficiency, which in turn may improve their quality of life.
Age and sex

Speakers’ English proficiency was compared with their age in five-year groups and their sex. In most age groups there was minimal difference between the percentage of men versus women who were monolingual English speakers or multilingual speakers with a high level of proficiency in English. However, the percentage of women with poor or no spoken English was higher in age groups over 35 years of age. A similar relationship was found in both the 2006 and 2011 censuses. The findings discussed above suggest that these women may have lower participation rates in education and employment and subsequently lower income and would therefore need support to not only increase their language skills, but also to allow them to participate in society.

Implications

Although an increase in linguistic diversity appears to provide economic as well as cultural benefits for Australia, it is accompanied by the challenge to support those with a limited ability to participate in society due to poor spoken English proficiency. Multilingual speakers with a high level of proficiency in English had better outcomes than monolingual English speakers in levels of education, employment and income. These findings add to the body of research which indicates that proficiency in the language of the country of residence is beneficial; however, proficiency in that language as well as another language may provide more opportunities for the individual and subsequently, benefit all of society.

Australia as an historically English-dominant country has a “monolingual mindset” which may impede the ability to value and utilise the language potential of our multilingual population (Clyne, 2008). This attitude is not peculiar to Australia. Monolingual speakers in countries with a dominant language such as Germany, France, Spain and Ireland are more likely to think that speaking another language is not very useful (Pietiläinen, 2011). Initiatives such as Western Sydney University’s Bilingual
Research Laboratory suggest that a change of attitude is possible. Researchers from the Laboratory are drawing on the multilingual skills of Western Sydney’s multicultural community to investigate how people learn languages. Their aim is to develop new language learning strategies for teachers, parents and children in order to provide all Australians with the global mindset afforded by knowledge of multiple languages (Western Sydney University, 2014). The findings for the current study challenge the monolingual mind-set by demonstrating that outcomes for multilingual speakers in education, employment and income are higher than for monolingual speakers. Australia, along with other single language dominant countries, needs to shift from this monolingual mind-set in order to recognise the potential for social and economic prosperity as a result of proficient multilingualism.

Australians who spoke a language other than English and had poor or no spoken English had poor outcomes for education, employment and income. Unfortunately, the census dataset does not allow the cause of poor spoken English skills (difficulty learning English, childhood speech and language impairment, autism, stroke, etc.) to be identified. These findings highlight the importance of supporting the development of English proficiency for migrant and multilingual Australians.

The Australian Government states it is committed to ensuring that all Australians have the opportunity to participate fully in society, regardless of their cultural and linguistic backgrounds (Department of Immigration and Border Protection, 2014a). Government policy should not only provide the opportunity to improve English skills, but it should also promote employment and education opportunities for those with developing English language skills or establish pathways towards these outcomes. The findings regarding English proficiency and age and sex which indicate that women over 35 years of age generally have poorer spoken English proficiency may assist in planning and directing resources to support these individuals, for example, ensuring
interpreters are available to facilitate assessment and intervention sessions for the women themselves or for their children.

**Implications for speech-language pathologists.**

As the Australian population becomes increasingly more diverse, speech-language pathologists should reflect on their cultural competence and preparedness to provide appropriate services to people from culturally and linguistically diverse backgrounds. This includes developing an understanding of the social history of their clients as well as the community and the context they work in. Clinicians may need to adapt to embrace this diversity in order to remain relevant and effective (Speech Pathology Australia, 2016).

Speech-language pathologists can play a role in supporting English proficiency through enhancing the intelligibility of multilingual speakers. Intelligibility enhancement is within the scope of practice for speech-language pathologists in the US (American Speech-Language-Hearing Association, 1997-2016), Canada (Speech-Language and Audiology Canada, 2015) and Australia (Speech Pathology Australia, 2015). Speech-language pathologists are specialists in speech and behaviour change (Sikorski, 2005; Winkworth, 2000), so they can determine which aspects of speech most impact intelligibility (proficiency of articulation, rate, fluency, prosody or conversation breakdown and repair strategies) and tailor a program to suit. If multilingual speakers seek intelligibility enhancement because they believe their intelligibility in English is negatively affecting their employment performance, educational advancement, or participation in everyday activities (American Speech-Language-Hearing Association, 1997-2016), speech-language pathologists have the skills to improve their communicative ability in English.
Limitations

The first aim of this study was to describe the spoken English proficiency of the Australian population. The census is self-enumerated so the accuracy of the self-reported English proficiency could be questioned (Edele et al., 2015) and cannot be used as a definitive measure of language skills. Additionally, the English proficiency census question asks for the language spoken at home, so multilingual skills may be under-reported as this does not account for those who speak English at home, but another language elsewhere (e.g. at their parents’ or grandparents’ homes or in the community). There is only a census question on spoken English proficiency and none requesting skills in understanding, reading or writing English. Notwithstanding this, many jobs also require English literacy skills. Therefore, unreported poor literacy may be as significant a reason why women over 35 are not participating more fully in employment, as their poor spoken English. The second aim of this study was to explore the relationship between spoken English proficiency and multilingual speakers’ participation in Australian society ascertained by considering higher education qualifications attained, employment status and income. The main limitation of the census dataset is that the individual records are confidential so data are aggregated, which limits some forms of statistical analysis such as regression analysis and significance testing. The data do not allow multilingual speakers to be analysed as individuals, so analyses cannot be conducted to account for individual influences on language proficiency, such as the interaction between age, sex, education, disability and communication disorder and the effect on multilingual speakers’ likelihood of gaining remunerative employment.

Further investigation is warranted into the barriers that mediate the relationship between English language skills and participation, such as racism and discrimination. Future research should investigate the relationship between English proficiency and
participation in other aspects of society, such as cultural and leisure activities, as well as access to key services such as health, housing, and transport. Such analyses are not possible with the Australian census data.

Conclusion

The findings of this study provide insight into the educational and socioeconomic profiles of multilingual speakers and indicate that spoken English proficiency may impact participation in Australian society. The results of this study highlight the importance of supporting multilingualism as well as English proficiency, because English-proficient multilingual speakers had better outcomes than monolingual English speakers. This study will inform the understanding of people such as speech-language pathologists who provide support for multilingual speakers. The results of this study can be used to encourage a shift in view towards multilingualism in English-dominant countries as the findings recognise the value of multilingualism and diversity in an increasingly globalised world.

Acknowledgements

This paper utilises data from the Australian Bureau of Statistics (ABS); however, the findings and opinions reported are those of the authors and should not be attributed to the ABS.

Note

1. Multilingual speakers are defined as people who are capable of understanding and/or producing more than one language; however, they may have different levels of competence in each of the languages they use and in the various ways they use them, be that orally, in writing or signed (International Expert Panel on Multilingual Children's Speech, 2012).
References


Table I

**Proficiency in spoken English/language**

<table>
<thead>
<tr>
<th></th>
<th>2006 census</th>
<th></th>
<th>2011 census</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Speaks English only</td>
<td>15,581,333</td>
<td>78.5</td>
<td>16,509,292</td>
<td>76.8</td>
</tr>
<tr>
<td>Speaks other language and speaks English; very well</td>
<td>1,743,448</td>
<td>8.8</td>
<td>2,205,041</td>
<td>10.3</td>
</tr>
<tr>
<td>Speaks other language and speaks English; well</td>
<td>848,207</td>
<td>4.3</td>
<td>1,067,344</td>
<td>5.0</td>
</tr>
<tr>
<td>Speaks other language and speaks English; not well</td>
<td>443,600</td>
<td>2.2</td>
<td>511,104</td>
<td>2.4</td>
</tr>
<tr>
<td>Speaks other language and speaks English; not at all</td>
<td>117,818</td>
<td>0.6</td>
<td>144,278</td>
<td>0.7</td>
</tr>
<tr>
<td>Both language and proficiency not stated</td>
<td>1,065,060</td>
<td>5.4</td>
<td>1,020,612</td>
<td>4.7</td>
</tr>
<tr>
<td>Language stated, proficiency not stated</td>
<td>55,821</td>
<td>0.3</td>
<td>50,048</td>
<td>0.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>19,855,287</td>
<td>100.0</td>
<td>21,507,719</td>
<td>100.0</td>
</tr>
</tbody>
</table>

*Source. ABS census 2006, 2011, TableBuilder Pro, authors’ analysis.*
## Table II

**Proficiency in spoken English/language and higher education qualifications**

<table>
<thead>
<tr>
<th></th>
<th>Postgraduate Degree Level</th>
<th>Graduate Diploma and Graduate Certificate Level</th>
<th>Bachelor Degree Level</th>
<th>Advanced Diploma and Diploma Level</th>
<th>Certificate Level</th>
<th>Level of education inadequately described</th>
<th>Level of education not stated</th>
<th>Not applicable</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2006 census</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>285,28</td>
<td>1</td>
<td>202,79</td>
<td>1</td>
<td>1,428,52</td>
<td>5</td>
<td>2,347,99</td>
<td>15.</td>
<td>1.</td>
</tr>
<tr>
<td>Speaks English only</td>
<td>8</td>
<td>8</td>
<td>9</td>
<td>3</td>
<td>1,428,52</td>
<td>5</td>
<td>2,347,99</td>
<td>15.</td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>1</td>
<td>16.</td>
<td>7.</td>
<td>1,428,52</td>
<td>5</td>
<td>2,347,99</td>
<td>15.</td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>55,161</td>
<td>5</td>
<td>20,464</td>
<td>2</td>
<td>288,476</td>
<td>5</td>
<td>131,979</td>
<td>6.</td>
<td>1.</td>
</tr>
<tr>
<td>Speaks other language and speaks English; very well</td>
<td>3.</td>
<td>0</td>
<td>11.</td>
<td>6.</td>
<td>288,476</td>
<td>5</td>
<td>131,979</td>
<td>6.</td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>29,126</td>
<td>4</td>
<td>4,101</td>
<td>5</td>
<td>97,533</td>
<td>5</td>
<td>54,495</td>
<td>4.</td>
<td>1.</td>
</tr>
<tr>
<td>Speaks other language and speaks English; well</td>
<td>0.</td>
<td>0</td>
<td>0.</td>
<td>1.</td>
<td>97,533</td>
<td>5</td>
<td>54,495</td>
<td>4.</td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>2,200</td>
<td>5</td>
<td>690</td>
<td>2</td>
<td>18,930</td>
<td>4.3</td>
<td>13,835</td>
<td>1.</td>
<td>1.</td>
</tr>
<tr>
<td>Speaks other language and speaks English; not well</td>
<td>0.</td>
<td>0</td>
<td>0.</td>
<td>1.</td>
<td>18,930</td>
<td>4.3</td>
<td>13,835</td>
<td>1.</td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>1</td>
<td>66</td>
<td>1</td>
<td>1,550</td>
<td>1.3</td>
<td>1,369</td>
<td>2.</td>
<td>0.</td>
</tr>
<tr>
<td>Speaks other language and speaks English; not at all</td>
<td>0.</td>
<td>0</td>
<td>0.</td>
<td>1.</td>
<td>1,550</td>
<td>1.3</td>
<td>1,369</td>
<td>2.</td>
<td>0.</td>
</tr>
<tr>
<td></td>
<td>453</td>
<td>0</td>
<td>264</td>
<td>0</td>
<td>2,577</td>
<td>0.2</td>
<td>1,910</td>
<td>2.</td>
<td>0.</td>
</tr>
<tr>
<td>Both language and proficiency not stated</td>
<td>1.</td>
<td>0</td>
<td>0.</td>
<td>1.</td>
<td>2,577</td>
<td>0.2</td>
<td>1,910</td>
<td>2.</td>
<td>0.</td>
</tr>
<tr>
<td></td>
<td>765</td>
<td>4</td>
<td>167</td>
<td>3</td>
<td>3,072</td>
<td>5.5</td>
<td>1,713</td>
<td>1.</td>
<td>1.</td>
</tr>
<tr>
<td>Language stated, proficiency not stated</td>
<td>413,09</td>
<td>2</td>
<td>228.55</td>
<td>1.</td>
<td>1,840.66</td>
<td>5.</td>
<td>1,130.47</td>
<td>5.</td>
<td>1.</td>
</tr>
<tr>
<td>Total</td>
<td>3</td>
<td>1</td>
<td>12</td>
<td>1</td>
<td>3</td>
<td>9.3</td>
<td>2</td>
<td>0</td>
<td>7.</td>
</tr>
<tr>
<td><strong>2011 census</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>392,76</td>
<td>2</td>
<td>256.01</td>
<td>1.</td>
<td>1,723,54</td>
<td>10.</td>
<td>1,097.67</td>
<td>6.</td>
<td>1.</td>
</tr>
<tr>
<td>Speaks English only</td>
<td>4</td>
<td>4</td>
<td>9</td>
<td>6</td>
<td>1,723,54</td>
<td>10.</td>
<td>1,097.67</td>
<td>6.</td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1</td>
<td>9</td>
<td>6</td>
<td>1,723,54</td>
<td>10.</td>
<td>1,097.67</td>
<td>6.</td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>175,21</td>
<td>8</td>
<td>33,543</td>
<td>1.</td>
<td>423,887</td>
<td>19.</td>
<td>185,831</td>
<td>8.</td>
<td>1.</td>
</tr>
<tr>
<td>Speaks other language and speaks English; very well</td>
<td>0.</td>
<td>0</td>
<td>0.</td>
<td>1.</td>
<td>423,887</td>
<td>19.</td>
<td>185,831</td>
<td>8.</td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>57,292</td>
<td>5.</td>
<td>6,297</td>
<td>0.</td>
<td>155,384</td>
<td>14.</td>
<td>84,806</td>
<td>8.</td>
<td>1.</td>
</tr>
<tr>
<td>Speaks other language and speaks English; well</td>
<td>0.</td>
<td>0</td>
<td>0.</td>
<td>1.</td>
<td>155,384</td>
<td>14.</td>
<td>84,806</td>
<td>8.</td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>3,844</td>
<td>8</td>
<td>769</td>
<td>2</td>
<td>28,635</td>
<td>5.6</td>
<td>18,449</td>
<td>3.</td>
<td>1.</td>
</tr>
<tr>
<td>Speaks other language and speaks English; not well</td>
<td>0.</td>
<td>0</td>
<td>0.</td>
<td>1.</td>
<td>28,635</td>
<td>5.6</td>
<td>18,449</td>
<td>3.</td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>204</td>
<td>0</td>
<td>91</td>
<td>0.</td>
<td>2,497</td>
<td>1.7</td>
<td>2,040</td>
<td>1.</td>
<td>1.</td>
</tr>
<tr>
<td>Speaks other language and speaks English; not at all</td>
<td>0.</td>
<td>0</td>
<td>0.</td>
<td>1.</td>
<td>2,497</td>
<td>1.7</td>
<td>2,040</td>
<td>1.</td>
<td>1.</td>
</tr>
<tr>
<td></td>
<td>535</td>
<td>0</td>
<td>299</td>
<td>0.</td>
<td>2,482</td>
<td>0.2</td>
<td>1,952</td>
<td>0.</td>
<td>1.</td>
</tr>
<tr>
<td>Both language and proficiency not stated</td>
<td>1,275</td>
<td>6</td>
<td>261</td>
<td>5</td>
<td>4,082</td>
<td>8.2</td>
<td>2,294</td>
<td>4.</td>
<td>1.</td>
</tr>
<tr>
<td>Language stated, proficiency not stated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>631,12</td>
<td>269,77</td>
<td>1,393,04</td>
<td>3,134,91</td>
<td>1,661,22</td>
<td>11,804,48</td>
<td>21,507,71</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>--------</td>
<td>--------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>-----------</td>
<td>-----------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3</td>
<td>9</td>
<td>1</td>
<td>10</td>
<td>14</td>
<td>1</td>
<td>7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Percentages are calculated according to the row on the total number of people with the same proficiency in English. Source: ABS census 2006, 2011, TableBuilder Pro, authors’ analysis.
## Table III

### Proficiency in spoken English/language and labour force status

<table>
<thead>
<tr>
<th></th>
<th>Employed, worked full-time</th>
<th>Employed, worked part-time</th>
<th>Employed, away from work</th>
<th>Unemployed, looking for full-time work</th>
<th>Unemployed, looking for part-time work</th>
<th>Not in the labour force</th>
<th>Not stated</th>
<th>Not applicable</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2006 census</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Speaks English only</td>
<td>4,928.55</td>
<td>31.4</td>
<td>2,287.07</td>
<td>14.0</td>
<td>490.3</td>
<td>3.0</td>
<td>241.66</td>
<td>1.0</td>
<td>4,096.46</td>
</tr>
<tr>
<td>Speaks other language and speaks English; very well</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>1</td>
<td>2</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Speaks other language and speaks English; well</td>
<td>351,712</td>
<td>12.0</td>
<td>251,836</td>
<td>4</td>
<td>62,476</td>
<td>2.0</td>
<td>2,311.07</td>
<td>1.0</td>
<td>25,404</td>
</tr>
<tr>
<td>Speaks other language and speaks English; not well</td>
<td>206,879</td>
<td>4</td>
<td>102,493</td>
<td>1.0</td>
<td>24,130</td>
<td>8</td>
<td>18,887</td>
<td>2.0</td>
<td>16,758</td>
</tr>
<tr>
<td>Speaks other language and speaks English; not at all</td>
<td>6,246.72</td>
<td>3.6</td>
<td>2,642.22</td>
<td>2.2</td>
<td>968.0</td>
<td>8</td>
<td>1,151</td>
<td>0.0</td>
<td>627.0</td>
</tr>
<tr>
<td>Both language and proficiency not stated</td>
<td>11,520</td>
<td>1.1</td>
<td>6,017.06</td>
<td>0.6</td>
<td>3,196.3</td>
<td>3</td>
<td>1,092</td>
<td>1.0</td>
<td>520.0</td>
</tr>
<tr>
<td>Language stated, proficiency not stated</td>
<td>7,308.43</td>
<td>2.9</td>
<td>2,685.19</td>
<td>1.3</td>
<td>591.55</td>
<td>3</td>
<td>310.58</td>
<td>1.1</td>
<td>193.22</td>
</tr>
<tr>
<td>Total</td>
<td>5,827.43</td>
<td>29.0</td>
<td>2,685.19</td>
<td>13.0</td>
<td>591.55</td>
<td>3</td>
<td>310.58</td>
<td>1.1</td>
<td>193.22</td>
</tr>
<tr>
<td><strong>2011 census</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Speaks English only</td>
<td>5,217.85</td>
<td>31.4</td>
<td>2,516.55</td>
<td>15.0</td>
<td>510.63</td>
<td>3.0</td>
<td>270.45</td>
<td>1.0</td>
<td>172.58</td>
</tr>
<tr>
<td>Speaks other language and speaks English; very well</td>
<td>0</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>7</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Speaks other language and speaks English; well</td>
<td>795,290</td>
<td>12.5</td>
<td>336,022</td>
<td>2</td>
<td>73,006</td>
<td>3</td>
<td>50,766</td>
<td>3.0</td>
<td>36,199</td>
</tr>
<tr>
<td>Speaks other language and speaks English; not well</td>
<td>266,610</td>
<td>12.0</td>
<td>153,403</td>
<td>4</td>
<td>28,609</td>
<td>7</td>
<td>23,966</td>
<td>2.0</td>
<td>23,031</td>
</tr>
<tr>
<td>Speaks other language and speaks English; not at all</td>
<td>64,556</td>
<td>6</td>
<td>42,760</td>
<td>8.4</td>
<td>9,762.9</td>
<td>9</td>
<td>9,743</td>
<td>9.0</td>
<td>8,505</td>
</tr>
<tr>
<td>Both language and proficiency not stated</td>
<td>5,051.35</td>
<td>3.5</td>
<td>3,949.27</td>
<td>2.7</td>
<td>1,222.8</td>
<td>8</td>
<td>1,207</td>
<td>8.0</td>
<td>836.0</td>
</tr>
<tr>
<td>Language stated, proficiency not stated</td>
<td>9,915.99</td>
<td>1.0</td>
<td>5,523.05</td>
<td>0.5</td>
<td>3,087.3</td>
<td>3</td>
<td>1,017</td>
<td>1.1</td>
<td>555.1</td>
</tr>
<tr>
<td>Total</td>
<td>6,367.55</td>
<td>29.3</td>
<td>3,062.97</td>
<td>14.0</td>
<td>627.79</td>
<td>2</td>
<td>357.87</td>
<td>1.1</td>
<td>242.26</td>
</tr>
</tbody>
</table>

113
Note. Percentages are calculated according to the row on the total number of people with the same proficiency in English. Source: ABS census 2006, 2011, TableBuilder Pro, authors’ analysis.
### Table IV

**Proficiency in spoken English/language and individual income**

<table>
<thead>
<tr>
<th></th>
<th>Negative income</th>
<th>Nil income</th>
<th>$1-$20,799</th>
<th>$20,800-$51,999</th>
<th>$52,000-$103,999</th>
<th>$104,000 or more</th>
<th>Not stated</th>
<th>Not applicable</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2006 census</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speaks English only</td>
<td>56,717</td>
<td>0.1</td>
<td>27.9</td>
<td>24.4</td>
<td>13.2</td>
<td>6.8</td>
<td>3.1</td>
<td>3.1</td>
<td>20.4</td>
</tr>
<tr>
<td>Speaks other language and speaks English; very well</td>
<td>9,351</td>
<td>0.16</td>
<td>9.4</td>
<td>20.3</td>
<td>21.6</td>
<td>39.9</td>
<td>5.6</td>
<td>0.2</td>
<td>1.7</td>
</tr>
<tr>
<td>Speaks other language and speaks English; well</td>
<td>6,335</td>
<td>0.12</td>
<td>11.7</td>
<td>29.8</td>
<td>28.6</td>
<td>5.8</td>
<td>0.8</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>Speaks other language and speaks English; not well</td>
<td>3,517</td>
<td>0.06</td>
<td>8.0</td>
<td>26.7</td>
<td>51.0</td>
<td>0.4</td>
<td>1.9</td>
<td>1.4</td>
<td>0.8</td>
</tr>
<tr>
<td>Speaks other language and speaks English; not at all</td>
<td>937</td>
<td>0.02</td>
<td>9.7</td>
<td>47.5</td>
<td>40.0</td>
<td>3.3</td>
<td>0.5</td>
<td>0.4</td>
<td>0.6</td>
</tr>
<tr>
<td>Both language and proficiency not stated</td>
<td>657</td>
<td>0.01</td>
<td>0.4</td>
<td>34.4</td>
<td>15.3</td>
<td>4.2</td>
<td>1.5</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Language stated, proficiency not stated</td>
<td>309</td>
<td>0.00</td>
<td>5.8</td>
<td>10.6</td>
<td>18.9</td>
<td>12.9</td>
<td>3.9</td>
<td>4.7</td>
<td>0.5</td>
</tr>
<tr>
<td>Total</td>
<td>77,823</td>
<td>0.18</td>
<td>5.4</td>
<td>38.7</td>
<td>27.0</td>
<td>25.0</td>
<td>11.1</td>
<td>9.1</td>
<td>1.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Negative income</th>
<th>Nil income</th>
<th>$1-$20,799</th>
<th>$20,800-$51,999</th>
<th>$52,000-$103,999</th>
<th>$104,000 or more</th>
<th>Not stated</th>
<th>Not applicable</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2011 census</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speaks English only</td>
<td>69,425</td>
<td>0.1</td>
<td>22.8</td>
<td>25.1</td>
<td>17.0</td>
<td>5.8</td>
<td>2.7</td>
<td>3.3</td>
<td>18.7</td>
</tr>
<tr>
<td>Speaks other language and speaks English; very well</td>
<td>14,274</td>
<td>0.03</td>
<td>9.5</td>
<td>47.5</td>
<td>31.3</td>
<td>4.3</td>
<td>3.3</td>
<td>3.5</td>
<td>16.3</td>
</tr>
<tr>
<td>Speaks other language and speaks English; well</td>
<td>10,260</td>
<td>0.02</td>
<td>13.1</td>
<td>33.3</td>
<td>29.5</td>
<td>7.6</td>
<td>1.7</td>
<td>1.1</td>
<td>1.1</td>
</tr>
<tr>
<td>Speaks other language and speaks English; not well</td>
<td>5,586</td>
<td>0.01</td>
<td>13.1</td>
<td>22.1</td>
<td>0.4</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Speaks other language and speaks English; not at all</td>
<td>1,469</td>
<td>0.00</td>
<td>12.4</td>
<td>46.1</td>
<td>32.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Both language and proficiency not stated</td>
<td>701</td>
<td>0.00</td>
<td>0.4</td>
<td>25.8</td>
<td>1.6</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Language stated, proficiency not stated</td>
<td>397</td>
<td>0.00</td>
<td>7.8</td>
<td>9.9</td>
<td>3.5</td>
<td>1.7</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total</td>
<td>102,112</td>
<td>0.06</td>
<td>6.1</td>
<td>22.2</td>
<td>24.4</td>
<td>16.2</td>
<td>5.1</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>
Note. Percentages are calculated according to the row on the total number of people with the same proficiency in English. Source: ABS census 2006, 2011, TableBuilder Pro, authors’ analysis.
<table>
<thead>
<tr>
<th>Age Group</th>
<th>Speaks English only</th>
<th>Speaks another language and speaks English very well</th>
<th>Speaks another language and speaks English well</th>
<th>Speaks another language and speaks English not well</th>
<th>Both language proficiency stated</th>
<th>Language stated, proficiency not stated</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4 years</td>
<td>Male</td>
<td>515.110</td>
<td>20.420</td>
<td>1.088</td>
<td>20.155</td>
<td>22.090</td>
<td>11.229</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>480.550</td>
<td>21.729</td>
<td>1.751</td>
<td>15.681</td>
<td>10.616</td>
<td>10.652</td>
</tr>
<tr>
<td>5-9 years</td>
<td>Male</td>
<td>551.875</td>
<td>56.678</td>
<td>13.761</td>
<td>10.539</td>
<td>10.975</td>
<td>10.975</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>521.531</td>
<td>71.878</td>
<td>20.242</td>
<td>10.539</td>
<td>10.242</td>
<td>10.242</td>
</tr>
<tr>
<td>10-14 years</td>
<td>Male</td>
<td>500.870</td>
<td>70.303</td>
<td>13.059</td>
<td>4.000</td>
<td>4.036</td>
<td>4.036</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>548.350</td>
<td>76.276</td>
<td>12.202</td>
<td>3.409</td>
<td>3.414</td>
<td>3.414</td>
</tr>
<tr>
<td>15-19 years</td>
<td>Male</td>
<td>559.289</td>
<td>77.029</td>
<td>17.739</td>
<td>5.041</td>
<td>5.92</td>
<td>5.92</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>533.258</td>
<td>76.493</td>
<td>16.528</td>
<td>4.392</td>
<td>5.96</td>
<td>5.96</td>
</tr>
<tr>
<td>20-24 years</td>
<td>Male</td>
<td>499.541</td>
<td>87.124</td>
<td>13.976</td>
<td>6.016</td>
<td>7.84</td>
<td>7.84</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>500.254</td>
<td>84.580</td>
<td>13.470</td>
<td>8.101</td>
<td>10.12</td>
<td>10.12</td>
</tr>
<tr>
<td>25-34 years</td>
<td>Male</td>
<td>442.253</td>
<td>84.487</td>
<td>28.000</td>
<td>6.92</td>
<td>8.23</td>
<td>8.23</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>479.566</td>
<td>94.612</td>
<td>30.739</td>
<td>9.020</td>
<td>12.55</td>
<td>12.55</td>
</tr>
<tr>
<td>35-44 years</td>
<td>Male</td>
<td>530.557</td>
<td>82.440</td>
<td>26.691</td>
<td>7.554</td>
<td>8.84</td>
<td>8.84</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>547.289</td>
<td>81.940</td>
<td>26.204</td>
<td>13.451</td>
<td>13.57</td>
<td>13.57</td>
</tr>
<tr>
<td>45-54 years</td>
<td>Male</td>
<td>531.521</td>
<td>78.137</td>
<td>20.230</td>
<td>10.201</td>
<td>1.217</td>
<td>1.217</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>530.441</td>
<td>82.874</td>
<td>24.850</td>
<td>10.480</td>
<td>1.894</td>
<td>1.894</td>
</tr>
<tr>
<td>55-64 years</td>
<td>Male</td>
<td>557.292</td>
<td>72.125</td>
<td>34.956</td>
<td>12.690</td>
<td>1.472</td>
<td>1.472</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>582.207</td>
<td>74.658</td>
<td>37.515</td>
<td>10.851</td>
<td>2.530</td>
<td>2.530</td>
</tr>
<tr>
<td>65-74 years</td>
<td>Male</td>
<td>500.002</td>
<td>59.712</td>
<td>34.145</td>
<td>3.533</td>
<td>1.031</td>
<td>1.031</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>530.077</td>
<td>65.605</td>
<td>35.505</td>
<td>3.122</td>
<td>2.842</td>
<td>2.842</td>
</tr>
<tr>
<td>75+ years</td>
<td>Male</td>
<td>518.599</td>
<td>41.122</td>
<td>31.059</td>
<td>2.096</td>
<td>3.111</td>
<td>3.111</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>531.575</td>
<td>56.245</td>
<td>12.007</td>
<td>2.096</td>
<td>3.111</td>
<td>3.111</td>
</tr>
<tr>
<td>All ages</td>
<td>Male</td>
<td>498.581</td>
<td>40.638</td>
<td>30.027</td>
<td>13.985</td>
<td>1.514</td>
<td>1.514</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>499.210</td>
<td>41.266</td>
<td>30.001</td>
<td>10.879</td>
<td>3.091</td>
<td>3.091</td>
</tr>
<tr>
<td>60-64 years</td>
<td>Male</td>
<td>387.122</td>
<td>27.416</td>
<td>25.640</td>
<td>5.064</td>
<td>1.573</td>
<td>1.573</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>380.107</td>
<td>26.184</td>
<td>24.003</td>
<td>10.901</td>
<td>3.270</td>
<td>3.270</td>
</tr>
<tr>
<td>65-74 years</td>
<td>Male</td>
<td>560.538</td>
<td>21.182</td>
<td>24.647</td>
<td>14.924</td>
<td>2.349</td>
<td>2.349</td>
</tr>
</tbody>
</table>

Supplementary Appendix
Proficiency in spoken English/language and age in five year groups and sex.
<table>
<thead>
<tr>
<th></th>
<th>60-69 years</th>
<th>70-74 years</th>
<th>75-79 years</th>
<th>80-84 years</th>
<th>85-89 years</th>
<th>90-94 years</th>
<th>95-99 years</th>
<th>100 years and over</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>372,006</td>
<td>297,856</td>
<td>222,518</td>
<td>194,717</td>
<td>157,671</td>
<td>119,333</td>
<td>81,913</td>
<td>385,873</td>
</tr>
<tr>
<td>Female</td>
<td>342,267</td>
<td>280,018</td>
<td>211,362</td>
<td>178,206</td>
<td>144,989</td>
<td>109,787</td>
<td>75,209</td>
<td>337,557</td>
</tr>
<tr>
<td>Total</td>
<td>714,273</td>
<td>577,874</td>
<td>433,880</td>
<td>372,923</td>
<td>292,660</td>
<td>229,120</td>
<td>167,122</td>
<td>723,430</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>60-69 years</th>
<th>70-74 years</th>
<th>75-79 years</th>
<th>80-84 years</th>
<th>85-89 years</th>
<th>90-94 years</th>
<th>95-99 years</th>
<th>100 years and over</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>372,006</td>
<td>297,856</td>
<td>222,518</td>
<td>194,717</td>
<td>157,671</td>
<td>119,333</td>
<td>81,913</td>
<td>385,873</td>
</tr>
<tr>
<td>Female</td>
<td>342,267</td>
<td>280,018</td>
<td>211,362</td>
<td>178,206</td>
<td>144,989</td>
<td>109,787</td>
<td>75,209</td>
<td>337,557</td>
</tr>
<tr>
<td>Total</td>
<td>714,273</td>
<td>577,874</td>
<td>433,880</td>
<td>372,923</td>
<td>292,660</td>
<td>229,120</td>
<td>167,122</td>
<td>723,430</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>60-69 years</th>
<th>70-74 years</th>
<th>75-79 years</th>
<th>80-84 years</th>
<th>85-89 years</th>
<th>90-94 years</th>
<th>95-99 years</th>
<th>100 years and over</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>372,006</td>
<td>297,856</td>
<td>222,518</td>
<td>194,717</td>
<td>157,671</td>
<td>119,333</td>
<td>81,913</td>
<td>385,873</td>
</tr>
<tr>
<td>Female</td>
<td>342,267</td>
<td>280,018</td>
<td>211,362</td>
<td>178,206</td>
<td>144,989</td>
<td>109,787</td>
<td>75,209</td>
<td>337,557</td>
</tr>
<tr>
<td>Total</td>
<td>714,273</td>
<td>577,874</td>
<td>433,880</td>
<td>372,923</td>
<td>292,660</td>
<td>229,120</td>
<td>167,122</td>
<td>723,430</td>
</tr>
<tr>
<td>Age Group</td>
<td>Speaks English only</td>
<td>Speaks another language and speaks English very well</td>
<td>Speaks another language and speaks English well</td>
<td>Speaks another language and speaks English not well</td>
<td>Speaks another language and proficiency not stated</td>
<td>Both language and proficiency not stated</td>
<td>Language stated, proficiency not stated</td>
<td>Total</td>
</tr>
<tr>
<td>-----------</td>
<td>---------------------</td>
<td>-----------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>40-44 years Male</td>
<td>571,971</td>
<td>75.8</td>
<td>56,204</td>
<td>11.8</td>
<td>36,737</td>
<td>4.9</td>
<td>13,146</td>
<td>1.7</td>
</tr>
<tr>
<td>Female</td>
<td>598,518</td>
<td>75.9</td>
<td>57,564</td>
<td>11.8</td>
<td>43,643</td>
<td>5.4</td>
<td>20,667</td>
<td>2.5</td>
</tr>
<tr>
<td>45-49 years Male</td>
<td>587,636</td>
<td>76.8</td>
<td>77,541</td>
<td>10.5</td>
<td>36,681</td>
<td>5.2</td>
<td>15,770</td>
<td>2.1</td>
</tr>
<tr>
<td>Female</td>
<td>580,265</td>
<td>77.1</td>
<td>76,586</td>
<td>10.6</td>
<td>40,587</td>
<td>5.4</td>
<td>22,466</td>
<td>2.9</td>
</tr>
<tr>
<td>50-54 years Male</td>
<td>539,302</td>
<td>78.0</td>
<td>81,267</td>
<td>8.7</td>
<td>35,570</td>
<td>5.0</td>
<td>16,359</td>
<td>2.3</td>
</tr>
<tr>
<td>Female</td>
<td>570,000</td>
<td>78.7</td>
<td>85,217</td>
<td>9.0</td>
<td>36,609</td>
<td>5.0</td>
<td>21,663</td>
<td>3.2</td>
</tr>
<tr>
<td>55-59 years Male</td>
<td>509,925</td>
<td>79.9</td>
<td>47,411</td>
<td>9.4</td>
<td>31,109</td>
<td>4.9</td>
<td>15,856</td>
<td>2.3</td>
</tr>
<tr>
<td>Female</td>
<td>524,213</td>
<td>79.5</td>
<td>50,651</td>
<td>7.7</td>
<td>32,022</td>
<td>5.0</td>
<td>23,166</td>
<td>3.4</td>
</tr>
<tr>
<td>60-64 years Male</td>
<td>483,769</td>
<td>80.9</td>
<td>36,683</td>
<td>6.6</td>
<td>25,640</td>
<td>5.0</td>
<td>14,844</td>
<td>2.5</td>
</tr>
<tr>
<td>Female</td>
<td>480,010</td>
<td>80.5</td>
<td>41,770</td>
<td>6.9</td>
<td>20,765</td>
<td>4.2</td>
<td>10,947</td>
<td>2.2</td>
</tr>
<tr>
<td>65-69 years Male</td>
<td>458,167</td>
<td>80.8</td>
<td>26,105</td>
<td>5.7</td>
<td>24,379</td>
<td>5.4</td>
<td>13,383</td>
<td>3.0</td>
</tr>
<tr>
<td>Female</td>
<td>374,560</td>
<td>80.8</td>
<td>26,405</td>
<td>5.5</td>
<td>22,666</td>
<td>5.1</td>
<td>17,506</td>
<td>3.2</td>
</tr>
<tr>
<td>70-74 years Male</td>
<td>205,518</td>
<td>77.8</td>
<td>18,038</td>
<td>5.8</td>
<td>22,112</td>
<td>5.7</td>
<td>14,420</td>
<td>4.2</td>
</tr>
<tr>
<td>Female</td>
<td>282,244</td>
<td>77.2</td>
<td>18,305</td>
<td>5.1</td>
<td>22,510</td>
<td>6.2</td>
<td>10,680</td>
<td>5.4</td>
</tr>
<tr>
<td>75-79 years Male</td>
<td>189,421</td>
<td>75.3</td>
<td>14,007</td>
<td>5.2</td>
<td>18,439</td>
<td>7.3</td>
<td>11,454</td>
<td>5.3</td>
</tr>
<tr>
<td>Female</td>
<td>222,121</td>
<td>76.0</td>
<td>12,478</td>
<td>4.5</td>
<td>17,695</td>
<td>5.8</td>
<td>10,407</td>
<td>5.4</td>
</tr>
<tr>
<td>80-84 years Male</td>
<td>142,799</td>
<td>75.8</td>
<td>8,339</td>
<td>4.7</td>
<td>12,134</td>
<td>5.4</td>
<td>9,995</td>
<td>5.3</td>
</tr>
<tr>
<td>Female</td>
<td>101,256</td>
<td>77.0</td>
<td>8,509</td>
<td>2.8</td>
<td>11,665</td>
<td>4.7</td>
<td>12,133</td>
<td>5.4</td>
</tr>
<tr>
<td>85-89 years Male</td>
<td>78,321</td>
<td>76.0</td>
<td>4,222</td>
<td>4.2</td>
<td>1,600</td>
<td>5.0</td>
<td>4,853</td>
<td>4.0</td>
</tr>
<tr>
<td>Female</td>
<td>123,046</td>
<td>76.9</td>
<td>6,283</td>
<td>2.7</td>
<td>7,554</td>
<td>4.4</td>
<td>7,977</td>
<td>4.6</td>
</tr>
<tr>
<td>90-94 years Male</td>
<td>24,234</td>
<td>76.2</td>
<td>1,245</td>
<td>3.9</td>
<td>1,383</td>
<td>4.4</td>
<td>1,332</td>
<td>4.2</td>
</tr>
<tr>
<td>Female</td>
<td>56,167</td>
<td>77.8</td>
<td>2,071</td>
<td>2.9</td>
<td>2,219</td>
<td>3.1</td>
<td>2,429</td>
<td>3.4</td>
</tr>
<tr>
<td>95-99 years Male</td>
<td>4,286</td>
<td>72.7</td>
<td>233</td>
<td>3.9</td>
<td>249</td>
<td>4.2</td>
<td>275</td>
<td>4.7</td>
</tr>
<tr>
<td>Female</td>
<td>14,443</td>
<td>74.3</td>
<td>476</td>
<td>2.5</td>
<td>501</td>
<td>2.6</td>
<td>616</td>
<td>3.3</td>
</tr>
</tbody>
</table>

Note: Percentages are calculated according to the row on the total number of people of the same sex in that age group. Source: ABS census 2006, 2011, Tablebuilder Pro, author’s analysis.

119
Addendum to Paper 2

Since Paper 2 was published, data from the 2016 Australian Census of Population and Housing have been released. The 2016 data reinforced the trends reported in Paper 2; the increasing linguistic diversity among residents of Australia, as well as the change in the languages other than English spoken at home from predominantly European languages to Asian languages.

In 2016, 72.7% of Australians reported speaking English only at home, down from 78.5% in 2011 (ABS, 2018). Conversely, 22.2% reported speaking a language other than English at home, an increase from 21.5% in 2011 (ABS, 2018). Table III displayed the change over time in the five most common languages other than English spoken at home from the 2006 and 2011 censuses reported in Paper 2, compared to the most recent data from the 2016 Census. The trends evident in the data over time reinforce the need for research, such as this doctoral research as Australia’s population continues to diversify and move away from monolingualism.

Table III. Change Over Time in the Five Most Common Languages Other Than English Spoken in Australian Homes

<table>
<thead>
<tr>
<th>Australian Census Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006 Language spoken at home %</td>
</tr>
<tr>
<td>2011 Language spoken at home %</td>
</tr>
<tr>
<td>2016 Language spoken at home %</td>
</tr>
<tr>
<td>Italian</td>
</tr>
<tr>
<td>1.6</td>
</tr>
<tr>
<td>Mandarin</td>
</tr>
<tr>
<td>1.6</td>
</tr>
<tr>
<td>Mandarin</td>
</tr>
<tr>
<td>Arabic</td>
</tr>
<tr>
<td>1.2</td>
</tr>
<tr>
<td>Greek</td>
</tr>
<tr>
<td>1.3</td>
</tr>
<tr>
<td>Italian</td>
</tr>
<tr>
<td>1.4</td>
</tr>
<tr>
<td>Arabic</td>
</tr>
<tr>
<td>1.2</td>
</tr>
<tr>
<td>Cantonese</td>
</tr>
<tr>
<td>1.2</td>
</tr>
<tr>
<td>Italian</td>
</tr>
<tr>
<td>1.2</td>
</tr>
<tr>
<td>Mandarin</td>
</tr>
<tr>
<td>1.1</td>
</tr>
<tr>
<td>Cantonese</td>
</tr>
<tr>
<td>1.2</td>
</tr>
</tbody>
</table>

References


This is the authors accepted manuscript of an article published as the version of record in International Journal of Bilingual Education and Bilingualism ©Taylor & Francis Ltd 2019 Informa UK Limited, trading as Taylor & Francis Group, https://doi.org/10.1080/13670050.2017.1294557
The impact of oral English proficiency on humanitarian migrants’ experiences of settling in Australia

Helen L. Blake
Research Institute for Professional Practice, Learning and Education (RIPPLE)
Charles Sturt University, Panorama Ave, Bathurst 2795, Australia.
Phone: 61 437 472336. Email: heblake@csu.edu.au

Laura Bennetts Kneebone
National Centre for Longitudinal Data (NCLD)
Department of Social Services, Canberra 2601, Australia
Phone: 61 2 6146 2339. Email: laura.bennetts-kneebone@dss.gov.au

Sharynne McLeod
Research Institute for Professional Practice, Learning and Education (RIPPLE)
Charles Sturt University, Panorama Ave, Bathurst 2795, Australia.
Phone: 61 2 63384463. smcleod@scu.edu.au

Correspondence: Helen L. Blake
Research Institute for Professional Practice, Learning and Education (RIPPLE)
Charles Sturt University, Panorama Ave, Bathurst 2795, Australia.
Phone: 61 437 472336. Email heblake@csu.edu.au

Disclosure Statement: The authors acknowledge they have no financial interest or benefit arising from the direct applications of this research.
Abstract

Key drivers for migrants’ social integration are education, employment, and skills in the dominant language of the settlement country. Data from Building a New Life in Australia: The Longitudinal Study of Humanitarian Migrants were used to examine migrants’ English proficiency and how oral English proficiency facilitated or hindered participation in activities that may help them become self-sufficient and settle.

Participants were 2,399 humanitarian migrants interviewed in the first wave of data collection (during 2013/14). Before arrival in Australia, 80.1% reported they spoke English not well or not at all. After arrival, oral English proficiency was a statistically significant predictor of self-sufficiency (knowing how to look for a job, get help in an emergency, etc.) explaining 21% of the variance while controlling for confounding variables such as age and education. After English proficiency, age (neither too young nor too old), gender (male), education (more than 12 years), and time since arrival (more than one year) were significant predictors of self-sufficiency. Identification of factors that predict self-sufficiency informs the understanding of people who provide support for humanitarian migrants. These findings indicate poor oral English skills may profoundly hinder humanitarian migrants’ ability to settle and highlight the importance of supporting migrants’ English learning.

Key words

English proficiency, humanitarian migrants, refugees, participation, self-sufficiency, settlement
Introduction

The number of displaced people escaping conflict, persecution and human rights violations is increasing. In 2015, 63.3 million people were forcibly displaced worldwide, a record number not seen since the end of the Second World War (UNHCR 2016). This total included 21.3 million refugees (humanitarian migrants), 40.8 million internally displaced persons, and 3.2 million asylum seekers. Over half (51%) of humanitarian migrants were under 18 years of age, 46% were between 18 and 59, and 3% were over 60 years of age (UNHCR 2016). According to the International Organization for Migration (IOM), people may be forced to migrate in order to escape persecution or discrimination (based on race, ethnicity, gender, or religion), because their country has been devastated by ethnic or religious conflict or natural disasters, or because they are victims of trafficking (IOM 2013).

The movement of people between countries has social and economic implications for source and destination countries as well as for migrants themselves (IOM 2013). The socioeconomic profiles of migrants can have positive and negative implications for a country’s labour market (whether they are skilled or unskilled workers), population structure (home language, age, gender, etc.), and for the provision of services, according to the World Migration Report describing 25,000 first-generation migrants in more than 150 countries (IOM 2013). Consequently, there is growing recognition that migration can positively contribute to socioeconomic development, as long as effective management policies exist in the destination country (IOM 2013).

Migrants’ settlement

Settlement services in western countries such as the USA and Australia aim to assist humanitarian migrants to successfully transition to life in their destination country and achieve self-sufficiency as soon as possible (Department of Social Services, DSS 2016a; U.S. Department of Health and Human Services 2016). Self-sufficiency means
migrants can participate in the community to the best of their ability and minimise long-term dependence on support services (DSS 2016a). Activities aimed at helping migrants become self-sufficient focus on critical skills and knowledge needed to live and function independently in society, such as accessing services, education, employment, legal and cultural activities (DSS 2016b). Individualised support is based on assessment (DSS 2016a), because even when humanitarian migrants have the same country of birth, they may be diverse in terms of personal factors (e.g., gender, education, language skills, employment experience) and migration factors (e.g., immigration status) (Taylor and Stanovic 2005). Loss of identity associated with leaving jobs, skills, language, and culture through forced migration means humanitarian migrants may face a formidable task to rebuild their identity in a culturally diverse context, when migrating to a Minority world country from a Majority world country (Colic-Peisker and Walker 2003).

Numerous studies have been conducted addressing humanitarian migrants’ settlement experiences and factors that contribute to positive settlement. Significant predictors of wellbeing in humanitarian migrants include region of birth, time in the destination country, and experiences of discrimination (Correa-Velez, Gifford, and Barnett 2010). Younger people appear to adapt more readily, learning the language and gaining employment (Colic-Peisker and Walker 2003; Correa-Velez, Gifford, and Barnett 2010). Child minding can limit women’s opportunities for education and employment (Sulaiman-Hill and Thompson 2012), with women more likely to be socially isolated (Markovic, Manderson, and Kelaher 2002; Sulaiman-Hill and Thompson 2012) and their well-being may subsequently affect their children (Colic-Peisker and Walker 2003).

Migrants’ proficiency in the language of their country of residence has implications for settlement in their new country. Language proficiency affects migrants’
ability to participate in education and remunerative employment (Chiswick, Lee, and Miller 2006; Hwang, Xi, and Cao 2010; Blake et al. 2016), to access health services (Chin et al. 2006; Shi, Lebrun, and Tsai 2009; Zhou 2015) and appears to be a key factor affecting the ability of migrants to participate in a wide range of community activities (Department of Immigration and Border Protection, DIBP 2014; Australian Bureau of Statistics, ABS, 2015a). Migrants report fewer social connections and need help building a support network in their new country (IOM 2013). Many factors are interrelated, such as poor English proficiency creating a barrier to accessing health services (Markovic, Manderson, and Kelaher 2002), while poor health (mental and physical) can have a significant impact on workforce participation (Khoo 2010).

Australia’s multicultural and migrant context

Australia, as a country whose cultural and linguistic diversity is continually reshaped by migration, offers an opportunity to consider humanitarian migrants’ settlement experiences. Australia ranks fourth among countries within the Organisation for Economic Co-operation and Development (OECD) for the largest proportion of overseas-born residents, behind Luxembourg (43.7%), Switzerland (28.3%), and New Zealand (28.2%) (OECD 2016). In the 2011 census, over a quarter (26.0%) of Australia’s population reported they were born overseas (ABS 2013). The source countries for migration are changing from European to Asian and consequently, linguistic diversity is changing. The five most common languages spoken at home after English are Mandarin (1.6%), Italian (1.4%), Arabic (1.3%), Cantonese (1.2%), and Greek (1.2%) (ABS 2015b).

Migration appears crucial to Australia’s future prosperity. By 2050, it is estimated migration will contribute $1,625 billion to the Gross Domestic Product and increase the workforce participation rate by 15.7% (Migration Council Australia 2015).

Humanitarian migrants also make an important contribution through business ownership
(Collins and Krivokapic-Skoko 2016), workforce participation, and volunteering within
the community (Hugo 2011). Migrants, especially those with non-English speaking
backgrounds, possess language skills which support Australia’s ability to participate in
a global economy (Department of Immigration and Border Protection 2014). While
23.2% of Australians reported speaking another language at home in the 2011 census,
13.1% also claimed to speak English well or very well. Multilingual speakers who also
spoke English very well were more likely to have full-time employment, high income,
and post-graduate qualifications, than monolingual English speaking Australians (Blake
et al. 2016).

Australians have a more positive attitude to immigration than residents in other
western countries. In 2014, more than half (58%) of Australians surveyed in the Social
Cohesion Report thought the immigration intake was about right or too low, while
American and European surveys have found disapproval of immigration in the range of
60 to 75% (Scanlon Foundation 2014). Similar attitudes exist towards humanitarian
migrants. In 2016, Australia was ranked the fifth most welcoming out of 27 countries
surveyed in the Welcoming Refugees Index (Amnesty International 2016).

Notwithstanding this, there are concerns negative perceptions of boat arrival asylum
seekers will change supportive attitudes to migration as some politicians and media
foster the perception that these arrivals indicate the government has poor control of
migration (Hugo 2014).

A comparison of immigration laws and policies from nine countries, including
Australia indicate a trend toward more restrictive regulations since the 1990s, as well as
differential treatment of certain groups, such as skilled migrants (Beine et al. 2016).
Australia’s immigration policies have changed significantly in recent years as the
migration program is established annually in consideration of economic and labour
force forecasts, net overseas migration and community views (DIBP 2017). Up to
190,000 permanent migrants will settle in Australia in 2015-2016 through various programs (DIBP 2015a). There are up to 128,550 skilled migrants’ places, 57,400 places for family sponsored migrants, 565 places for special eligibility migrants, and 3,485 permanent child visa places (DIBP 2015a). Australia’s humanitarian migrant program will provide 13,750 places (DIBP 2015b). This program has an onshore component that offers protection to refugees who apply for asylum after arrival and an offshore component that covers people usually outside their home country. The offshore component is comprised of a Special Humanitarian Program and a Refugee category. Most applicants in the Refugee category are identified and referred to Australia for resettlement by UNHCR (DSS 2014).

**Context of the current study**

Data used in this article were from the first wave of participants in Building a New Life in Australia: The Longitudinal Study of Humanitarian Migrants (BNLA). BNLA is conducted by the Australian Institute of Family Studies (AIFS) on behalf of the Australian Government Department of Social Services (DSS). BNLA is the first comprehensive national study to examine the lives of humanitarian migrants at regular intervals across their settlement in Australia and aims to support migration policy development as well as improve existing programs for humanitarian migrants. The project will follow approximately 1,500 migrating units comprised of a principal applicant (PA), who received initial approval to migrate, and secondary applicants (SA) who are members of the household migrating on the same application. Recruitment of the BNLA sample was via the Australian Government’s Settlement Database. Data is being collected annually in 5 waves from 2013 to 2018. Waves 1, 3, and 5 involve home visits and telephone interviews are being conducted in Waves 2 and 4 (DSS 2015b). The current paper reports on data from wave 1.
**Study aims**

This paper aims to identify the impact of English proficiency on humanitarian migrants’ participation in Australian society. Specifically,

1. To describe the cultural and linguistic diversity of humanitarian migrants in Australia from the first wave of the BNLA (home language, age, gender, etc.).
2. To describe humanitarian migrants’ self-reported English proficiency (i.e., understanding, speaking, reading, and writing) and their efforts to improve their English proficiency.
3. To determine humanitarian migrants’ perceptions of how their oral English proficiency (i.e., understanding and speaking) affects their participation in activities that may help them to settle and become self-sufficient (get a job, make friends, etc.).

**METHOD**

**Participants**

A total of 2,399 Australian humanitarian migrants (from 1,509 migrating units) participated in the first wave of the BNLA. Migrants came from 35 countries and spoke 50 languages in their homes (Department of Social Services 2015a). The majority of participants came from the Middle East and Central Asia. The top five countries of birth were Iraq \( (n = 944, 39.3\%) \), Afghanistan \( (n = 611, 25.5\%) \), Iran \( (n = 286, 11.9\%) \), Myanmar \( (n = 135, 5.6\%) \), and Bhutan \( (n = 84, 3.5\%) \) (see Table 1). The five most common home languages were Arabic \( (n = 546, 22.8\%) \), Assyrian Neo-Aramaic \( (n = 426, 17.8\%) \), Persian \( (n = 399, 16.6\%) \), Hazaraghi \( (n = 260, 10.8\%) \), and Dari \( (n = 209, 8.7\%) \) (see Table 2). While most participants were literate in their home language, some were not with 45.1% \( (n = 1,081) \) reporting their ability to read in their home language as very well, 20.6% \( (n = 493) \) as well, 12.2% \( (n = 292) \) as not well, and 19.8% \( (n = 475) \) as not at all. At the same time, 43.0% \( (n = 1,032) \) reported their ability to write in their
home language as very well, 20.3% (n = 486) as well, 12.3% (n = 296) as not well, and 21.8% (n = 523) as not at all.

[Table 1 and 2 near here]

Participants were aged between 15 and 75 years (M = 35.48) with 54.5 % male (n = 1,307) and 45.5% female (n = 1,092). The majority (n = 1,468, 61.2%) had been in Australia for 3 to 5 months; however, 18.8% (n = 452) had been in country for 6 to 11 months and 11.4% (n = 274) for 1 to 2 years. Most participants (n = 2,230, 93.0%) were not currently in paid work. Participants reported their highest completed education before arrival and 15.8% (n = 380) never attended school, 19.7% (n = 473) had 6 or less years of schooling, 18.2% (n = 436) had 7 to 9 years of schooling, 10.8% (n = 258) had 10 to 11 years of schooling, 18.5% (n = 443) had 12 or more years of schooling, 6.0% (n = 143) had a trade or technical qualification, and 10.1% (n = 243) a university degree. PAs reported people in their immediate family experienced trauma before arrival due to extreme living conditions (n = 512, 33.9%), war or conflict (n = 865, 57.3%), violence (n = 324, 21.5%), imprisonment/kidnapping (n = 266, 17.6%), political or religious persecution (n = 835, 55.3%), natural disasters (n = 95, 6.3%) or other causes (n = 266, 17.6%).

Procedure

Wave 1 data collection took place between June 2013 and March 2014. A home visit was conducted utilising a survey instrument translated into 14 languages; however, 19 languages were used to complete interviews with assistance from additional interpreters. The most common languages used were Arabic, Persian, English, and Dari. Topics included demographic information, housing, language proficiency, education, employment and income, health, self-sufficiency, community support, and life in Australia. For example, participants completed two tables to report their English proficiency both before they came to Australia and currently using the following
question: “how well did/do you understand spoken English, speak English, read English, write English?” Participants selected from the following answers: very well, well, not well, or not at all (DSS 2013). Participants completed either a computer assisted self-interview using a computer tablet with audio support (n = 1,692, 70.5%), a computer assisted personal interview with support from a bilingual interviewer (n = 658, 27.4%), or an interview with assistance from an accredited interpreter (over the phone or in person) as well as an interviewer present to ask questions and record responses (n = 49, 2.0%). Interviews took between 35 and 55 minutes to complete (DSS, 2015b).

Data analysis

Data analysis was undertaken using IBM SPSS Statistics Version 22.0 (IBM 2013) and STATA Version 13.1 (StataCorp 2013). Missing data were removed prior to Chi-square (χ²) and regression analysis and several variables were recoded. For example, a derived variable oral English proficiency was created by combining understanding spoken English and speaking English, as both skills are necessary to successfully communicate orally. (Reading and writing skills were not examined in the analyses.) In order to combine the two variables, the response values for both variables were recoded using a 4-point Likert-type scale (0 = not at all, 1 = not well, 2 = well, and 3 = very well), added together and divided by two (i.e., understanding spoken English plus speaking English divided by 2) to determine a mean score from 0 to 3. Scores were then recoded into three groups. A score of 0 was coded as No oral English, a score from 0.1 to 1.9 was coded as Low oral English and a score from 2 to 3 was coded as High oral English. Therefore, individuals who self-rated as well for speaking English (score of 2) and not well for understanding spoken English (score of 1) would have a mean score of 1.5 which would be recoded as Low oral English.
Open-ended responses were collated for why participants had not studied English since arriving in Australia. Fourteen common themes were identified and responses were categorised within themes according to gender to determine which factors most hindered participants’ ability to undertake English language training.

A self-sufficiency scale was created by combining participants’ responses to the following seven questions relating to their level of knowledge accessing help, information and services. Participants were asked “If you had to, would you know how to: look for a job, use public transport, get help in an emergency, use a bank service (e.g., start an account, get a loan), find out what government services and benefits are available, find out about your rights (e.g., legal rights, tenancy rights etc.), and get help from the police” (DSS 2013). The seven items used to measure self-sufficiency were assessed to ensure they were conceptually coherent and represented an internally consistent and reliable measure. Prior to assessing these items using principal components analysis, the distribution of each item was examined for outliers and missing data. Of the 2399 respondents, there were missing data for 122 cases. No imputation was undertaken and these cases were excluded from the analysis. Distributions of many of the items were skewed, indicating respondents were less likely to consider themselves self-sufficient. A principal components model was fitted to the data. Components to retain were extracted on the basis of Eigenvalues (≥ 1.0) and Cattell’s scree test. This resulted in one component accounting for 65.04% of the item variance. Proportions of item variance accounted for in this component ranged from (0.3419 – 0.3926). The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.8929 indicating that items were generally suitable for principal components analysis. Using the seven items as a general scale appeared feasible and the Chronbach’s alpha for this item set was .91 indicating excellent internal reliability. Therefore, it was feasible to add the items up into a single measurement variable. Each question was scored on a 4-point
Likert-type scale. Missing items were removed and scores were rescaled to equate a high score with a high level of knowledge (0 = wouldn’t know at all, 1 = would know a little, 2 = would know fairly well, and 3 = would know very well) to create a scale with a potential score of 0 to 21. Three linear regressions were performed utilising the scale score to determine the impact of the following variables on participants’ self-sufficiency: oral English proficiency, gender, age, having a partner, level of education, living outside a major city, living in Australia for more than one year, and country of birth.

RESULT

**English proficiency**

Participants rated their English proficiency across the four domains of understanding, speaking, reading, and writing both before arriving in Australia and currently. In general, participants reported poor English proficiency prior to arrival, which had improved over time (see Table 3). For example, the percentage of participants who self-rated the lowest English proficiency (not at all) decreased across all language domains. Before arrival 38.3% (n = 919) rated their understanding as not at all, which reduced to 21.3% (n = 511) currently. Before arrival 44.6% (n = 1,070) rated their speaking as not at all, which reduced to 28.0% (n = 672,) currently. Before arrival 39.1% (n = 938) rated their reading as not at all, which reduced to 25.9% (n = 621) currently. Before arrival 40.0% (n = 959) rated their writing as not at all, which reduced to 26.3% (n = 632) currently.

[Table 3 near here]

A similar result was evident using the derived variable oral English proficiency created by combining understanding spoken English and speaking English. Before arrival, 38.0% (n = 892) of participants had no oral English, 44.8% (n = 1,051) had low oral English, and 17.2% (n = 404) had high oral English. At wave 1, 20.9% (n = 493) of
participants had *no oral English*, 51.5% (*n* = 1,216) had *low oral English*, and 27.7% had *high oral English* (*n* = 654).

**English proficiency and gender**

Before arrival there was a significant difference between males’ and females’ oral English proficiency (*χ*²(2) = 29.95, *p* < .000, *ϕ* = 0.11). For example, before arrival, 33.1% (*n* = 424) of males and 44.0% (*n* = 468) of females had *no oral English* (see Table 4). At wave 1, there remained a significant difference between males’ and females’ oral English proficiency (*χ*²(2) = 92.20, *p* < .000, *ϕ* = 0.20). For example, at wave 1 there were 14.0% (*n* = 181) of males and 29.1% (*n* = 312) of females with *no oral English* (see Table 4).

Of the 888 participants with valid data who self-reported *no oral English* prior to arrival in Australia, males (*n* = 237, 56.4%) were significantly more likely to report improvement to the *low oral English* category than females (*n* = 167, 35.7%) (*χ*²(2) = 51.39, *p* < .000, *ϕ* = 0.24) (see Table 5). Similarly, of the 1,047 participants with valid data who self-reported *low oral English* prior to arrival in Australia, males (*n* = 170, 27.7%) were significantly more likely to report an improvement to the *high oral English* category than females (*n* = 77, 17.8%) (*χ*²(2) = 14.39, *p* = .001, *ϕ* = 0.12).

**English language study**

The majority of participants had studied English since coming to Australia. At wave 1, 71.4% (*n* = 1,714) were currently studying while 5.3% were no longer studying English (*n* = 127). Most studied through the Adult Migrant English Program (*n* = 1,151, 62.5%). A further 3.6% (*n* = 87) had not studied because their English was already good, and 18.2% (*n* = 436), including similar numbers of males (*n* = 204, 46.8%) and females (*n* = 232, 53.2%), provided open-ended responses regarding reasons for not
studying. These responses were collated into fourteen common themes where some responses varied according to gender. More males gave work-related reasons such as looking for work (male, m = 10, female, f = 0) or working (m = 21, f = 0), while females gave reasons related to caring for children (m = 1, f = 64), health (m = 47, f = 63), pregnancy (m = 0, f = 8), or illiteracy (m = 0, f = 5). Reasons common to both genders included caring for others (m = 21, f = 24), age (m = 17, f = 10), disability (m = 4, f = 4), recent arrival (m = 6, f = 3), waiting for space in a class (m = 16, f = 12), commencing study soon (m = 23, f = 17), receiving no information on classes (m = 3, f = 3), or other reasons (m = 35, f = 18).

**English proficiency and participation**

Participants reported poor proficiency in English affected their ability to participate in activities that helped them to settle. Of 1,509 PAs, 40.9% (n = 617) reported poor English proficiency hindered efforts to find housing. Both PA and SA participants reported difficulties finding employment. Of those who were either already employed or reported having looked for work 48.7% (n = 293) indicated that low English proficiency hindered efforts to find employment. Poor English skills were also a reported cause of stress (n = 1,356, 56.5%) and a reason they were finding it hard to settle (n = 1,542, 64.3%).

Poor proficiency in English also affected participants’ ability to participate in activities that facilitated social integration. Oral English proficiency had a significant impact on self-ratings of difficulty making friends ($\chi^2 (6) = 122.74, p <.000, \phi = 0.17$), understanding Australian ways ($\chi^2 (6) = 196.19, p <.000, \phi = 0.21$), and talking to Australian neighbours ($\chi^2 (6) = 312.53, p <.000, \phi = 0.28$) (see Table 6).

[Table 6 near here]

Participants rated how well they knew how to access the help, information, and services that would help them to settle and in general, oral English proficiency had a
significant impact on participants’ knowledge with those with higher levels of proficiency reporting greater understanding (see Table 7). For example, oral English proficiency had a significant effect on participants’ knowledge of how to look for a job ($\chi^2 (6) = 438.96, p < .000, \phi = 0.31$) with 84.0% ($n = 401$) of participants with *no oral English* reporting they *wouldn’t know at all* how to look for a job, compared to 59.0% ($n = 693$) of those with *low oral English* and 27.4% ($n = 174$) of those with *high oral English*.

[Table 7 near here]

Participants rated their overall settlement experience as *very good* ($n = 554, 23.1\%$), *good* ($n = 1,400, 58.4\%$), *hard* ($n = 328, 13.7\%$) or *very hard* ($n = 87, 3.6\%$) and oral English proficiency had a significant effect on their self-ratings of overall settlement experience ($\chi^2 (2) = 13.10, p < .001, \phi = 0.07$) (see Table 8). Of the 479 participants with *no oral English*, 21.7% ($n = 104$) rated their overall settlement experience as *hard/very hard* compared to 18.1% ($n = 218$) of those with *low oral English* and 13.6% ($n = 88$) of those with *high oral English*.

[Table 8 near here]

**Self-sufficiency**

Three linear regression analyses with robust standard error were performed utilising the self-sufficiency scale (scored from 0 to 21) as determined by participants’ level of knowledge about how to access help, information and services (see Table 9). The regressions were used to predict the effect of oral English proficiency on participants’ self-sufficiency, as well as to investigate the impact of confounding variables such as gender, age, education, and time living in Australia. Model 1 considered the impact of oral English proficiency, model 2 considered the impact of personal factors and model 3 considered the impact of migration factors.
Oral English proficiency was a statistically significant predictor of participants’ self-sufficiency explaining 21% of the variance ($R^2 = 0.21$, $F_{2, 2247} = 293.84, p<0.000$) in the first model. Compared to the reference category of no oral English, participants with low oral English had predicted self-sufficiency scores 3.25 points higher and participants with high oral English had predicted scores 7.64 points higher than no oral English.

Personal factors such as age, gender, and education predicted only an additional 6% of the variance ($R^2 = 0.27$, $F_{11, 2224} = 88.85, p<0.000$) over oral English proficiency in Model 2. Age was significant in the model with each year of age predicting slightly higher self-sufficiency until the age of 28, when self-sufficiency began to gradually decrease. Gender was also significant with females 2.02 points less self-sufficient than males. Compared to not attending school, participants who undertook any schooling were more self-sufficient; however, only undertaking more than 12 years of schooling or a university education were significant predictors of higher self-sufficiency. Whether or not a participant had a partner or lived in a major city or a regional area were not significant in the model.

The migration factors of country of birth and time since arrival predicted only a further 2% of the variance ($R^2 = 0.29$, $F_{17, 2218} = 64.89, p<0.000$) in the third model. Participants from the top five countries of birth (Iraq, Afghanistan, Iran, Myanmar, and Bhutan) were all less self-sufficient than participants from any other countries in the dataset; however, being born in Afghanistan and Bhutan was a significant predictor of being less self-sufficient. Time since arrival in Australia was a significant predictor of self-sufficiency with participants who had been in Australia for more than 1 year, 1.60 points more self-sufficient than recent arrivals.

[Table 9 near here]
Discussion

This study utilised data from the first wave of the BNLA to describe the cultural and linguistic diversity of humanitarian migrants and their English language proficiency and to determine whether oral English proficiency facilitates or hinders participation in activities which may help migrants to become self-sufficient and settle in their destination country. Several factors were identified that predict low self-sufficiency: having poor oral English skills, being female, never attending school, being a recent arrival and coming from Afghanistan or Bhutan predict humanitarian migrants will be less self-sufficient and will require more support to settle in their destination country. Oral English proficiency was the most statistically significant predictor of self-sufficiency explaining 21% of the variance while controlling for confounding variables such as age and education. Factors that prevented some humanitarian migrants (especially females) from participating in English classes included caring for children, poor health and disability.

The cultural and linguistic diversity of participants in the BNLA varied from resident multilingual Australians. Most participants migrated from the Middle East and Central Asia, with more than half from Iraq, Afghanistan, and Iran. As a result, the most common language spoken at home by the migrants in the BNLA study was Arabic. In contrast, Arabic was the third most common language other than English spoken at home in the 2011 Australian census (ABS 2015b; Blake et al. 2016). Therefore, new migrants who speak less commonly spoken languages may require assistance to prevent them becoming isolated from other migrants and from the resident multicultural/multilingual Australian population. The low levels of home language literacy reported by these humanitarian migrants will necessitate higher levels of support (e.g., public transport signage, forms in banks and health services, etc.). These findings highlight the heterogeneity of this population and confirm the need for
settlement services to conduct accurate and timely initial assessments in order to
determine individualised support required by humanitarian migrants.

**English proficiency**

In general, participants reported poor English proficiency prior to arrival in
Australia that improved over time. Although participants reported an improvement in
their English speaking and understanding skills, there was less reported improvement in
reading and writing English as these skills take longer to acquire and because of the low
literacy levels in home languages. The majority of participants had studied English
since coming to Australia and most through the Adult Migrant English Program. This
program provides eligible migrants with up to 510 hours of training in foundation
English to help them to settle; however, eligible humanitarian migrants can receive up
to 400 extra hours in recognition of their special needs (e.g., pre-migration stressors,
limited schooling, etc.) (DSS 2016a). The low levels of literacy in the home language
reported in this study warrant extra support for English language training. Training will
potentially need to cater for migrants with little experience participating in standard
classroom lessons. Participation in these English language programs is voluntary;
therefore, it is important to ensure English training is provided in a time, place and
manner that will maximise attendance and ensure positive outcomes.

English language study outcomes were generally poorer for females than males,
with women significantly less likely to report an improvement in their English and
reporting more obstacles to study, such as health issues, illiteracy and childcare. These
findings suggest that women may not only require more help to increase their English
language skills, but also to support their overall settlement in Australia.

**English proficiency, participation and self-sufficiency**

Participants’ oral English proficiency had a significant impact on their
knowledge of how to access the help, information, and services that would help them to
settle, such as how to look for work, use public transport, and get help in an emergency. Those with higher levels of proficiency reported greater understanding. As a consequence, when responses were converted into a self-sufficiency scale, oral English proficiency proved a statistically significant predictor of self-sufficiency. After English proficiency, age (neither too young nor too old), gender (male), education (more than 12 years), and time since arrival (more than one year) were significant predictors of self-sufficiency. Country of birth was only significant for those born in Afghanistan or Bhutan as a predictor of low self-sufficiency. Whether or not a participant had a partner, or lived in a major city or a regional area was not significant. These results support previous literature on humanitarian migrant’s settlement in Australia (Colic-Peisker and Walker 2003; Correa-Velez, Gifford, and Barnett 2010; Markovic, Manderson, and Kelaher 2002; Sulaiman-Hill and Thompson 2012). Identification of factors that predict self-sufficiency will inform the understanding of people who provide support for humanitarian migrants, such as settlement services who provide assessment and early practical assistance through initial settlement. Additionally, these findings highlight the need for assistance and training for humanitarian migrants to access the help, services, and information they require to successfully settle.

Poor proficiency in English affected the participants’ ability to participate in activities that facilitated social integration, such as making friends and talking to Australian neighbours. In general, migrants report fewer social connections and need help building a support network in their new country (IOM 2013). They are less likely to have friends and someone they can count on, and their situations do not improve over time. Long-term migrants (82%) are no more likely than new migrants (84%) to report having friends or relatives they can depend on (IOM 2013). All migrants, especially new arrivals, are more likely to experience sadness than the resident population (IOM
2013). Participation in social activities may not only improve social connections, but may also provide opportunities to practise English language skills in a social context.

**Implications**

The findings from the current study can inform policy in Australia. For example, in November 2016, the Minister for Immigration and Border Protection and the Minister for Social Services asked the Joint Standing Committee on Migration to inquire into and report on migrant settlement outcomes. The committee will consider available settlement services, international best practice in improving settlement outcomes as well as the influence of English language skills on settlement outcomes (Parliament of Australia 2016). The Australian government recognises English language skills are a key factor affecting the ability of migrants to participate in a range of community activities (DIBP 2014); however, results from the current study indicate English language skills also facilitate humanitarian migrants’ successful transition to life in their destination country and help them to attain self-sufficiency. Consequently, migration policies that emphasise early support for oral English proficiency should assist humanitarian migrants to become self-sufficient as soon as possible.

The heterogeneity of participants in the current study affirms the need to provide individualised policies and plans for humanitarian migrants who have different settlement experiences and needs. For example, participants who were illiterate prior to arrival will require different support from those with tertiary qualifications. Additionally, post-migration stressors can significantly affect some individuals’ ability to settle (Davidson, Murray, and Schweitzer 2008). Unemployment, financial adversity, decrease in socioeconomic standing, social isolation, the attitude of the host community, and educational services available for children and adults can all negatively affect humanitarian migrants’ mental health and subsequently impact their ability to adapt and become self-sufficient (Murray, Davidson, and Schweitzer 2008). Poor English skills
can also be a barrier to accessing formal health services. Multilingual speakers with lower English proficiency are more likely to experience barriers to accessing medical care (Chin et al. 2006; Shi, Lebrun, and Tsai 2009, Zhou 2015). Additionally, Chin et al. (2006) found that when multilingual patients were acutely ill, they had diminished capacity to understand English medical terminology. Migrants therefore require support to ensure that their proficiency in English does not negatively impact on their health outcomes and subsequently their ability to participate in the other domains of Australian society discussed here.

**Strengths and limitations**

The sample size of the BNLA and the targeted survey ensures this study provides important evidence on which settlement services and English language training can be planned and provided. The current study only reports data from the first wave of the BNLA while four more waves of data will be available. Future research could analyse subsequent waves to investigate key transitions in humanitarian migrants’ lives. Change is central to the migration experience and therefore longitudinal research is ideal because it can provide insights into the changing nature of the challenges and opportunities humanitarian migrants face over time when settling in their destination country (Beiser 2006).

The BNLA is self-reported so the accuracy of self-reported English proficiency could be questioned (Edele et al. 2015) and cannot be used as a definitive measure of language skills. Additionally, multilingual skills may be under-reported as the English proficiency question asks for language spoken at home, which does not account for participants who speak English at home, but another language elsewhere (e.g., at their friends’ or relatives’ homes, in their workplaces, or community).

**Conclusion**
The findings of this study provide insight into the English proficiency of humanitarian migrants in Australia and indicate that oral English proficiency has a significant impact on their settlement experience. The results highlight the importance of supporting humanitarian migrants’ English language learning. Caring for children, poor health and disability prevented some humanitarian migrants from participating in English classes. While some positive outcomes were reported, such as improvements in English proficiency over time, with individuals with higher proficiency achieving better outcomes and more positive settlement experiences, individuals with poor oral English skills were especially vulnerable and in need of support to undertake any activities that would help them to settle and become self-sufficient. This study will inform development of policy and improvement of programs for humanitarian migrants to ensure migrants have a positive settlement experience and become self-sufficient as soon as possible.

Acknowledgements

This paper utilises data from the Department of Social Services (DSS) and the Australian Institute of Family Studies (AIFS); however, the findings and opinions reported are those of the authors and should not be attributed to the DSS or AIFS.

Notes

1. Multilingual speakers are defined as individuals who are able to understand and/or speak more than one language; however, they may have varied competence in each of the languages they use and in the ways they use them, whether orally, in writing or signed (International Expert Panel on Multilingual Children’s Speech 2012).

2. Data on country of birth and home language were confidentialised when there were fewer than 10 households with a member who nominated a specific
country/language (Department of Social Services 2015b). Therefore, only 16 countries of birth and 16 home languages were listed in the data.

3. Data on age were confidentialised due small numbers to preserve anonymity. Responses where age was over 70 years were coded as 75 years to reflect the average age of respondents in the dataset aged over 70 years (DSS, 2015b). The oldest participant was 83 years of age (DSS, 2015a).
References


Correa-Velez, Ignacio, Sandra M. Gifford, and Adrian G. Barnett. 2010. “Longing to belong: Social inclusion and wellbeing among youth with refugee backgrounds in the first three years in Melbourne, Australia.” *Social Science and Medicine,* 71(8), 1399-1408. doi: 10.1016/j.socscimed.2010.07.018

Department of Immigration and Border Protection. 2014. *The place of migrants in contemporary Australia: A summary report.* 

Department of Immigration and Border Protection. 2015a. *Australia’s 2015-16 migration programme.*

Department of Immigration and Border Protection. 2015b. *Corporate plan 2015-19.*

Department of Immigration and Border Protection. 2017. *Fact sheet: Migration programme planning levels.*
http://www.border.gov.au/about/corporate/information/fact-sheets/20planning


IBM. 2013. Statistical program for the social sciences 22.0. IBM, Armonk, NY.


Migration Council Australia. 2015. The economic impact of migration. 


https://data.oecd.org/migration/foreign-born-population.htm


<table>
<thead>
<tr>
<th>SACC</th>
<th>Country of birth</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>4204</td>
<td>Iraq</td>
<td>944</td>
<td>39.3</td>
</tr>
<tr>
<td>7201</td>
<td>Afghanistan</td>
<td>611</td>
<td>25.5</td>
</tr>
<tr>
<td>4203</td>
<td>Iran</td>
<td>286</td>
<td>11.9</td>
</tr>
<tr>
<td>5101</td>
<td>The Republic of the Union of Myanmar</td>
<td>135</td>
<td>5.6</td>
</tr>
<tr>
<td>7102</td>
<td>Bhutan</td>
<td>84</td>
<td>3.5</td>
</tr>
<tr>
<td>7106</td>
<td>Pakistan</td>
<td>68</td>
<td>2.8</td>
</tr>
<tr>
<td>9108</td>
<td>Democratic Republic of Congo</td>
<td>40</td>
<td>1.7</td>
</tr>
<tr>
<td>7107</td>
<td>Sri Lanka</td>
<td>36</td>
<td>1.5</td>
</tr>
<tr>
<td>4214</td>
<td>Syria</td>
<td>31</td>
<td>1.3</td>
</tr>
<tr>
<td>4102</td>
<td>Egypt</td>
<td>30</td>
<td>1.3</td>
</tr>
<tr>
<td>4103</td>
<td>Libya</td>
<td>21</td>
<td>0.9</td>
</tr>
<tr>
<td>7105</td>
<td>Nepal</td>
<td>21</td>
<td>0.9</td>
</tr>
<tr>
<td>9207</td>
<td>Ethiopia</td>
<td>21</td>
<td>0.9</td>
</tr>
<tr>
<td>9206</td>
<td>Eritrea</td>
<td>15</td>
<td>0.6</td>
</tr>
<tr>
<td>4105</td>
<td>Sudan</td>
<td>13</td>
<td>0.5</td>
</tr>
<tr>
<td>7103</td>
<td>India</td>
<td>9</td>
<td>0.4</td>
</tr>
<tr>
<td>-10</td>
<td>Other- Confidentialised</td>
<td>34</td>
<td>1.4</td>
</tr>
<tr>
<td>Total</td>
<td>Total</td>
<td>2,399</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 2. Home Language Reported by Participants (N = 2,399)

<table>
<thead>
<tr>
<th>ASCLa</th>
<th>Home language</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>4202</td>
<td>Arabic</td>
<td>546</td>
<td>22.8</td>
</tr>
<tr>
<td>4206</td>
<td>Assyrian Neo-Aramaic</td>
<td>426</td>
<td>17.8</td>
</tr>
<tr>
<td>4106</td>
<td>Persian</td>
<td>399</td>
<td>16.6</td>
</tr>
<tr>
<td>4107</td>
<td>Hazaraghi</td>
<td>260</td>
<td>10.8</td>
</tr>
<tr>
<td>4105</td>
<td>Dari</td>
<td>209</td>
<td>8.7</td>
</tr>
<tr>
<td>5206</td>
<td>Nepali</td>
<td>104</td>
<td>4.3</td>
</tr>
<tr>
<td>6100</td>
<td>Burmese and Related Languages, nfd</td>
<td>82</td>
<td>3.4</td>
</tr>
<tr>
<td>4207</td>
<td>Chaldean Neo-Aramaic</td>
<td>72</td>
<td>3.0</td>
</tr>
<tr>
<td>4102</td>
<td>Pashto</td>
<td>50</td>
<td>2.1</td>
</tr>
<tr>
<td>9211</td>
<td>Swahili</td>
<td>38</td>
<td>1.6</td>
</tr>
<tr>
<td>5103</td>
<td>Tamil</td>
<td>32</td>
<td>1.3</td>
</tr>
<tr>
<td>6101</td>
<td>Burmese</td>
<td>24</td>
<td>1.0</td>
</tr>
<tr>
<td>1201</td>
<td>English</td>
<td>23</td>
<td>1.0</td>
</tr>
<tr>
<td>4101</td>
<td>Kurdish</td>
<td>15</td>
<td>0.6</td>
</tr>
<tr>
<td>5212</td>
<td>Urdu</td>
<td>15</td>
<td>0.6</td>
</tr>
<tr>
<td>6199</td>
<td>Burmese and Related Languages, nec</td>
<td>14</td>
<td>0.6</td>
</tr>
<tr>
<td>-10.</td>
<td>Confidentialised</td>
<td>85</td>
<td>3.5</td>
</tr>
<tr>
<td>-1.</td>
<td>Does not apply</td>
<td>3</td>
<td>0.1</td>
</tr>
<tr>
<td>-4.</td>
<td>Not specified</td>
<td>2</td>
<td>0.1</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>2,399</td>
<td>100</td>
</tr>
</tbody>
</table>

aAustralian Standard Classification of Languages (ABS, 2011). nfd, not further defined; nec, not elsewhere classified. Source: Building a New Life in Australia, SPSS, authors’ analysis.
Table 3. Participants’ Reported English Proficiency before Arrival in Australia Compared to Proficiency at Wave 1 (N = 2,399)

<table>
<thead>
<tr>
<th>Proficiency</th>
<th>Understanding spoken English</th>
<th>Speaking</th>
<th>Reading</th>
<th>Writing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before arrival</td>
<td>Currently</td>
<td>Before arrival</td>
<td>Currently</td>
</tr>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Very well</td>
<td>82</td>
<td>3.4</td>
<td>130</td>
<td>5.4</td>
</tr>
<tr>
<td>Well</td>
<td>437</td>
<td>18.2</td>
<td>691</td>
<td>28.8</td>
</tr>
<tr>
<td>Not well</td>
<td>927</td>
<td>38.6</td>
<td>1,037</td>
<td>43.2</td>
</tr>
<tr>
<td>Not at all</td>
<td>919</td>
<td>38.3</td>
<td>511</td>
<td>21.3</td>
</tr>
<tr>
<td>Prefer not to say</td>
<td>6</td>
<td>0.3</td>
<td>3</td>
<td>0.1</td>
</tr>
<tr>
<td>Don’t know</td>
<td>28</td>
<td>1.2</td>
<td>27</td>
<td>1.1</td>
</tr>
<tr>
<td>Total</td>
<td>2,399</td>
<td>100.0</td>
<td>2,399</td>
<td>100.0</td>
</tr>
</tbody>
</table>

*Source: Building a New Life in Australia, SPSS, authors’ analysis.*
Table 4. Participants’ Reported Oral English Proficiency before Arrival and at Wave 1 Compared with Gender

<table>
<thead>
<tr>
<th>Proficiency</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td><strong>Before arrival</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No oral English</td>
<td>424</td>
<td>33.1</td>
<td>468</td>
</tr>
<tr>
<td>Low oral English</td>
<td>615</td>
<td>47.9</td>
<td>436</td>
</tr>
<tr>
<td>High oral English</td>
<td>244</td>
<td>19.0</td>
<td>160</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1,283</td>
<td>100.0</td>
<td>1,064</td>
</tr>
<tr>
<td>Pearson $\chi^2$ (2) = 29.9477 $p = 0.000 \phi = 0.1130$</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Current proficiency | | | | | | |
|---------------------|------|--------|------|--------|------|
| n                   | %    | n      | %    | n      | %    |
| No oral English | 181 | 14.0 | 312 | 29.1 | 493 | 20.9 |
| Low oral English | 687 | 53.2 | 529 | 49.4 | 1,216 | 51.5 |
| High oral English | 423 | 32.8 | 231 | 21.6 | 654 | 27.7 |
| **Total** | 1,291 | 100.0 | 1,072 | 100.0 | 2,363 | 100.0 |
| Pearson $\chi^2$ (2) = 92.2012 $p = 0.000 \phi = 0.1975$ | | | | | | |

*This measure was derived from combining the English speaking and understanding variables. Source: Building a New Life in Australia, STATA, authors’ analysis.*
Table 5. Participant Reported Improvement in Oral English Proficiency at Wave 1 Compared to Gender

<table>
<thead>
<tr>
<th>Proficiency</th>
<th>Male</th>
<th></th>
<th>Female</th>
<th></th>
<th>Total</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td><strong>No oral English before arrival</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No oral English</td>
<td>167</td>
<td>39.8</td>
<td>296</td>
<td>63.3</td>
<td>463</td>
<td>52.1</td>
</tr>
<tr>
<td>Low oral English</td>
<td>237</td>
<td>56.4</td>
<td>167</td>
<td>35.7</td>
<td>404</td>
<td>45.5</td>
</tr>
<tr>
<td>High oral English</td>
<td>16</td>
<td>3.8</td>
<td>5</td>
<td>1.1</td>
<td>21</td>
<td>2.4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>420</td>
<td>100.0</td>
<td>468</td>
<td>100.0</td>
<td>888</td>
<td>100.0</td>
</tr>
<tr>
<td>Pearson $\chi^2 (2) = 51.3879$</td>
<td></td>
<td></td>
<td>$p = 0.000$</td>
<td></td>
<td>$\phi = 0.2406$</td>
<td></td>
</tr>
</tbody>
</table>

| **Low oral English before arrival** |      |       |        |       |       |       |
| No oral English               | 11   | 1.8   | 12     | 2.8   | 23    | 2.2   |
| Low oral English              | 433  | 70.5  | 344    | 79.5  | 777   | 74.2  |
| High oral English             | 170  | 27.7  | 77     | 17.8  | 247   | 23.6  |
| **Total**                     | 614  | 100.0 | 433    | 100.0 | 1,047 | 100.0 |
| Pearson $\chi^2 (2) = 14.3938$ |      |       | $p = 0.001$ |   | $\phi = 0.1173$ | |

*Source: Building a New Life in Australia, STATA, authors’ analysis.*
Table 6. Participants’ Reported Oral English Proficiency Compared to Level of Difficulty Participating in Tasks

<table>
<thead>
<tr>
<th>Task and level of difficulty with task</th>
<th>No oral English</th>
<th>Low oral English</th>
<th>High oral English</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( n )</td>
<td>( % )</td>
<td>( n )</td>
<td>( % )</td>
</tr>
<tr>
<td>Make friends</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very easy</td>
<td>23</td>
<td>5.3</td>
<td>78</td>
<td>6.8</td>
</tr>
<tr>
<td>Easy</td>
<td>103</td>
<td>23.9</td>
<td>418</td>
<td>36.5</td>
</tr>
<tr>
<td>Hard</td>
<td>208</td>
<td>48.3</td>
<td>523</td>
<td>45.7</td>
</tr>
<tr>
<td>Very hard</td>
<td>97</td>
<td>22.5</td>
<td>126</td>
<td>11.0</td>
</tr>
<tr>
<td>Total</td>
<td>431</td>
<td>100.0</td>
<td>1,145</td>
<td>100.0</td>
</tr>
<tr>
<td>( \chi^2 (6) = 122.7372 ) ( p = 0.000 ) ( \phi = 0.1673 )</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Understand Australian ways

<table>
<thead>
<tr>
<th></th>
<th>( n )</th>
<th>( % )</th>
<th>( n )</th>
<th>( % )</th>
<th>( n )</th>
<th>( % )</th>
<th>( n )</th>
<th>( % )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very easy</td>
<td>13</td>
<td>3.0</td>
<td>57</td>
<td>5.1</td>
<td>74</td>
<td>11.8</td>
<td>144</td>
<td>6.6</td>
</tr>
<tr>
<td>Easy</td>
<td>108</td>
<td>24.9</td>
<td>455</td>
<td>40.3</td>
<td>333</td>
<td>52.9</td>
<td>896</td>
<td>40.9</td>
</tr>
<tr>
<td>Hard</td>
<td>218</td>
<td>50.4</td>
<td>516</td>
<td>45.7</td>
<td>195</td>
<td>31.0</td>
<td>929</td>
<td>42.4</td>
</tr>
<tr>
<td>Very hard</td>
<td>94</td>
<td>21.7</td>
<td>101</td>
<td>9.0</td>
<td>27</td>
<td>4.3</td>
<td>222</td>
<td>10.1</td>
</tr>
<tr>
<td>Total</td>
<td>433</td>
<td>100.0</td>
<td>1,129</td>
<td>100.0</td>
<td>629</td>
<td>100.0</td>
<td>2,191</td>
<td>100.0</td>
</tr>
<tr>
<td>( \chi^2 (6) = 196.1903 ) ( p = 0.000 ) ( \phi = 0.2116 )</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Talk to Australian neighbours

<table>
<thead>
<tr>
<th></th>
<th>( n )</th>
<th>( % )</th>
<th>( n )</th>
<th>( % )</th>
<th>( n )</th>
<th>( % )</th>
<th>( n )</th>
<th>( % )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very easy</td>
<td>7</td>
<td>1.8</td>
<td>36</td>
<td>3.4</td>
<td>56</td>
<td>9.3</td>
<td>99</td>
<td>4.8</td>
</tr>
<tr>
<td>Easy</td>
<td>28</td>
<td>7.0</td>
<td>224</td>
<td>21.3</td>
<td>277</td>
<td>46.0</td>
<td>529</td>
<td>25.8</td>
</tr>
<tr>
<td>Hard</td>
<td>223</td>
<td>56.0</td>
<td>589</td>
<td>55.9</td>
<td>211</td>
<td>35.1</td>
<td>1,023</td>
<td>49.8</td>
</tr>
<tr>
<td>Very hard</td>
<td>140</td>
<td>35.2</td>
<td>204</td>
<td>19.4</td>
<td>58</td>
<td>9.6</td>
<td>402</td>
<td>19.6</td>
</tr>
<tr>
<td>Total</td>
<td>398</td>
<td>100.0</td>
<td>1,053</td>
<td>100.0</td>
<td>602</td>
<td>100.0</td>
<td>2,053</td>
<td>100.0</td>
</tr>
<tr>
<td>( \chi^2 (6) = 312.5338 ) ( p = 0.000 ) ( \phi = 0.2759 )</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Missing values were excluded from this analysis. *Source:* Building a New Life in Australia, STATA, authors’ analysis.
## Table 7. Participants’ Reported Oral English Proficiency Compared to Level of Knowledge of How to Access Help, Information and Services

<table>
<thead>
<tr>
<th>Task and level of difficulty with task</th>
<th>No oral English</th>
<th>Low oral English</th>
<th>High oral English</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$n$</td>
<td>%</td>
<td>$n$</td>
<td>%</td>
</tr>
<tr>
<td><strong>Look for a job</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very well</td>
<td>10</td>
<td>2.1</td>
<td>54</td>
<td>4.6</td>
</tr>
<tr>
<td>Fairly well</td>
<td>14</td>
<td>2.9</td>
<td>105</td>
<td>8.9</td>
</tr>
<tr>
<td>A little</td>
<td>53</td>
<td>11.1</td>
<td>323</td>
<td>27.5</td>
</tr>
<tr>
<td>Not at all</td>
<td>401</td>
<td>84.0</td>
<td>693</td>
<td>59.0</td>
</tr>
<tr>
<td>Total</td>
<td>478</td>
<td>100.0</td>
<td>1,175</td>
<td>100.0</td>
</tr>
<tr>
<td>Pearson $\chi^2$ (6) = 438.9639 $p = 0.000$ $\phi = 0.3097$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Use public transport**

|                                       |        |     |        |     |        |     |        |     |
| Very well                             | 62     | 12.9| 252    | 21.1| 297     | 46.4| 611     | 26.4|
| Fairly well                           | 88     | 18.3| 378    | 31.7| 198     | 30.9| 664     | 28.7|
| A little                              | 123    | 25.6| 388    | 32.5| 102     | 15.9| 613     | 26.5|
| Not at all                            | 208    | 43.2| 176    | 14.7| 43      | 6.7 | 427     | 18.4|
| Total                                 | 481    | 100.0| 1,194  | 100.0| 640     | 100.0| 2,315   | 100.0|
| Pearson $\chi^2$ (6) = 426.2083 $p = 0.000$ $\phi = 0.3034$ |       |     |        |     |        |     |        |     |

**Get help in an emergency**

|                                       |        |     |        |     |        |     |        |     |
| Very well                             | 66     | 13.7| 227    | 19.1| 270     | 42.4| 563     | 24.4|
| Fairly well                           | 59     | 12.2| 292    | 24.6| 183     | 29.7| 534     | 23.2|
| A little                              | 130    | 27.0| 417    | 35.1| 125     | 19.6| 672     | 29.1|
| Not at all                            | 227    | 47.1| 251    | 21.2| 59      | 9.3 | 537     | 23.3|
| Total                                 | 482    | 100.0| 1,187  | 100.0| 637     | 100.0| 2,306   | 100.0|
| Pearson $\chi^2$ (6) = 363.6424 $p = 0.000$ $\phi = 0.2808$ |       |     |        |     |        |     |        |     |

**Use bank services**

157
<table>
<thead>
<tr>
<th>Category</th>
<th>Very well</th>
<th>Fairly well</th>
<th>A little</th>
<th>Not at all</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government services/benefits</td>
<td>20</td>
<td>4.1</td>
<td>114</td>
<td>9.6</td>
<td>203</td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>9.3</td>
<td>215</td>
<td>18.1</td>
<td>167</td>
</tr>
<tr>
<td></td>
<td>84</td>
<td>17.4</td>
<td>328</td>
<td>27.5</td>
<td>136</td>
</tr>
<tr>
<td></td>
<td>334</td>
<td>69.2</td>
<td>534</td>
<td>44.8</td>
<td>134</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,002</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2,314</td>
</tr>
<tr>
<td>Total</td>
<td>483</td>
<td>100.0</td>
<td>1,191</td>
<td>100.0</td>
<td>640</td>
</tr>
<tr>
<td>Pearson $\chi^2$ (6) = 394.1961 $p = 0.000 \phi = 0.2918$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Category</th>
<th>Very well</th>
<th>Fairly well</th>
<th>A little</th>
<th>Not at all</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Get help from the police</td>
<td>62</td>
<td>12.9</td>
<td>228</td>
<td>19.1</td>
<td>238</td>
</tr>
<tr>
<td></td>
<td>52</td>
<td>10.8</td>
<td>249</td>
<td>20.9</td>
<td>177</td>
</tr>
<tr>
<td></td>
<td>135</td>
<td>28.0</td>
<td>437</td>
<td>36.7</td>
<td>139</td>
</tr>
<tr>
<td></td>
<td>233</td>
<td>48.3</td>
<td>277</td>
<td>23.3</td>
<td>91</td>
</tr>
<tr>
<td>Total</td>
<td>483</td>
<td>100.0</td>
<td>1,190</td>
<td>100.0</td>
<td>639</td>
</tr>
<tr>
<td>Pearson $\chi^2$ (6) = 307.9565 $p = 0.000 \phi = 0.2582$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>Total</td>
<td>482</td>
<td>100.0</td>
<td>1,191</td>
<td>100.0</td>
<td>635</td>
</tr>
</tbody>
</table>

Pearson $\chi^2 (6) = 298.0523 \ p = 0.000 \ \phi = 0.2541$

*Note.* Missing values were excluded from this analysis. *Source:* Building a New Life in Australia, STATA, authors’ analysis.
Table 8. Participants’ Reported Oral English Proficiency Compared to Overall Settlement Experience

<table>
<thead>
<tr>
<th>Settlement experience</th>
<th>No oral English</th>
<th>Low oral English</th>
<th>High oral English</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( n )</td>
<td>( % )</td>
<td>( n )</td>
<td>( % )</td>
</tr>
<tr>
<td>Hard/very hard</td>
<td>104</td>
<td>21.7</td>
<td>218</td>
<td>18.1</td>
</tr>
<tr>
<td>Good/very good</td>
<td>375</td>
<td>78.3</td>
<td>988</td>
<td>81.9</td>
</tr>
<tr>
<td>Total</td>
<td>479</td>
<td>100.0</td>
<td>1,206</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Pearson \( \chi^2 (2) = 13.0975 \) \( p = 0.001 \) \( \phi = 0.0749 \)

Source: Building a New Life in Australia, STATA, authors’ analysis.
Table 9. Multiple Linear Regression Analyses to Predict Self-Sufficiency

<table>
<thead>
<tr>
<th>Dependent variables</th>
<th>Model 1: Oral English Proficiency</th>
<th>Model 2: Personal Factors</th>
<th>Model 3: Migration Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>p</td>
<td>Coefficient</td>
</tr>
<tr>
<td>Oral English</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No oral English (ref.)</td>
<td>0.000</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>Low oral English</td>
<td>3.248</td>
<td>0.000</td>
<td>2.006</td>
</tr>
<tr>
<td>High oral English</td>
<td>7.642</td>
<td>0.000</td>
<td>5.755</td>
</tr>
<tr>
<td>Female</td>
<td>-2.017</td>
<td>0.000</td>
<td>-1.727</td>
</tr>
<tr>
<td>Age</td>
<td>0.135</td>
<td>0.001</td>
<td>0.098</td>
</tr>
<tr>
<td>Age squared</td>
<td>-0.002</td>
<td>0.000</td>
<td>-0.002</td>
</tr>
<tr>
<td>Having a partner</td>
<td>0.086</td>
<td>0.724</td>
<td>0.010</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never attended school (ref.)</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>6 or less years of schooling</td>
<td>0.442</td>
<td>0.256</td>
<td>0.726</td>
</tr>
<tr>
<td>7 to 11 years of schooling</td>
<td>0.097</td>
<td>0.801</td>
<td>0.541</td>
</tr>
<tr>
<td>12 or more years of schooling</td>
<td>0.778</td>
<td>0.048</td>
<td>1.396</td>
</tr>
<tr>
<td>University education</td>
<td>2.015</td>
<td>0.000</td>
<td>2.410</td>
</tr>
<tr>
<td>Lives outside a major city</td>
<td>-0.154</td>
<td>0.700</td>
<td>-0.324</td>
</tr>
<tr>
<td>More than 1 year in Australia</td>
<td></td>
<td></td>
<td>1.604</td>
</tr>
<tr>
<td>Country of birth</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (ref.)</td>
<td>0.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iraq</td>
<td>-1.515</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Afghanistan</td>
<td>-0.659</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iran</td>
<td>-2.342</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Myanmar</td>
<td>-1.372</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bhutan</td>
<td>-1.270</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.2105</td>
<td></td>
<td>0.2676</td>
</tr>
<tr>
<td>$F$-statistic</td>
<td>$F = (2, 2247) = 293.84$</td>
<td>$F = (11, 2224) = 88.85$</td>
<td>$F = (17, 2218) = 64.89$</td>
</tr>
<tr>
<td>---------------</td>
<td>--------------------------</td>
<td>--------------------------</td>
<td>--------------------------</td>
</tr>
</tbody>
</table>

*Note: p-Values are based on estimations with robust standard errors. Source: Building a New Life in Australia, STATA, authors’ analysis.*
Chapter 5: Paper 4

Multilingual university students’ perceived English proficiency, intelligibility and participation

Helen L. Blake 1, 2, Sarah Verdon 1, & Sharynne McLeod 1

Charles Sturt University, Australia
University of Technology Sydney, Australia

Corresponding author:
Helen L. Blake
Graduate School of Health, University of Technology, PO Box 123, Broadway 2007, Australia
Tel: +61-437472336 Email: Helen.Blake@uts.edu.au
Twitter: @helenlblake
ORCiD: http://orcid.org/0000-0003-10414613

Sarah Verdon
Charles Sturt University, Albury NSW 2640, Australia
Ph: +61260519357 Email: sverdon@csu.edu.au
Twitter: @SV-SLP
ORCiD: http://orcid.org/0000-0002-75035860

Sharynne McLeod
Charles Sturt University, Panorama Ave, Bathurst, NSW 2795, Australia
Tel: +61-2 63384463 Email: smcleod@csu.edu.au
Twitter: @SharynneMcLeod
ORCiD: http://orcid.org/0000-0002-7279-7851
Abstract

International higher education students’ ability to communicate effectively in the dominant language of their host county is important given their need to express complex ideas in an additional language. This paper reports on 137 multilingual students enrolled at 14 English-speaking Australian universities who completed a 27-item online survey investigating the relationship between perceived English proficiency, intelligibility, and their academic, social, and vocational participation. Open-ended responses described strategies used to enhance spoken English. Participants came from 44 countries and spoke 49 home languages. All participants spoke English and their home language; however, 65.0% (n = 89) reported speaking three or more languages. Self-ratings of English communication skills were significantly affected by age, English experience, number of languages spoken, and home language. Participants reported spoken English proficiency impacted participation; however, results highlighted lack of awareness of intelligibility as an essential component of spoken language proficiency. Although environmental factors (e.g., more time using English in conversations) were associated with higher self-ratings of proficiency, participants preferred individual strategies (e.g., listening/repeating) to support English intelligibility rather than social interactions with native speakers. The results demonstrate the importance of conversation practice in language learning as a means to increase proficiency and confidence, as well as participation.

Keywords: multilingual; participation; international students; English proficiency; higher education
Introduction

Spoken English language proficiency impacts multilingual speakers’ participation in educational and social activities in English-dominant countries (Blake, Bennetts Kneebone, & McLeod, 2019; Blake, McLeod, Verdon, & Fuller, 2018; Chiswick, Lee, & Miller, 2006). A vital component of spoken language proficiency is intelligibility, which a measure of how much of an individual’s speech is understood by their listener (Munro & Derwing, 2015). Intelligibility is of particular importance for multilingual international students because of their need to express complex ideas and pronounce technical terminology in an additional language. This study investigated multilingual university students’ perceptions of the impact of their proficiency and intelligibility in English on their participation, not only at university, but also in an English-dominant society.

International students

The top three international higher education providers in the world are English-dominant countries (US, UK, and Australia); however, non-English-dominant countries, including China and India are seeking to increase their market share (Training Council for International Education, 2016). Australia is a popular destination for international students and international education is important to the Australian economy. In January 2016, almost a quarter \( (n = 303,072, 24.3\%) \) of students enrolled in Australian higher education institutions were from other countries, an increase of 6.6% on the previous year (Department of Education and Training (DET), 2017a). In 2015, international education contributed an estimated $17.1 billion to Australia’s Gross Domestic Product and supported 130,700 full-time equivalent employees (Deloitte Access Economics, 2016). When graduates remain in Australia post-graduation to work, they may enhance workforce skills and productivity as well as contribute socially and culturally to Australian society (Deloitte Access Economics, 2016).
The majority (93%) of international students chose Australia as a study destination because of the reputation of Australian educational institutions, the quality of teaching and research, and for personal safety (DET, 2015). While the majority of tertiary respondents reported being satisfied with their learning and living experiences, areas of dissatisfaction included local orientation, earning money, and making friends with Australians (DET, 2015). Although reasons for dissatisfaction were not investigated in the survey, English language difficulties may have contributed.

Spoken English skills have been identified as barriers to making friends and interacting with native speakers (Blake, Verdon, & McLeod, 2019; Choi, 1997). Major challenges faced by international students in Australia include English language skills, social isolation, culture shock, and unmet expectations (Choi, 1997; Gatwiri, 2015; Khawaja & Stallman, 2011; Ward, Masgoret, & Gezentsvey, 2009). In a survey of 385 Asian-born international students, Mak, Bodycott, and Ramburuth (2015) found self-efficacy (belief and confidence in one’s own ability) in academic skills and perceived social support from others in the host country to be more important predictors of satisfaction with university life than English proficiency. Participants reported high levels of self-efficacy in their academic abilities; however, lower levels of confidence in their ability to interact effectively with Australians (Mak et al., 2015). International students expect and desire interaction with people from the host country in social as well as academic settings (Choi, 1997). Mak, Bodycott, and Ramburuth (2015) recommended further study into the domains of the international student experience, including sources of social support.

**English language learning**

Recently, the largest number of international higher education enrolments in Australia have been from countries where English is not the dominant language, the top five of which were China, India, Malaysia, Nepal, and Vietnam (DET, 2017b).
Historically, Australian universities have expressed concerns over the English proficiency of international students (Benzie, 2010; Birrell, 2006; Devos, 2003). Strategies suggested for addressing low proficiency include raising English entry requirements and providing pathways courses (Benzie, 2010). English entry requirements are determined by measures such as the International English Language Testing System (IELTS), an internationally recognised language proficiency test for people wishing to study or work in English-speaking environments. IELTS is used by the Australian Government to assess the English proficiency of applicants whose home language is not English for both permanent residency and study visas (O’Loughlin, 2008). The test has four sections: Reading, Writing, Listening, and Speaking and results are scored on a scale from 1 (non-user) to 9 (expert user) (IELTS, 2017). An overall band score between 6.0 and 7.0 in the Academic module is considered to be acceptable English proficiency for higher education worldwide; however, some programs may have higher prerequisites (O’Loughlin, 2008). Raising English entry requirements may not effectively improve outcomes, as scores in tests like IELTS reflect English proficiency only, rather than academic success (Benzie, 2010) or intelligibility of spoken English.

Pathway courses to higher education, such as English Language Intensive Courses for Overseas Students (ELICOS) combine intensive English language training with the development of academic skills. In 2014, 34% of students on student visas in Australia completed ELICOS and went on to higher education, including 64% of Chinese and 42% of Indian students; however, 90% of international postgraduate students did not undertake any English language study in Australia prior to enrolment (DET, 2016). Further investigation is warranted into why so few postgraduate students study English in Australia prior to enrolment.
Traditionally, English language learning has focussed on grammar and vocabulary with minimal attention on perception (identification and discrimination) and pronunciation of the sounds (consonants and vowels) or prosody (rate, stress, and intonation) and how these features differ to features in the speaker’s home language (Levis, 2005; Munro & Derwing, 2015; Sawir, 2005). Multilingual speakers report being unaware of differences between their speech and a native speaker’s and unaware of reduced intelligibility in English until told so by a native English speaker (Blake et al., 2019). In a study of multilingual university students and faculty, 81.7% of participants reported being taught English by a non-native English speaker in their home country with minimal focus on pronunciation (Blake & McLeod, 2019). Some language teachers report they are reluctant to teach pronunciation, due to concerns about loss of identity associated with accent, and lack of empirical evidence and direction for this aspect of language learning (Couper, 2006; Derwing & Munro, 2015; McCrocklin & Link, 2016). Consequently, multilingual speakers may find that even after years of language study, they are less proficient in spoken English than in written vocabulary and grammar and that their reduced proficiency and intelligibility in spoken English may impact on their participation in academic, social, and vocational life.

In seeking to promote Australia as a global higher education provider, the Australian Government has developed the first National Strategy for International Education 2025 (Training Council for International Education, 2016). One of the measures of success of the strategy is the quality of the international student experience. Strategy goals include providing support to international students to facilitate participation in academic, social, and vocational activities as well as listening to international students to ensure their needs are met (Training Council for International Education, 2016). The current study supports the Government’s strategy by examining
the international student experience with a focus on their English language proficiency and intelligibility.

Aims

This paper surveyed multilingual university students to investigate the relationship between their perceived English proficiency and their academic, social, and vocational participation from the unique perspective of their intelligibility in spoken English. Specifically, the aim of this research was to:

1. Describe participants’ self-reported English proficiency (i.e., understanding, speaking, reading, and writing), as well as their levels of confidence and difficulty communicating in English.

2. Investigate the association between participants’ perceived English skills and personal and environmental factors (e.g., home language, age, and gender).

3. Explore whether participants’ spoken English impacted on their participation in academic, social, and vocational activities in Australia.

4. Detail strategies participants used to support their spoken English.

Method

This study was informed by the Checklist for Reporting Results of Internet E-Surveys (CHERRIES) (Eysenbach, 2004).

Participants

Multilingual university students were recruited through international offices, student services and graduate offices at universities throughout Australia. Universities were asked to forward an introductory email and survey link to their international students. The introductory email explained that the survey targeted those multilingual students who did not speak English as their home language. Consenting participants completed the survey using Survey Monkey©. The survey received 145 responses from 14 universities, predominantly from research higher degree students. Eight incomplete
entries were excluded from analysis. The 14 universities and the distribution of students among them have not been reported in order to maintain participant confidentiality, especially in consideration of those participants whose home languages were less common.

The 137 participants were aged between 20 and 60 years ($M = 32.97$ years; $SD = 8.34$), with 41.0% being male ($n = 55$) and 59.0% female ($n = 79$). Participants came from 44 different countries and spoke 49 home languages (Table 1). The top three countries of birth were Vietnam ($n = 19, 14.2$%), Iran ($n = 9, 6.7$%), and Germany ($n = 7, 5.2$%) and the three most common home languages were Vietnamese ($n = 19, 14.4$%), German ($n = 11, 8.3$%), and Persian ($n = 8, 6.1$%). Participants who reported their home language as English reported they were speakers of World Englishes including Singaporean English and Malaysian English. Most participants ($n = 106, 79.7$%) had been in Australia for less than five years, with 28.6% ($n = 38$) arriving within the last year. All participants spoke English and their home language; however, 65.0% ($n = 89$) reported speaking three or more languages.

[Table 1 near here]

Participants were enrolled at 14 Australian universities in PhD ($n = 115, 83.9$%), Masters ($n = 8, 5.8$%), Bachelors ($n = 10, 7.3$%), and Study Abroad programs ($n = 1, 0.7$%), or were conducting post-doctoral research ($n = 1, 0.7$%). The five most common areas of study were health ($n = 32, 23.7$%), arts/law ($n = 21, 15.6$%), science ($n = 18, 13.3$%), education ($n = 16, 11.9$%), and engineering ($n = 15, 11.1$%).

Most participants reported first learning English at school (age: $M = 11.14$ years; $SD = 7.23$); however, they reported not using English in conversations until years later (age: $M = 18.74$ years; $SD = 8.49$). Many participants ($n = 90, 69.2$%) had not studied English since arriving in Australia either because they believed their English was already good ($n = 78, 60$%), or for additional reasons ($n = 12, 9.2$%) such as ‘didn't feel
any necessity’, ‘don’t have money’, and ‘learning English while using it in my research’. A further 16.2% (n = 21) had studied English since arriving in Australia, but were no longer studying, and 14.6% (n = 19) were currently studying English.

**Ethical Approval**

Ethical approval was obtained from Charles Sturt University Human Research Ethics Committee (protocol number 2016/039) and The University of Newcastle Human Research Ethics Committee (approval number H-2016-0096).

**Instrument**

A survey was created by the authors specifically for this study using the International Classification of Functioning, Disability and Health (ICF) (World Health Organization, WHO, 2001) as the conceptual framework. This multi-dimensional framework was used to investigate interactions between Body Functions and Structures (e.g., articulation of speech sounds), Personal Factors (e.g., age), and Environmental Factors (e.g., attitudes of society) and any restrictions these may place on an individual’s Activities and Participation (Blake & McLeod, 2018; WHO, 2001).

The online survey contained 27 questions (see Supplementary Appendix) under four headings; About you (e.g., ‘Which country were you born in?’), About your English skills (e.g., ‘What year did you start studying English?’), About your spoken English (e.g., ‘Has your spoken English affected your ability to make friends?’), and About your intelligibility - How easy it is for other people to understand what you say, (e.g., ‘Would you consider getting help to sound clearer and be more intelligible in English?’). Likert-type scales recorded participants’ perceptions of their English proficiency and intelligibility, and the effect of spoken English on participation in academic, social, and vocational activities. Questions relating to participation were informed by the Wave 1 survey for Building a New Life in Australia: The Longitudinal Study of Humanitarian Migrants with permission (cf. Blake et al., 2017; Department of Social Services, 2015).
Open-ended questions (e.g., ‘Who could you ask for help with intelligibility in English?’) allowed participants to provide additional information or opinion. Analysis of responses to 25 of the questions are reported here. Analysis of qualitative responses to two of the questions (questions 21 and 27) have been reported elsewhere (Blake, Verdon, & McLeod, 2019).

Content validity for the survey instrument was established by piloting with two multilingual and two native English speakers. Once the online draft was available, four additional multilingual and two native English speakers provided feedback on survey complexity, ease of understanding, and terminology, and adaptions were made to create the final survey. Every effort was made to prevent content bias in the questions asked. The multilingual speakers who checked the survey drafts were postgraduate students from varied language/cultural backgrounds. Additionally, all three authors have many years’ experience working with multilingual speakers and have promoted multilingualism in their research and advocacy roles.

Data analysis

Data analysis was undertaken using IBM SPSS Statistics Version 24.0 (IBM, 2016). Six variables were derived from the data: age, time lived in Australia, length of time studying and using English in conversations, and age began studying English and using English in conversations. To facilitate analysis, age was grouped into four bins (under 24.6 years, 24.6 - 33 years, 33 - 41.3 years and above 41.3 years), and home languages were grouped into nine broad groups according to the Australian Standard Classification of Languages (Australian Bureau of Statistics, 2016) (Table 1). Likert responses relating to participants’ reports of spoken English affecting activities were recoded from 5 to 2 points with never and rarely recoded as no and sometimes, often and always recoded as yes.
Data were tested for normality through Kolmogorov-Smirnov and Shapiro-Wilk Tests. As the data were not normally distributed, the following non-parametric tests were used to explore relationships between variables: Mann Whitney-U Test, Kruskal-Wallis Test, Wilcoxon Signed Rank Test, Chi-square test for independence, and Spearman rho. Participants’ responses to the following two open-ended questions were analysed and coded into common themes relating to each question using NVivo software (QSR International, 2015):

1. ‘What do you do to make it easier to pronounce the sounds of English?’
2. ‘Who could you ask for help with intelligibility in English?’

**Results**

**Self-reported English proficiency**

Participants rated their English proficiency across the four domains of understanding, speaking, reading, and writing both before arriving in Australia and currently, and in general, ratings were high and improved significantly over time (Table 2). Wilcoxon Signed Rank Tests revealed statistically significant increases over time with medium effect sizes in understanding spoken English ($z = -4.99$, $p = .000$, $r = .31$), speaking English ($z = -5.91$, $p = .000$, $r = .36$), reading English ($z = -4.59$, $p = .000$, $r = .28$), and writing English ($z = -5.32$, $p = .000$, $r = .32$). More participants rated themselves as highly proficient in receptive (understanding and reading) than expressive English (speaking and writing). Ratings for speaking English were significantly lower than for understanding spoken English ($z = -2.69$, $p = .01$, $r = .17$) and there were significantly lower ratings for writing English than for reading English ($z = -3.65$, $p = .00$, $r = .23$); both with modest effect sizes.

[Table 2 near here]
Self-ratings of English proficiency were analysed by the personal and environmental factors of age group, gender, English experience, number of languages spoken, and home language group (Table 3). Each of these is discussed below.

[Table 3 near here]

Age

Kruskal-Wallis Tests revealed a significant difference only in self-reported ability to understand spoken English before coming to Australia across age groups (H(3) = 8.4, p = .04, η² = .07. The youngest age group (≤28 years) recorded a higher median score than all other groups. There was no significant difference according to age across all other English proficiency domains (speaking, reading, writing) both before arrival in Australia and currently.

Gender

There was no significant difference in self-ratings of proficiency by gender.

English experience

The relationship between self-rated English proficiency and the number of years participants had spent studying English and using English in conversations were investigated using Spearman’s rho. There were small correlations between years of studying English and current proficiency in speaking (r = -.26, n = 132, p = .00), reading (r = -.21, n = 131, p = .02), and writing (r = -.21, n = 131, p = .02), with more time studying English associated with higher self-ratings. There was no correlation between years of studying English and proficiency ratings of current understanding of English and all domains of English prior to arrival in Australia.

There was a medium correlation between current self-ratings of spoken English and years participants had used English in conversations (r = -.40, n = 131, p = .00), with more time conversing in English associated with higher self-ratings. There were small correlations between years participants had used English in conversations and
current proficiency in understanding \((r = -0.25, n = 131, p = 0.01)\), reading \((r = -0.23, n = 130, p = 0.01)\), and writing \((r = -0.23, n = 130, p = 0.01)\), as well as understanding \((r = -0.23, n = 130, p = 0.01)\), and speaking \((r = -0.19, n = 131, p = 0.03)\), prior to arrival in Australia with more time conversing in English associated with higher self-ratings. There was no correlation between years of using English in conversation and reading or writing English prior to arrival in Australia.

**Number of languages spoken**

The number of languages spoken by participants varied across home language groups with 75.0\% of speakers of Northern European languages speaking three or more languages, along with 72.2\% of Southern European, 71.4\% of Eastern European, 66.7\% of African, 61.9\% of Southern Asian, 45.5\% of Southwest and Central Asian, 35.7\% of Eastern Asian, and 27.6\% of Southeast Asian languages. Participants who spoke three or more languages rated their ability to understand, speak, read, and write English higher than participants with two languages. For example, a Mann-Whitney U Test revealed a significant difference in ability to currently speak English between those who spoke three or more languages \((Md = 2.0, n = 73)\), and speakers of two languages \((Md = 1.0, n = 59)\), \(U = 1200, z = -4.99, p = .00, r = .43\). Similar results were found across domains of understanding, reading, and writing English both before arrival in Australia and currently.

**Home language**

Kruskal-Wallis Tests revealed significant differences across home language groups for all English proficiency domains both before arrival in Australia and currently, except writing before coming to Australia. For example, there was a significant difference in self-reported ability to currently speak English across all home language groups \((H(8) = 39.78, p = .00, \eta^2 = .31\) with speakers of Southwest and Central Asian Languages (e.g. Persian) and Southeast Asian Languages (e.g.,
Vietnamese) recording lower median scores than the other seven groups. These two language groups also recorded lower scores for currently understanding spoken English, reading, and writing.

**Difficulty and confidence communicating in English**

Participants rated their level of difficulty communicating in English on a 5-point single item Likert scale as slight ($n = 81, 66.9\%$), some ($n = 31, 25.6\%$), moderate ($n = 8, 6.6\%$), significant ($n = 1, 0.8\%$), or extreme ($n = 0, 0\%$). Participants rated their level of confidence communicating in English on a 5-point single item Likert scale as not confident ($n = 1, 0.8\%$), slightly confident ($n = 2, 1.5\%$), moderately confident ($n = 23, 17.4\%$), confident ($n = 69, 52.3\%$), or extremely confident ($n = 37, 28.0\%$). Self-ratings of difficulty and confidence communicating in English were analysed by the personal and environmental factors of age group, gender, English experience, number of languages spoken, and home language group and in general, results were similar to English proficiency. While no significant relationship was found between age and gender, factors with significant findings are discussed below.

**English experience**

The relationship between confidence and difficulty communicating in English and the number of years participants had spent studying and using English in conversations were investigated using Spearman’s rho. There was a small correlation between confidence and the years participants had studied English ($r = -0.26, n = 132, p = .00$), with less time studying English associated with lower levels of confidence. There was a medium correlation between confidence and the years participants had used English in conversations ($r = -0.41, n = 131, p = .00$), with more time conversing in English associated with higher levels of confidence. There was no correlation between difficulty communicating in English and the years participants had studied English ($r = -0.15, n = 121, p = .10$); however, there was a small correlation between difficulty
communicating and the years participants had used English in conversations \((r = -0.27, n = 120, p = .00)\), with less time conversing in English associated with higher levels of difficulty.

**Number of languages spoken**

Participants who spoke three or more languages reported greater confidence and less difficulty communicating in English than participants with two languages. Mann-Whitney U Tests revealed significant differences in confidence between speakers of three or more languages \((Md = 2.0, n = 73)\) and those who spoke two languages \((Md = 2.0, n = 59)\), \(U = 1610.5, z = -2.73, p = .01, r = .24\) as well as for self-ratings of difficulty communicating between speakers of three or more languages \((Md = 1.0, n = 67)\) and those who spoke two languages \((Md = 1.0, n = 54)\), \(U = 1440.5, z = -2.33, p = .02, r = .21\).

**Home language**

Kruskal-Wallis Tests revealed significant differences in self-reported levels of confidence \((H(8) = 28.08, p = .00, \eta^2 = 0.5)\) and difficulty \((H(8) = 16.73, p = .03, \eta^2 = 0.14)\) communicating in English across all nine language groups, with speakers of Southeast Asian Languages reporting the lowest levels of confidence and high levels of difficulty communicating.

**Spoken English and participation**

Participants reported whether their spoken English proficiency affected their ability to participate in a range of activities that facilitated academic, social, and vocational life (Table 4). When participation ratings were compared to self-ratings of spoken English, Mann-Whitney U Tests revealed significant differences for all activities, with participants with lower spoken English proficiency reporting a greater impact on participation. For example, there was a significant difference in self-ratings of ability to speak English between participants who reported their spoken English
proficiency affected their ability to make friends \((Md = 2.0, n = 43)\) and those who reported it did not \((Md = 1.0, n = 88)\), \(U = 827.0, z = -5.96, p = .00, r = .52\) (Table 4).

Participants’ responses were also analysed by the personal and environmental factors of age, gender, number of languages spoken, home language group (only four Asian home language groups were analysed because other groups failed to meet the sample size criteria to run the test), and time lived in Australia. Each of these is discussed below.

[Table 4 near here]

There were significant associations between the number of languages spoken and whether spoken English affected participants’ ability to participate in activities, with 38.9% of speakers of three or more languages and 57.6% of speakers of two languages reporting it affected their ability to understand Australian ways \(\chi^2 (1, n = 131) = 3.85, p = .05, V = .19\), 13.9% of speakers of three or more languages and 47.5% of speakers of two languages reporting it affected talking to Australian neighbours \(\chi^2 (1, n = 131) = 16.15, p = .00, V = .37\), and 20.0% of speakers of three or more languages and 45.6% of speakers of two languages reporting it affected their ability to look for a job \(\chi^2 (1, n = 127) = 8.40, p = .00, V = .27\).

Chi-square tests for independence indicated significant associations between the four Asian home language groups and whether spoken English affected making friends \(\chi^2 (3, n = 72) = 10.27, p = .02, V = .38\) and talking to Australian neighbours \(\chi^2 (3, n = 72) = 9.11, p = .03, V = .36\) with over 50% of speakers of Southwest and Central Asian Languages and Southeast Asian Languages reporting that it did.

A Mann-Whitney U Test revealed a significant difference in time lived in Australia and whether spoken English affected talking on the phone \((Md = 1, n = 51)\) or not \((Md = 2, n = 75)\), \(U = 1387, z = -2.66, p = .01, r = .24\) with participants who had lived in Australia for a longer time reporting less effect.
There were no other significant differences in ratings by home language group, number of languages spoken, or time lived in Australia across all other activities. There was no significant difference in ratings by gender or age across all activities.

**Intelligibility in English**

Participants rated how much intelligibility affected their ability to communicate in English and 39.1% \( (n = 50) \) reported it had no impact. A Kruskal-Wallis Test revealed significant differences in spoken English proficiency \( (H(4) = 32.58, p = .00, \eta^2 = 0.26) \) and how much participants believed their intelligibility affected their ability to communicate with lower proficiency associated with increased effects.

Participants provided open-ended responses regarding what they did to make it easier to pronounce the sounds of English. Responses were collated into two themes: Individual and Interactive Activities (Table 5). Subthemes that emerged under Individual Activities included: practise, use technology, listen, imitate native speakers, repeat, nothing, oro-musculature exercises, and slow speech rate. Subthemes that emerged under Interactive Activities included: ask native speakers for help, engage in conversations with native speakers, ask native speakers for corrections, attend English classes, and attend intelligibility enhancement sessions.

Almost half \( (n = 60, 46.9\%) \) of participants reported they would consider getting help for intelligibility in English, while 7.8% \( (n = 10) \) had already done so. Participants reported approaching friends \( (n = 41, 43.2\%) \), academic staff \( (n = 23, 24.2\%) \), native speakers \( (n = 7, 7.4\%) \), and speech-language pathologists \( (n = 7, 7.4\%) \) for help; while, some \( (n = 7, 7.4\%) \) did not know who they could ask.

**Discussion**

This paper described a survey of multilingual university students that investigated the association between perceived proficiency and intelligibility in English.
and academic, social, and vocational participation. Two key messages were identified that are essential for supporting multilingual university students in Australia: (1) multilingual speakers lack awareness of intelligibility as an essential element of spoken language proficiency and (2) conversation practice should be an important component in English language learning as more time using English in conversations was associated with higher self-ratings of proficiency, higher confidence, and less difficulty communicating in English.

**English communication skills**

Self-ratings of English communication skills were significantly affected by age, English experience, the number of languages spoken, and home language. Participants who were 28 years of age and younger reported higher proficiency in understanding spoken English before coming to Australia than all other age groups. More time studying English and using it in conversations was associated with higher ratings of spoken English proficiency. Participants who spoke three or more languages rated their ability to understand, speak, read, and write English higher than participants with two languages. Speakers of Southwest and Central Asian Languages (e.g., Persian) and Southeast Asian Languages (e.g., Vietnamese) self-rated as less proficient than all other language groups.

Differences in perceived English proficiency across home language groups were found to be a result of or a combination of many factors including: language distance, a consequence of less experience studying and conversing in English, sampling bias, and/or a reflection of cultural differences in self-efficacy, self-perceptions, and reporting. Comparisons of self-assessment measures for language proficiency and formal assessment results indicated accuracy of self-ratings can be affected by cultural background (Edele, Seuring, Kristen, & Stanat, 2015). Speakers of more than two languages rated their English proficiency and confidence higher, suggesting that the
additional language learning supported their English competency. There were more speakers of European and African languages who spoke three or more languages than speakers of Asian languages. Participants who self-rated as less proficient in English included those from Australia’s top eight source countries for international higher education students: Malaysia (third) Vietnam (fifth), and Indonesia (eighth) (DET, 2017b). These students may require extra support while studying in English-dominant countries like Australia.

**Participation**

Self-ratings of the impact of spoken English proficiency on participation were significantly affected by home language, number of languages spoken, time lived in Australia, and perceived spoken English proficiency. Participants reported spoken English proficiency impacted more on social, rather than academic participation with understanding Australian ways, talking on the phone, and making friends the most frequently reported activities affected. Multilingual students’ focus on social participation reflected similar concerns discussed in the literature (Blake et al., 2019; DET, 2015; Gatwiri, 2015; Khawaja & Stallman, 2011). International students frequently report experiencing loneliness and social isolation related to difficulties developing friendships with native-speaking students (Khawaja & Stallman, 2011). These findings highlight the importance of social participation to the international student experience, proving that support for social activities is warranted in accordance with the National Strategy for International Education 2025 (Training Council for International Education, 2016).

**English in conversations**

More time using English in conversations was equated with higher self-ratings of English proficiency and increased confidence communicating in English. This finding highlights the importance of conversation practice in language learning. Most
participants did not begin conversing in English until more than seven years after commencing language study, possibly due to traditional language learning approaches focusing on vocabulary and grammar (Levis, 2005; Munro & Derwing, 2015; Sawir, 2005). The delay between learning and conversing in English may also partially account for participants’ higher proficiency ratings in receptive (understanding and listening) than expressive English (speaking and reading). Opportunities for conversing in English may also be restricted by multilingual speakers’ shyness and perceptions of negative attitudes of native speakers, as well as their study and family commitments (Blake et al., 2019). Khawaja and Stallman (2011) recommended multilingual university students get out of their comfort zone (i.e., socialising with students with the same home language) to establish social networks with native speakers and practise social skills in order to increase opportunities to converse in English.

**Intelligibility in English**

The study investigated multilingual students’ perceptions of the impact of their English proficiency on participation from the unique perspective of their intelligibility in spoken English. However, over a third of participants reported intelligibility had no impact on their ability to communicate in English. This result is consistent with the low self-awareness of intelligibility found in a qualitative study of multilingual university students (Blake et al., 2019). Additionally, once some students pass the IELTS, they may think they have no need to improve their English skills (O’Loughlin, 2008). Almost 70% of participants had not studied English since arriving in Australia, consistent with previous studies (DET, 2016).

Although more time using English in conversations was associated with better English proficiency outcomes, multilingual university students largely used individual strategies (e.g., listening and repeating) to support their English intelligibility rather than interacting with native speakers to gain informal (e.g., conversations) or formal
experience (e.g., intelligibility enhancement sessions). Nevertheless, almost half of participants reported that they would consider seeking help for their English intelligibility even though some (7.4%) did not know who to ask for help. There are many professionals that can provide support for intelligibility, such as speech-language pathologists, language teachers, linguists, and elocution, acting or voice coaches (Blake & McLeod, in press); however, few higher education institutions have adopted this method of support (Khurana & Huang, 2013). Intelligibility enhancement by speech-language pathologists provides multilingual speakers with awareness of differences between their speech and a native speaker’s, uses massed practice with specific feedback, assists speakers to modify their speech to facilitate effective, intelligible communication, and has an emerging evidence base (Blake & McLeod, in press). Aside from enhancing the English speech of multilingual speakers, intelligibility enhancement can provide training in conversation breakdown and repair strategies that can promote confidence communicating, as well as make it easier for conversation partners to understand what is being said (Blake & McLeod, in press). However, multilingual speakers are not solely responsible for the success of a communication interaction (Clyne, 2008). Native English-speaking conversation partners may benefit from specific training in linguistics that can improve their confidence to interact with multilingual speakers (Carlson & McHenry, 2006). Such training for people working with multilingual students can focus on listening to a variety of accents as well as learning conversation breakdown and repair strategies.

**Implications**

The findings of this study highlight important implications from the students’ perspectives that can inform higher education providers in English-dominant countries such as Australia, the US, Canada, and the UK as well as others who support multilingual university students. International education is an expanding market;
therefore, higher education providers worldwide need to review existing services supporting multilingual students and explore new ways of providing institutional support for key issues facing these students (Smith & Khawaja, 2011). Many universities have existing support programs focusing on practical and academic concerns such as learning support programs that provide English language assistance and academic writing courses; however, not all students who are in need of such help attend (Smith & Khawaja, 2011). Students from some cultures are less likely to seek professional support (Khawaja & Dempsey, 2008). Several factors were identified in this study that may predict students at risk of lower perceived confidence and competence communicating in English that could impact on their student experience: students with less experience studying and conversing in English, speakers of only two languages, and speakers of Southwest and Central Asian or Southeast Asian home languages. International programs can use this information to identify and target potential students who may need further support, whether that involves English writing skills or Intelligibility Enhancement. In light of the key findings of this study, university support programs for multilingual students need to include conversation practice as an important component of English language learning and provide opportunities for students to not only engage in conversations, but also to increase their awareness of intelligibility as an essential element of their spoken English communication skills.

While the Australian Government’s National Strategy for International Education 2025 (Training Council for International Education, 2016) aims to listen to students to facilitate their participation in academic, social, and vocational activities, the multilingual university students in this study appeared predominantly concerned with the social impact of their spoken English. Multilingual students may need to deal with social and cultural barriers as well as language barriers. Students need support in reducing barriers and increasing facilitators to their social participation. For example,
students could be supported in finding a ‘third space’ (Elliot, Baumfield, & Reid, 2016) outside of university, such as in a job or club that will provide them with opportunities to establish social connections, improve their spoken English skills, and promote opportunities for conversation practice. Such a space might not only improve their student experience, but could also facilitate a valuable intercultural experience for native English speakers (Elliot et al., 2016).

**Strengths and limitations**

The size and diversity of the sample and the targeted survey instrument allowed this study to provide evidence on which support services for multilingual university students can be planned and provided. Notwithstanding this, sampling bias may prevent generalisation of the results to a wider population, as only participants interested in their English proficiency may have completed the survey. There were participants representing the five countries with the largest number of international higher education enrolments in Australia, that include China \( n = 6 \), India \( n = 5 \), Malaysia \( n = 4 \), Nepal \( n = 4 \), and Vietnam \( n = 19 \); however, future research could target the English proficiency, intelligibility, and participation of multilingual university students from these countries given their significance to the higher education sector in Australia. As noted above, students from some cultures may be less likely to seek professional support (Khawaja & Dempsey, 2008); therefore, it is possible that they may also be less willing to participate in a survey discussing their communication skills in English. It is unclear why there was a higher proportion of PhD students in the sample. This may have been a result of the recruitment process or evidence of increased interest among research higher degree students in their oral English skills. Differences in level of education can impact communication, interaction, and integration (Grech, 2019). The verbal communication demands on higher degree students (e.g., conference
presentations) are different to those of undergraduates, who may potentially remain silent in lectures and tutorials.

Self-reported language proficiency ratings are generally not considered an accurate measure of language skills; however, self-ratings by multilingual speakers studying an additional language can be more accurate because of feedback they may receive on language skills (Edele et al., 2015). Future research could include direct assessment of English skills and investigate multilingual students’ awareness of English communication support programs provided at their university, any barriers and/or facilitators to their participation in such programs, and the effectiveness of these programs.

**Conclusion**

The findings of this study provide insight into multilingual university students’ perspectives of the impact of their English proficiency and intelligibility on their academic, social, and vocational participation in Australia. Participants reported their spoken English proficiency impacted participation; however, the results highlighted a lack of awareness of intelligibility as an essential component of spoken language proficiency. Social, rather than academic participation was more commonly reported as being affected by spoken English. Although environmental factors such as more time studying and using English in conversations were associated with higher self-ratings of proficiency and confidence communicating, students reported using individual strategies such as listening and repeating to support their intelligibility in English rather than engaging in social interactions with native speakers. Factors that may predict students at risk of low English communication skills were less experience studying and conversing in English, speaking only two languages, and speaking an Asian home language. The results of this study demonstrate the importance of conversation practice in English language learning not only as a means to develop proficiency and confidence,
but also extent of participation. These findings highlight the need for support for multilingual university students wishing to improve their spoken language proficiency in order to increase their participation in the society of their host country.

Acknowledgements

The authors wish to acknowledge Charles Sturt University’s Spatial Analysis Network, particularly Gail Fuller, for support preparing the online version of the survey, the staff at the Australian universities who forwarded the survey link to their students, as well as to the students who participated. Helen L. Blake acknowledges funding from an Australian Postgraduate Award.

Disclosure statement

No potential conflict of interest was reported by the authors.
References


Blake, H. L., & McLeod, S. (2018). The International Classification of Functioning, Disability and Health: Considering individuals from a perspective of health and wellness. Perspectives of the ASHA Special Interest Groups, 3(17), 69-77. doi:10.1044/persp3.SIG17.69


Blake, H. L., & McLeod, S. (2019). Speech-language pathologists' support for multilingual speakers’ English intelligibility and participation informed by the


Table 1. Participants’ home languages ($n = 137$)

<table>
<thead>
<tr>
<th>Home language group</th>
<th>$n$</th>
<th>Home languages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern European</td>
<td>28</td>
<td>English, German, Danish, Afrikaans, Swedish, Dutch, Norwegian, Flemish</td>
</tr>
<tr>
<td>Southern European</td>
<td>18</td>
<td>French, Spanish, Portuguese, Italian, Catalan, Greek</td>
</tr>
<tr>
<td>Eastern European</td>
<td>7</td>
<td>Hungarian, Russian, Romanian, Serbo-Croatian, Croatian</td>
</tr>
<tr>
<td>Southwest and Central Asian</td>
<td>12</td>
<td>Arabic, Persian, Turkish, Hebrew</td>
</tr>
<tr>
<td>Southern Asian</td>
<td>21</td>
<td>Bengali, Malayalam, Dinka, Hindi, Sinhalese, Urdu, Tamil, Nepali, Marathi</td>
</tr>
<tr>
<td>Southeast Asian</td>
<td>30</td>
<td>Vietnamese, Sundanese, Thai, Bahasa Indonesia, Malay, Filipino</td>
</tr>
<tr>
<td>Eastern Asian</td>
<td>14</td>
<td>Mandarin, Cantonese, Korean, Dzongkha</td>
</tr>
<tr>
<td>African</td>
<td>6</td>
<td>iKalanga, Akan, Oromo, Ankole, Amharic, Kambatigna</td>
</tr>
<tr>
<td>Australian Indigenous</td>
<td>1</td>
<td>Torres Strait Creole</td>
</tr>
</tbody>
</table>

*Australian Standard Classification of Languages (Australian Bureau of Statistics, 2016)
Table 2. Participants’ reported English proficiency before arrival in Australia compared to current proficiency ($n = 137$)

<table>
<thead>
<tr>
<th>Proficiency</th>
<th>Understanding Before arrival</th>
<th>Currently</th>
<th>Speaking Before arrival</th>
<th>Currently</th>
<th>Reading Before arrival</th>
<th>Currently</th>
<th>Writing Before arrival</th>
<th>Currently</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$n$</td>
<td>%</td>
<td>$n$</td>
<td>%</td>
<td>$n$</td>
<td>%</td>
<td>$n$</td>
<td>%</td>
</tr>
<tr>
<td>Very well</td>
<td>60</td>
<td>45.8</td>
<td>86</td>
<td>65.2</td>
<td>42</td>
<td>31.8</td>
<td>72</td>
<td>54.5</td>
</tr>
<tr>
<td>Well</td>
<td>50</td>
<td>38.2</td>
<td>42</td>
<td>31.8</td>
<td>61</td>
<td>46.2</td>
<td>55</td>
<td>41.7</td>
</tr>
<tr>
<td>Not well</td>
<td>14</td>
<td>10.7</td>
<td>4</td>
<td>3.0</td>
<td>22</td>
<td>16.7</td>
<td>5</td>
<td>3.8</td>
</tr>
<tr>
<td>Not at all</td>
<td>7</td>
<td>5.3</td>
<td>0</td>
<td>0.0</td>
<td>7</td>
<td>5.3</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total</td>
<td>131</td>
<td>100.0</td>
<td>132</td>
<td>100.0</td>
<td>132</td>
<td>100.0</td>
<td>132</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Table 3. Self-rated English proficiency compared to personal and environmental factors (n = 137)

<table>
<thead>
<tr>
<th>English proficiency</th>
<th>Age group&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Years studied English&lt;sup&gt;d&lt;/sup&gt;</th>
<th>Years conversed in English&lt;sup&gt;d&lt;/sup&gt;</th>
<th>Number of languages spoken&lt;sup&gt;c&lt;/sup&gt;</th>
<th>Home language group&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;i&gt;p&lt;/i&gt;</td>
<td>&lt;i&gt;χ²&lt;/i&gt;</td>
<td>&lt;i&gt;r&lt;/i&gt;</td>
<td>&lt;i&gt;p&lt;/i&gt;</td>
<td>&lt;i&gt;r&lt;/i&gt;</td>
</tr>
<tr>
<td>Before arrival</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understand</td>
<td>0.04*</td>
<td>8.4</td>
<td>0.12</td>
<td>-0.14</td>
<td>0.01*</td>
</tr>
<tr>
<td>Speak</td>
<td>0.39</td>
<td>3.01</td>
<td>0.25</td>
<td>-0.1</td>
<td>0.03*</td>
</tr>
<tr>
<td>Read</td>
<td>0.13</td>
<td>5.65</td>
<td>0.78</td>
<td>-0.03</td>
<td>0.28</td>
</tr>
<tr>
<td>Write</td>
<td>0.39</td>
<td>2.99</td>
<td>0.47</td>
<td>-0.06</td>
<td>0.31</td>
</tr>
<tr>
<td>Currently</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understand</td>
<td>0.31</td>
<td>3.59</td>
<td>0.05*</td>
<td>-0.17</td>
<td>0.01*</td>
</tr>
<tr>
<td>Speak</td>
<td>0.45</td>
<td>2.63</td>
<td>0.00*</td>
<td>-0.26</td>
<td>0.00*</td>
</tr>
<tr>
<td>Read</td>
<td>0.11</td>
<td>6.15</td>
<td>0.02*</td>
<td>-0.21</td>
<td>0.01*</td>
</tr>
<tr>
<td>Write</td>
<td>0.75</td>
<td>1.2</td>
<td>0.02*</td>
<td>-0.21</td>
<td>0.01*</td>
</tr>
</tbody>
</table>

<sup>a</sup><i>p < / = .05</i>

<sup>b</sup>Kruskal-Wallis Test

<sup>c</sup>Mann-Whitney U Test

<sup>d</sup>Spearman rho
Table 4. Participants’ reports of spoken English affecting activities compared to self-rated spoken English proficiency and personal and environmental factors (n = 137)

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Affected</th>
<th>Self-rated spoken English proficiency</th>
<th>Number of languages spoken</th>
<th>Asian home language groups</th>
<th>Time lived in Australia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>n</td>
<td>%</td>
<td>p</td>
<td>z</td>
</tr>
<tr>
<td>Understand Australian ways</td>
<td>131</td>
<td>62</td>
<td>47.3</td>
<td>0.00*</td>
<td>-4.61</td>
<td>0.4</td>
</tr>
<tr>
<td>Talk on the phone</td>
<td>130</td>
<td>51</td>
<td>39.2</td>
<td>0.00*</td>
<td>-5.73</td>
<td>0.5</td>
</tr>
<tr>
<td>Make friends</td>
<td>131</td>
<td>43</td>
<td>32.8</td>
<td>0.00*</td>
<td>-5.96</td>
<td>0.52</td>
</tr>
<tr>
<td>Look for a job</td>
<td>127</td>
<td>40</td>
<td>31.5</td>
<td>0.00*</td>
<td>-4.6</td>
<td>0.41</td>
</tr>
<tr>
<td>Talk to Australian neighbours</td>
<td>131</td>
<td>38</td>
<td>29</td>
<td>0.00*</td>
<td>-5.58</td>
<td>0.49</td>
</tr>
<tr>
<td>Use voice activated software, e.g., Siri</td>
<td>128</td>
<td>36</td>
<td>28.1</td>
<td>0.03*</td>
<td>-2.22</td>
<td>0.2</td>
</tr>
<tr>
<td>Give presentations at university or conferences</td>
<td>131</td>
<td>35</td>
<td>26.7</td>
<td>0.00*</td>
<td>-5.33</td>
<td>0.47</td>
</tr>
<tr>
<td>Participate in academic activities</td>
<td>131</td>
<td>31</td>
<td>23.7</td>
<td>0.00*</td>
<td>-4.36</td>
<td>0.38</td>
</tr>
</tbody>
</table>

*p < / = .05
*Mann-Whitney U Test
*Chi-square
Table 5. Strategies participants used to make it easier to pronounce the sounds of English \((n = 79)\)

<table>
<thead>
<tr>
<th>Themes</th>
<th>n</th>
<th>Sub-themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Activities</td>
<td>39</td>
<td>Practise sounds</td>
</tr>
<tr>
<td>((n = 79))</td>
<td></td>
<td>11 Use technology (YouTube, e-dictionary)</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Listen to native speakers</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Imitate native speakers</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Repeat sounds</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Nothing</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Tongue exercises</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Reduce speech rate</td>
</tr>
<tr>
<td>Interactive Activities</td>
<td>6</td>
<td>Ask native speakers for help</td>
</tr>
<tr>
<td>((n = 16))</td>
<td></td>
<td>5 Engage in conversations with native speakers</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Ask native speakers for corrections</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Attend English classes</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Attend intelligibility enhancement sessions</td>
</tr>
</tbody>
</table>
### Supplementary Appendix

#### Survey Questions

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer selections</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  Please indicate your gender</td>
<td>1. Male</td>
</tr>
<tr>
<td></td>
<td>2. Female</td>
</tr>
<tr>
<td></td>
<td>3. Prefer not to say</td>
</tr>
<tr>
<td>2  What year were you born?</td>
<td>drop down list</td>
</tr>
<tr>
<td>3  Which country were you born in?</td>
<td>drop down list and other</td>
</tr>
<tr>
<td>4  What year did you come to live in Australia?</td>
<td>drop down list</td>
</tr>
<tr>
<td>5  Which countries have you lived in for more than one year?</td>
<td>(please specify)</td>
</tr>
<tr>
<td>6  What is your first (home or native) language?</td>
<td>drop down list</td>
</tr>
<tr>
<td>7  What other languages do you speak?</td>
<td>(please specify)</td>
</tr>
<tr>
<td>8  Which university are you studying at?</td>
<td>drop down list</td>
</tr>
<tr>
<td>9  What academic program are you enrolled in?</td>
<td>1. Bachelor</td>
</tr>
<tr>
<td></td>
<td>2. Masters</td>
</tr>
<tr>
<td></td>
<td>3. PhD</td>
</tr>
<tr>
<td></td>
<td>4. Post-doc</td>
</tr>
<tr>
<td></td>
<td>5. Other (please specify)</td>
</tr>
<tr>
<td>10 What is your main area of study? (e.g., Engineering, Nursing, etc.)</td>
<td>(please specify)</td>
</tr>
<tr>
<td>11 What year did you start studying English?</td>
<td>drop down list</td>
</tr>
<tr>
<td>12 What year did you start using English in conversations outside the classroom?</td>
<td>drop down list</td>
</tr>
<tr>
<td>13 Before you came to Australia, how well did you…?</td>
<td>1. Very Well</td>
</tr>
<tr>
<td>a. Understand spoken English (listen)</td>
<td>2. Well</td>
</tr>
<tr>
<td>b. Speak English</td>
<td>3. Not well</td>
</tr>
<tr>
<td>c. Read English</td>
<td>4. Not at all</td>
</tr>
</tbody>
</table>
d. Write English

14 Have you studied English since arriving in Australia?
   1. Yes - I am currently studying English
   2. Yes - but I am no longer studying
   3. No - my English was already good
   4. No - other reason (please specify)

15 How well do you now…?
   a. Understand spoken English (listen)
   b. Speak English
   c. Read English
   d. Write English
   1. Very Well
   2. Well
   3. Not well
   4. Not at all

16 Do you plan to study English in the future?
   1. Yes
   2. No
   3. Not sure

17 How would you currently rate your level of difficulty communicating in English?
   1. Slight difficulty communicating
   2. Some difficulty communicating
   3. Moderate difficulty communicating
   4. Significant difficulty communicating
   5. Extreme difficulty communicating

18 How would you currently rate your confidence communicating in English?
   1. Extremely confident communicating
   2. Confident communicating
   3. Moderately confident communicating
   4. Slightly confident communicating
   5. Not confident communicating

About your spoken English

19 Has your spoken English affected your ability to:
   a. Make friends
   b. Understand Australian ways
   c. Talk to Australian neighbours
   d. Look for a job
   1. Never
   2. Rarely
   3. Sometimes
   4. Often
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>e.</td>
<td>Use public transport</td>
</tr>
<tr>
<td>f.</td>
<td>Get help in an emergency</td>
</tr>
<tr>
<td>g.</td>
<td>Use bank services</td>
</tr>
<tr>
<td>h.</td>
<td>Find out about benefits</td>
</tr>
<tr>
<td>i.</td>
<td>Find out about rights</td>
</tr>
<tr>
<td>j.</td>
<td>Get help from the police</td>
</tr>
<tr>
<td>k.</td>
<td>Participate in academic activities (lectures, tutorials, etc.)</td>
</tr>
<tr>
<td>l.</td>
<td>Give presentations at university or conferences</td>
</tr>
<tr>
<td>m.</td>
<td>Talk to strangers</td>
</tr>
<tr>
<td>n.</td>
<td>Talk on the phone</td>
</tr>
<tr>
<td>o.</td>
<td>Use voice activated software, e.g., Siri</td>
</tr>
<tr>
<td>p.</td>
<td>Any others? (please specify)</td>
</tr>
<tr>
<td>5.</td>
<td>Always</td>
</tr>
</tbody>
</table>

**About your intelligibility - how easy it is for other people to understand what you say**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>How much does your intelligibility affect your ability to communicate in English?</td>
</tr>
<tr>
<td>1.</td>
<td>Not at all</td>
</tr>
<tr>
<td>2.</td>
<td>A little bit</td>
</tr>
<tr>
<td>3.</td>
<td>Some</td>
</tr>
<tr>
<td>4.</td>
<td>Quite a bit</td>
</tr>
<tr>
<td>5.</td>
<td>A lot</td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>What do you do when someone has difficulty understanding your spoken English?</td>
</tr>
<tr>
<td>1.</td>
<td>Talk more slowly</td>
</tr>
<tr>
<td>2.</td>
<td>Repeat what I said</td>
</tr>
<tr>
<td>3.</td>
<td>Say it with different words</td>
</tr>
<tr>
<td>4.</td>
<td>Talk more loudly</td>
</tr>
<tr>
<td>5.</td>
<td>Other (please specify)</td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>What do you do to make it easier to pronounce the sounds of English? (e.g., practise sounds, tongue exercises, etc.)</td>
</tr>
<tr>
<td>23</td>
<td>Would you consider getting help to sound clearer and be more intelligible in English?</td>
</tr>
<tr>
<td>1.</td>
<td>Yes</td>
</tr>
<tr>
<td>2.</td>
<td>No</td>
</tr>
<tr>
<td>3.</td>
<td>I have previously</td>
</tr>
<tr>
<td>4.</td>
<td>Other (please specify)</td>
</tr>
<tr>
<td>24</td>
<td>Who could you ask for help with intelligibility in English?</td>
</tr>
<tr>
<td>202</td>
<td></td>
</tr>
</tbody>
</table>
25 Would you prefer English intelligibility sessions to be:
1. Individual
2. In a group
3. Other (please specify)

26 How much do each of these things affect your ability to communicate in English?
   a. Your intelligibility
   b. Your accent
   c. Your grammar
   d. Your vocabulary
   e. Who you are talking to
   f. Where you are (e.g., noisy places)
   g. Any other things that affect your ability to communicate in English (please specify)
   1. Not at all
   2. A little bit
   3. Some
   4. Quite a bit
   5. A lot

27 Do you have any other comments (e.g., about communicating in English, how it affects you, etc.)?
Chapter 6: Paper 5


This is the authors accepted manuscript of an article published as the version of record in Language and Hearing ©Taylor & Francis Ltd 2019 Informa UK Limited, trading as Taylor & Francis Group. [https://doi.org/10.1080/2050571X.2019.1585681](https://doi.org/10.1080/2050571X.2019.1585681)

Taylor & Francis has granted permission for the accepted manuscript to appear in this PhD thesis.
Exploring multilingual speakers’ perspectives on their intelligibility in English

Helen L. Blake¹,²
Sarah Verdon¹
Sharynne McLeod¹

¹Charles Sturt University, Australia
²The University of Newcastle, Australia

Corresponding author:
Helen L. Blake
Graduate School of Health, University of Technology, PO Box 123, Broadway 2007, Australia
Tel: +61-437472336
Email: Helen.Blake@uts.edu.au Twitter: @helenlblake
ORCiD: http://orcid.org/0000-0003-10414613

Sarah Verdon
Charles Sturt University, Albury NSW 2640 Australia.
Tel: +61260519357
Email: sverdon@csu.edu.au Twitter: @SV_SLP
ORCID: http://orcid.org/0000-0002-75035860

Sharynne McLeod
Charles Sturt University, Panorama Ave, Bathurst, NSW 2795, Australia
Tel: +61-2 63384463
Email: smcleod@csu.edu.au Twitter: @SharynneMcLeod
ORCiD: http://orcid.org/0000-0002-7279-7851
Disclosure of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this article.

Biographical notes

Helen L. Blake is an associate lecturer in speech-language pathology at the University of Technology Sydney, Australia. A certified practicing speech pathologist (CPSP), she is a member of the working party that developed Speech Pathology Australia’s national position paper and clinical guidelines Working in a Culturally and Linguistically Diverse Society and a member of the International Expert Panel on Multilingual Children’s Speech. Helen’s work in Intelligibility Enhancement in multilingual speakers is informed by her previous role as a standardisation officer in air traffic control.

Sarah Verdon Ph.D. is a senior lecturer and research fellow at Charles Sturt University, Australia. She is co-chair of The International Expert Panel on Multilingual Children's Speech and oversaw the development the Speech Pathology Australia national position paper and clinical guidelines Working in a Culturally and Linguistically Diverse Society.

Sharynne McLeod Ph.D is a Professor at Charles Sturt University, Australia, Life Member of Speech Pathology Australia, Fellow of the American Speech-Language-Hearing Association, Vice President of International Clinical Linguistics and Phonetics Association, Co-chair of International Expert Panel on Multilingual Children’s Speech, and past editor of the International Journal of Speech-Language Pathology.

Keywords (8 max): Intelligibility Enhancement; multilingual; participation; English proficiency; university students; qualitative analysis; accent modification; ICF
Abstract

Multilingual speakers’ ability to communicate effectively and intelligibly in the language of their country of residence is crucial to their participation. This study explored multilingual speakers’ motivations for improving their intelligibility in English and their perceptions of potential barriers and facilitators to enhancing intelligibility. Participants were multilingual students and staff at 14 Australian universities. Extended response data from 137 survey responses were combined with seven semi-structured interviews, thematically analysed using the World Health Organization’s International Classification of Functioning, Disability and Health as a conceptual framework, and coded using NVivo software. Three overarching themes were: motivations, barriers, and facilitators. Themes that emerged under motivations were meeting their own and others’ expectations and career aspirations. Themes that emerged under barriers to intelligibility were lack of self-awareness of reduced English intelligibility, use of ineffective strategies (e.g., fast speech rate to disguise pronunciation difficulties), language differences, lack of opportunity to practise English, participants’ perceptions of others’ negative attitudes to their English skills, and challenging conversational partners. Facilitators to intelligibility were emotional support from others, beneficial strategies (e.g., confirming listener understanding), and opportunities to practice. The results highlight the importance of supporting multilingual speakers’ efforts to improve their English intelligibility. An environment with barriers such as lack of opportunity to practise English may restrict an individuals’ performance and participation, while facilitators such as support from others may increase participation. This study will inform the understanding of speech-language pathologists engaged in Intelligibility Enhancement, as well as SLPs working with multilingual speakers in any context.
Introduction

Multilingual speakers’ participation in education, employment, and social activities in English-dominant countries is influenced by their spoken English proficiency (Blake, Bennetts Kneebone, & McLeod, 2017; Blake, McLeod, Verdon, & Fuller, 2018; Chiswick, Lee, & Miller, 2006). Intelligible speech is an essential element of spoken language proficiency, contributing to effective verbal communication (Miller, 2013). Intelligible speech is also vital in ensuring successful communication in multilingual speakers when they are speaking a language other than their home language (Blake & McLeod, in press); for example, for a university student whose home language is Mandarin, when participating in a tutorial in English.

Although English-dominant countries are increasingly linguistically diverse, proficiency and intelligibility in English remain important to successful participation of multilingual speakers because of the need to interact with a monolingual majority. In 2015, The US Census Bureau (2015) reported at least 350 languages were spoken in US homes; however, an estimated 78.9% of the population only spoke English at home (United States Census Bureau, 2016). In the 2016 Australian census, there were over 300 separately identified languages spoken at home; however, 72.7% of all residents and 91% of residents who were born in Australia only spoke English at home (Australian Bureau of Statistics, (ABS), 2017a; 2017b). Globally, monolinguals are in the minority (Clyne, 2004); however, countries that have a monolingual majority such as the US, Australia, and England, may be less likely to recognise the political, economic, and social benefits of multilingualism (Pietiläinen, 2011). Along with other language-dominant countries such as England, Ireland, Germany and France, Australia has been described as having a ‘monolingual mindset’ (Clyne, 2008, p. 348). This mindset may influence expectations of and interactions with multilingual speakers, such as holding them responsible for the success of a verbal interaction (Clyne, 2008).
Additionally, societal attitudes may shape multilingual speakers’ perceptions not only of their own English communication skills, but also of their place in society (Clyne, 2008). A meta-analysis of 20 studies investigating the effects of speakers’ accents on interpersonal evaluations of domains that included intelligence, attractiveness, and trustworthiness found an overwhelming number of effect sizes that were positive, strong, and consistent across domains, settings, and countries, in favour of standard-accented speakers (Fuertes, Gottdiener, Martin, Gilbert, & Giles, 2012). Consequently, in English-dominant countries, individuals with poor spoken English language proficiency and low intelligibility may experience discrimination and social exclusion based on their speech.

International multilingual university students recognise the value of a tertiary education in English (Klapwijk & Van der Walt, 2016) but may experience unmet expectations once they are studying and living in an English-dominant country. Some international multilingual students may not see studying in an additional language as problematic, even though historically they experience challenges (Van der Walt, 2013) such as social isolation, unmet expectations, and culture shock (Khawaja & Stallman, 2011). International multilingual students expect interaction with people from the host country in social as well as academic settings (Choi, 1997); however, when they attempt to study and socialise with host country students, they may be met with attitudes that make it difficult for them to connect with these students (Leask, 2010). Domestic students may not have the time to interact with multilingual students given their own commitments inside and outside university, they may not have the conversation skills to be able to modify their language or use breakdown and repair strategies, and they may not see the future benefits of communicating with multilingual students for their own participation in a globalised world (Leask, 2010).
Host universities in English-dominant countries have expressed concerns regarding multilingual students’ English proficiency (Benzie, 2010; Birrell, 2006). Although international multilingual students should have met English entry requirements determined by measures such as the International English Language Testing System (IELTS) (IELTS, 2017), they may be less proficient in spoken English pronunciation (i.e., intelligibility) than grammar and vocabulary. Staff perceptions of multilingual university students’ poor English proficiency, along with lack of time to improve skills during lectures and tutorials may restrict students’ academic participation and success (Leask, 2011). While universities may have programs that support multilingual students’ English communication, such as academic writing and English language assistance, existing services need to be examined to investigate new ways of providing institutional support for students such as targeting social support and coping strategies (Smith & Khawaja, 2011).

Foreign language learning has traditionally concentrated on grammar and vocabulary with minimal focus on perception (identification and discrimination) and production of the sounds of English (vowels and consonants) or prosody (intonation, stress, and rate), and limited attention to the difference between English sounds and those of a multilingual speaker’s home language (Levis, 2005; Munro & Derwing, 2015; Sikorski, 2005). The role of home language in the acquisition of additional languages is a large area of research being undertaken by linguists, phoneticians, pedagogical specialists, psychologists, and speech-language pathologists (SLPs) (Munro & Derwing, 2015). Consequently, many theories of second language acquisition have been developed (see Chomsky, 1986; Krashen, 1985; Selinker, 1972) and many studies have investigated aspects of pronunciation such as the factors that influence a multilingual speaker’s accent (see Ellis, 2008; Flege & Fletcher, 1992; Long, 1990; Moyer, 1999; Piske, MacKay, & Flege, 2001). When speaking English, multilingual
speakers may substitute phonemes (e.g., because certain sounds may not exist in their home language) and delete sounds (e.g., because the home language may have few word-final consonants), exhibit variations in prosody (e.g., stress, speech rate, intonation) or variations in voice quality (e.g., nasality, volume, pitch) (Munro & Derwing, 2015).

Intervention to improve the intelligibility of the English speech of multilingual speakers is known as Intelligibility Enhancement (Blake & McLeod, in press). Similar interventions have been called accent improvement, accent modification, accent reduction, and pronunciation training (Fritz & Sikorski, 2013). Techniques and materials that exist for enhancing intelligibility include self-help programs, computerised resources and structured programs facilitated by professionals such as SLPs, linguists, language teachers, and acting, elocution, or voice coaches. Intelligibility Enhancement adheres to the principle of intelligible speech rather than native-like pronunciation. (Blake & McLeod, in press). Clients typically are multilingual speakers of English, rather than English speakers with regional dialects. The purpose of the intervention is for the multilingual speaker to learn to modify their English speech to facilitate effective, intelligible communication (Munro & Derwing, 2015). The aim is not to teach the speaker a new accent, as adult language learners rarely achieve native-like pronunciation (Levis, 2005). Intervention includes providing the speaker with an awareness of the differences between features of their home language and English that may be impacting English intelligibility as well as providing optimum intensity practise and specific feedback on pronunciation of English consonants, vowels, and prosody (Blake & McLeod, in press).

The purpose of this paper was to gain insight into the perspectives of multilingual speakers in relation to intelligibility and Intelligibility Enhancement in Australia (an English-dominant country). In 2016, Australia had the third highest number of
international students worldwide, after the US and UK (Training Council for International Education, 2016). The largest number of international enrolments in Australia were from countries where English is not the dominant language: China, India, Malaysia, Nepal, and Vietnam (Department of Education and Training, 2017). Situating this research in an Australian context may inform support for multilingual speakers in other linguistically diverse and otherwise language-dominant countries around the world.

**Aims**

The aims of this paper were to explore multilingual speakers’:

1. motivation for seeking Intelligibility Enhancement in English, and
2. perceptions of barriers and facilitators to improving their intelligibility in English.

This paper combines qualitative data collected in two studies involving multilingual university students and staff using an online survey and semi-structured interviews. The International Classification of Functioning, Disability and Health (ICF) (World Health Organization, WHO, 2001) provided a conceptual framework to explore multilingual speakers’ perceptions of the facilitating or hindering impact of features of their physical, social and attitudinal world on their intelligibility in English. The ICF informed the questions and interpretation of the data from both studies.

**Method**

**Participants**

*Study 1*

Participants in Study 1 were multilingual university students \( (n = 137) \) recruited through student services and international and graduate offices at 14 Australian universities. Universities forwarded an introductory email and a link to the survey in Survey Monkey ©. While 145 responses were received, 8 incomplete entries were excluded from analysis.
Participants were aged between 20 and 60 years ($M = 32.97$ years; $SD = 8.34$), with fewer males ($n = 55, 41.0\%$) than females ($n = 79, 59.0\%$). They spoke 49 different home languages, the three most common being Vietnamese ($n = 19, 14.4\%$), German ($n = 11, 8.3\%$), and Persian/Farsi ($n = 8, 6.1\%$). All participants spoke their home language and English; however, $65.0\%$ ($n = 89$) of participants reported speaking three or more languages. Participants reported first studying English at school (age: $M = 11.14$ years; $SD = 7.23$); however, most did not use English in conversations until years later (age: $M = 18.74$ years; $SD = 8.49$).

The majority of participants ($n = 115, 83.9\%$) were enrolled in Ph.D. programs, while the remainder were completing Masters ($n = 8, 5.8\%$), Bachelors ($n = 10, 7.3\%$), and Study Abroad programs ($n = 1, 0.7\%$) or conducting post-doctoral research ($n = 1, 0.7\%$). The top five areas of study were health ($n = 32, 23.7\%$), arts/law ($n = 21, 15.6\%$), science ($n = 18, 13.3\%$), education ($n = 16, 11.9\%$), and engineering ($n = 15, 11.1\%$).

Study 2

Study 2 took place in a clinical program at an Australian university. Seven multilingual university staff and PhD students who had completed Intelligibility Enhancement sessions in the clinic were invited to participate in the study by an email from a third party. Convenience sampling was used as potential participants were restricted to people who had completed their sessions and yet were still in Australia and contactable for interview. Participants were diverse in age (range: 36 to 59 years old), sex (male: $n = 3$; female: $n = 4$), home languages spoken (Vietnamese, Bengali, Italian, and Spanish), and area of work/study (Architecture, Education, Finance, Law, Management, Psychology, and Science). See Table 1 for participant demographic and linguistic data, (i.e., age learnt English, speaks English at home).

[Table 1 near here]
Ethical approval

Ethical approval was obtained from The University of Newcastle Human Ethics Committee (approval number H-2016-0096) and Charles Sturt University Human Ethics Committee (protocol number 2016/039). Participants in Study 1 were anonymous. Participants in Study 2 were assigned culturally and linguistically appropriate pseudonyms to protect their confidentiality.

Researchers

The researchers were monolingual English-speaking SLPs. The primary author has studied nine languages and worked with adult multilingual speakers for many years, assisting them with their intelligibility in English. Multilingual speakers have told her how their intelligibility affects their participation and this research enabled documentation of their stories and privileging of their voices. As is inherent in qualitative research, her personal background and experience in Intelligibility Enhancement, as well as her personal culture and the culture of her current profession have influenced data collection, analysis and interpretation. There was no existing relationship with participants in Study 1; however, a clinician-client relationship had previously existed between the primary author and the participants in Study 2. While the potential existence of a dependent relationship is acknowledged, the recruitment of only participants who had completed the Intelligibility Enhancement program was intended to reduce the potential for bias. Additionally, the pre-existing rapport between the primary author and the participants was key to facilitating the conversation during the interview. The co-authors were involved in the research design and data analysis. Both authors have travelled and worked in many countries, have experience working with multilingual speakers of different ages in various speech-language pathology contexts, and have promoted multilingualism in their research and advocacy roles. It is acknowledged that the authors’ cultural lens has influenced the interpretation of these
Data. The combination of different viewpoints in data analysis enabled rich interpretation of the data.

**Data collection**

**Study 1**

The survey in Study 1 contained 27 questions relating to participants’ demographic details, English language experience, and perceptions of whether their proficiency and intelligibility in spoken English impacted their participation. Analysis of responses to 25 of the questions have been reported elsewhere (Blake, Verdon, & McLeod, 2019). This study reports participants’ responses to the following open-ended questions:

3. ‘What do you do when someone has difficulty understanding your spoken English?’
4. ‘Do you have any other comments?’

**Study 2**

Semi-structured interviews were conducted with the seven participants by the first author. The list of questions used in the interview was created specifically for the current research based on the research aims using the ICF framework (Blake & McLeod, 2018; WHO, 2001). The questions included motivation for improving intelligibility in English, as well as perceived barriers and facilitators to improving intelligibility. The questions were grouped by topic with possible follow-up questions to promote discussion or clarify comments. Data were captured by audio recording each interview, which was then transcribed verbatim. Six interviews were completed face-to-face; one interview was conducted over the phone. The interviews took between 20 and 54 minutes to complete.

Because of the connection between the first author and participants in Study 2, the validity of the findings was checked by multiple measures to examine the accuracy of the information (Creswell, 2018). These measures were acknowledging and reflecting
upon potential bias the researcher brought to the study, peer debriefing with the two co-authors who reviewed and questioned the study and discussed the interpretation of findings, and member checking, completed in situ during the interviews to clarify meaning and interpretation with participants. Participants were invited to read the initial draft text of the Results and Discussion sections of this paper to comment on the reporting and interpretation of their data. Member checking kept the research focused on the meaning participants held about their intelligibility and participation, rather than the meaning derived from the researchers or the literature (Creswell, 2018). All seven participants confirmed their approval of the presented text.

**Data analysis**

Data from participants’ responses in Study 1 and 2 were analysed using an inductive thematic analysis informed by Braun and Clarke (2006). The process involved 4 stages. (1) Familiarisation. The first two authors separately listened to the recordings and read the entire manuscripts attempting to identify data that were relevant and reflect on its overall meaning, rather than looking for expected themes. (2) Open coding. The first two authors separately generated a list of open codes based on their reading and listening to the data sets. (3) Discussion. The first two authors discussed the open codes they had individually identified and agreed on those that appeared salient to both and began to generate themes that occurred in both datasets. (4) Representing the description and themes. The first author then systematically analysed each transcript and response and coded the data using NVivo software (QSR International, 2015). Themes were refined and added to inductively as comments arose from the data. The data were reviewed multiple times to facilitate appropriate interpretation of the themes that emerged. Upon examination of the themes, three clear overarching themes emerged to be represented in the qualitative narrative. These were: motivations, barriers, and facilitators. The third author reviewed and modified themes in further discussion.
Participants’ quotes pertaining to Study 1 are indicated by [1] and quotes pertaining to Study 2 are indicated by [2].

**Result and Discussion**

The aim of this paper was to explore multilingual university students’ experiences of communicating in an English-dominant country, specifically their (1) motivation for improving their intelligibility in English and (2) their perceptions of barriers and facilitators to improving their intelligibility in English. Across both studies themes that emerged under motivation were: meeting their own and others’ expectations and career aspirations. Barriers to intelligibility were: participants’ lack of self-awareness of intelligibility, the use of ineffective strategies, language differences, lack of opportunity to practise English, the attitudes of others, and challenging conversational partners. Themes related to facilitators for improving their intelligibility were: support from others, useful strategies, and opportunities to practice. The results and discussion are combined as is the practise in qualitative research, so that the focus is on the participants’ own words, while providing evidence to support interpretation (Given, 2015).

**Motivation for improving intelligibility in English**

Expectations and career aspirations were motivations for improving intelligibility in English for many participants.

**Expectations**

Participants reported they were motivated to improve their intelligibility because they believed they fell short of their own or others’ expectations of them as Ph.D students, tutors, and lecturers. Failing short of the high expectations of themselves lead to feeling language disabled [1]. Participants were also frustrated that their English speech limited their expectation of social participation:

I really hate English. ... I hate that I still cannot find a proper way to have an enjoyable conversation with anyone in English. … I describe myself as language disabled and I carry
When Binh pronounced words differently, she felt ‘I should perform better’ [2]. Eulalia felt embarrassed because ‘if I am a tutor, maybe I have to speak English more … perfect’ [2]. Chiara was concerned about perceptions of her intelligence and professionalism from all listeners from academics to school children, ‘Oh, if I’m pronouncing something wrong, what they will think?’ [2].

Career aspirations

Participants expressed feelings of frustration or embarrassment that they were unable to convey what they believed was the true level of their academic competence to employers, academic staff, or students due to their intelligibility in English. Two participants discussed difficulties finding work as academics in Australia due to their communication skills in English. In relation to being selected for employment, Kanchan [2] felt he was competitive in terms of experience, but had been overlooked for positions in favour of native English-speaking colleagues:

Whenever I compare my profile with the existing lecturer profile in university, I’m that far ahead of those existing lecturers, in terms of publications, in terms of teaching records, in terms of industry experience and so on [2].

Oreopoulos (2011) indicates employers may justify discrimination towards multilingual speakers and discrimination against foreign-sounding names based on concerns that an applicant lacks critical language skills for employment without checking their level of proficiency or intelligibility and without considering that the applicant’s other characteristics may offset any potential deficit in communication skills. Kanchan understood interviewer judgements of his English communication skills might have overridden his academic experience:

If somebody can’t speak it, he or she is not going to be selected [2].

Although additional factors may have affected Kanchan’s employment success, his perception was that intelligibility was the key factor inhibiting his selection. Feng
believed interviewers thought he, ‘probably cannot communicate with others or students sufficiently and effectively’ [2]. He believed a previous employer had had low expectations of his performance, as they were surprised when he received positive feedback on lectures. He had also received negative feedback:

Some students will write some feedback saying this person’s (i.e., Feng’s) pronunciation is not good enough to be understood well [2].

Prospective employers consistently rate graduates’ communication skills more highly than their academic results (Cotton, 2001; Graduate Careers Australia, 2015). Australian census data revealed multilingual speakers with high proficiency in spoken English are more likely to have full-time employment and a high income than monolingual Australians (Blake et al., 2018). Conversely, multilingual speakers with reduced English intelligibility are judged as having lower status, lower levels of competence, and therefore, are rated as less employable (Carlson & McHenry, 2006; Kalin & Rayko, 1978).

Participants’ motivations reflected the impacts of multilingual speakers’ intelligibility discussed by other researchers, such as negative perceptions of employability (Carlson & McHenry, 2006) and intelligence (Fuertes et al., 2012).

**Barriers to intelligibility in English**

The diverse environments in which people conduct their lives, may impact on individuals in different ways. An environment with barriers may restrict an individual’s performance and participation in major life areas (WHO, 2001). Six barriers to multilingual speakers’ intelligibility in English emerged from participants’ comments: lack of self-awareness of intelligibility, the use of ineffective strategies, language differences, lack of opportunity, attitudes of others, and challenging conversational partners.
Lack of self-awareness of intelligibility

Participants reported they were unaware they were not intelligible in English until they came to Australia or until told so by a native English speaker. Binh reported ‘I didn’t notice about my pronunciation, that it’s not very good’ [2]. Academic supervisors were often the first to suggest multilingual students should improve their pronunciation, because they could not understand them. Participants suggested many multilingual speakers may be unaware of their intelligibility in English, because they learnt and used English in their home country with speakers with the same accent in English. Kanchan suggested ‘they [multilingual speakers] don’t know also that they are having issues. They don’t know they don’t know how to pronounce’ [2]. Several participants indicated they were previously unaware that substituting or deleting one English sound could make a different word:

Before I come here to study, I just think by my own way, I think … people can understand for example, … [if] I say ‘play’, it means ‘place’ [Giang, 2].

Most participants appreciated being advised when they were not intelligible.

It depends on the way people make me aware of my different pronunciation. I sometimes feel emotionally sensitive when it sounds as if I am doing things wrong, if other people make fun of me when I pronounce a word slightly differently. Most friends find it cute and interesting. But I also experienced low forms of discrimination - that’s how it feels to me [1].

Multilingual speakers may not realise they have been misunderstood or may misinterpret their listeners’ reactions to their utterances. Lack of awareness may impact interactions with English speakers and may reduce the likelihood of self-referral to Intelligibility Enhancement intervention. Awareness of accent, as well as the ability to modify it can also affect intervention outcomes such as the development of social and linguistic strategies to practise and improve their speech (Moyer, 2007).
**Ineffective strategies**

Participants in Study 1 were asked what they do when someone has difficulty understanding their spoken English. Common responses reported included: say it with different words, repeat what they said, talk more slowly, and talk more loudly. Some participants reported using body language or gesture, trying to pronounce words more distinctly, or giving up on the interaction:

- Sometimes I would just say ‘never mind’ [1].
- Just do not talk and walk away [1].
- Some participants were aware of their reduced intelligibility in English and used ineffective compensation strategies. For example, Eulalia thought ‘if you speak fast, they will not realise the mistakes that you are doing’ [2]. Others used avoidance strategies that reduced their participation in everyday activities. Binh and Kanchan used strategies to avoid speaking on the phone, such as going into a bank rather than using telephone banking or emailing and paying bills online, because over the phone ‘there may be miscommunication’ [Kanchan, 2]. Other studies have similarly reported multilingual speakers report speaking on the phone is difficult (Blake & McLeod, 2019).

Multilingual university students may benefit from specific training in breakdown and repair strategies, such as turn-taking and clarifying, that may enhance listeners’ perceptions of their communication competence and their ability to participate in conversations with native English speakers (Blake & McLeod, in press).

**Language differences**

Some participants were aware that differences between their spoken home language and spoken English may influence their pronunciation and consequently, impact their intelligibility in English. Eulalia reported difficulties with pronunciation because spelling and pronunciation were more closely linked in her home language (Spanish) than in English. Chiara believed other multilingual speakers had less
difficulty pronouncing English, because they had the corresponding sounds in their home languages:

   Some countries … pronounce English well, because they already have the sounds in there [2].

Even a different variety of English may influence intelligibility in a different English-speaking country:

   Even though English is my first language in my country, I realised the differences in culture will affect the way we pronounce and phrase our words [1].

Understanding that variations in English pronunciation are due to features of home language and not because of personal deficit (American Speech-Language-Hearing Association, 2018), may alleviate multilingual speakers’ concerns about their abilities and facilitate learning metalinguistic skills.

   Lack of opportunity to practise English

Participants discussed their lack of opportunities to speak English prior to coming to Australia. Many multilingual speakers were taught English by a non-native English speaker in their home country with minimal focus on pronunciation (Blake & McLeod, 2019). Participants reported they were taught English by non-native speakers whose ‘pronunciation probably is not really correct’ [Feng, 2] or they reported they did not receive any training in spoken English, but ‘just learn from books’ [Binh, 2].

   Although participants were now living and studying in an English-speaking country, key commitments reduced the time they could allocate to improving their English intelligibility. Some felt Ph.D commitments should take priority while others reported the impact of domestic obligations where candidates ‘have to manage with their children after school time and they have prepare food and things for them and they do not have time to study English’ [Binh, 2]. Eulalia recognised that research and family commitments meant she had no time to socialise with anyone outside ‘the people in my office and people in the discipline doing research, a few of them international. This is a disadvantage for me, because my English has a roof’ [2]. Chiara commented
on the attitude of university staff that she believed restricted opportunities, because all international students were treated as if they were homogenous:

There is nothing like organised for them, thinking of them. I mean thinking they have family, thinking they are single, thinking they are with different interests [2].

Participants appeared to recognise improving intelligibility takes time, even if they were unable to dedicate time to that purpose. The English language proficiency of multilingual students has been a concern of Australian universities (Benzie, 2010; Birrell, 2006). Consequently, universities could support multilingual students by providing individualised opportunities that may promote enhanced English skills as well as allowing them time to commit to such activities.

**Attitudes of others**

Under the ICF, the attitudes of others including peers, the community, people in authority, and strangers are recognised as potentially affecting an individual’s behaviour and social life at all levels (Blake & McLeod, 2018; WHO, 2001). Some participants perceived Australians’ negative attitudes to their English communication similar to those described by ‘the monolingual mindset’ (Clyne, 2008, p. 348):

There is a negative perception in the Australian society that people who don't speak good English are not intelligent [1].

Hey, I learned your language and am able to speak multiple languages, and you don't appreciate my efforts [1].

Some local people are annoying and rude with non-English speakers. I rather to avoid them [1].

Consequently, some participants reported avoiding interacting with native English speakers in academic and social environments. Dinh was afraid his ‘pronunciation may cause some misunderstanding or their perceptions about foreign students are not very good at English, not good enough to communicate’ [2]. Participants avoided making friendships with Australians because of the difficulty they had being understood in English. It appeared that participants’ perceptions of the attitudes of others, whether
factual or not, impacted on their participation at the level of conversations, friendships, and academic engagement.

**Challenging conversation partners**

In Study 1, 16 of the 27 general comments participants made in relation to their communication, related to themes concerning perceptions of Australians’ negative attitudes to multilingual speakers, expectations that multilingual speakers were solely responsible for the success of communication interactions, and lack of awareness of differences between Australian English (e.g., pronunciation, slang, and vocabulary) and other varieties of English that multilingual speakers may be more familiar with (e.g., US and British English).

I often feel like Australians are not aware of the fact that they shorten a lot of words or are pronouncing them differently from other English accents [1].

Some participants felt Australians made challenging conversation partners, possibly due to their inexperience communicating with multilingual speakers. Kanchan felt ‘Australian people, they don’t understand my language, my accent’ [2]. Eulalia demonstrated the cognitive load required to communicate in another language with a native speaker who may have had difficulty modifying his communication style. A fellow bus passenger spoke to her and her son on the way home from university:

At some point I disconnected. So I said, I cannot understand this guy, so if I try to understand, I would be very, very tired so I, I put myself to the window and they were talking. Yes maybe it’s a mistake also but it’s, it’s tiring … I mean I am tired when I try to, to understand. In the end it’s like my brain is, it hurt [2].

Some participants found it difficult to speak to Australians in the general public; therefore, they preferred interacting with people at university, particularly multilingual speakers from different linguistic backgrounds, possibly because they spoke slowly and made an effort to understand and be understood:

I've noticed that it is easier to communicate with people in university as they are used to all the different accents [1].
Many Australians may be poor conversation partners because they are largely monolingual, with 72.7% of the population reporting they only speak English at home (ABS, 2017b). Therefore, many Australian listeners may not only be unaware of the complexity of communicating in an additional language, but may also be unsure of how to communicate with a multilingual conversation partner. Participants appeared to believe that their conversation partners were holding them responsible for the success of communication interactions (cf. Clyne, 2008), perhaps due to their lack of experience with multilingual speakers. Success in a communicative interaction depends on the skills of both conversation partners, rather than just the language proficiency of one (Rajadurai, 2007). Therefore, in order to shift this ‘monolingual mindset’, some responsibility must be assumed by native speakers when interacting with non-native speakers. For example, more proficient native speakers can facilitate understanding by using shorter, less syntactically complex utterances (Long, 1983). Furthermore, specific training in linguistic strategies can improve listener confidence to interact with multilingual speakers (Carlson & McHenry, 2006). SLPs can provide specific training for people working with multilingual students focusing on listening to accents as well as on conversation breakdown and repair strategies (Shah, 2012). Lack of support from native-speaking conversational partners may increase the multilingual speakers’ cognitive load to the extent that it limits their participation in conversations and reduces their likelihood of engaging in conversation with native speakers, which in turn reduces their ability to practice speaking in English and further compounds their participation restrictions.

**Facilitators of intelligibility in English**

An environment that is more facilitating may increase individuals’ performance and participation in major life areas (WHO, 2001). Three facilitators of multilingual
speakers’ intelligibility in English emerged from participants’ comments: support from others, useful strategies, and opportunities to practice.

**Support from others**

Support is classified in the ICF (WHO, 2001) as the amount of physical or emotional support and assistance provided to an individual at home or at work from friends, family, peers, and professionals. One participant described what the support required to facilitate communication meant to her:

> In multilingual communication, very often people communicate with hearts. That means showing respect to one another, feeling the warm and friendly relationship with one another, having interests in common and mutual understanding can contribute to fostering communication among people from different cultural backgrounds [1].

Some participants reported receiving support from friends who were willing to help them with their spoken English. For example, when Chiara told friends she was attending Intelligibility Enhancement sessions, they ‘started to tell me more about idiomatic sentences or how you say things’ [2].

**Support** as a facilitator of intelligibility, appears to be inversely related to lack of opportunity as a barrier. If multilingual speakers do not have support from friends, family, and the community, that in this context includes the university, they may not have the opportunity to participate in activities that may enhance their intelligibility. Universities should be mindful of an individual’s self-perception of their status in the learning environment (Evans & Liu, 2018) as well as their communication and participation needs and ensure support systems are available.

**Useful strategies**

Participants reported using a variety of strategies to support their intelligibility, some of which they learnt in Intelligibility Enhancement sessions:

> I try to speak slowly, sometimes self-correct what I am saying; sometimes repeat, use different words for the same things, use body language, etc. I observe listeners’ facial
expressions as signals about how well they understand what I am saying about in order to adapt my speaking [1].

Feng and Kanchan recognised the value of speaking slowly, to allow listeners more time to process what they had said and to allow themselves time to pronounce new sounds or new transitions between sounds as well as to self-monitor and correct unclear productions.

If I can speak slowly, and with some kind of consciousness, … I can correct myself, but if I speak too fast, … sometimes I will forget the pronunciation can be a bit different, and so awareness, if too fast, I will forget [Feng, 2].

Chiara reported using circumlocution when listeners did not understand her, Giang said she learnt to self-monitor and correct, and Eulalia discussed three strategies she used successfully to support her intelligibility when providing tutorials: direct appeals for help, confirmation checks, and written support such as writing terms on the whiteboard. All of the strategies participants reported using are effective problem-solving behaviours that can enhance perceptions of communication competence (Ellis, 1985). Training in these and other communication breakdown and repair strategies are included in Intelligibility Enhancement programs.

Opportunities to practice

Participants in both studies recognized the value of communication practise:

To me, the key to grasp the ability to communicate in English is building self-confidence through consistent practice [1].

Participants in Study 2 reported enjoying opportunities to participate in conversations with SLP students who were predominantly native English speakers and recognised the students were able to modify their language to facilitate communication. For example, Eulalia stated ‘I think they [SLP students] make an effort to speak slowly and to use a plain English’ [2]. SLP students may also benefit from opportunities to learn to effectively communicate with non-native speakers during their course. More time using English in conversations is associated with increased confidence and reduced difficulty
communicating in English (Blake & McLeod, 2019). However, study and family commitments, perceptions of the negative attitude of others, and lack of opportunity to practise, may restrict multilingual students’ opportunities to converse in English and impact on their ability to enhance their English intelligibility.

**Implications**

The findings of this study highlight three key messages essential to supporting multilingual university students aiming to enhance their intelligibility and increase their participation in English-dominant countries: (1) multilingual speakers may be unaware of their intelligibility in English and the factors that influence it, (2) multilingual speakers’ efforts to improve their intelligibility in English may be hindered by their perceptions of negative attitudes and inadequate conversation skills of their listeners, and (3) multilingual speakers require opportunities to practise their spoken English with supportive conversation partners in order to enhance their intelligibility.

SLPs can support multilingual speakers to reduce barriers and increase facilitators to their participation in society by improving their intelligibility in English. Universities could consider establishing intelligibility clinics such as the one described in Study 2 to support multilingual students’ spoken English communication. Programs such as Intelligibility Enhancement (Blake & McLeod, in press) can increase awareness of those features of an individual’s speech influencing their intelligibility. Perception and production training that also teaches metalinguistic skills, such as phonological and morphological awareness can highlight the consequences of substituting or deleting English sounds on intelligibility. Understanding how English sounds are pronounced may also facilitate improved comprehension and increased confidence communicating with native English speakers as well as speakers of different home languages when they are speaking in English. SLPs can also facilitate or advise multilingual speakers of opportunities to practise speaking in English. For example, some not-for-profit
organisations provide conversation groups for migrants or SLPs could ask multilingual speakers to perform generalisation tasks as part of intervention, such as making phone or in-person enquiries to business or service providers. SLPs have the skills to prepare the speaker for such tasks as well as to provide feedback after the activities.

Multilingual university students’ perceptions of the negative attitudes of English-speaking listeners not only affected participation in academic activities, but also in conversations and friendships. Negative perceptions may potentially stem from conversation partners’ inexperience communicating with multilingual speakers or from a ‘monolingual mindset’. Training in accent listening and conversation breakdown and repair strategies by an SLP at a multilingual speaker’s place of work or study can create a greater degree of cultural competence among colleagues (Shah, 2012). Conversation partner training may also reduce multilingual speakers’ cognitive load in interactions and facilitate increased conversations. However, if negative perceptions stem from the ‘monolingual mindset’, more systematic, society-wide remediation is required.

Seemingly, in Australia ‘if you learned your second language at school or at university - that’s clever and admirable. If your bilingualism comes from your heritage, we’d prefer to ignore it.’ (Adoniou, 2015, p. 1). Professionals working with multilingual speakers can promote the view that linguistic diversity is something to be celebrated by highlighting the value of multilingualism to our society and by being role models for tolerance as well as for effective communication.

**Strengths and limitations**

The nature of qualitative research is that the researcher cannot separate their own experience from the data, therefore it is important to acknowledge that experience at the outset (Creswell, 2018), as was done. Qualitative research is concerned with describing and understanding the multiple realities and individual differences that exist (Bryman, 2012). The results need not be generalizable, but should be credible, original, and useful.
Combining the results from two studies with different methodologies provided triangulation across multiple methods and participants to support credibility. Member checking completed both in situ and post-analysis also supported the credibility of the findings. Additionally, the first author’s prolonged participation in Intelligibility Enhancement with multilingual speakers and the other authors experience supporting multilingualism allowed for a high level of congruence between observations and concepts (Bryman, 2012). The analysis provided an original rendering of the data that focused on the environmental factors impacting intelligibility. Including barriers and facilitators portrayed the fullness of the data regarding multilingual speakers’ experiences of participating in an English-dominant country. Understanding motivations, barriers and facilitators to multilingual speakers’ intelligibility in English assists SLPs in building rapport with a client, gaining a thorough and useful case history, and designing an appropriate intervention program that considers an individual holistically.

The findings from this study have informed modifications to the Intelligibility Enhancement program. The case history has been updated to include questions relating to barriers and facilitators such as support available to the client. There is an increased emphasis on raising awareness of intelligibility through oral and written feedback, as well as on the facilitation of opportunities for conversation practise. The findings also provide evidence for clients new to Intelligibility Enhancement from voices similar to their own that may offer some reassurance relating to barriers and facilitators to enhancing their English intelligibility.

As is inherent in qualitative research, the data have been interpreted subjectively from the perception of the authors who undertook the analysis. The first author acknowledges the potential bias present in the data as a result of their previous relationship with the participants in Study 2 as their Intelligibility Enhancement SLP.
Cultures represented in the participant sample, such as the Chinese and Vietnamese cultures, highly value education and scholarship and confer high status on teachers (Chan & Chen, 1992), meaning participants may have been more inclined to provide answers that were desired by the interviewer, as opposed to presenting critiquing or challenging ideas. The first author explained the need for truthful reflections in qualitative research prior to the interviews. Participants appeared understanding given their own engagement in research; however, there is the possibility favourable responses may have been generated. Furthermore, the first author’s pre-existing knowledge and experience of barriers and facilitators related to intelligibility created the potential for bias in interpretation of the data. To address these potential biases and enhance the validity of the findings coding, discussion, and reflection upon the findings was undertaken among the three authors who each brought their own unique lens to the dataset. The study offers interpretations that multilingual speakers and those who support them can use to enhance their intelligibility and participation in everyday life. Future research could further investigate barriers and facilitators to multilingual speakers’ intelligibility using a quantitative method. Employing both qualitative and quantitative approaches may enhance the integrity of the findings (Creswell, 2018).

**Conclusion**

The findings from this study provide insight into the challenges faced by multilingual speakers attempting to participate in English-dominant societies. The results highlight the importance of supporting multilingual speakers’ efforts to improve their intelligibility in English by removing the barriers and increasing the facilitators to participation. An environment with barriers such as lack of opportunity to practise English and the negative attitudes of others may restrict an individuals’ performance and participation, while facilitators such as support from others and the use of communication repair strategies may increase participation. The motivations for
Intelligibility Enhancement reported by multilingual speakers in the tertiary sector indicate they recognise the value of intervention. This study will not only inform the understanding of SLPs engaged in Intelligibility Enhancement, but also other professionals working with multilingual speakers in order to increase their participation in language-dominant countries.

**Acknowledgements**

The authors wish to acknowledge The University of Newcastle Speech Pathology Program, especially Dr Sally Hewat for her foresight in establishing the Speech Intelligibility Clinic. We also acknowledge support from a University of Newcastle Teaching and Learning Project Grant in 2011 that facilitated establishing the on-campus clinic. Helen L. Blake acknowledges funding from an Australian Government Research Training Program Stipend Scholarship.
References


doi:10.1111/j.1747-7379.2006.00023.x

doi:10.1080/0729436970160302


doi:10.1558/sols.v2i3.347


Klapwijk, N., & Van der Walt, C. (2016). English-plus multilingualism as the new linguistic capital? Implications of university students’ attitudes towards


<table>
<thead>
<tr>
<th>Participant ID</th>
<th>Age</th>
<th>Gender</th>
<th>Home Language</th>
<th>Additional Languages</th>
<th>Program</th>
<th>Age Learnt English</th>
<th>Speaks English at Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>Binh</td>
<td>36</td>
<td>Female</td>
<td>Vietnamese</td>
<td>None</td>
<td>Science</td>
<td>16</td>
<td>No</td>
</tr>
<tr>
<td>Chiara</td>
<td>41</td>
<td>Female</td>
<td>Italian</td>
<td>French, Spanish</td>
<td>Psychology</td>
<td>8</td>
<td>Yes</td>
</tr>
<tr>
<td>Dinh</td>
<td>40</td>
<td>Male</td>
<td>Vietnamese</td>
<td>French</td>
<td>Education</td>
<td>12</td>
<td>Yes</td>
</tr>
<tr>
<td>Eulalia</td>
<td>41</td>
<td>Female</td>
<td>Spanish</td>
<td>Italian</td>
<td>Law</td>
<td>34</td>
<td>No</td>
</tr>
<tr>
<td>Feng</td>
<td>59</td>
<td>Male</td>
<td>Mandarin</td>
<td>None</td>
<td>Architecture</td>
<td>15</td>
<td>No</td>
</tr>
<tr>
<td>Giang</td>
<td>37</td>
<td>Female</td>
<td>Vietnamese</td>
<td>None</td>
<td>Management</td>
<td>12</td>
<td>No</td>
</tr>
<tr>
<td>Kanchan</td>
<td>42</td>
<td>Male</td>
<td>Bengali</td>
<td>None</td>
<td>Finance</td>
<td>8</td>
<td>No</td>
</tr>
</tbody>
</table>
Part Three

English Intelligibility Enhancement for Multilingual Speakers
Introduction to Part Three

Part Three (Chapters 7, 8, and 9) of this doctoral research focused on the topic of intelligibility and examined intelligibility enhancement, an intervention designed to improve the English intelligibility of multilingual speakers.

Chapter 7 presented an invited entry describing intelligibility enhancement for The SAGE Encyclopedia of Human Communication Sciences, a publication intended to be a non-technical reference for students new to the field of communication sciences and for educated general readers. The author guidelines specified entries should be jargon-free, explain concepts in an uncomplicated manner, and be suitable for an interdisciplinary readership. This intelligibility enhancement entry described the reasons multilingual speakers may seek support for their intelligibility in language(s) other than their home language and the variables that influence that intelligibility. Three terms relevant to the discussion of multilingual speech were defined; accent, intelligibility, and comprehensibility (these were also covered in Chapter 1). Intelligibility enhancement was defined and examples were provided of features of multilingual English speech that might be targeted in an intervention. Three supplementary resources were to be provided to give readers who wanted more information a starting point for research. As referencing and a bibliography were precluded, a reference list of sources that informed the writing of the entry were listed in this thesis following Paper 6.

Over the years a number of universities (e.g., in Australia and the US) have established intelligibility programs to enhance students’ and others’ intelligibility. These are undertaken separately from the English-language centres at each university and are typically located within speech-language pathology professional preparation programs specifically considering intelligibility as an additional area to general English-language learning. The papers presented in Chapters 8 and 9 interrogated one Australian university clinic that provided speech intelligibility enhancement to university staff and students who were multilingual speakers of English. Chapter 8 reported on a retrospective record review of 175 client records from the Speech Intelligibility Clinic in order to describe those multilingual speakers who sought support for their intelligibility in English. Chapter 9 reported on a multiple-baseline SCED with two multilingual university students in the Speech Intelligibility Clinic in order to determine the effectiveness of the Intelligibility Enhancement Assessment and Intervention Protocols (Blake, 2019a, 2019b).

SAGE has granted permission for this excerpt to appear in this PhD thesis.
Intelligibility enhancement describes intervention to improve the clarity of speech in multilingual speakers. Intelligible speech, as part of spoken language proficiency, is essential for successful verbal communication. Intelligibility is important for all people, ranging from typical speakers to children with speech sound disorders and people with dysarthria, dyspraxia, and dysphonia. Intelligibility is also necessary for effective communication in multilingual speakers when they are speaking a language other than their home language (e.g., Vietnamese speakers using English). Some multilingual speakers find that listeners have difficulty understanding them in their second (or third, fourth, or fifth) language because the sound system of their home language interferes with or transfers to their pronunciation in their other language. Most people learn new languages by focusing on vocabulary and grammar with minimal focus on learning the sounds (consonants, vowels, tones, prosody) of the new language, how they are made, and the difference between these sounds and those of the speaker’s home language.

Multilingual speakers may be motivated to seek intelligibility enhancement because they believe their intelligibility in their other language is negatively affecting their employment performance, educational advancement, or participation in everyday activities. Intelligibility enhancement may promote confidence when speaking their other language, increase understanding and participation in social and academic activities, improve employment prospects, and allow listeners to concentrate more on the speaker’s message than on the delivery.

Many variables influence a multilingual speaker’s intelligibility including age of learning the additional language, length of residence in the country speaking the language, formal instruction, motivation, language learning aptitude, and amount of home language use. Age of learning appears to be the most important predictor of degree of intelligibility; however, the relative importance of the other variables is uncertain. Therefore, even after years of language classes, multilingual speakers may often be far less proficient in spoken language than in grammar, vocabulary, and literacy. This is unfortunate, since verbal communication is often more critical to multilingual speakers achieving social, educational, and occupational goals.

Accent, Intelligibility, and Comprehensibility

Three interconnected terms are relevant to the discussion of the speech of multilingual speakers in a language other than their home language: accent, intelligibility, and comprehensibility. Accent is the distinctive manner of speech production influenced by a speaker’s home language or dialect. Therefore, everyone who speaks a language has an accent. For example, accented speech may differ from the standard pronunciation because of phonemic substitutions or variations in prosody (rate, stress, intonation), fluency, or voice quality.

Intelligibility in speech, language, and hearing contexts is a relative measure of how much of a speaker’s message is understood by a listener. Objective ratings of intelligibility are typically made by reviewing the listener’s transcriptions of a speech sample to derive a percentage of intelligible speech. Intelligibility in multilingual speakers is affected by attributes of the speaker (e.g., accent, nonverbal cues, communication breakdown, and repair strategies), attributes of the listener (e.g., experience, hearing), and the environment (e.g., background noise).

Comprehensibility is a listener’s perception of intelligibility based on the effort required to understand an utterance. Multilingual speakers’ utterances may require more time to process than native speech. Listeners’ perceptions of speakers’ communicative competence can be negatively affected by the amount of effort expended in understanding them. So although accented speech may be perceived as intelligible, it may be judged as less comprehensible because of an increased listener burden. Comprehensibility is therefore more subjective than intelligibility and potentially easier to manipulate. That is, aspects of the interaction most likely to increase listener burden can be readily adjusted. For example, the volume of the signal can be improved by speaking louder or by reducing background noise, which requires less effort than adjusting articulation of speech sounds.
Intelligibility Enhancement Intervention

Intervention to improve the speech of multilingual speakers is called intelligibility enhancement and has also been called accent modification, accent reduction, accent improvement, and pronunciation training. Historically, there has been a debate in the literature over whether the goal for such intervention should be native-like pronunciation or intelligible speech that may still contain differences due to a home language accent. The goal of intelligibility enhancement adheres to the principle of intelligible speech. It is not to teach the speaker a new accent, as adult language learners rarely achieve native-like pronunciation. The goal is for multilingual speakers to learn to modify their speech in their other language to facilitate effective, intelligible communication. Intervention involves providing speakers with an awareness of the differences between their speech and that of a native speaker as well as providing practice and feedback. Various techniques and materials exist for enhancing intelligibility. These include self-help manuals, computerized resources, and structured programs facilitated by professionals such as speech-language pathologists, language teachers, linguists, and elocution, acting, or voice coaches.

Intelligibility Enhancement for English Language Learners

The difficulties that multilingual speakers have pronouncing English phonemes may depend on whether these sounds exist in their home language. For example, speakers of some Chinese dialects typically have difficulty producing the English consonants /l/ and /l/, and many multilingual speakers have difficulty producing /u/ and /o/, as these sounds are not present in their home language. Substitutions are generally systematic changes rather than random errors. Multilingual speakers typically replace sounds they do not have in their home languages with the closest sounds they can produce; however, these sounds may differ in voicing (whether the vocal folds are vibrating) or place or manner of articulation. For example, speakers may replace /n/ in thin with /d/ to say din, or they may replace /t/ in this with /d/ to say dis. In English, final consonants in words often indicate tense or plurality; however, some languages such as Vietnamese have a limited number of consonants that can occur at the end of a word. If a Vietnamese speaker has difficulty producing /d/, /s/, or /z/ at the end of a word (e.g., pronouncing play instead of played), listeners may perceive that speaker to have inferior English grammar skills.

Vowels that do not occur in a speaker’s home language may be more difficult to learn than consonants because their formation is less visible. Diphthongs (vowels where there is a change in quality within the syllable, e.g., as in eye, air, and our) can also be particularly challenging for multilingual speakers. Any English phonemes (consonants, vowels, or diphthongs) that do not exist in the speaker’s home language or are not used in the same word positions as in English may therefore be targeted in intelligibility enhancement.

Features of prosody such as stress, speech rate, pitch, intonation, and loudness may also be targeted in intelligibility enhancement. Transferring prosodic features from their home languages can negatively impact multilingual speakers’ intelligibility, if they differ from English patterns. Stress is used in English to emphasize a particular syllable or word in order to convey the vital part of a message. This feature contrasts in English, that is, it creates different meanings. For example, ‘PERmit’ is a noun, while per-MIT is a verb. Therefore, incorrect use of stress in English can contribute to poor intelligibility. The combination of phonemic substitutions and prosodic features, such as a fast speech rate, can exacerbate poor intelligibility. Teaching speakers to speak more slowly will not only give them more time to place their lips, teeth, and tongue in position to form the English sounds, but it will also give the listener enough time to process what was said.

See also Accent Modification; Comprehensibility; Intelligibility; Multilingualism; Oral Language; Phoneme

Helen L. Blake & Sharynne McLeod
http://dx.doi.org/10.4135/9781483380810.n310
10.4135/9781483380810.n310

Page 3 of 4
Further Readings


Additional sources that informed the writing of Paper 6


Chapter 8: Paper 7


This article was published by Elsevier in the Journal of Communication Disorders, available online 21 December 2018 from: https://www.sciencedirect.com/science/article/pii/S0021992418301114

Elsevier has granted permission for this published journal article to appear in this PhD thesis.
Speech-language pathologists’ support for multilingual speakers’ English intelligibility and participation informed by the ICF

Helen L. Blake*, Sharynne McLeod

*Charles Sturt University, Bathurst, Australia
The University of Newcastle, Australia

ARTICLE INFO

Keywords:
Multilingual
Participation
English proficiency
Accent modification
Intelligibility enhancement
Retrospective record review

ABSTRACT

Purpose: To use the ICF to classify characteristics and aspirations of multilingual university students and faculty who seek speech-language pathologists’ support for intelligibility in English and to identify activities, facilitators, and barriers that impact participation in society.

Method: A retrospective record review was conducted on files of 175 clients attending a university clinic for intelligibility enhancement (accent modification). Participants came from 35 countries and spoke 28 different home languages.

Results: Assessment and intervention for intelligibility enhancement involved consideration of ICF components of Body Functions and Structures (e.g., articulating phonemes, rate, prosody), Environmental Factors (e.g., support), and Personal Factors (e.g., motivation). Consonant substitutions and deletions were common, although participants were often unaware of these. For example, only 25.5% of participants reported English dental fricatives (/θ/ and /ð/) were difficult to pronounce; however, 94.9% substituted them with other phonemes such as [l] and [d]. The combination of substitutions/deletions, fast speech rate, low speaking volume, and differences in word stress exacerbated poor intelligibility. More time convening in English was associated with greater confidence and less difficulty communicating in English, although more time knowing English was not. Difficult communication situations were reported to be converging over the phone, talking to strangers, and communicating in English on professional field-work placements. Participants were motivated to seek intelligibility enhancement for academic, employment, and social reasons.

Conclusions: To ensure multilingual speakers are able to participate fully in society, intelligibility enhancement requires a multi-pronged approach where speech and environmental characteristics interweave.

1. Introduction

Spoken English proficiency impacts multilingual speakers’ ability to participate in major life areas, such as education, employment, and access to health services (Blake, Bennetts Kneebone, & McLeod, 2017; Blake, McLeod, Verdon, & Fuller, 2018a; Chin, Kang, Kim, Martinez, & Eckholdt, 2006; Chiswick, Lee, & Miller, 2006; Shi, Lebrun, & Tsai, 2009). Speech-language pathologists (SLPs) can play a role in supporting spoken English proficiency through enhancing the intelligibility of multilingual speakers who seek their support. Such intervention has been called accent modification, accent improvement, accent reduction, pronunciation training (Fritz & Sikorski, 2013), and as used in this paper, intelligibility enhancement (Blake & McLeod, 2018b, in press). Successful intervention

*Corresponding author at: Graduate School of Health, University of Technology, PO Box 123, Broadway 2007, Australia.
E-mail address: Helen.Blake@uts.edu.au (H.L. Blake).

https://doi.org/10.1016/j.jcomdis.2018.12.003
Received 23 May 2018; Received in revised form 4 December 2018; Accepted 18 December 2018
Available online 21 December 2018
0201-9924/ © 2018 Elsevier Inc. All rights reserved.
requires an understanding of multilingual speakers’ communicative needs and motivation for seeking intervention (Behrmann & Neel, 2016), as well as the impact of linguistic factors that affect their intelligibility in English.

Linguistic diversity in English-speaking countries such as the US, Canada, and Australia is increasing. In the US in 2013, 21% of the population spoke a language other than English at home, an increase of 2.2 million from 2010 (Camarota & Zeigler, 2014). In Canada in 2016, 22% of the population reported using an immigrant mother tongue, an increase of 13.3% from 2011 (Statistics Canada, 2017). In Australia in 2016, 22.2% of the population spoke a language other than English at home, an increase from 20.3% in 2011 (Australian Bureau of Statistics, 2017). However, of those in the US who spoke a language other than English at home, 41% (25.1 million speakers) reported speaking English more than very well (Camarota & Zeigler, 2014). Similarly, of those in Australia, 44% (2,158,374) reported low proficiency in spoken English (Australian Bureau of Statistics, 2018).

Multilingual speakers with poor spoken English proficiency may find that listeners have difficulty understanding them because the sound system of their home language interferes with or transforms their pronunciation of English. Foreign language learning has traditionally focused on grammar and vocabulary with minimal focus on the articulation of phonemes (vowels and consonants) or prosody (intonation, stress, and rate) and the difference between English sounds and those in the speaker’s home language (Levis, 2005; Munro & Derwing, 2015; Sikorski, 2005). Perception (identification and discrimination) of English is also often overlooked in foreign language instruction. As a result, some multilingual speakers report they are unaware of differences between their speech and a native English speaker’s speech and unaware of their decreased intelligibility in English until they receive feedback from a native English speaker (Blako, Verdon, & McLeod, 2018). While there has been extensive research about pronunciation training in second language acquisition (see Levis, 2005; Munro & Derwing, 2015; Troschimovitch & Baker, 2006), some language teachers are reluctant to teach pronunciation due to concerns about loss of identity related to accent, paucity of empirical evidence, and lack of guidance on this aspect of language learning (Couper, 2006; McCarkin & Link, 2016; Moyer, 2007). Consequently, multilingual speakers who have spent years studying English, may find they are not so proficient in pronunciation than in grammar, vocabulary, and literacy.

Accented speech may vary from the standard pronunciation due to phonemic substitutions (e.g., because phonemes may not exist in the home language or due to confusion based on spelling) and deletions (e.g., because the home language may have limited consonants that occur in certain word positions), or variations in prosody (e.g., rate, stress, intonation) or voice quality (e.g., pitch, voice quality, nasality) (Munro & Derwing, 2015). The phonetic structure of a speaker’s home language (syllabic structure constraints of consonant and vowels possible) may also influence a multilingual speaker’s perception and production of English (Ellis, 2008). Factors that influence a multilingual speaker’s accent include: age of learning the target language (Long, 1990), formal instruction (Moyer, 1999), amount of target language compared to home language use (Pfege, Yeni-Komshian, & Liu, 1999), differences between the target language and the home language (Ellis, 2008), motivation (Moyer, 2007), length of residence in the country speaking the target language (Pfege & Fletcher, 1992), and language learning aptitude (Pfege et al., 1999). Age of learning appears to be the best predictor of accent; however, the relative importance of the other variables is uncertain (Jakes, Mackay, & Pfege, 2001). Length of residence is not an effective predictor, because it does not explain the quality of interactions in English (Moyer, 2007).

Differences in multilingual speakers’ pronunciation (perceived as an accent) are influenced by the speaker’s home language or dialect and therefore, do not reflect a disorder (American Speech-Language-Hearing Association, 2011a; Sikorski, 2005). Identifying accent differences as disorder may result in unnecessary restrictions on an individual’s participation in communicative activities (Farrugia-Bernard, 2018). Regardless of the strength of an accent, it may not necessarily interfere with intelligibility (Derwing & Munro, 1997; Munro & Derwing, 1998). SLPs are generally familiar with the term intelligibility due to significant research on speech intelligibility in other contexts of speech-language pathology (Fritz & Sikorski, 2013) such as apraxia of speech, dysarthria, and speech sound disorders. However, intelligibility in multilingual speakers is the result of a difference rather than a disorder and may be affected by speaker attributes (e.g., accent, communication repair strategies), listener attributes (e.g., attitudes to and experience communicating with multilingual speakers), and the environment (e.g., context, background noise) (Kent, Miolo, & Bloedel, 1994; Miller, 2015; Rajadurai, 2007).

1.1. Speech-language pathology intervention

Multilingual speakers may request SLPs’ support to improve their intelligibility when they are speaking in English because they believe that others have difficulty understanding them, concentrate more on their accent than their message, or have negative attitudes towards a speaker with an accent (American Speech-Language-Hearing Association, 2013a). Historically, there has been controversy around this form of intervention with debate over whether the goal should be native-like pronunciation or intelligible speech. Choosing between these two goals may depend on the context of English use; whether for use as a lingua franca in international communication or to facilitate participation in an English-dominant country (Jenkins, 2004). There has also been resistance to SLPs working in accent modification (Jenkins, 2004; Müller & Guendouzi, 2007). SLPs, as specialists in speech and behaviour change have skills to improve multilingual speakers’ communicative ability in English (Sikorski, 2005) and there is an emerging body of research to support clinicians (see Behrmann, 2017; Franklin & McDaniel, 2016; Fritz & Sikorski, 2013; Khorana & Haug, 2013; Kim, Kang, Pirruccello, Kweon, & Oh, 2017; Lee & Sanchirian, 2013; Oeleke et al., 2015). Nevertheless, there is no consensus regarding assessment or intervention protocols, such as factors to be considered in assessment or for establishing goals for intervention.

1.2. The International Classification of Functioning, Disability and Health

The International Classification of Functioning, Disability and Health (ICF) (World Health Organization, WHO, 2001) provides a conceptual framework that can inform assessment and intervention for multilingual speakers seeking to enhance their intelligibility.
in English. The ICF was developed by WHO to provide a common language to be used by everyone connected with an individual’s health, education and wellbeing to discuss issues with body structures and their functions and any restrictions these may place on an individual’s ability to participate in activities (WHO, 2001). It was designed as a framework for research, social policy, and educational and clinical use to enhance and support the participation of an individual, recognising that people are not homogenous (WHO, 2001).

The ICF contains two parts; Functioning and Disability and Contextual Factors. Each part contains two components. Functioning and Disability contains the components of Body Functions and Body Structures, and Activities and Participation. Body Functions and Body Structures describe the physiological functions of body systems and their anatomical parts (e.g., the reception and expression of spoken language, producing speech sounds). Activities and Participation describe the execution of tasks and the individual’s involvement in life situations (e.g., being able to catch a bus, rent accommodation, undertake activities for daily living such as shopping for food and clothing, engaging in curriculum activities required for employment, going to the theatre, playing sport). Contextual Factors contains the components of Environmental Factors and Personal Factors that may act as barriers or facilitators to participation or as both. Environmental Factors describe the physical, social, and attitudinal environment in which people conduct their lives (e.g., the services which provide benefits, structured programs, and operations to meet the needs of an individual). Personal Factors describe the features of an individual that are not part of their health state (e.g., sex, age, education, race) but that may influence intervention outcomes (WHO, 2001). An individual’s functioning may involve the interaction between all components and can be classified by the use of codes to create a profile. Each component (e.g., Activities and Participation) contains various domains (e.g., Communication), and each domain contains categories (e.g., Conversation) that are the units of classification. For example, the category code for Conversation is d350.

The ICF provides a structured way to consider potential activities, barriers, and facilitators to multilingual speakers’ intelligibility in English (Blake & McLeod, 2018a). SLPs may traditionally have focused at the level of Body Functions and Body Structures (e.g., speech sounds, rate, prosody); however, consideration of the ICF has encouraged clinicians to look at an individual holistically (Threats & Worrall, 2004). The ICF can be used to readily document most of what SLPs already do to improve an individual’s communicative functioning. For example, psychosocial questions from a case history can provide information on the consequences of the individual’s functioning in relation to Environmental barriers, Activity limitations, and restrictions on Participation, while speech-language pathology assessment can provide details of Body Functions and Body Structures (American Speech-Language-Hearing Association, 2018b).

1.3. Context of the current study

A number of speech-language pathology programs in universities throughout the world have established intelligibility programs to enhance the intelligibility of university faculty, students, and others. These intelligibility clinics are undertaken separately from English-language centres at universities and are typically located within speech-language pathology professional preparation programs (see Schmidt & Sullivan, 2003) and typically specifically consider intelligibility as an additional area to general English-language learning. Within intelligibility clinics, intervention programs are provided by qualified SLPs in conjunction with student SLPs. The University of Newcastle Speech Intelligibility Clinic provides intelligibility enhancement services to multilingual faculty and students of the university. The services include an assessment to evaluate intelligibility in reading and conversation to determine suitability for intervention and if required, intelligibility programs focusing on speech sounds and prosody for a maximum of 12 h either in individual or group sessions, face-to-face, or via an internet video service.

1.4. Purpose

This paper used a retrospective record review to investigate the files of multilingual speakers who attended The University of Newcastle Speech Intelligibility Clinic. A retrospective record review is a method of using large samples to investigate complex issues around clients, intervention, and any related variables in order to improve understanding of barriers and facilitators to provision of service (Wilkinson, 2016). The ICF was used as a conceptual framework to investigate the range of potential factors that may influence multilingual speakers’ intelligibility in English. Specifically, the aims of the paper were:

1. Describe the Personal Factors of multilingual speakers who attended the clinic for intelligibility enhancement (e.g., sex and age).
2. Describe those aspects of Body Functions and Body Structures assessed as impacting on their intelligibility in English (e.g., speech sounds, rate, and intensity).
3. Describe participants’ self-reported aspirations for Activities and Participation.
4. Identify Environmental Factors that may act as facilitators and/or barriers to multilingual speakers’ ability to participate fully in society.

2. Method

2.1. Participants

A retrospective record review was conducted on files for all clients who attended The University of Newcastle Speech Intelligibility Clinic in Australia from January 2011 to August 2016 for intelligibility enhancement assessment and intervention.
Table 1
Assessment protocol.

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Variables measured</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case history questionnaire</td>
<td>Year of intervention</td>
</tr>
<tr>
<td></td>
<td>Age</td>
</tr>
<tr>
<td></td>
<td>Sex</td>
</tr>
<tr>
<td></td>
<td>Home language</td>
</tr>
<tr>
<td></td>
<td>Country of birth</td>
</tr>
<tr>
<td></td>
<td>Speaks English at home</td>
</tr>
<tr>
<td></td>
<td>Speaks additional languages</td>
</tr>
<tr>
<td></td>
<td>Number of additional languages spoken</td>
</tr>
<tr>
<td></td>
<td>Age began studying English</td>
</tr>
<tr>
<td></td>
<td>How learnt English (e.g., taught by native speakers)</td>
</tr>
<tr>
<td></td>
<td>Problems learning home language</td>
</tr>
<tr>
<td></td>
<td>Years used English in conversations</td>
</tr>
<tr>
<td></td>
<td>Hearing difficulties</td>
</tr>
<tr>
<td></td>
<td>Academic role (student or faculty)</td>
</tr>
<tr>
<td></td>
<td>Field of study</td>
</tr>
<tr>
<td></td>
<td>Retired by</td>
</tr>
<tr>
<td></td>
<td>Difficult communication situations</td>
</tr>
<tr>
<td></td>
<td>Difficult sounds</td>
</tr>
<tr>
<td></td>
<td>Motivation for seeking intelligibility enhancement</td>
</tr>
<tr>
<td></td>
<td>Confidence communicating in English (5-point Likert scale)</td>
</tr>
<tr>
<td></td>
<td>Difficulty communicating in English (5-point Likert scale)</td>
</tr>
<tr>
<td></td>
<td>Assessed vision or hearing</td>
</tr>
<tr>
<td></td>
<td>Facial symmetry and sensation</td>
</tr>
<tr>
<td></td>
<td>Tongue strength, range of movement, coordination</td>
</tr>
<tr>
<td></td>
<td>Dentition</td>
</tr>
<tr>
<td></td>
<td>Mandible range of movement</td>
</tr>
<tr>
<td></td>
<td>Lip seal and alternate movements</td>
</tr>
<tr>
<td></td>
<td>Palate</td>
</tr>
<tr>
<td>Omo-motor assessment (OMA) proforma</td>
<td>Production of Australian English vowels and diphthongs in sentences</td>
</tr>
<tr>
<td></td>
<td>Production of consonants and consonant clusters in sentences</td>
</tr>
<tr>
<td></td>
<td>Sex in multisyllabic words</td>
</tr>
<tr>
<td>ClearSpeak Adult Pronunciation Test (CAP Test)</td>
<td>Perceptual voice quality (e.g., howse, glottal fry) in monologue</td>
</tr>
<tr>
<td></td>
<td>Speech rate (in syllables per minute) in reading and a monologue</td>
</tr>
<tr>
<td>Voice measures taken during CAP Test</td>
<td>Speech intensity (in decibels) in reading and a monologue</td>
</tr>
<tr>
<td></td>
<td>Fluency (e.g., stuttering)</td>
</tr>
</tbody>
</table>

*Kimble-Fry, 2009.*

sessions. Clinic data were collected for 176 multilingual speakers; however, one file was excluded from the study due to lack of consent for inclusion in research, so there were 175 participants in the study.

2.2. Ethical approval

Ethical approval was obtained from The University of Newcastle Human Ethics Committee (approval number H-2016-0096) and Charles Sturt University Human Ethics Committee (protocol number 2016/039).

2.3. Procedure

Data for this study were extracted by the first author from client files of The University of Newcastle Speech Intelligibility Clinic containing case history questionnaires, oro-musculature assessments results, and assessment analysis and reports. Assessment and intervention sessions were provided by student SLPs under the supervision of a qualified SLP. For 85.1% of participants, the qualified SLP was one clinician; the first author. This consistency of supervision as well as the use of templates/proformas contributed to assessment fidelity. The majority of participants underwent the standard assessment protocol (See Table 1) used in the clinic during the period of this review; however, some minor modifications were made during the period under review. Assessments of speech rate, speech intensity, and oro-musculature were added to the protocol after it became evident that these factors were impacting some multilingual clients’ English intelligibility. As a result, the number of valid cases in the results may vary.

2.4. Instruments

2.4.1. Case history

A case history questionnaire at initial assessment documented participant demographic data, home language acquisition and hearing history, and English experience (time studying and using English in conversations, difficult English sounds, difficult situations communicating in English, motivations for seeking intelligibility enhancement). An example question from the case history was:
“When you were a child, did you have any problems learning/speaking your first language?” Participants were asked to rate their level of difficulty communicating in English on a 5-point single item Likert scale: extreme (5), significant (4), moderate (3), some (2) or slight difficulty communicating (1). They were also asked to rate their confidence communicating in English on a similar 5-point single item Likert scale: extremely (5), confident (4), moderately (3), slightly (2) or not confident communicating (1).

2.4.2. The ClearSpeak Adult Pronunciation Test
The ClearSpeak Adult Pronunciation Test (CAP Test) (Kimble-Fry, 2009) was administered to participants to identify non-standard Australian English productions. The CAP Test consists of five subtests assessing vowels, consonants and prosodic features (2009). For example, the following sentence was used to check production of the vowel /æ/: “The new teacher will speak at our meeting next week” (Kimble-Fry, 2009). Stress was assessed in syllableable words (e.g., DELI-cate) and a percentage correct in the word stress subtest was calculated. Four subtests were reading tasks and one was a spontaneous monologue. The CAP Test is intended to be used to create a summary analysis and training plan and does not have established reliability or validity.

2.4.3. Vocal function assessment
Speech rate during a reading and a monologue was measured in syllables per minute (spm) using a speech rating instrument (Synergistic Electronics True-Talk Professional) and intensity (volume) was measured in decibels (dB) using a sound level meter (Digitech QM-1589). The mouth-to-microphone distance was approximately 30 cm. Participants’ speech rate and intensity were compared with norms for adult Australian English speakers. A mean speech rate for males is 236.6 smp (SD = 20.6) in conversation and 229.5 smp (SD = 29.5) in reading and for females is 239.6 smp (SD = 21.2) in conversation and 231.4 smp (SD = 25.5) in reading (Black & Killen, 1996). A mean speech intensity for males is 71.9 dB (range: 60.2-80.8 dB, SD = 2.3) and for females is 69.8 dB (range: 59.4-79.2 dB, SD = 2.8) (Sanchez, Oates, Dacakis, & Holmberg, 2014). These measures, along with a perceptual judgement of voice (see Oates & Russell, 1997) were taken during administration of the CAP Test.

2.4.4. Oro-musculature assessment
An oro-musculature assessment (OMA) focusing on the structure and function of the mouth including lips, teeth, tongue, and palate was conducted to determine the potential impact of articulator functioning on the effectiveness of oral communication.

2.5. Reliability
Reliability of data extracted from client files was confirmed on 10.3% of the sample of 175 files (18 files) by an independent SLP blinded to all other aspects of the study. The reliability rater compared data from the 18 files with a spreadsheet where rows represented participants and columns described 71 variables analysed such as age, home language, speech rate in reading, produced /d/ intelligibly, produced /t/ intelligibly, etc. Inter-judge reliability was 99.6% on 1278 data points. intra-judge reliability of the primary coder was assessed seven months after the initial data extraction and was 99.5% on 1278 data points.

2.6. Data analysis
Data analysis was undertaken using IBM SPSS Statistics Version 24.0 (IBM, 2016). To facilitate analysis, age was grouped into four bins (under 25 years, 26-33 years, 34-40 years, and above 41 years), and home languages were grouped into nine broad groups according to the Australian Standard Classification of Languages (Australian Bureau of Statistics, 2016) (See Table 2). Data were tested for normality through Kolmogorov-Smirnov and Shapiro-Wilk tests. As the data were not normally distributed, the following non-parametric tests were used to explore relationships between variables: Mann Whitney-U test, Kruskal-Wallis test, Chi-square test for independence, and Spearman rho. A derived variable, years known English was created by subtracting the variable age learnt English from age. When participants selected half points on Likert scales, the result was rounded down to be conservative. Home languages

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Participants’ home languages.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
</tr>
<tr>
<td>Eastern Asian</td>
<td>68</td>
</tr>
<tr>
<td>Southeast Asian</td>
<td>32</td>
</tr>
<tr>
<td>Southwestern and Central Asian</td>
<td>25</td>
</tr>
<tr>
<td>Southern Asian</td>
<td>25</td>
</tr>
<tr>
<td>Southern European</td>
<td>16</td>
</tr>
<tr>
<td>Other</td>
<td>6</td>
</tr>
<tr>
<td>Northern European</td>
<td>2</td>
</tr>
<tr>
<td>Eastern European</td>
<td>1</td>
</tr>
<tr>
<td>Australian Indigenous</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>175</td>
</tr>
</tbody>
</table>

a Australian Standard Classification of Languages (Australian Bureau of Statistics, 2016).

b Home languages reported as Cantonese, Chinese, Hokkien or Mandarin were coded as Chinese as specific dialects were frequently not provided.

b World Englishes including Malaysian English and Singaporean English.
reported as Cantonese, Chinese, Hokkien or Mandarin, were coded as Chinese as specific dialects were frequently not provided. Participants who reported their home language as English reported they were speakers of World Englishes including Malaysian English and Singaporean English.

Participants’ open-ended responses to the following three questions from the case history were collated: “In what situations do you have most difficulty speaking English clearly?”, “Are there any particular English sounds, words, or other aspects of English pronunciation that you find difficult?”, and “Why do you want to improve your English speech?” Similar responses are reported quantitatively by theme, while some direct quotes are included in the text. Variables were classified according to the components of the ICF; however, the results by component are reported in an order to replicate typical SLP client reporting: Personal Factors, Body Functions and Body Structures, Activities and Participation, and Environmental Factors.

3. Results

3.1. Personal Factors

The 175 participants were aged between 19 and 84 years (M = 32.82 years; SD = 7.63) with 48.6% being male (n = 85) and 51.4% female (n = 90). Participants came from 35 different countries. The top five countries of birth were China (n = 40, 22.9%), Iran (n = 21, 12.0%), Bangladesh (n = 19, 10.9%), Vietnam (n = 18, 10.3%), and Malaysia (n = 12, 6.9%). The majority of participants were university students (n = 164, 93.7%) and faculty (n = 5, 2.9%), with PhD candidates accounting for almost half of the caseload (n = 81, 46.3%). The remaining participants (n = 6, 3.4%) came from outside the university and were doctors, a pharmacist, an SLP, and a wife of a former client of the clinic. The top five areas of study/employment were engineering (n = 44, 25.1%), allied health (n = 35, 20.0%), finance (n = 24, 13.7%), health (n = 19, 10.9%), and human resources (n = 13, 7.4%).

3.2. Body Functions and Structures

3.2.1. Mental functions of language

Participants spoke 28 different home languages. The five most common home languages were Chinese (n = 56, 32.0%), Persian (n = 21, 12.0%), Bengali (n = 19, 10.9%), Vietnamese (n = 18, 10.3%), and Korean (n = 10, 5.7%) (see Table 2). Only 5.7% (n = 10) of participants reported problems learning their home language, such as difficulty producing specific sounds and fluency disorders.

Participants were asked if they spoke additional languages to their home language and English and 19.4% (n = 34) reported speaking a third language, 5.7% (n = 10) a fourth language, and 1.7% (n = 3) spoke a fifth language. A Chi-square test for independence revealed significant differences in the number of languages spoken by participants across the top five language groups ($\chi^2 (4, n = 166) = 15.90, p < .01, V = .31$) with 62.5% (n = 10) of speakers of Southern European languages speaking three or more languages, compared to 32.0% (n = 8) of Southern Asian, 24.0% (n = 6) of Southwest and Central Asian, 20.6% (n = 14) of Eastern Asian, and 12.5% (n = 4) of speakers of Southeast Asian languages.

Most participants reported first learning English at the commencement of high/middle school (M = 10.45 years of age; SD = 5.1) and therefore, had known English for some time (M = 22.37 years; SD = 7.94). Kruskal-Wallis tests revealed a significant difference across home language groups in the number of years participants had known English (H(7) = 27.76, p < .01, $\eta^2 = 0.16$) with speakers of other languages (e.g., Amharic) reporting the most time studying English (Md = 30) ahead of speakers of Southern Asian (Md = 25), Northern European (Md = 24.5), Eastern European (Md = 24), Southwest and Central Asian (Md = 23), Southern European (Md = 20.5), Eastern Asian (Md = 20), and Southeast Asian languages (Md = 19). The majority of participants were taught English by a non-native English speaker at school (n = 143, 81.7%) or university (n = 4, 2.3%) and some reported minimal focus on English speech sounds or prosody. Some participants (n = 13, 7.4%) were taught by native English speakers who spoke Standard American English, British English, Singaporean English, or Malay English.

3.2.2. Hearing functions

Only 1.7% (n = 3) of participants reported hearing difficulties that included untested mild losses and a bilateral severe loss (assisted with hearing aids).

3.2.3. Voice functions

Speech intensity in decibels (dB) was measured during reading and a monologue for 135 participants. Intensity in reading ranged from a minimum of 38 dB to a maximum of 85 dB (M = 62.68, mode = 65, SD = 7.34). When compared with norms for adult Australia English speakers (males: 60.2-80.8 dB; females: 59.4-79.2 dB), the reading intensity of 29.4% of males (n = 20) and 28.4% of females (n = 19) were below the normal range and one male was above the range at 85 dB. Intensity during a monologue ranged from a minimum of 34 dB to a maximum of 80 dB (M = 62.16, mode = 65, SD = 7.54). When compared with norms for adult Australia English speakers, the speech intensity in monologue of 30.1% of males (n = 21) and 31.0% of females (n = 21) were below the normal range. Mann-Whitney U tests a revealed significant different between male (Md = 65, n = 68) and female (Md = 62, n = 67) speech intensity in reading ($U = 1686.0, z = -2.67, p = .01, r = .23$) as well as a significant difference between male (Md = 65, n = 68) and female (Md = 61, n = 67) speech intensity in a monologue ($U = 1549.0, z = -3.28, p < .01, r = .28$) with females speaking with a lower volume than males. There was no significant difference between home language groups in intensity in reading ($H(7) = 9.69, p = .22$) or monologue ($H(7) = 10.60, p = .14$). Some participants presented with differences in vocal tone.
and quality that were judged by the SLP as monotone (n = 10, 5.7%), low pitch (n = 2, 1.1%), nasal (n = 2, 1.1%), and glottal fricative (n = 1, 0.6%).

3.2.4. Articulation functions

Clinical testing revealed substitutions and deletions of English phonemes that may reduce intelligibility. For example, 96.0% of participants (n = 166) deleted final consonants in words. The majority of the 175 participants (n = 166, 94.9%) did not produce English dental fricatives (/θ/ and /ð/). See Table 3 for the results relating to all phonemes assessed.

Some participants were able to identify English sounds they found difficult to pronounce. Of the 133 participants with a valid response to this question, 34 (25.6%) reported the dental fricatives (/θ/ and /ð/) and 19 (14.3%) reported /l/; however, 21 (15.8%) did not identify any difficulties (see Table 3). Chi-square tests for independence investigated the association between difficult English sounds identified and area of study, home language, age, sex, and number of languages spoken. The only significant association between these variables was between the number of languages spoken and participants who identified the dental fricatives as difficult sounds (χ²(1, n = 133) = 3.70, p = .0566 = .05, V = .19) with 20.6% (n = 20) of speakers of two languages and 32.9% (n = 14) of speakers of three or more languages reporting these English sounds as difficult. Two participants commented on the difference between English pronunciation and spelling.

3.2.5. Fluency and rhythm of speech functions

Speech rate in reading and a monologue was measured in syllables per minute (spm) for 147 participants. Reading rate ranged from a minimum of 120 smp to a maximum of 285 smp (M = 209.02, mode = 250, SD = 39.14). When compared with norms for adult Australian English speakers (males: 229.5 smp; females 231.4 smp), 32.4% of males (n = 24) and 31.5% females (n = 23) were above the mean speech rate in reading; however, 16.2% of males (n = 12) and 15.1% females (n = 11) had a speech rate in reading of less than 170 smp. Speech rate in a monologue ranged from a minimum of 110 smp to a maximum of 280 smp (M = 211.7, mode = 180, SD = 38.1). When compared with norms for adult Australian English speakers (males: 236.6 smp; females 239.6 smp), 29.7% of males (n = 22) and 32.8% females (n = 24) were above the mean speech rate in the monologue; however, 17.6% of males (n = 13) and 12.3% females (n = 9) had a speech rate the monologue of less than 170 smp.

Kruskal-Wallis tests revealed no significant differences across home language groups for speech rate in reading (H(7) = 9.69, p = .21) or monologue (H(7) = 10.60, p = .16). Mann-Whitney U tests did not find a significant difference by sex in speech rate in reading (U = 2516.0, z = −0.23, p = .87) or monologue (U = 2377.0, z = −1.26, p = .21). Some participants presented with fluency differences including appropriately placed inspirations (e.g., breathing mid-sentence and not pausing between sentences) (n = 3, 1.7%), and frequent repetitions and fillers (n = 2, 1.1%).

Stress in words (e.g., strong versus weak syllables) was assessed for 171 participants. Results ranged from a minimum of 8% correct to a maximum of 97% correct (M = 67.12, mode = 75, SD = 17.98). There were significant differences in results between home language groups (H(7) = 21.76, p < .01, η² = 0.13) with speakers of European languages recording higher median scores and speakers of Southeast and Eastern Asian Languages recording the lowest scores.

3.2.6. Structure of mouth

An OMA was completed with 127 participants. No abnormality was detected in the majority of participants assessed (n = 106,
83.5%); however, some participants were observed to have poor tongue coordination (n = 8, 6.3%) or ankyloglossia (tongue tie) (n = 4, 3.1%), while the remaining participants (n = 9, 7.1%) had individual issues relating to dentition, surgery, or infection that may impact intelligibility.

3.3. Activities and Participation

3.3.1. Conversation
Participants were asked how long they had used English in conversations (M = 6.32 years; SD = 7.34). Whilst the majority (n = 90, 51.4%) reported they had used English in conversations for three years or less, 9.7% (n = 17) reported they had only used English in conversations for the last six months. Kruskal-Wallis tests revealed a significant difference across home language groups in the number of years participants had used English in conversations (H(7) = 23.14, p < .01, η² = 0.13) with speakers of Eastern European languages reporting the most number of years (Md = 23), ahead of speakers of Northern European (Md = 21), other (Md = 14), Southern Asian (Md = 7), Southern European (Md = 4.5) Southeast Asian (Md = 3) Eastern Asian (Md = 3), and Southwest and Central Asian languages (Md = 2.5).

Participants were asked if they spoke English at home. The majority (n = 81, 54.0%) reported they did not speak English at home, 31.1% (n = 47) reported they did, 9.3% (n = 14) reported they sometimes did, 1.3% (n = 2) reported they did half of the time, and 4.0% (n = 6) reported they rarely spoke English at home. Chi-square tests for independence revealed no significant difference among the top five language groups and whether participants spoke English at home (χ²(4, n = 142) = 5.48, p = .24).

Participants (n = 164) rated their level of confidence communicating in English on a 5-point single item Likert scale as not confident communicating (n = 9, 9.4%), slightly confident communicating (n = 32, 19.3%), moderately confident communicating (n = 49, 42.8%), confident communicating (n = 39, 23.8%), or extremely confident communicating (n = 3, 1.6%). Participants (n = 164) also rated their level of difficulty communicating in English on a 5-point single item Likert scale as slight difficulty communicating (n = 27, 16.5%), some difficulty (n = 51, 31.1%), moderate difficulty (n = 68, 41.5%), significant difficulty (n = 16, 9.8%), or extreme difficulty (n = 2, 1.2%).

Self-ratings of confidence and difficulty communicating in English were analysed by the Personal and Environmental Factors of home language, age, sex, area of study, number of languages spoken, years known English, years used English in conversations, speech rate, volume, and whether participants used English to communicate at home. Spearman’s ρ revealed medium correlations between the years participants had used English in conversations and their confidence (r = .34, n = 164, p < .01) and difficulty (r = -.31, n = 164, p < .01) communicating in English with more time conversing in English associated with higher levels of confidence and less reported difficulty. There was also a small correlation between reading rate and difficulty communicating in English (r = -.19, n = 145, p = .02) with faster speech rate associated with less difficulty communicating. There were no significant relationships between confidence and difficulty communicating in English and any of the other variables. For example, there was no correlation between the years participants had known English and their confidence (r = -.06, n = 164, p = .47) or difficulty (r = -.08, n = 164, p = .34) communicating in English.

The remaining data classified under Activities and Participation are reported as aspirations or barriers to participation.

3.3.2. Aspirations for participation
Participants provided open-ended responses regarding their motivation for seeking intelligibility enhancement with many participants providing more than one reason. Responses were collated into three themes: academic (n = 125, 80.6%), employment (n = 89, 57.4%), or social aspirations (n = 80, 51.6%) and presented in Table 4.

Chi-square tests for independence investigated the association between academic, employment, and social aspirations and area of study (χ²(4, n = 117) = 5.30, p = .26) (range: 88.2%, n = 30 for engineering students to 58.3%, n = 7 for human resources students) or employment aspirations (χ²(4, n = 117) = 10.27, p = .04) (range: 58.3%, n = 7 for human resources students to

Table 4: Participants’ aspirations for participation.

<table>
<thead>
<tr>
<th>Academic aspirations</th>
<th>Employment aspirations</th>
<th>Social aspirations</th>
</tr>
</thead>
<tbody>
<tr>
<td>To talk to supervisors</td>
<td>For job skills</td>
<td>To talk with native English speakers</td>
</tr>
<tr>
<td>To pass IELTS</td>
<td>To pass IELTS</td>
<td>To join the community</td>
</tr>
<tr>
<td>To give lectures, tutorials, and presentations</td>
<td>To find work</td>
<td>To make friends</td>
</tr>
<tr>
<td>For admission interviews for the medical degree</td>
<td>For job interviews</td>
<td>To be able to freely express thoughts and ideas</td>
</tr>
<tr>
<td>To pass/perform better/be more comfortable on clinical placements/practicums</td>
<td>To work for international companies in country of birth</td>
<td></td>
</tr>
<tr>
<td>For PhD confirmation/endorsement sessions</td>
<td>To sound more professional</td>
<td></td>
</tr>
<tr>
<td>To pass oral exams for courses</td>
<td>To be understood by clients</td>
<td></td>
</tr>
<tr>
<td>To speak more with people and within class</td>
<td>To pass medical fellowship exams</td>
<td></td>
</tr>
<tr>
<td>To improve credibility in research</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To be able to freely express thoughts and ideas</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* International English Language Testing System, an English test required for academic study, work, and migration (IELTS, 2017).
31.6%, n = 6 for health students). There was a significant association between employment aspirations and sex (χ² (1, n = 155) = 4.36, p = .04, V = .18) with 52.1% of males (n = 38) compared to only 34.1% of females (n = 28) reporting employment aspirations. There was a significant association between whether participants reported social aspirations and the top five areas of study (χ² (4, n = 117) = 29.12, p < .01, V = .50) with 88.2% (n = 30) of engineering students reporting social aspirations compared to 50% (n = 6) of human resources students 36.8% (n = 7) of health students, 35.0% (n = 7) of finance students, and 28.1% (n = 9) of allied health students. There was a significant association between social aspirations and the top five home language groups (χ² (4, n = 147) = 13.15, p = .01, V = .30) with 78.9% (n = 15) of speakers of Southwest and Central Asian languages reporting social aspirations, compared to 73.7% (n = 14) of Southern Asian, 57.1% (n = 8) Southern European languages, 45.2% (n = 14) of speakers of Southeast Asian languages, and 40.6% (n = 26) of speakers of Eastern Asian languages. The results relating to social aspirations likely reflect speakers of Southwest and Central Asian (n = 15), Southern Asian (n = 15) and Eastern Asian (n = 11) languages being more highly represented among engineering students than other language groups. Other trends that existed with respect to language and area of study include speakers of Eastern Asian languages who were more highly represented in allied health (n = 19), and speakers of Eastern Asian (n = 9) and Southeast Asian (n = 7) languages who were more highly represented in finance than other language groups. There were no significant relationships between aspirations and any of the other variables.

3.3.3. Barriers to participation

Participants provided open-ended responses to the question: “In what situations do you have most difficulty speaking English clearly?” Responses included speaking: on the phone (n = 67, 41.1%), with a stranger (n = 25, 15.3%), or with a native English speaker (n = 26, 16.0%). Other responses were collated into difficult academic situations (n = 82, 50.3%) or social situations (n = 29, 17.8%). Difficult academic situations included: lectures, tutorials, meetings, presentations, job interviews, PhD confirmation/endorsement sessions, attending conferences, talking to supervisors, talking to colleagues, communicating and assessing patients on clinical placement, and using terminology for research. Difficult social situations included: talking to friends, talking to the opposite sex, shopping, everyday conversations, booking reservations, and ordering meals. Two participants commented that they were more confident writing than speaking English.

3.4. Environmental factors

Open-ended responses in the case history reported features of the physical, social and attitudinal world that may externally influence participation. Given the case history questions included the word “difficulties”, participants’ responses focused on barriers.

3.4.1. Products and technology

Products and technology were a barrier as 41.1% (n = 67) of participants reported speaking on the phone was difficult. One participant reported he was frustrated at being unable to successfully use voice recognition software on his mobile phone. Participants used assistive technology for communication, such as glasses and contact lenses (n = 12, 7.9%) and one participant wore hearing aids.

3.4.2. Support and relationships

Participants were not questioned about whether they received practical, physical, or emotional support from family, friends, or people in authority or in the community; however, some made comments such as there is “not much opportunity to practise English” and “I want people to tell me what I am doing wrong” that may indicate a lack of support. Being referred to the Speech Intelligibility Clinic may indicate some level of support or a lack of support. Most participants (n = 78, 47.9%) were referred by university faculty including supervisors, course coordinators, and language teachers; however, 25.2% (n = 41) were referred by previous clients of the clinic or by friends 11.0% (n = 18).

3.4.3. Attitudes

Participants made comments about the attitudes of others, such as “native speakers sometimes don’t understand me” or attitudes that may indicate an influence on the individual’s behaviour, such “as I’m afraid to speak in class”.

4. Discussion

This study used the ICF as a conceptual framework to retrospectively review client files in order to describe those who sought SLP support for their intelligibility in English. The study also aimed to investigate potential barriers and facilitators that intelligibility in English may impose on multilingual speakers’ participation. The study identified four key messages for people working with multilingual university students and faculty. They were: (1) multilingual speakers may be unaware of their reduced intelligibility in English, (2) more time conversing in English is associated with greater confidence and less difficulty communicating in English, although more time knowing English is not, (3) speaking on the phone is a difficult task for many multilingual speakers, and (4) multilingual speakers’ communication experiences may be influenced by their perceptions of negative attitudes of their listeners. The ICF provided a useful tool for merging assessment data from several sources to document English intelligibility in multilingual speakers. By classifying multilingual speakers’ functioning to the ICF, the study identified the broad range of factors relevant to planning assessment and intervention aimed at facilitating participation.
4.1. Body Functions and Structures

The review of factors relating to Body Functions and Structures revealed that some multilingual speakers were unaware of factors affecting their intelligibility. There was a mismatch between sounds identified by SLPs as requiring intervention and speech sounds identified by the participants as difficult. During the formal assessment, participants substituted and deleted English phonemes and these sounds became the targets for intervention; however, few participants were initially able to identify English sounds they had difficulty pronouncing. For example, only a quarter reported difficulty with dental fricatives, although 95% were substituting these sounds with other phonemes. The majority of participants were taught English by a non-native English speaker at school and reported minimal focus on English speech sounds or prosody. Speakers of three or more languages typically were more able to identify difficult sounds, suggesting the additional language learning may support phonological awareness. Awareness of accent, along with an ability to modify it can affect outcomes of intervention (Moyer, 2007). Therefore, intervention for intelligibility enhancement should not only focus on differences in the production of phonemes and perceptual identification and discrimination of phonemes when spoken by native speakers of English, but also on skills in self-monitoring and correcting.

The combination of phonemic substitutions and prosodic features, such as low speaking volume, fast speech rate, and differences in word stress exacerbated poor intelligibility. Across four measures of speech volume, approximately one-third of participants were below the range for typical adult English speakers. Only one male participant was louder than the norms in reading (Sanchez et al., 2014). Loudness may be interpreted as a sign of confidence in some cultures; however, it may be interpreted as impolite, aggressive, or an indicator of poor education in others (Bebhla & Murray, 2012). Although voice quality varies across languages and can even vary when a multilingual speaker speaks in different languages (Bebhla & Murray, 2012), there were no significant differences in speech intensity by language groups; however, there were differences by sex, with females speaking with a lower volume than males. Speaking at a volume below the English norms, may require more effort from English-speaking listeners to comprehend an utterance; increased listener burden can negatively influence listeners’ perception of a speaker's intelligibility (Munro & Derwing, 2015).

Across four measures of speech rate, approximately one-third of participants spoke faster than a typical adult English speaker (Block & Killen, 1996). Approximately 15% of participants had a speech rate slower than 170 smp. A rapid speech rate may be induced by stress, time constraints, or lack of listener attention, while a slow rate may imply education, self-control, and politeness (Bebhla & Murray, 2012). A fast speech rate reduces comprehension, especially for heavily accented speech (Anderson-Hsieh & Koehler, 1988) as listeners have less time to process what has been said. Speech that is too slow can also negatively affect communication as it leads to a decrease in comprehensibility (Derwing & Munro, 2001). Consequently, measures of speech rate and speech intensity should be included in assessment protocols and intervention should focus on modifying these to enhance intelligibility.

Review of data relating to home languages revealed that speakers of certain home language groups may require additional support for their proficiency and intelligibility in English. For example, speakers of Eastern Asian and South East Asian languages reported less time studying English, less time conversing in English, were less likely to speak more than two languages (their home language and English), and had more difficulty producing English stress than any other language group.

Review of the OMA and hearing data revealed 16% of the participants had issues that may have impacted their intelligibility, such as poor tongue coordination, ankyloglossia, or hearing difficulties. Ten participants (5.7%) reported a history of speech or fluency disorders. SLPs cannot assume intelligibility is only affected by home language phonology and prosody (Schmidt & Sullivan, 2003), because additional factors such as hearing difficulties, ankyloglossia, or pre-existing speech, voice, or fluency disorders may also reduce speech intelligibility. Professionals other than SLPs are less likely to include an OMA in a comprehensive evaluation of multilingual speech as this may be seen as medicalising production that is not considered to be pathological (see Derwing & Munro, 2015; Müller & Gendouzi, 2007); however, it is an important part of providing a comprehensive assessment, as demonstrated by the fact that 16% of participants in this study had difficulties with oro-muscular functioning that may impact their speech.

The review of the data classified as Body Functions and Structures highlights the importance of including a history of speech and language development, an OMA and hearing history, and speech rate and intensity measures in an assessment. A comprehensive written report should detail those features of multilingual speakers' English speech impacting on their intelligibility and note whether differences are a result of home language or an individual's medical history. A written report should increase the speaker's awareness of their intelligibility and allow them time to reflect on the features identified in order to both justify the intervention and provide a clear baseline for them to measure their own progress.

4.2. Activities and Participation

The review of the factors relating to Activities and Participation revealed that more time conversing in English was associated with greater confidence and less difficulty communicating in English; however, most participants reported they had used English in conversations for three years or less. Limited interactive use of the target language leads to limitations in phonological attainment (Moyer, 2007). Multilingual speakers with more conversation experience report more positive orientations to the target language, develop cognitive strategies for improving their speech, and look for increasing communicative opportunities (Moyer, 2007). SLPs can not only assist speakers with strategies for enhancing their intelligibility but also suggest or provide opportunities for conversation practice in English.

There were many tasks and situations that participants found difficult due to their intelligibility in English. Just over half of participants reported academic situations, such as participating in tutorials and communicating and assessing patients on clinical fieldwork placements as difficult. This is not surprising given participants are university students and faculty; however, the review
highlights the importance of gathering data on the specific client-identified barriers to ensure that intervention is targeted to their individual needs. For example, vocabulary used in sessions should include terminology used in an individual’s academic program and conversation breakdowns and repair strategies could be role-played in relevant academic or employment scenarios. Similar practice could be used to address difficult social situations such as speaking on the phone, shopping, and ordering meals.

4.3. Environmental Factors

The review highlighted the paucity of data collected in the assessment protocol that could be classified as Environmental Factors. OMA data captured the use of assistive technology for communication including glasses, contact lenses, and hearing aids. Some data collected from case history questions was skewed towards barriers rather than facilitators by the wording that focused on “difficulty” in speech sounds and situations (see Table 1). Participants’ comments may indicate a desire for more support and that their perceptions of the negative attitudes of native English speakers restricted their participation (see Blake, Verdon, & McLeod, 2018; Gluszek & Dovidio, 2010; Zarrinabadi & Khodarahmi, 2017). Participants may use programs that exist to support students, such as university counselling services, careers service, and learning support; however, the case history did not query participants’ use of these programs.

The review of the data classified as Environmental Factors highlights the need to gather case history information about the people who provide practical, physical, or emotional support or assistance to multilingual speakers at home, university, or in any context of their daily activities (WHO, 2001). Over half the participants did not speak English at home. Multilingual university students report family and study commitments reduced the time they can spend improving their English proficiency and intelligibility (Blake, Verdon, & McLeod, 2018). Understanding support available to multilingual speakers should assist SLPs in forming realistic goals and determining practical strategies for practice.

4.4. Personal Factors

The review of factors relating to Personal Factors revealed that although participants were similar in being university students or faculty, they were diverse in age, sex, country of birth, and area of study. SLPs need to consider Personal Factors such as age, sex, ethnicity, personality, and attitudes in order to understand clients and meet their needs (Threats, 2006). Multilingual speakers’ beliefs about their own communicative abilities can influence their actual abilities (Moyer, 2007). Attitudes may be a barrier to modifying speech when participants report they believe it is impolite to speak with an increased volume or with their tongue visible when producing dental fricatives. The philosophy of the ICF is that the individual should be at the center of assessment and intervention deliberations (Threats, 2008); therefore, multilingual speakers’ views should influence consideration of all other ICF components relevant to their functioning.

4.5. Implications for SLPs

In this study, the ICF was used as a research tool that provided a framework to determine which relationships should be investigated, such as the relationship between vocal intensity (Body Functions) and sex (Personal Factors). Using a systematic method of collecting functional data for research also provides an opportunity to analyse similar data across other SLP facilities (Threats, 2006; Wilkinson, 2016).

SLPs can use the ICF as a clinical tool to determine functional goals for intervention (Threats, 2006). Goals should consider features of Body Functions and Structures identified during SLP assessment and aspirations for Activities and Participation, address Environmental Factors to determine generalization, and analyse Personal Factors to ensure goals are relevant to the individual. For example, while difficulties with the production of interdental fricatives may be obvious to listeners, these substitutions do not necessarily impact intelligibility as much as others, such as the substitution of /p/ for /t/. As a result, dental fricatives might not be included in functional goals for some multilingual speakers, but may be included for university students or faculty because of negative perceptions of professionalism associated with unclear pronunciations of these consonants. ICF components relating to intelligibility enhancement assessment and intervention for multilingual university students and faculty are listed in Table 5, along with direct quotes from participants that reinforce the importance of including the individual’s views. The ASHA website contains examples of functional goal writing using the ICF in various contexts (American Speech-Language-Hearing Association, 2018b) that can inform goal setting in intelligibility enhancement for multilingual speakers, as the goal of such intervention should be functional communication rather than simply reduction in accent (Behrmann & Akhund, 2015).

The current research can advance SLPs’ understanding of clinical practice in intelligibility enhancement. Using the ICF allowed consideration of the broad range of factors that contribute to a multilingual speaker’s intelligibility, not just their accent. SLPs are encouraged to incorporate a similar multi-pronged approach within assessment and intervention protocols for intelligibility enhancement.

4.6. Limitations

This retrospective record review used a single site and a population of convenience; however, such limitations are common in group designs (Wilkinson, 2016). In order to address these limitations, it is important to provide context for the findings by completing a thorough description of the records, while maintaining confidentiality, as well as describing any potential effects of the
Table 5
ICF components relating to assessment and intervention for multilingual university students and faculty seeking intelligibility enhancement in English.

<table>
<thead>
<tr>
<th>Body Functions and Structures</th>
<th>Activities and Participation</th>
<th>Environmental Factors</th>
<th>Personal Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>b167  Mental functions of language  a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>h230  Hearing functions  a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b310  Voice functions: Loudness, quality  a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b320  Articulation functions  a  English pronunciation is different to spelling  a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>h330  Fluency and rhythm of speech functions  a  (I’ve been told to slow down)  a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>s320  Structure of mouth  a</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Qualifier and Quote  b</th>
</tr>
</thead>
<tbody>
<tr>
<td>d330</td>
<td>Speaking  c</td>
</tr>
<tr>
<td>d350</td>
<td>Conversation  c</td>
</tr>
<tr>
<td>d360</td>
<td>Using communication devices and techniques  d</td>
</tr>
<tr>
<td>d620</td>
<td>Acquaintion of goods and services  d</td>
</tr>
<tr>
<td>d710</td>
<td>Basic interpersonal interactions  d</td>
</tr>
<tr>
<td>d730</td>
<td>Relating to strangers  d</td>
</tr>
<tr>
<td>d740</td>
<td>Formal relationships  d</td>
</tr>
<tr>
<td>d750</td>
<td>Informal social relationships  d</td>
</tr>
<tr>
<td>d845</td>
<td>Acquiring, keeping or terminating a job  d</td>
</tr>
<tr>
<td>d860</td>
<td>Basic economic transactions  d</td>
</tr>
<tr>
<td>d920</td>
<td>Recreational and leisure  d</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Qualifier and Quote  b</th>
</tr>
</thead>
<tbody>
<tr>
<td>c120</td>
<td>Products and technology for transportation  d</td>
</tr>
<tr>
<td>c125</td>
<td>Products and technology for communication  d</td>
</tr>
<tr>
<td>c310 - 360</td>
<td>Support and relationships  a</td>
</tr>
<tr>
<td>c425 - 465</td>
<td>Attitudes  d</td>
</tr>
<tr>
<td>e570 - 595</td>
<td>Attitude  d</td>
</tr>
</tbody>
</table>

Words in italics are direct quotes from participants.

a Assessed by SLP.
b Case history: Demographic details.
c Case history: Language acquisition and hearing history.
d Case history: Difficult English communication situations.
e Case history: Difficult English sounds.
f Case history: Aspirations.
g Email from client post-intervention.
limitations on generalisability (Wilkinson, 2016). The ICF framework allowed for a thorough description of the records using all the data collected during the initial assessment. Participants in this study were university faculty and students; well-educated and motivated professionals. While they may have been referred for intervention by a third party, none were required to attend as a prerequisite to study or employment. They attended of their own volition to improve their English speech. Therefore, generalisation of these results outside of professional and academic contexts may not be appropriate. Notwithstanding this, the use of the ICF as a framework for assessment and intervention in intelligibility enhancement may be appropriate for multilingual speakers seeking to increase their participation in any context.

This study retrospectively used data collected in a university teaching clinic. Every effort was made to ensure fidelity of assessments by co-supervision and the use of templates/proformas as described in Table 1. However, limitations exist that could be excluded in a purpose-designed study. For example, the use of a hand-held sound level meter held by different students cannot ensure a consistent mouth-to-microphone distance was used in measuring intensity. As noted above, the case history focused on difficulties and did not contain specific questions regarding facilitators. Additionally, the assessment protocol addressed hearing functions, but not perceptual discrimination or identification of English phonemes. These were assessed in subsequent intervention sessions.

While participants’ English speech skills were assessed during the SLP assessment, their English language skills were not. Perception and production of English phonemes is critical to the successful negotiation of meaning; therefore, intelligibility enhancement is a relevant intervention for speakers with any level of English proficiency rather than only the highly proficient (Moyer, 2007). Skills likely varied due to program prerequisites and avenues of entry into university. English language skills may have influenced variables such as speech rate and word stress (e.g., due to unfamiliar vocabulary), and limited some participants’ ability to effectively understand and respond to case history questions, although every effort was made to ensure clients understood and were understood.

Future research will focus on gathering more information relating to the Environmental Factors affecting multilingual speakers. This study reviewed the assessment protocol used in the clinic. The intervention program can now be reviewed incorporating the findings from this study.

5. Conclusion

Multilingual university students and faculty seek intelligibility enhancement in order to increase their academic, employment, and social participation. The characteristics and aspirations of the multilingual speakers in this study included speech varying in sounds, rate and prosody to native English speakers, limited oral English experience, a desire for more support and academic, employment, and social motivations. Assessment and intervention for intelligibility enhancement not only requires consideration of the ICF components of Body Functions and Structures (e.g., articulating phonemes, rate, prosody), Activities and Participation (e.g., measures of phonological, intelligibility), but also Environmental Factors (e.g., support for multilingual speakers) and Personal Factors (e.g., age, sex). To ensure multilingual speakers can participate in major life areas and domestic and social life, intelligibility enhancement requires a multi-pronged approach where speech and environmental characteristics interweave.

CRediT authorship contribution statement

Helen L. Blake: Conceptualization, Methodology, Investigation, Formal analysis, Writing - original draft, Writing - review & editing, Visualization. Sharynne McLeod: Conceptualization, Methodology, Writing - review & editing, Visualization.

Acknowledgements

The authors wish to acknowledge The University of Newcastle Speech Pathology Program, especially Dr Sally Hewat for her foresight in establishing the Speech Intelligibility Clinic and for supporting this research. Helen L. Blake acknowledges funding from an Australian Postgraduate Award and support from a University of Newcastle Teaching and Learning Project Grant in 2011 that facilitated the establishment of the Speech Intelligibility Clinic. Helen L. Blake would like to thank Dr Sarah Verdon and Alexandra Uy for their support.

References


Chapter 9: Paper 8


This is the authors accepted manuscript of an article published as the version of record in Clinical Linguistics and Phonetics ©Taylor & Francis Ltd 2019 Informa UK Limited, trading as Taylor & Francis Group, https://doi.org/10.1080/02699206.2019.1608470 Taylor & Francis has granted permission for the accepted manuscript to appear in this PhD thesis.
Intelligibility Enhancement Assessment and Intervention: A single-case experimental design with two multilingual university students

Helen L. Blake 1, 2
Sharynne McLeod 1
Sarah Verdon 1

Charles Sturt University, Australia 1
The University of Newcastle, Australia 2

Corresponding author:
Helen L. Blake
Graduate School of Health, University of Technology, PO Box 123, Broadway 2007, Australia
Tel: +61-2 9514 7351
Email: Helen.Blake@uts.edu.au
ORCiD: http://orcid.org/0000-0003-10414613

Sharynne McLeod
Charles Sturt University, Panorama Ave, Bathurst, NSW 2795, Australia
Tel: +61-2 63384463
Email: smcleod@csu.edu.au
ORCiD: http://orcid.org/0000-0002-7279-7851

Sarah Verdon
Charles Sturt University, Albury NSW 2640, Australia
Tel: +61260519357
Email: sverdon@csu.edu.au

ORCiD: http://orcid.org/0000-0002-75035860

Acknowledgements

The authors wish to acknowledge The University of Newcastle Speech Pathology Program, especially Dr Sally Hewat for her foresight in establishing the Speech Intelligibility Clinic. The first author acknowledges funding from an Australian Postgraduate Award. We also acknowledge support from a University of Newcastle Teaching and Learning Project Grant in 2011 that facilitated the establishment of the clinic. The first author would like to thank Annemarie Laurence for her support.

Declaration of interest

The authors report no declarations of interest.
Abstract

Speech-language pathologists (SLPs) may be approached by multilingual speakers wishing to improve their intelligibility in English. Intelligibility is an essential element of spoken language proficiency and is particularly important for multilingual international students given their need to express complex ideas in an additional language. Intelligibility Enhancement aims to improve the intelligibility and acceptability of consonants, vowels, and prosody with multilingual speakers who are learning to speak English. This study aimed to describe the Intelligibility Enhancement Assessment and Intervention Protocols and determine whether the intervention changes multilingual university students’ English intelligibility. A multiple-baseline single-case experimental design was applied with direct inter-subject replication across two female participants whose home languages were Vietnamese and Putonghua (Mandarin). English intelligibility was assessed at multiple intervals pre, post, and during intervention. The intervention protocol consisted of 11 weekly 1-hour sessions with an SLP targeting English consonants, vowels, and prosody. Following intervention, both participants displayed increased performance across most measures. For example, the Vietnamese participant’s percentage of consonants correct (PCC) increased from 62.5% to 85.0% in probe keywords. Effect sizes, when comparing baseline and withdrawal phases, were 5.5 for PCC, 4.6 for final consonants, 2.3 for consonant clusters, and 1.6 for syllables indicating improvements in all variables measured. Her speech rate reduced, word stress increased in accuracy, and she perceived less difficulty communicating in English. These promising results suggest further testing of Intelligibility Enhancement Protocols is warranted to determine its effectiveness as an intervention for multilingual speakers.

Keywords: Intelligibility Enhancement; accent modification; multilingual; international students; single-case experimental design (SCED); Vietnamese; Mandarin
**Introduction**

Intelligible speech is an essential element of spoken language proficiency (Miller, 2013). Spoken English proficiency impacts multilingual speakers’ ability to participate in education, employment, and community activities in English-dominant countries (Blake, Bennetts Kneebone, & McLeod, 2017; Blake, McLeod, Verdon, & Fuller, 2018; Chin, Kang, Kim, Martinez, & Eckholdt, 2006). Multilingual speakers may seek support from language teachers, linguists, voice coaches or speech-language pathologists (SLPs), if they believe their intelligibility is negatively impacting their participation in major life areas (Blake & McLeod, in press). Support has been called accent modification, accent improvement, accent reduction, pronunciation training, and intelligibility enhancement. Differences in multilingual speakers’ intelligibility and pronunciation perceived as accent are influenced by the speaker’s home language or dialect and therefore, do not reflect a disorder (American Speech-Language-Hearing Association, 2018; Sikorski, 2005).

Intelligibility Enhancement is an intervention approach aimed at improving the intelligibility and acceptability of the production of consonants, vowels, and prosody by multilingual speakers when they are speaking a language (English) other than their home language (Blake & McLeod, in press). The goal of Intelligibility Enhancement is functional communication that aims to improve participation, rather than approximating a nativelike accent (see Jenkins, 2004). While there is an emerging body of research to support SLPs working in the field of accent modification and intelligibility enhancement, assessment protocols reported have mostly focused on listeners’ perceptions of multilingual speech post-intervention and intervention protocols have mostly targeted a restricted number of features in a narrow context. Assessment protocols generally involve unfamiliar native speakers transcribing utterances in standard orthography and/or rating the intelligibility of multilingual speech along with
other measures such as accentedness, naturalness, acceptability, and comprehensibility on Likert-type scales. For example, Behrman (2017) used 7-point Likert-type scales to rate ease of understanding and accentedness in English spoken by six Spanish native speakers. The listeners were thirty monolingual undergraduate students. Similar scales were used to rate the English intelligibility, speech naturalness in connected speech, and articulatory precision of 12 native speakers of Korean (Kim, Kang, Pirruccello, Kweon, & Oh, 2017). Listeners were 10 native English-speaking graduate students. A 7-point Likert-type scale was also used to rate accentedness in English and ease of understanding in four Hindi native speakers; however, these ratings were judged by two individuals who specialised in accent modification (Behrman, 2014). Behrman (2014) also assessed articulation (consonants only), intonation, and auditory discrimination using the Proficiency in Oral English Communication (POEC) (Sikorski, 2014), an assessment tool specifically designed for use with accented English speakers. The POEC was used to determine eligibility for the study, to develop training goals for each participant, and selected items from the POEC were administered as probes. While some studies report on assessments that are administered and analysed by SLPs (Khurana & Huang, 2013; Lee & Sancibrian, 2013; Schmidt & Meyers, 1995), these are often keyword probes rather than comprehensive, culturally and linguistically appropriate assessments of multilingual speakers’ communication skills as recommended by the American Speech-Language-Hearing Association (2018).

Clinicians need valid and reliable measures not only to identify targets for intervention, but also to document change as a result of intervention. Using multiple measures may allow changes to be identified that would not have been found by a single measure less sensitive to certain factors than others (Franklin & Stoel-Gammon, 2014).

Intervention protocols to support intelligibility have typically focused on narrow linguistic contexts, such as English fricatives and affricates in Korean speakers.
(Schmidt & Meyers, 1995), /ʃ/, /ɹ/, /l/ and /ɹ/ in Korean speakers (Lee & Sancibrian, 2013), and /l/ and /ɹ/ in Japanese speakers (Bradlow, Pisoni, Akahane-Yamada, & Tohkura, 1997), or narrow intervention contexts, such as targeting sounds only from isolation to word level (Oelke et al., 2015) or targeting the utterance level only (Behrman, 2017; Kim et al., 2017). Some of these studies provide comparisons of intervention approaches to inform and support intervention protocols. For example, Schmidt and Meyers (1995) compared articulation and phonological approaches for supporting fricatives and affricates in Korean speakers. Although they noted improvements in both approaches, differences in participants’ performances suggest incorporating features of both approaches (e.g. supporting phonological contrasts with instruction on articulator placement) may prove most effective. Behrman (2014) compared segmental (stops and fricatives only) and suprasegmental (rise-fall pitch and intonation only) approaches for supporting speakers of Hindi. Although both methods yielded positive outcomes, there was no carry-over between approaches (i.e. segmental training did not improve prosody and vice-versa). The authors suggested a more holistic and integrated approach may be warranted (see Jenkins, 2004).

Intelligibility Enhancement offers a holistic and integrated assessment and intervention approach (see Supplemental Appendix). The Intelligibility Enhancement Assessment and Intervention Protocols (Blake, 2019a; Blake, 2019b) are informed by the International Classification of Functioning, Disability and Health (ICF) (WHO, 2001) to consider all factors relating to an individual’s intelligibility in English: Body Functions and Body Structures (e.g. structures and functions relating to voice and speech), Activities and Participation (e.g. communicating), Environmental Factors (e.g. support and relationships) and Personal Factors (e.g. age, education) (Blake & McLeod, 2018, 2019). The use of the ICF to consider communication in a non-traditional speech-language pathology context such as Intelligibility Enhancement is appropriate given the
framework was designed to enhance and support the participation of all people (WHO, 2001), not just those with a disorder. In a previous study, the authors used the ICF to classify the characteristics of multilingual speakers who sought SLP support for their intelligibility in English (Blake & McLeod, 2019). The aim of that review was to identify the activities, facilitators, and barriers that impacted on multilingual speakers’ participation in society. The multi-pronged approach recommended as a result of the review has informed the protocols used in the current study that consider all ICF components potentially influencing multilingual speakers’ intelligibility in English. The Intelligibility Enhancement Protocols were designed to support the English intelligibility of multilingual university students. The Intelligibility Enhancement Assessment Protocol incorporates biopsychosocial components from a typical comprehensive speech-language pathology assessment battery. The Intelligibility Enhancement Intervention Protocol incorporates aspects of successful interventions described in the literature.

**Aims**

This study aimed to determine whether the Intelligibility Enhancement Assessment and Intervention Protocols (Blake, 2019a; 2019b) changed multilingual university students’ intelligibility in English. Specifically, their

1. percentage of consonants correct (PCC), production of final consonants, consonant clusters, and syllables,
2. acceptability of speech rate, volume, and word stress, and
3. perceptions of intelligibility, confidence, and ease communicating in English.

**Method**

This method is organised in accordance with the SCRIBE statement (Tate et al., 2016) for describing single-case experimental design (SCED) studies.
Research design

A multiple-baseline SCED was applied with direct inter-subject replication across two participants; Giang and Ning Yi (pseudonyms). Participants completed repeated measurements using probes developed for this study (Blake, 2018) during a baseline (phase A₁), intervention (phase B), and post-intervention withdrawal phase (phase A₂). There were three months between the end of Giang’s participation in the study and the commencement of Ning Yi’s. In phase A₁, both participants completed the probes on two occasions. Giang completed the probes over a period of 7 days directly before the commencement of the intervention; however, Ning Yi completed the probes for the first time 4 months pre-intervention, then once more 7 days pre-intervention. A third baseline probe was completed by both participants during the comprehensive initial assessment described below. During phase B (intervention), Giang was probed at the beginning of each session. As Giang was unable to complete homework during this phase, a procedural change was made for Ning Yi to complete probes both before and after each intervention session to assist with determining intervention effect. One of the strengths of SCED methodology is flexibility to make alterations to the protocol without compromising the experimental control (Tate et al., 2016). In phase A₂ (post-intervention), both participants completed the probes three times; during a final assessment session, one-week later, and one-month later. There were no maintenance-promoting activities, such as homework during the A₂ phase.

All sessions took place in The University of Newcastle Speech Intelligibility Clinic that provides Intelligibility Enhancement to multilingual university students and staff. The first author provided an initial assessment, 11 weekly 1-hour intervention sessions, and a post-intervention assessment session (see Supplementary Materials) to
both participants in the same setting\(^1\). Both participants received the same 10 intervention sessions plus one individualised session addressing a self-identified concern (Giang, Bible reading; Ning Yi, glottal fry/vocal fatigue).

There was no randomisation of phase onset or sequencing as this study aimed to directly replicate the Intelligibility Enhancement Assessment and Intervention Protocols (Blake, 2019a; 2019b). The rationale for intervention onset after three probes was based on the minimum baseline probes required to calculate effect sizes (see Beeson & Robey, 2006). The length of phase B corresponded to content outlined in the Intervention Protocol (Blake, 2019b). Three probes were performed in A\(^2\) to allow for a better estimate of effect size as well as to provide details of stability of the intervention effect over time (Beeson & Robey, 2006).

**Participants**

Participants were two multilingual research higher degree candidates recruited from the waiting list of the Speech Intelligibility Clinic. The participants were Giang, a 37-year-old Vietnamese female undertaking a PhD in Management and Ning Yi, a 30-year-old Chinese female who was undertaking a Masters of Business Administration (see table 1 for participant data). Both of the participants included in the study had scored 5.5 or over in the International English Language Testing System (IELTS), an English test required for academic study, work, and migration (IELTS, 2017) within the previous two years and were therefore expected to be capable of listening to instructions and reading assessment and intervention materials in English.

Exclusion criteria were: hearing or oro-motor deficits, ability to adhere to the intervention schedule, and a score of 80% or more on the Basic English Lexicon (BEL)

---

\(^1\) There was two weeks between sessions for Giang on one occasion and twice for Ning Yi due to public holidays and power failure.
sentences (Calandruccio & Smiljanic, 2012) in order to provide an opportunity for statistically significant change in performance as a result of intervention. Three potential participants were excluded: one failed the hearing criteria, one scored over 80% on BEL sentences, and one was not available for the full intervention duration.

**Language background of the participants**

Preparation for assessment and intervention for Intelligibility Enhancement requires an understanding of the phonetic inventory and phonotactic structure of a speaker’s home language(s) because these features may influence a multilingual speaker’s perception and production of English (Ellis, 2008). Giang spoke the southern dialect of Vietnamese. Vietnamese is generally considered to have four dialects (standard, northern, central, and southern) based on geography, usage, and culture that are differentiated by variations in consonants, vowels, and tones (Phạm & McLeod, 2016). Ning Yi spoke Putonghua, the standardised variety of Chinese based on the phonology and grammar of the Beijing dialect, sometimes referred to as Mandarin (Zhu, 2007). Differences exist between consonant and vowel inventories of these languages and Australian English. Table 2 displays consonants Vietnamese and Putonghua share with Australian English. While Australian English contains 13 monophthong and seven diphthong vowels (Cox, 2008), there are 12 monophthong vowels and three diphthongs in Vietnamese (Phạm & McLeod, 2016), and nine monophthong vowels, nine diphthongs, and four triphthongs in Putonghua (Zhu, 2007).

Differences in phonotactic structure between languages may also have caused participants to have difficulty pronouncing some English speech sounds. English syllables can be open or closed. An open syllable consists of an onset containing one or more consonants and a rhyme that is a vowel, while a closed syllable contains a coda consisting of one or more final consonants (Ellis, 2008). Vietnamese syllables can
include five components: an onset containing a single initial consonant, a medial semivowel, a main vowel, a final phoneme (a consonant or semivowel), and a tone (Phạm & McLeod, 2016). While 21 of the 24 consonants in the southern dialect of Vietnamese can occur in an onset, only 8 can occur in a coda (Phạm & McLeod, 2016). Syllables in Putonghua consist of an optional onset and coda with a compulsory vowel in the nucleus (Zhu, 2007). Twenty-one of the 22 consonants in Putonghua can occur in an onset; however, only two can occur in a coda (Zhu, 2007). Because of the limited final consonants in both Vietnamese and Putonghua, speakers may delete final consonants or add a vowel after them when speaking in English (Swan & Smith, 2001). Additionally, as consonant clusters do not occur in Vietnamese or Putonghua, speakers may delete, add a phoneme, and/or substitute consonants in English clusters (Ellis, 2008). Consequently, some English consonants present in Vietnamese and Putonghua were targeted for intervention because they were not clearly produced in all word positions.

**Ethical approval**

Ethical approval was obtained from The University of Newcastle Human Ethics Committee (approval number H-2016-0096) and Charles Sturt University Human Ethics Committee (protocol number 2016/039). Potential participants were recruited by a third party with no existing or potential relationship. Participants were emailed a copy of the information and consent form and offered the opportunity to ask questions regarding their participation.

**Assessment**

This study used assessment instruments detailed in the Intelligibility Enhancement Assessment Protocol (Blake, 2019a).
**Case history**

A case history questionnaire at the pre-intervention assessment documented participant demographic data, home language acquisition, and English experience (see table 1). An example question from the case history was: ‘At what age did you first learn English?’ Participants were asked to rate their confidence communicating in English on a 5-point single item Likert scale: *extremely (5), confident (4), moderately (3), slightly (2), or not confident communicating (1).* They also rated their level of difficulty communicating in English on a similar 5-point scale: *extreme (5), significant (4), moderate (3), some (2), or slight difficulty communicating (1).*

**Oro-musculature assessment**

An oro-musculature assessment (OMA) was conducted to determine the potential impact of articulator functioning on oral communication. The assessment focused on the structure and function of the mouth; lip seal and alternate movements, dentition, tongue strength, range of movement, and coordination, palatal structure and movement, and mandible range of movement. Additional factors such as assisted vision and/or hearing and facial symmetry and sensation were also noted. A retrospective record review of 175 client files in the same clinic (Blake & McLeod, 2019) found 16% of participants had issues with oro-muscular functioning demonstrating the importance of including an OMA in this assessment protocol.

**Hearing screener**

Participants’ hearing was screened in a sound-proof room using a MAICO MA1 Screening Audiometer with DD-46 headset fitted with Peltor Audiocups. Four frequencies were tested 500, 1000, 2000 and 4000 Hertz. Pass criteria were two positive responses at a minimum of 25 decibels in hearing level (dB HL) (American Speech-Language-Hearing Association, ASHA, 2019) in both ears with a maximum of four presentations at each frequency.
Speech rate and intensity

Speech rate in reading and a monologue was measured in syllables per minute (spm) using a speech rating instrument (Synergistic Electronics True-Talk Professional). Speech intensity (volume) was measured in decibels (dB) using a sound level meter (Digitech QM-1589) with a mouth-to-microphone distance of 50 cm. Participants’ speech rate and intensity were compared with established norms for adult female English speakers: A mean speech rate of 239.6 spm ($SD=21.2$) in conversation and 231.4 spm ($SD=25.5$) in reading (Block & Killen, 1996) and a mean speech intensity of 69.8 dB (range: 59.4–79.2 dB, $SD=2.8$) (Sanchez, Oates, Dacakis, & Holmberg, 2014). Although a speech rate that is too slow can decrease comprehensibility (Derwing & Munro, 2001), target behaviours were reductions in speech rate during intervention and assessment to allow participants more time to position their articulators to form the target sounds and self-monitor and correct productions.

Speech/intelligibility assessments

Four instruments were used to measure speech/intelligibility: ClearSpeak Adult Pronunciation Test (CAP test) (Kimble-Fry, 2009), BEL sentences (Calandruccio & Smiljanic, 2012), Intelligibility Enhancement Probes (Blake, 2018), and Intelligibility in Context Scale (ICS) (McLeod, Harrison, & McCormack, 2012) adapted for adults. The CAP test was administered to identify non-standard productions of Australian English sounds. This test does not have established reliability or validity; however, it is useful for creating a summary analysis and training plan (Kimble-Fry, 2009). The CAP test consists of five subtests targeting vowels, consonants, and features of prosody. Target behaviour was pronunciation of each subtests’ identified targets without additions, distortions, substitutions, or deletions. The CAP test enables calculation of percentage of correct word stress from a list of polysyllable words; however, for the
purpose of this study, percentage of vowels correct (PVC) and percentage of consonants correct (PCC) (Shriberg, Austin, Lewis, McSweeny, & Wilson, 1997) also were calculated from the vowel and consonant subtests. Speech rate and intensity measures, along with a perceptual judgement of voice (see Oates & Russell, 1997) were taken during administration of the CAP Test. This instrument was audio recorded to facilitate analysis.

BEL sentences were designed to be appropriate for multilingual speakers of English and have been used in intervention studies with multilingual speakers (Rimikis, Smiljanic, & Calandruccio, 2013; Van Engen, Chandrasekaran, & Smiljanic, 2012) and tested for reliability and validity with monolingual English speakers and listeners (Calandruccio & Smiljanic, 2012) as well as a large cohort of multilingual speakers (102 individuals) (Rimikis, Smiljanic, & Calandruccio, 2013). Participants read a set of 25 sentences containing four keywords per sentence (100 keywords per set) balanced for vocabulary, syntactic structure, and number of syllables. Target behaviour was the complete, accurate pronunciation of consonants in keywords including morphological affixes, without the addition of phonemes, and including the correct number of syllables per sentence. Scores were calculated for fricatives and affricates in keywords. PCC in keywords was also calculated for this study. Pronunciation of the irregular past tense (Australian/British English) was accepted. This instrument was audio recorded to facilitate analysis.

Intelligibility Enhancement Probes (Blake, 2018) contain 30 keywords developed to determine English consonant sounds in participants’ phonetic inventories. Probe keywords contain consonants of Australian English in all possible word positions, morphological suffixes (for past tense, plural, possessive, and third person singular present tense) and nine consonant clusters (three each of word initial, within word, and word final clusters). Keywords were concealed in 30 short sentences with adjacent
phonemes in words either side of keywords either vowels or consonants diverse in place and manner of articulation. For example, the keyword voted was concealed in the sentence ‘They voted for a change’. Keywords allowed participants’ PCC, final consonants, consonant clusters, and syllables (in keywords only) to be probed throughout the study. Target behaviour was pronunciation of consonants and syllables without additions, distortions, substitutions, or deletions. For final consonants, substitutions were accepted only when a required morphological suffix was present (e.g. ‘votet’ for voted was considered correct). The rationale for crediting substitutions (e.g. devoiced final consonants) was based on the protocols’ focus on remediating final consonant deletion. This instrument was audio recorded to facilitate analysis.

The ICS was developed as a quick parent-rated measure of children’s functional intelligibility (McLeod et al., 2012). The 7-item scale was adapted for this study to ask participants to think about their speech intelligibility over the past month and identify the degree to which communication partners understood them on a 5-point Likert scale. A total score out of 35 from the 7 questions was calculated then converted to an average score out of 5 (by dividing by 7). Participants completed the adapted ICS in English and their home language.

The final assessment was conducted one week after the intervention was completed. Measures were taken using the CAP test, BEL sentences, the first of three post-intervention Intelligibility Enhancement Probes, and the adapted ICS. Speech rate and intensity and self-ratings of confidence and difficulty communicating in English were recorded again. Participants were provided with written and verbal feedback on their initial assessment prior to the first intervention session and on the final assessment after the last post-intervention probe was completed.
**Intervention**

The first author, who provided the intervention, developed the Intelligibility Enhancement Intervention Protocol (Blake, 2019b) after providing intervention for multilingual speakers for seven years. The Intelligibility Enhancement Intervention Protocol was based on principles of motor learning. Essential features of motor learning include cognitive analysis, practice, gradual progress, and feedback (Bernthal, Bankson, & Flipsen, 2017). Key features of this Intervention Protocol are perception training (identification and discrimination of sounds), explicit explanation of features of English speech (e.g. place, manner, and voicing of consonants), opportunity for multiple productions of targets with specific, timely feedback to encourage clients to develop the ability to self-monitor and correct unclear productions (e.g. devoicing of consonants), and opportunities to practise targets in conversation each session. These features support metalinguistic skills to facilitate improved production and comprehension of English speech.

The Protocol prioritises the production of consonants over vowels because English listeners focus more on differences in the production of consonants than vowels (Cutler, Sebastián-Gallés, Soler-Vilageliu, & Van Ooijen, 2000; Van Ooijen, 1996). Additionally, if speakers have difficulty producing final consonants, grammatical features (e.g. past tense and plurals) may be missing. In a study of 175 multilingual speakers who sought intelligibility enhancement, 96.0% of participants \( n=166 \) deleted final consonants in words (Blake & McLeod, 2018) (see table 2 for consonants targeted for both participants). Two consonants were targeted per session, while all Australian English vowels were targeted in one session. Adherence to the intervention protocol was accomplished by the use of handouts listing words, phrases, and sentences containing target phonemes and audio recordings of the same to facilitate practice.
outside of sessions. For this study, the review session at the end of the Intervention Protocol was replaced with the final assessment described above.

Cumulative intervention intensity was calculated as the product of dose multiplied by frequency multiplied by total duration (Warren, Fey, & Yoder, 2007). Dose was defined as the average number of participants’ attempted productions of a targeted consonant per session. An average dose of 207 was calculated over five random sessions with 10 consonants. Session frequency was weekly and total intervention duration was 11 weeks. Therefore, the cumulative intervention intensity was 2277 productions of targeted consonants.

**Data analysis**

Both visual and statistical techniques are presented as both are appropriate methods of analysing data from SCEDs (Tate et al., 2016). Probe data were plotted to allow visual inspection of performance variability, both within and between phases. Effect sizes were calculated as the difference in mean performance between baseline and withdrawal phases, divided by the pooled standard deviation (SD), that is the weighted average of the SD of both the baseline and withdrawal phases (Beeson & Robey, 2006). Improvement was defined as an effect size greater than 1.00 (i.e. a mean difference that exceeds the SD) as used in other speech-language pathology studies (Behrman, 2014; Maas & Farinella, 2012). There are few studies for this type of intervention that include effect sizes (see Behrman, 2014, 2017; Oelke et al., 2015); therefore, effect sizes are reported here for the purpose of comparison within and between participants and in order to contribute to the establishment of benchmarks for this intervention in the future.

**Reliability**

Reliability of data coding was confirmed by an independent SLP blinded to all other aspects of the study. She rated audio recordings of 25% of data for CAP test, BEL
sentences, Intelligibility Enhancement Probes, and speech rate. Reliability judgements were based on decisions of whether the phonemes were produced correctly or incorrectly and provided ratings in spm for speech rate. Training for inter-judge reliability was conducted prior to the study using a pilot assessment from an excluded participant. Inter-judge reliability on the study data ranged from 85.3 to 99.0% across the different instruments. Where disagreements occurred, the two raters discussed and reached agreement. Intra-judge reliability ranged from 99.0 to 99.5%.

**Results**

Insert table 3 about here

**Giang**

Clinical testing at initial assessment revealed Giang substituted and deleted English consonants (table 3). Final consonants were deleted (e.g. *nine* /nain/ was produced as [naɪ]) or substituted with /s/ (e.g. *but* /bʌt/ was produced as [bʌs]). Consonant clusters were reduced in all word positions (e.g. *price* /praɪs/ was produced as [pɹaɪs]), there were voicing or aspiration differences (e.g. *perfect* /pɜːfɪkt/ was perceived as [bɜːfɪkt]), and bilabial plosives were interchanged with labiodental fricatives (e.g. *flat* /flæt/ was produced as [plæt], *poor* /pɔːr/ as [fɔː], *give* /gɪv/ as [ɡɪb]). Substitutions and deletions occurred for sounds that do not occur in Vietnamese; dental fricatives (e.g. *rather* /ræðə/ was produced as [ɡaθə], *throw* /θrəʊ/ as [θɹəʊ]), affricates (e.g. *catch* /kæʧ/ was produced as [kæt]), and the voiceless postalveolar fricative (e.g. *she* /ʃi/ was produced as [sɪ]). Vowel substitutions were also noted during the assessment (e.g. *read* /rɛd/ (past participle) was produced as [ɹɪd], *said* /sed/ was produced as [sɛd], *week* /wik/ was produced as [wɪk], *her* /hɜː/ was produced as [hɜː], and *rain* /rɛm/ was
produced as [ɪn]. Giang had difficulty with stress in polysyllable words, achieving 46.6% on this subtest (e.g. *a*ˈcɛrn*ɪn* was produced as *a*ˈcɛrnˈɪn*ɪn*). Giang’s productions on the Intelligibility Enhancement Probes are shown in figure 1 where separate lines represent results for all variables probed (PCC, final consonants, consonant clusters, and syllables) for every measurement point in each phase of the study. An upward trend indicates positive change in the variables from baseline A₁ to withdrawal A₂. At the post-intervention assessment, Giang showed increases in PCC across the CAP test, BEL sentences, and Intelligibility Enhancement Probes as well as improvement in fricatives and affricates in BEL sentences keywords and final consonants in probes compared to the initial assessment (table 3). There was also some improvement in PVC and word stress in the CAP test even though these features were less rigorously targeted than consonants. There was a reduction in speech rate in both reading and monologue and an increase in speech intensity in reading only. Giang’s perception of her level of difficulty communicating in English reduced by 1 point on the 5-point scale, while her confidence communicating in English did not change (table 3). Representation of Giang’s probe data in figure 1 displays evident changes in slope from A₁ to B and A₂. Effect sizes, when comparing baseline and withdrawal phases, were 5.5 for PCC, 4.6 for final consonants, 2.3 for clusters, and 1.6 for syllables, indicating improvements in all variables measured.

Insert figure 1 near here

**Ning Yi**

Clinical testing at initial assessment revealed the consonants Ning Yi frequently substituted and deleted in English. Final consonants were deleted (e.g. *hæv* /hæv/ was produced as [hæ]) or substituted with /s/ (e.g. *lɒt* /lɒt/ was produced as [lʊs]). Consonant clusters were reduced (e.g. *ɪts* /ɪts/ was produced as [ɪs]) and medial
consonants (e.g. modern /mɒdən/ was produced as [mɒŋ]) and syllables were deleted (e.g. yesterday /jɛstədə/ was produced as [jɛstə]). Substitutions replaced sounds not present in Putonghua; dental fricatives (e.g. this /ðɪs/ was produced as [zɪs], three /θɹi/ as [sɹi]), the voiced labiodental fricative (e.g. very /vrɪ/ was produced as [wɹɪ]), and the voiceless postalveolar fricative (e.g. she /ʃi/ was produced as [ʃi]). Vowel substitutions were noted during the assessment (e.g. pet /pet/ and peat /pit/ were both produced as [pɪət], and he /hi/ was produced as [heɪ]). Ning Yi inserted a schwa before /s/ clusters (e.g. smoke /smoʊk/ was produced as [əsmoʊk]) and after plosives in word final when followed by a word-initial consonant (e.g. utmost respect /ʌtmoustɹəspɛkt/ was produced as [ʌtmoustɹəspɛkt]). Ning Yi had some difficulty with stress in polysyllable words, achieving 65.0% on this subtest (e.g. ec'onomy was produced as econ'omy, pre'senting as 'presenting).

Ning Yi’s productions on the Intelligibility Enhancement Probes are shown in figure 2 where separate lines represent results for all variables probed (PCC collected pre- and post-session, final consonants, consonant clusters, and syllables) for every measurement point in each phase of the study. As with figure 1, an upward trend indicates positive change in the variables from baseline A₁ to withdrawal A₂. At the post-intervention assessment, Ning Yi showed increases in PCC across the CAP test, BEL sentences, and Intelligibility Enhancement Probes, as well as improvement in fricatives and affricates in BEL sentences keywords and final consonants and consonant clusters in probes (see table 3). There was minimal improvement in PVC and a reduction in performance in word stress in the CAP test due to Ning Yi’s focus on clearly producing phonemes. (Participants were not informed what the instruments were
measuring.) There was an increase in speech intensity in both reading and monologue and a reduction in speech rate in reading only. Ning Yi’s perception of her confidence communicating in English increased by 1 point on the 5-point scale, while her level of difficulty communicating in English did not change. Representation of Ning Yi’s probe data in figure 2 displays changes in slope from $A_1$ to $B$ and $A_2$. Data points for the additional Post PCC display a more consistent increase in slope over the intervention period when compared to the slope of pre-session probes. Effect sizes, when comparing baseline and withdrawal phases, were 8.1 for PCC, 3.5 for final consonants, and 4.0 for syllables. Ning Yi improved in her production of consonant clusters; however, an effect size cannot be calculated for this outcome due to zero variance in scores in both baseline and withdrawal phases.

Figure 2 near here

**Discussion**

This research described the Intelligibility Enhancement Assessment and Intervention Protocols (Blake, 2019a; Blake, 2019b) and aimed to determine whether implementation changed two multilingual university students’ intelligibility in English. Both protocols included consideration of all components of the ICF (WHO, 2001), ensuring all factors potentially influencing multilingual speakers’ intelligibility in English were considered. For example, Body Functions and Body Structures were assessed by OMA, Activities and Participation factors were addressed in conversation practice tasks in intervention, Environmental Factors such as community support available were queried in the case history, and Personal Factors such as education and employment determined the personalised vocabulary used in intervention stimulus materials. Following intervention, both participants displayed increased performance across the speech/intelligibility instruments in the assessment protocol.
Assessment protocol

The comprehensive Intelligibility Enhancement Assessment Protocol contained typical elements of a speech-language pathology assessment as well as participants’ perceptions of their own oral communication skills in English. The thorough case history provided key details of English language experience that afforded a lens through which to view the results of the speech/intelligibility measures. The different contexts of English usage (Giang lecturing in English to Vietnamese native speakers; Ning Yi interpreting for speakers of US English in China), amount of time spent using English in conversation, and community support available to improve their intelligibility in English likely affected participants’ initial presentation as well as their awareness of their own intelligibility. Giang rated herself higher in English on the adapted ICS than Ning Yi, although her scores on the other three speech/intelligibility assessments were lower. Before intervention Giang’s lack of experience communicating in English both in Australia and prior to arrival may have afforded her less awareness of her intelligibility to native English speakers than Ning Yi.

The assessments revealed both participants made systematic variations in pronunciation consistent with expectations based on differences between their home language phonetic inventories and phonotactics and those of Australian English. This finding confirms the importance of investigating home languages in preparation for assessment in order to formulate predictions about multilingual speakers’ potential difficulties in English. Individuals seeking Intelligibility Enhancement should be made aware of the influence of home language to allay concerns of personal deficits in communication or learning. For example, both participants substituted dental fricatives with other sounds, consistent with Vietnamese speakers, Giang substituted alveolar stops; while typically for speakers of Putonghua, Ning Yi replaced them with alveolar fricatives. It is anticipated that atypical substitutions such as those Giang made as a
Vietnamese speaker between bilabial plosives and labiodental fricatives (e.g. poor produced as [fɔ]) may have greater impact on intelligibility than more typical substitutions, such as the substitution of /w/ for /v/ by Ning Yi as a speaker of Putonghua. Perception training to increase awareness of the impact of these differences on intelligibility is an important component of the Intelligibility Enhancement Intervention Protocol.

While CAP test and BEL sentences facilitated identification of intervention targets and comparison of pre- and post-intervention performance, Intelligibility Enhancement Probes illustrated participants’ progress throughout the intervention period. Probing at numerous intervals provided a clearer indication of learning as seen in the slope of a graph, than in the final assessment where performance on the day may have been affected by factors such as fatigue. For both participants, upward trends indicated increased performance for all variables from baseline A₁ to withdrawal A₂, and visual inspection of the data was supported by effect sizes. For example, while there was no difference between Giang’s scores for syllables in BEL sentences and Intelligibility Enhancement Probes in initial and final assessments, probe results in figure 1 provide visual evidence of improvement that is supported by the calculated effect size (1.6). The minimal improvements in vowel production provides further evidence of the effectiveness of the intervention when compared to the greater progress noted in features more rigorously targeted, such as final consonant deletion. Along with participants’ perceptions of increased confidence and reduced difficulty communicating in English, these findings provide important evidence to support this intervention: Intelligibility Enhancement was effective in improving the intelligibility of these multilingual university students.
**Intervention protocol**

Detailed feedback from the SLP assisted participants in analysing and adjusting their performance. For example, Giang was initially unaware of the implications of deleting final consonants. Once she understood their omission could create a different word, she focussed on producing final sounds. Practise is necessary for mastering a motor skill, beginning in a simple environment (sounds in isolation) and increasing in complexity (conversation level) (Bernthal et al., 2017). The cumulative intervention intensity (2277 productions of targeted consonants) facilitated multiple opportunities for producing the target during sessions. Unfortunately, Giang reported she was unable to complete homework practice due to family and study commitments. However, in consultation with the clinician, she developed strategies to focus on intervention targets during daily activities. The procedural difference implemented for Ning Yi (as a result of Giang’s inability to complete homework) provided comparison of Ning Yi’s pre- and post-session PCC. Her Post PCC displayed a more consistent improvement than pre-session probes suggesting Ning Yi’s performance after intervention sessions was potentially unaffected by how she arrived at the session (e.g. whether she had practised, had assignments, was stressed). The Post PCC also illustrates the effectiveness of clinician feedback in focusing participants on their productions and reminding them to self-monitor and correct their English speech because internal feedback is also important in the early development of motor skills (Bernthal et al., 2017)

**Clinical implications**

Intelligibility Enhancement uses the ICF as a framework to provide a holistic and integrated method of supporting multilingual speakers’ intelligibility in English. These findings indicate the Intelligibility Enhancement Assessment and Intervention Protocols may be effective in improving the English intelligibility of multilingual university students. In order to administer an intervention, clinicians need to be aware of
specific aspects such as intervention targets, procedure, materials, dosage, and target behaviours (Kaderavek & Justice, 2010). The administration of an intervention must be consistent to achieve optimum outcomes (Kaderavek & Justice, 2010). Future detailed manualisation of this intervention with pre-set materials (e.g. Intelligibility Enhancement Probes, handouts) will assist with fidelity and consistency of administration.

**Strengths and limitations**

This study employed both visual and statistical techniques to analyse intervention data to facilitate development of empirical benchmarks for Intelligibility Enhancement. The acceleration and duration of slopes in the learning curve can be compared with other interventions to determine efficiency and the tabular presentation of the results will assist in verification in a meta-analysis (Tate et al., 2016). Reporting of effect sizes not only allowed comparison within and between participants, but also contributes to the increasing literature in this field. While this study reported a high cumulative intervention intensity, an optimum intensity is yet to be determined. Variables such as the quality and quantity of both client and clinician acts, learning that occurs independent of practice, and service-related variables would need to be identified and evaluated (Baker, 2012) along with clients’ Personal and Environmental Factors.

While the current study showed good maintenance for one month, ongoing maintenance data were not collected. Participants were multilingual university students with high levels of motivation to improve their communication skills in English to enhance their employment prospects; therefore, it is unclear whether results will generalise to other populations. Nevertheless, the promising findings suggest that further testing of the Intelligibility Enhancement Protocols is warranted to determine whether it is an effective intervention for multilingual speakers in other contexts.
Further investigation should also consider the factors affecting the outcomes, such as barriers to completing home practise.

**Conclusion**

This study described the Intelligibility Enhancement Assessment and Intervention Protocols and demonstrated their effectiveness in increasing English intelligibility in two multilingual university students. The results of this study highlight the importance of establishing holistic and comprehensive protocols so all factors relating to intelligibility are considered. This study will inform the understanding of SLPs and others who provide support for multilingual speakers and will contribute to the emerging literature regarding this area of clinical practice.
References


Table 1. Participant demographic data gathered from case history.

<table>
<thead>
<tr>
<th></th>
<th>Giang</th>
<th>Ning Yi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>37</td>
<td>30</td>
</tr>
<tr>
<td>Sex</td>
<td>Female</td>
<td>Female</td>
</tr>
<tr>
<td>Home language</td>
<td>Vietnamese (Southern dialect)</td>
<td>Putonghua (Mandarin)</td>
</tr>
<tr>
<td>University program</td>
<td>PhD in Management</td>
<td>Masters of Business Administration</td>
</tr>
<tr>
<td>Age learnt English</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>Time known English</td>
<td>25 years</td>
<td>16 years</td>
</tr>
<tr>
<td>Time used English in conversation</td>
<td>3 years</td>
<td>6 years</td>
</tr>
<tr>
<td>IELTS* overall score within the last 2 years</td>
<td>5.5</td>
<td>6.5</td>
</tr>
<tr>
<td>Domestic situation</td>
<td>Lives with husband (of same ethnicity) and child</td>
<td>Lives alone</td>
</tr>
<tr>
<td>Community support reported</td>
<td>Extensive support from other Vietnamese families</td>
<td>Friendly neighbours who provide an opportunity for conversation practice with native English speakers</td>
</tr>
<tr>
<td>Speaks English at home</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Additional languages</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Context of English use prior to living in Australia</td>
<td>Lectured in English to Vietnamese university students in Vietnam</td>
<td>Interpreted for an American company with an office in China</td>
</tr>
<tr>
<td>Motivation</td>
<td>There are some reasons, which I would like to improve my English speech: I have some problems with my pronunciation. It is difficult for me to conversation with another people. Although I know how to say, my sounds is not clearly and cannot make them easy to understand what I am saying. That make me lack of confidence when I contact with them. I am PhD student and study at the country where English is the mother tongue. I really want my English suit my level. In the future, I will attend some conferences and present my research. I would</td>
<td>I have been dreaming about speaking English as a native speaker for years since I worked as an interpreter in Beijing.</td>
</tr>
</tbody>
</table>
like that when I present my research, the audience can understand what I am saying. I have studied English since I was 12 years old. I have not improved my English skills, especially speaking.

*IELTS, International English Language Testing System*
Table 2. Shared consonant inventories between participants’ home languages and English.

<table>
<thead>
<tr>
<th>Sound classes</th>
<th>Shared consonants with English</th>
<th>Intervention targets for both participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plosives</td>
<td>/p, b, t, d, k/</td>
<td>/p, t, d, k/</td>
</tr>
<tr>
<td></td>
<td>Putonghua&lt;sup&gt;b&lt;/sup&gt; /p, t, k/</td>
<td></td>
</tr>
<tr>
<td>Nasals</td>
<td>/m, n, η/</td>
<td>/m, n, η/</td>
</tr>
<tr>
<td>Fricatives</td>
<td>/f, v, s, z, h/</td>
<td>/f, s/</td>
</tr>
<tr>
<td></td>
<td>Phù, v, θ, s, z, j, ʒ/</td>
<td>/f, s, θ, d, s, z, j, ʒ/</td>
</tr>
<tr>
<td>Approximants</td>
<td>/l, w, j/</td>
<td>/l, ɹ/</td>
</tr>
<tr>
<td></td>
<td>Approximants</td>
<td>/l, ɹ/</td>
</tr>
<tr>
<td></td>
<td>Phù, McLeod, 2016.</td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> Phù & McLeod, 2016.

<sup>b</sup> Zhu, 2007.
Table 3. Participants’ pre- and post-intervention assessment results.

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Giang</th>
<th></th>
<th>Ning Yi</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-intervention assessment</td>
<td></td>
<td>Post-intervention assessment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>CAP test (^a)</td>
<td>67</td>
<td>87.0</td>
<td>68</td>
<td>88.3</td>
</tr>
<tr>
<td>Percentage of vowels correct (PVC) (total /77)</td>
<td>175</td>
<td>67.8</td>
<td>224</td>
<td>86.8</td>
</tr>
<tr>
<td>Percentage of consonants correct (PCC) (total /258)</td>
<td>35</td>
<td>46.6</td>
<td>40</td>
<td>53.3</td>
</tr>
<tr>
<td>BEL sentences (^b)</td>
<td>43</td>
<td>43.0</td>
<td>77</td>
<td>77.0</td>
</tr>
<tr>
<td>Keywords (total /100)</td>
<td>214</td>
<td>72.1</td>
<td>268</td>
<td>92.4</td>
</tr>
<tr>
<td>Fricatives and affricates in keywords (total /varies)</td>
<td>55</td>
<td>69.6</td>
<td>74</td>
<td>93.7</td>
</tr>
<tr>
<td>Syllables in sentences (total /varies)</td>
<td>210</td>
<td>99.5</td>
<td>199</td>
<td>99.5</td>
</tr>
<tr>
<td>Intelligibility Enhancement Probes (^c)</td>
<td>50</td>
<td>62.5</td>
<td>68</td>
<td>85.0</td>
</tr>
<tr>
<td>PCC (total /80)</td>
<td>13</td>
<td>61.9</td>
<td>18</td>
<td>85.7</td>
</tr>
<tr>
<td>Final consonants (total /21)</td>
<td>4</td>
<td>44.4</td>
<td>6</td>
<td>66.7</td>
</tr>
<tr>
<td>Syllables (total /30)</td>
<td>27</td>
<td>90.0</td>
<td>27</td>
<td>90.0</td>
</tr>
<tr>
<td>ICS (^d) adapted (total /5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home language</td>
<td>5.0</td>
<td>n/a</td>
<td>4.6</td>
<td>n/a</td>
</tr>
<tr>
<td>English</td>
<td>3.9</td>
<td>n/a</td>
<td>3.7</td>
<td>n/a</td>
</tr>
<tr>
<td>Speech rate (syllables per minute)</td>
<td>180</td>
<td>100</td>
<td>245</td>
<td>145</td>
</tr>
<tr>
<td>Reading</td>
<td>210</td>
<td>120</td>
<td>255</td>
<td>255</td>
</tr>
<tr>
<td>Speech intensity (decibels)</td>
<td>60</td>
<td>62</td>
<td>58</td>
<td>58</td>
</tr>
<tr>
<td>Oro-motor assessment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Within normal limits</td>
<td>n/a</td>
<td>Within normal limits</td>
<td>n/a</td>
</tr>
</tbody>
</table>

\(^a\) PVC: Percentage of vowels correct. \(^b\) BEL: Baseline Evaluation of Language. \(^c\) Intelligibility Enhancement Probes. \(^d\) ICS: Intelligibility Comprehension Scale.
<table>
<thead>
<tr>
<th>Hearing screener</th>
<th>Within normal limits</th>
<th>n/a</th>
<th>Within normal limits</th>
<th>n/a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confidence communicating in English (5-point Likert scale)</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Confident</td>
</tr>
<tr>
<td>Difficulty communicating in English (5-point Likert scale)</td>
<td>Moderate</td>
<td>Some</td>
<td>Some</td>
<td>Some</td>
</tr>
</tbody>
</table>

* ClearSpeak Adult Pronunciation Test (Kimble-Fry, 2009).
* Basic English Lexicon (BEL) sentences (Calandruccio & Smiljanic, 2012).
* Blake, 2018c.
* Intelligibility in Context Scale (ICS) (McLeod, Harrison, & McCormack, 2012).
* Giang added 1 syllable (not included in score)
* Ning Yi added 4 syllables (not included in score)
* Ning Yi added 2 syllables (not included in score)
* n/a Measurement not taken
Figure 1.
Figure 2.
List of figure captions

Figure 1. Intelligibility Enhancement Probe (Blake, 2018) results for Giang. PCC=percentage of consonants correct, FC=final consonants
Reprinted with permission from Blake, McLeod, & Verdon (2019)

Figure 2. Intelligibility Enhancement Probe (Blake, 2018) results for Ning Yi. PCC=percentage consonants correct, FC=final consonants, Post
PCC=percentage of consonants correct probed at the end of each intervention session
Reprinted with permission from Blake, McLeod, & Verdon (2019)
Supplemental Appendix

Intelligibility Enhancement: Assessment Protocol

(Reprinted with permission from Blake, 2019a)

The Intelligibility Enhancement Assessment Protocol outlines assessments, tools, and resources to conduct a holistic and structured assessment of a multilingual speaker’s English intelligibility as well as to provide insight into the impact of intelligibility on functioning and participation:

1. Case history including demographic data, home language acquisition, and English experience as well as motivation for seeking support (see Blake & McLeod, 2019).
2. Oro-motor assessment (OMA) to determine the potential impact of articulatory functioning on oral communication (see Blake & McLeod, 2019).
3. Speech rate (in syllables per minute) in reading and a monologue.
4. Speech intensity (in decibels) in reading and a monologue.
5. Perceptual judgement of voice (see Oates & Russell, 1997) and fluency.
6. Confidence communicating in English on a 5-point Likert scale.
7. Difficulty communicating in English on a 5-point Likert scale.

Speech/intelligibility instruments

2. Basic English Lexicon (BEL) sentences (Calandruccio & Smiljanic, 2012).
3. Intelligibility Enhancement Probes (Blake, 2018).
4. Intelligibility in Context Scale (ICS) (McLeod, Harrison, & McCormack, 2012) adapted for adults and completed by the multilingual speakers in English and their home language(s).
**Assessment tools and resources**

1. Information about the speaker’s home language(s) (consonants, vowels, tones, stress, syllable and phonotactic structure, dialectal variants) to formulate predictions about potential difficulties in English (see McLeod, 2012; Swan & Smith, 2001).

2. Digital recorder to record all speech/intelligibility assessments to facilitate analysis.

3. Sound level meter/app to measure speech intensity.

4. Stutter rating tool/app to measure speech rate.

5. Hand sanitizer for the OMA, rather than gloves that medicalise the assessment.

6. Torch for OMA.

**Note on terminology**

Differences in multilingual speakers’ pronunciation perceived as an accent are influenced by speakers’ home languages and therefore, do not reflect a disorder. Intelligibility Enhancement uses non-medical, non-judgemental terminology to ensure multilingual speakers are not pathologised: *clients/speakers* rather than *patients*, *differences* rather than *disorders*, and *substitutions, distortions, and deletions* rather than *errors*. 
Intelligibility Enhancement: Intervention Protocol

(Reprinted with permission from Blake 2019b)

The Intelligibility Enhancement Intervention Protocol provides a structured approach to enhance English intelligibility in multilingual speakers as well as to teach metalinguistic skills that may improve comprehension and provide skills and knowledge for lifelong learning.

Rationale for targets

The Intelligibility Enhancement Intervention Protocol outlines a 12-week program, undertaken as a 1-hour session each week. Plosives are targeted first (see schedule) because they are easier to visualise, can readily be used to demonstrate aspiration and voicing for speakers of languages that do not contain these features, and targeting them assists in remediating final consonant deletion, common in the English speech of multilingual speakers (Blake & McLeod, 2019). In English, final consonants may designate morphological features such as tense and plurality. Therefore, omitting final consonants may lead to miscommunication and a perception of inferior grammar. Targeting labiodental, dental, and alveolar fricatives in sequence assists with perception and production of these sounds. Dental fricatives are rare in many languages, so these phonemes frequently require intervention. In a study of 175 multilingual speakers who sought support for their English intelligibility, 94.9% (n = 166) substituted dental fricatives with other phonemes (Blake & McLeod, 2019). The alveolar fricatives (/s/ and /z/) are often targeted to remediate final consonant deletion. If affricates require intervention, then post-alveolar fricatives should be targeted first to assist with perception and production of these sounds. Approximants are the last consonants targeted as comparison with other manners of articulation assists with perception and production of these sounds. The consonants listed for weeks 1 to 6 generally require intervention because of final consonant deletion or because they are rare in other
languages; however, those targeted in weeks 7 to 10 may not require intervention. If this situation occurs, sessions may target other areas of concern, such as speaking on the telephone or presentation skills. One session on English vowels is provided. The final session involves a review of clients’ progress and provides direction for continued focus on increasing intelligibility in English.

**Schedule for Intelligibility Enhancement intervention**

<table>
<thead>
<tr>
<th>Session</th>
<th>Targeted place and manner</th>
<th>Target</th>
<th>Additional Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Assessment</td>
<td>Bilabial plosives</td>
<td>/p/ and /b/</td>
<td>See Assessment Protocol</td>
</tr>
<tr>
<td>1</td>
<td>Alveolar plosives</td>
<td>/t/ and /d/</td>
<td>Feedback on assessment</td>
</tr>
<tr>
<td>2</td>
<td>Velar plosives</td>
<td>/k/ and /g/</td>
<td>Past tense pronunciation rules; /t/, /d/ or /sd/</td>
</tr>
<tr>
<td>3</td>
<td>Labiodental fricatives</td>
<td>/f/ and /v/</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Dental fricatives</td>
<td>/θ/ and /ð/</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Alveolar fricatives</td>
<td>/s/ and /z/</td>
<td>‘s’ morpheme pronunciation rules; plus /s/, /z/ or /sz/</td>
</tr>
<tr>
<td>6</td>
<td>Post-alveolar fricatives</td>
<td>/ʃ/ and /ʒ/</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Affricates</td>
<td>/ʧ/ and /ʤ/</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Alveolar approximants</td>
<td>/l/ and /ɹ/</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>/w/ or /j/ or /h/</td>
<td>If clients produce these phonemes clearly during assessment, the session may target an area of their concern</td>
</tr>
<tr>
<td>10</td>
<td>Vowels</td>
<td>Schwa, stress, and prosody</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Review of progress</td>
<td>Revision of all targets and practise in 3 tasks (reading, monologue, and conversation) with feedback prior to moving to the next task</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Structure of sessions**

1. Each session begins with an auditory discrimination task to check whether the clients are able to discriminate between the target sound and their substitution.
Minimal pairs are used to highlight the impact of substituting or deleting a single phoneme on intelligibility (e.g., *pear* versus *bear*). Minimal pairs are used because multilingual speakers reported they were unaware they were not intelligible in English and of the factors that influenced their intelligibility until told so by a native English speaker (Blake, Verdon, & McLeod, 2019).

2. Next, provide explicit explanation of the articulation of consonant targets in terms of place, manner, and voicing or in Session 11, explicit explanation of vowel formation in terms of tongue position (height and fronting), length, and lip posture (rounded, spread, neutral), as well as the formation of diphthongs. Explanations assist with perception as well as production (Blake, Verdon, & McLeod, 2019).

3. Enable practise including multiple repetitions with modelling and feedback from the clinician in isolation, alternating voicing pairs (and alternating short versus long vowels), then in syllables (CV and VC), in words, phrases, sentences, and finally in a short conversation that includes personalised vocabulary. Feedback is only given on session targets and phonemes previously targeted. Feedback is timely and specific, indicating those aspects of productions that are unclear (e.g. aspiration, voicing, or tongue placement).

4. All sessions include discussion, modelling, and feedback on features of prosody, such as speech rate and intensity, stress (word and sentence), pausing, and intonation. Clients also hear models of vowels in consonant sessions; however, feedback on vowels is not provided until Session 11.

5. Clients are encouraged to self-monitor and correct unclear productions in every session.

**Intervention tools and resources**

1. A written handout for each session that includes:
   a. an auditory discrimination task
b. an explanation of how targets are produced

c. prompts and exemplars for producing the targets in isolation, syllables, words, phrases, sentences, and conversation

d. spelling conventions, rules for the pronunciation of morphological suffixes (e.g. past tense), and examples of homonyms.

2. Charts representing the International Phonetic Alphabet (IPA) consonant and vowel symbols (International Phonetic Association, 1999).

3. A small hand mirror for clients to check positioning of articulators.

4. A pinwheel to promote aspiration.

5. Large rubber bands to facilitate kinaesthetic feedback for short versus long vowels.

Homework

Clients are provided with audio exemplars of words, phrases, and sentences used in sessions with pauses to allow repetition. The recommended frequency of practice is daily. Clients and the SLP decide on a weekly generalisation task such as making phone calls and instigating conversations with strangers (e.g. asking for directions).

Conversation group

Clients may attend a weekly 1-hour group session where they can practise their English conversation skills in a supportive environment as more time conversing in English is associated with greater confidence and less difficulty communicating in English (Blake & McLeod, 2019). Prepared activities extend clients’ English conversation skills. Example tasks include providing directions, circumlocution activities, and understanding idioms.
References


Part Four

Conclusions and Contributions
of this Doctoral Research

<table>
<thead>
<tr>
<th>Parts</th>
<th>One: General Introduction</th>
<th>Two: The Relationship between the English Proficiency of Multilingual Speakers and their Participation in Australian Society</th>
<th>Three: English Intelligibility</th>
<th>Four: Conclusions and Contributions of this Doctoral Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapters</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
Chapter 10: Conclusions and Contributions

The purpose of this doctoral research was to investigate the relationship between multilingual speakers’ proficiency and intelligibility in English and their participation in Australian society and to provide insight into whether intelligibility enhancement was an effective intervention to enhance the English intelligibility of multilingual speakers.

Guided by the ICF (WHO, 2001), the studies presented in this thesis form a new and significant contribution to knowledge of English proficiency, intelligibility, and participation in multilingual speakers in Australia. This research appears to be the first to present data considering the participation of multilingual speakers from the perspective of their English proficiency and intelligibility. The use of data from large-scale Government datasets added statistical power to the exploration of the effect of multilingual speakers’ English proficiency on their participation, while the inclusion of qualitative data to support the quantitative findings enabled the voices of multilingual speakers to be heard.

This research has shown that multilingual speakers:

- were successfully participating in Australian society, while also contributing to Australia’s economic and social prosperity,
- perceived a strong relationship between their English proficiency and their successful participation in society,
- lacked awareness of their intelligibility and its importance to their spoken language proficiency,
- valued intervention to support their intelligibility in English, and
- achieved positive outcomes after participating in intervention with a speech-language pathologist (SLP) using the Intelligibility Enhancement Assessment and Intervention Protocols (Blake, 2019a, 2019b).

The findings of this research provide insights for Australia and other language-dominant countries, for communities, universities, individuals, as well as for SLPs and others (e.g., linguists, language teachers, and acting, elocution, or voice coaches) who support multilingual speakers in intelligibility enhancement or in additional contexts of speech-language pathology. This final chapter summarises the results presented in Chapters 1 to 9 and describes the unique contributions of this doctoral research with implications for the Government, communities, universities, individuals, professional practice, and theory.
Synopsis Revisited

This doctoral thesis contained four parts presented as a series of eight publications addressing the interrelated topics of English proficiency, intelligibility, and participation in multilingual speakers.

Part One: General Introduction

The two chapters in Part One provided a general introduction to the thesis and introduced the theoretical framework. Chapter 1 described the background, benefit, purpose, research questions, and methodology of the thesis and introduced the aims and different methods employed in each of the individual papers (Table 1). Chapter 2 introduced the ICF (WHO, 2001) as the theoretical framework for this research in a literature review (Paper 1) that described the ICF and its application to speech (including intelligibility), language, and hearing. The description of the ICF in Chapter 2 highlighted that it was intended for use with all people, not just those with disorders, an argument that permitted the investigation and discussion of multilingual speakers and their English proficiency and intelligibility that followed in Parts 2, 3, and 4.

Part Two: The Relationship between the English Proficiency of Multilingual Speakers and their Participation in Australian Society

Part Two (Chapters 3 to 6) presented three quantitative research papers and one qualitative research paper that focused on multilingual speakers’ participation in Australian society and the relationships between their participation and their English proficiency and intelligibility. Chapter 3 (Paper 2) presented an analysis of data from two Australian censuses that described the relationship between the spoken English proficiency of Australian residents and their educational level, employment, and income. The analysis proved multilingual residents who also spoke English very well were more likely to have postgraduate qualifications, full-time employment, and a high income than monolingual English-speaking Australians. Chapter 4 (Paper 3) presented an analysis of data from Building a New Life in Australia: The Longitudinal Study of Humanitarian Migrants that examined 2,399 humanitarian migrants’ English proficiency and how it facilitated or hindered their self-sufficiency and consequently, their successful settlement in Australia. Oral English proficiency proved a statistically significant predictor of humanitarian migrants’ self-sufficiency (knowing how to look for a job, get help in an emergency, etc.), explaining 21% of the variance. Personal factors such as age, gender, and education predicted only an additional 6% of the variance over oral English proficiency. Chapter 5 (Paper 4) narrowed the focus of the
research to multilingual university students and presented an analysis of a survey of their perceptions of the impact of their spoken English proficiency and intelligibility on their participation, not only at university, but also in society. While participants reported their spoken English proficiency impacted their participation in social, academic, and employment activities, the results highlighted a lack of awareness of intelligibility as an essential component of spoken language proficiency. Chapter 6 (Paper 5) further explored multilingual university students’ perspectives regarding their intelligibility in English through qualitative analysis of comments from the same survey as in Paper 4 along with semi-structured interviews with seven multilingual speakers. Participants discussed their motivation for seeking support for their intelligibility in English as well as their perceptions of barriers and facilitators to improving their intelligibility. Participants reported career aspirations and their own as well as other’s expectations of them as motivations for improving their intelligibility in English. Barriers to intelligibility included lack of self-awareness of reduced English intelligibility and the use of ineffective strategies (e.g., fast speech rate to disguise pronunciation difficulties). Facilitators to intelligibility were support from others, beneficial strategies (e.g., confirming listener understanding), and opportunities to practice.

Part Three: English Intelligibility Enhancement for Multilingual Speakers

Part Three (Papers 6, 7, and 8) examined intelligibility enhancement, an intervention designed to improve multilingual speakers’ intelligibility in English. Chapter 7 (Paper 6) presented an encyclopaedia entry describing intelligibility enhancement. The entry outlined the reasons multilingual speakers may seek support for their intelligibility in language(s) other than their home language, variables that may influence intelligibility, and features of multilingual English speech that might be targeted in an intervention. Chapter 8 (Paper 7) presented a retrospective record review of 175 client records from a clinic providing intelligibility enhancement that described the characteristics and aspirations of the individuals who sought support for their English intelligibility. Some multilingual speakers’ poor intelligibility was exacerbated by a combination of substitutions/deletions, fast speech rate, low speaking volume, and differences in word stress. More time conversing in English was associated with greater confidence and less difficulty communicating in English, although more time knowing English was not. Chapter 9 (Paper 8) presented a multiple-baseline single-case experimental design (SCED) with two multilingual speakers that aimed to determine the effectiveness of the Intelligibility Enhancement Assessment and Intervention Protocols developed by the doctoral candidate. Following intervention, both participants displayed
increased performance across the speech/intelligibility instruments in the assessment protocol.

**Part Four: Conclusions and Contributions of this Doctoral Research**

This final chapter summarises the results presented in Chapters 1 to 9 and describes the key contributions of this doctoral research with reference to the individual research questions. The results highlight the challenges faced by multilingual speakers attempting to participate in language-dominant societies and the barriers and facilitators associated with their proficiency and intelligibility in English. This chapter also presents key implications for the Government, communities, universities, individuals, professional practice, and theory as well as addressing limitations of the research and directions for future research.

**Summary of Key Findings with Reference to the Research Questions**

In this doctoral research, the International Classification of Functioning, Disability and Health (ICF) (WHO, 2001) was used as a theoretical framework to provide a structured way to consider the broad range of factors that contributed to multilingual speakers’ English proficiency, intelligibility, and participation. The eight papers embedded within this thesis were designed to address five research questions. The key findings of the research are summarised here with reference to these five questions.

1. *The relationship between spoken English proficiency and participation in Australian society (e.g., employment, education, and access to services)*

   In this doctoral research, particularly, Chapters 3, 4, 5, 6, and 8, English proficiency impacted multilingual speakers’ participation in employment and income, education, and social activities. Multilingual speakers with high levels of proficiency in English proved to be successfully participating in Australian society, while also contributing to Australia’s economic and social prosperity (Chapter 3). However, those multilingual speakers with low levels of English proficiency experienced poorer participatory outcomes (Chapters 3 and 4). Personal Factors including age, gender, and education impacted both English proficiency and participation. For example, older multilingual women were more likely to have poorer English skills than other multilingual speakers and this was true among both the residents of Australia (Chapter
3) and among humanitarian migrants (Chapter 4). Female humanitarian migrants were also less likely to report improvement in their English skills over time, even though both humanitarian migrants (Chapter 4) and multilingual university students (Chapter 5) who had been in Australia for more than one year reported less difficulties communicating. Family commitments restricted female humanitarian migrants’ participation in English language learning (Chapter 4) and female university students’ participation in English conversations (Chapter 6). Education level affected humanitarian migrants’ participation in activities and access to services that might have helped them to settle in their new country, with those migrants with any schooling being more self-sufficient than those with no schooling and those with university qualifications achieving the best outcomes (Chapter 4).

Factors relating to home language spoken, the number of additional languages spoken, and English language learning impacted multilingual university students’ English proficiency and participation (Chapters 5, 6, 8, and 9). Multilingual university students from certain home language backgrounds (e.g., Vietnamese) self-rated their English proficiency lower than other language groups (e.g., Bengali), and reported greater impact of English proficiency on participation (Chapter 5). Conversely, those who spoke three or more languages rated their English proficiency higher and reported significant and positive associations with participation. Many multilingual university students reported learning English in their home country from teachers who did not speak English as their home language (Chapter 8). Consequently, the amount of time multilingual students had spent studying English had less effect on outcomes than the amount of time they had spent speaking English in conversations with native speakers (Chapters 5 and 8). Before multilingual students came to Australia, they may not have had the opportunity to converse with native speakers; however, once they were living and studying in an English-dominant country, opportunities to practice their English with native speakers were restricted by finances, family, work, or study commitments, shyness, or their perceptions of the negative attitudes of conversation partners (Chapters 5, 6 and 8).

Intelligibility in English also impacted multilingual university students’ English proficiency and participation (Chapter 6); however, three of the studies in this research highlighted a lack of awareness among multilingual speakers of the importance of intelligibility in spoken language proficiency (Chapters 5, 6, and 8).

In summary, in this research there was a relationship between spoken English proficiency and participation in Australian society. Multilingual speakers with high
proficiency in English achieved good outcomes, while individuals with poor spoken English proficiency were especially vulnerable and may have needed support to participate fully in society.

2. Multilingual speakers’ perceptions of the relationship between their English proficiency and their participation in society

In this doctoral research, particularly Chapters 4, 5, 6, 8, and 9, multilingual-speaking humanitarian migrants and university students perceived a strong relationship between their English proficiency and their successful participation in society. Humanitarian migrants’ perceptions confirmed those reported in the literature (Choi & Ziegler, 2015; Edele, Seuring, Kristen, & Stanat, 2015); that spoken English proficiency was critical to their successful settlement, allowing them to participate in further education, employment, and the social life of their new country (Chapter 4).

Multilingual university students perceived that English proficiency restricted their academic, social, and employment opportunities (Chapters 5, 6, and 8) to the point where one participant compared spoken English proficiency to a disability:

I really hate English. ... I hate that I still cannot find a proper way to have an enjoyable conversation with anyone in English. … I describe myself as language disabled and I carry around my disability (Blake, Verdon, & McLeod, 2019, p. 5).

Over half of the 175 students who sought intelligibility enhancement (Chapter 8) reported participation in academic activities was difficult because of spoken English proficiency. However, approximately a third of 137 multilingual survey respondents (Chapter 5) believed intelligibility of spoken English had no effect on their English communication. This perception was consistent with the low self-awareness of intelligibility reported in other studies in this thesis (Chapters 6, 8, and 9). Multilingual speakers’ lack of awareness of their own intelligibility appeared to be associated with their lack of experience communicating with native speakers of English, who may have provided direct or indirect feedback. For example, prior to intervention in the SCED (Chapter 9), Giang rated her intelligibility in English higher than Ning Yi on the adapted ICS. Her prior experience communicating in English involved lecturing in English to Vietnamese native speakers in Vietnam which may have afforded her less awareness of her intelligibility to native English speakers than Ning Yi, who had been employed as an interpreter for speakers of U.S. English in China (Chapter 9).

In summary, multilingual speakers perceived their English proficiency impacted on their participation in social, academic, and employment activities; however, they
lacked awareness of their intelligibility and its importance to their spoken language proficiency.

3. **Multilingual speakers who seek support for their intelligibility in English**

In this doctoral research, particularly Chapters 5, 6, 8, and 9, the multilingual speakers who sought support for their intelligibility in English were diverse in terms of their motivation, previous English experience, awareness of their own intelligibility, and home language background (Chapters 5, 6, 8, and 9). For example, some multilingual speakers were motivated to seek support because they believed they fell short of their own or other peoples’ expectations and others were looking to support their social and career aspirations (Chapters 6, 8, and 9). However, multilingual speakers who were aware of their reduced intelligibility in English were not the only ones who sought support. Some multilingual speakers with less awareness were referred by others including academic staff, supervisors, and friends (Chapters 6 and 8). Of the multilingual university students surveyed in Chapter 5, 7.8% reported they had already sought support for their English intelligibility, and although almost half (46.9%) would consider seeking such support, some (7.4%) did not know who they could ask for help (Chapter 5).

In summary, the multilingual speakers who sought support for their intelligibility in English were not homogenous, highlighting the importance of a thorough assessment protocol that investigates all factors that may potentially impact an individual’s intelligibility prior to establishing goals for intervention.

4. **Factors to be considered in providing English intelligibility enhancement assessment and intervention for multilingual speakers**

The use of the ICF as the theoretical framework in this research enabled a holistic consideration of factors potentially affecting multilingual speakers’ intelligibility in English with a central focus on participation. The factors identified in every chapter of this thesis (e.g., the range of movement of an individual’s tongue, their articulation of final consonants, and the years they had used English in conversations) informed the development of the Intelligibility Enhancement Assessment and Intervention Protocols (Blake, 2019a; 2019b) created by the doctoral candidate during the course of this candidature (Chapter 9). SLPs planning on providing English intelligibility enhancement for multilingual speakers require an understanding of their clients’ communicative needs and motivations for seeking support (Behrman & Neel,
2016) and holistic and structured assessment and intervention protocols should assist both SLPs and the multilingual speakers that they aim to support.

5. **Outcomes of Intelligibility Enhancement intervention with multilingual speakers’ intelligibility in English**

In this doctoral research, multilingual speakers who participated in English intelligibility enhancement intervention appeared to recognise the value of the intervention in facilitating their participation (Chapters 6, 8, and 9). For example, they reported learning useful communication strategies, enjoying opportunities to practice their skills in conversations, and feeling more confident communicating in English.

The Intelligibility Enhancement Assessment and Intervention Protocols (Blake, 2019a; 2019b) (Chapter 9) were effective in improving the English intelligibility of two multilingual university students in this research. Increased performance on measures of percentage of consonants correct, production of final consonants, and syllables was demonstrated statistically by large effect sizes. After the intervention, participants reported increased confidence and reduced difficulty communicating in English.

Participants’ performance on the Intelligibility Probes (Blake, 2018) administered throughout the intervention provided a clear indication of the participants’ learning that was supported by the effect sizes in the statistical analyses. Further evidence of the effectiveness of the intervention was provided since there were minimal improvements noted in the production of vowels when compared to the greater progress noted in features more rigorously targeted, such as final consonant deletion. These promising results suggest further testing of the Intelligibility Enhancement Assessment and Intervention Protocols is warranted to determine their effectiveness for multilingual speakers.

**Implications of this Research**

The integration of the findings from the 8 papers presented in this doctoral research revealed important implications for policy and practice in considering the participation of multilingual speakers from the unique perspective of their English proficiency and intelligibility. This research presented key implications for Australia (at the level of government, communities, universities, and individuals), for speech-language pathology practice, and for theory.
Implications for Australia

This research revealed important implications for Australia as an English-dominant country that may also inform governments and others supporting multilingual speakers in other language-dominant countries. Australia and other English language-dominant countries including Canada, New Zealand, the United Kingdom, and the United States are increasingly culturally and linguistically diverse. While multilingualism in these countries may provide economic and cultural benefits to society, it is accompanied by the challenge to support those with a limited ability to participate in society due to difficulties with spoken English proficiency and intelligibility.

Australia is benefiting economically from multilingual speakers who are skilled migrants, international students, humanitarian migrants, or multilingual-speaking residents. Migration is estimated to add $1625 billion to Australia’s Gross Domestic Product (GDP) by 2050 (Migration Council Australia, 2015). Australia is the third most popular destination country for people wanting to improve their English (Training Council for International Education, 2016) and international education contributed $17.1 billion to Australia’s GDP in 2014/15 (Deloitte Access Economics, 2016). Humanitarian migrants also make an important contribution through business ownership, workforce participation, and volunteering within the community (Hugo, 2011). Additionally, Chapter 3 reported the contributions of Australia’s multilingual-speaking residents; those who spoke English very well were more likely to have postgraduate qualifications, full-time employment, and a high income than monolingual English-speakers. Australia, along with other language-dominant countries needs multilingual people (as well as monolingual people who value multilingualism) in order to participate in a globalised world. Individuals with multilingual skills can facilitate international communication and are integral to successful participation in global activity.

The challenge for governments, universities, SLPs, and individuals wishing to support multilingual speakers is that multilingual speakers are far from homogenous. Consequently, there are different considerations and implications depending on whether multilingual speakers are international students, humanitarian migrants, skilled migrants, or multilingual speakers residing in society.

Implications for Government. This doctoral research provided implications relevant to the Australian Government regarding policy, plans, and advocacy for
multilingual speakers who may be international students, humanitarian migrants, or resident Australians.

The Australian Government is focused on international education through the first National Strategy for International Education 2025 (Training Council for International Education, 2016). The Strategy aims to listen to students’ needs and provide support to facilitate their participation in academic, social, and vocational activities. If Australia is to continue to benefit economically from international education, international students must see that the reasons they choose to study in Australia remain unchanged; including the reputation of the educational institutions, the quality of teaching and research, and student safety (Department of Education and Training, 2015). Multilingual students’ perspectives reported in the study in Chapter 5 can inform implementation of this Strategy in that the results of the study provide insight into the impact of English proficiency and intelligibility on academic, social, and vocational participation. As noted in Chapter 5, the largest number of international higher education enrolments in Australia were from countries where English was not the dominant language, the top five of which were China, India, Malaysia, Nepal, and Vietnam (Department of Education and Training, 2017). Students from Malaysia and Vietnam were among those who self-rated as less proficient in English. Consequently, the Government needs to support universities in maintaining or establishing programs that support multilingual students’ English proficiency, intelligibility, and social, academic, and vocational participation, while ensuring universities are able to maintain the standards in research, teaching, and student safety that attracted students to Australia in the first instance.

The Australian Government’s immigration policy focuses on younger migrants with high levels of education and exposure to English, which means they are likely to be more self-sufficient; however, there is also an increasing need to resettle humanitarian migrants who may have lower levels of education, exposure to English, and as a result, lower self-sufficiency. Differences in level of education can impact humanitarian migrants’ communication, interaction, and subsequently, their social integration (Grech, 2019). Chapter 4 identified factors predicting self-sufficiency that will inform the understanding of people who provide support for humanitarian migrants. The results also highlighted the importance of supporting humanitarian migrants’ English language learning and providing training in a time, place, and manner that will maximise attendance for those experiencing barriers to study due to age, gender, education, as well as responsibilities relating to work or caring for family. While the
Government must continue to provide the opportunity for migrants to improve their English skills, they need to also promote employment and education opportunities for those with developing English language skills and establish pathways towards achieving these outcomes.

The Government can also support and advocate for multilingual speakers by helping to challenge the “monolingual mindset” (Clyne, 2008, p. 348) in Australian society. A recent survey of the social acceptance of diversity in 27 countries, reported 72% of Australians think that if migrants are fluent in English they can be considered “real” Australians; however, only 42% think the same for those who are not fluent in English (IPSOS, 2018). In order to challenge Australia’s monolingual mindset, the Government must promote and support anti-discrimination activities that focus on the benefits of cultural and linguistic diversity, since they have been found to reduce racist attitudes as well as racial discrimination (Elias, 2016). Similar efforts are recommended for any language-dominant countries with the same mindset.

**Implications for Communities, Universities, and Individuals.** This doctoral research revealed implications for advocacy and general strategies for support for multilingual speakers at the level of communities, universities, and individuals.

Like governments, communities, universities, and individuals must challenge the monolingual mindset by valuing and celebrating multilingual speakers’ contributions. For example, communities can provide conversation practise opportunities for multilingual speakers who are humanitarian migrants as well as for international students seeking to improve their English communication skills and their social participation. Such practice might not only improve multilingual speakers’ English proficiency and participation, but could also facilitate valuable intercultural experiences for native English speakers (Elliot, Baumfield, & Reid, 2016).

Universities can review current support programs for multilingual students and explore new ways of providing institutional support for key issues facing these students (Sawir, 2005; Smith & Khawaja, 2011). For example, universities could use the factors identified in Chapter 5 to predict students at risk of poorer English proficiency and participation (e.g., students with less experience conversing in English and speakers of only two languages) and provide early support. Universities could facilitate opportunities for multilingual students to participate in conversation practice with native speakers. They could assist monolingual students to recognise the value of multilingualism and learn to effectively communicate with multilingual speakers in a globalised world (e.g., by encouraging additional language learning within academic
programs or as extra-curricular activities). Additionally, they could establish specific support for multilingual students’ intelligibility such as that provided by the university clinic investigated in Chapter 8, recognising intelligibility as an essential element of multilingual students’ spoken English proficiency and therefore, important for their academic, vocational, and social participation.

This doctoral research also revealed implications for individuals within society. Chapter 6 reported multilingual speakers’ perspectives on monolingual Australians that ranged from finding them supportive, to thinking they made poor conversation partners, to stating “Some local people are annoying and rude with non-English speakers. I rather to avoid them” (Blake, Verdon, & McLeod, 2019, p. 7). These negative perceptions may potentially stem from some monolingual Australians’ inexperience communicating with multilingual speakers, from a monolingual mindset, or from racism.

Recommendations to combat the monolingual mindset and racism (e.g., acknowledging the benefits of multilingualism) have been noted in the section on Implications for Government (above) and all members of society should be encouraged to support such efforts. Some monolingual Australians’ inexperience communicating with multilingual speakers may mean they are unaware of the complexity and cognitive load required to communicate in an additional language and unsure how to communicate with a multilingual conversation partner. Individuals can seek specific training from an SLP that focuses on listening to accents as well as on conversation breakdown and repair strategies. Such training could facilitate increased conversations with multilingual speakers as well as enhanced cultural competence.

**Implications for SLPs**

This doctoral research provides recommendations for SLPs and others (e.g., linguists and language teachers) who provide intelligibility enhancement for multilingual speakers. Firstly, the research findings provided evidence of the need for a more holistic model of speech-language pathology practice that incorporates intervention targeting all the factors affecting multilingual speakers’ intelligibility in English, not only their accent. SLPs intending to provide these services are encouraged to incorporate a holistic approach by following protocols such as recommended within the Intelligibility Enhancement Assessment and Intervention Protocols (Blake, 2019a; 2019b). A holistic and structured assessment containing typical elements of a speech-language pathology assessment as well as an investigation of participants’ perceptions of their own oral communication skills in English can provide insight into the impact of intelligibility on an individual’s functioning and participation. Intervention should
provide multilingual speakers with awareness of those features influencing their intelligibility, include perception and production training, and incorporate specific training in conversation breakdown and repair strategies that can promote confidence communicating, as well as make it easier for conversation partners to understand what is being said. SLPs can also facilitate conversation opportunities and where possible, provide conversation partner training in accent listening and interactional competence.

Secondly, many SLPs have struggled to find an appropriate term for intervention to improve the intelligibility of multilingual speakers that identifies the specialty to potential clients, avoids terminology with negative connotations (Winkworth, 2000), yet reflects the goals of potential clients. The term “intelligibility enhancement” used in this doctoral research signals a focus on intelligibility rather than accent; therefore, intelligibility enhancement could be said to have updated accent modification practice (see Appendix A). Intelligibility enhancement uses non-medical, non-judgemental terminology to ensure multilingual speakers are not pathologised (e.g., clients/speakers rather than patients, differences rather than disorders, and substitutions, distortions, and deletions rather than errors). Recently, the American Speech-Language-Hearing Association (ASHA, 2019) has expanded their Practice Portal information on accent modification to reflect a similar focus on holistic, client-centered assessment and intervention focused on intelligibility. Attitudes towards this form of intervention have changed over time. In the 1990s, accent modification was believed to be ineffective, both because the goal to reach native-like pronunciation was unrealistic and researchers suggested instruction had a negligible effect (Burda-Riess, 2006). Additionally, there were concerns about who should provide such intervention, if at all. Historically, accent modification was thought to be an inappropriate role for SLPs because of concerns their involvement would medicalise accented speech and that the intervention required core skills not generally taught as part of a speech-language pathology curriculum (e.g., phonetics and phonology of other languages) (Müller & Guendouzi, 2007). However, currently, it is acknowledged that many SLPs do have the necessary skills to provide intelligibility enhancement for multilingual speakers, the intervention is within the scope of practice for speech-language pathology in the United States (ASHA, 2018), Canada (Speech-Language and Audiology Canada, 2015), and Australia (Speech Pathology Australia, SPA, 2015), and there is increasing interest from multilingual speakers as well as employers seeking services on behalf of their employees (Quested, 2019).
Finally, in order to prepare for practice in an increasingly diverse society, SLPs must reflect on their cultural competence and preparedness to provide appropriate services to people from culturally and linguistically diverse backgrounds (SPA, 2016; Verdon, Wong, & McLeod, 2016). These doctoral research findings may increase the knowledge base of SLPs and others working with multilingual speakers in intelligibility enhancement as well as other contexts of speech-language pathology. These findings also provide further evidence of the value of multilingualism in society and SLPs’ focus on speech, language, and participation puts them in a unique position from which to advocate for their multilingual client’s and promote the view to the rest of society that linguistic diversity is something to be celebrated.

**Theoretical Implications**

This doctoral research revealed important implications for theory specifically, in relation to the ICF (WHO, 2001). The ICF was used as a theoretical framework to explore the English proficiency, intelligibility, and participation of multilingual speakers in Australia. The ICF was applied in each paper in each part of the thesis and provided a structured way to consider the broad range of factors that contributed to multilingual speakers’ English proficiency, intelligibility, and participation. Throughout the papers in this thesis, it has been reiterated that accent and intelligibility are the result of a difference rather than a disorder; multilingual speakers are not disordered as a result of their multilingualism. As a result, the findings from this research have updated and reiterated the conceptualisation of the ICF as being for all people and not just those with disorders.

All the components of the ICF described in Chapter 2 (i.e., Body Functions, Body Structures, Activities and Participation, Environmental and Personal Factors) and the interactions between the components were addressed throughout this research (see Table II). For example, in Chapters 3 and 4 Australian Census and BNLA data sets were analysed with a focus on English proficiency as a facilitator or barrier to multilingual speakers’ Activities and Participation. The ICF informed the survey and interview questions in Chapters 5 and 6 and framed the original rendering of the qualitative data in Chapter 6 focused on the Environmental Factors impacting intelligibility. The ICF provided structure for the thorough description of the records in Chapter 8 and influenced the holistic assessment and intervention protocols described in Chapter 9.

This research listed a number of ICF categories considered most relevant to describing the function of an individual seeking intelligibility enhancement that may be used to inform the development of an ICF Core Set (ICF-CS) (Selb et al., 2015). The
papers in Chapters 5, 8, and 9 could be captured in a systematic literature review that would be the first phase in the process of developing an ICF-CS for intelligibility enhancement. For example, Chapter 8 (Table 5) presented the ICF components relating to assessment and intervention for multilingual university students and faculty seeking intelligibility enhancement in English. Previously, there has been limited consensus regarding assessment and intervention protocols for intelligibility enhancement, for example, factors to be considered in assessment or establishing goals for intervention. ICF-CS are shorter lists of ICF categories from the whole ICF classification (Selb et al., 2015); therefore, an ICF-CS for intelligibility enhancement may make it easier for SLPs to apply the ICF in their clinical practice in a variety of settings and countries.

**Limitations of this Research**

There are a number of limitations that may have impacted upon the findings of this doctoral research. Specific limitations for each paper are outlined within the individual papers. These include limitations based on the accuracy of self-reported English proficiency (Chapters 3, 4, and 5), the focus on participants who were multilingual university students with high levels of motivation to improve their English communication skills (Chapters 5, 6, 8, and 9), and the subjective interpretation of the data inherent in qualitative research, particularly as the researchers were not multilingual speakers themselves and therefore, were reliant upon participants to provide insights into the lived reality of being a multilingual speaker in Australian society (Chapter 6). The Intelligibility Enhancement Assessment and Intervention Protocols (Blake, 2019a; 2019b) were trailed with two participants who were female speakers of Asian home languages (Chapter 9). The focus on university students and the lack of participant diversity may limit generalisation to other populations or necessitate adaptations to translate this research to the general community. The intervention showed good maintenance over a month; however, there is a need to collect ongoing maintenance data to determine the effectiveness of the intervention over time and to expand the number and type of participants. Despite its exploratory nature, the study reported in Chapter 9 offered some insight into the effectiveness of the intervention in enhancing the English intelligibility of multilingual speakers.
Future Directions

The ICF that was used as the theoretical framework to guide this doctoral research in intelligibility enhancement can provide a focus for translational research that moves from testing the application of the novel protocols that achieved successful outcomes in one clinic setting, to a wider application (Sax Institute, 2016). This research began with the generation of an idea from the doctoral candidate’s experience in the aviation industry and speech-language pathology profession to try to solve the problem of intelligibility and participation in multilingual speakers (see Preface). The current research tested the feasibility of the program in a study with two participants to determine whether implementation was practical (Chapter 9). It also tested the efficacy of the program to determine whether it delivered the expected outcomes under the ideal conditions. In further research, the visual and statistical techniques employed to analyse the intervention data could facilitate the development of empirical benchmarks for intelligibility enhancement. The slopes in the learning curves (Figures 1 and 2 in Chapter 9) could be compared with other interventions to determine efficiency and the tabular presentation of the results and reporting of effect sizes could assist in verification in a meta-analysis. The methods used for this analysis may be applied in languages other than English to enhance the intelligibility of multilingual speakers in language-dominant countries elsewhere in the world. The next step in the research continuum would involve testing the replicability and adaptability of the Intelligibility Enhancement Assessment and Intervention Protocols (Blake, 2019a; 2019b) to determine whether the same outcomes can be reproduced under different conditions, circumstances, or settings (Sax Institute, 2016). For example, future research could be undertaken with a larger group of multilingual participants with more varied Personal Factors, such as age, gender, and education. Such research could also incorporate a longitudinal design that would enable an understanding of changes in English proficiency, intelligibility, and participation over time as a result of the intervention.

The current research design considered barriers to multilingual speakers’ participation in language-dominant countries, but did not include analysis of listeners’ attitudes and perceptions regarding multilingual speakers’ English proficiency, intelligibility, and participation in Australia. Given the findings relating to multilingual speakers’ negative perceptions of monolingual listeners, future research could investigate monolingual listeners/conversation partners’ perceptions. Such research may inform efforts to shift the monolingual mindset and assist in remediating barriers to
multilingual speakers’ participation in language-dominant countries. This research demonstrated the value of using large scale Australian Government datasets for analysing this population and it is anticipated that analysis of subsequent waves of Census and BNLA data could also be undertaken incorporating a longitudinal design.

**Final Summary and Concluding Remarks**

Taken individually and together, the studies presented in this doctoral research form a new and significant contribution to knowledge of English proficiency, intelligibility, and participation in multilingual speakers in Australia. The research was unique in presenting data considering the participation of multilingual speakers from the perspective of their English proficiency and intelligibility. The inclusion of data from large-scale Government Census and BNLA datasets added statistical power to the exploration of the English proficiency of Australia’s multilingual population and the effect of English proficiency on their participation. The inclusion of qualitative data to support quantitative findings enabled the voices of multilingual speakers to be heard.

It is anticipated that the findings of this doctoral research will support recognition of the contribution made by multilingual speakers in language-dominant societies. This recognition may reduce fears and racism associated with cultural and linguistic diversity, and assist some monolingual speakers to better understand the challenges multilingual speakers face communicating in an additional language and therefore, encourage them to be more supportive conversation partners for multilingual speakers. The research findings will increase the knowledge base of SLPs and others working with multilingual speakers in intelligibility enhancement and other contexts and countries around the world. The findings may also encourage SLPs to value intelligibility enhancement for multilingual speakers as a worthy intervention that can make a difference in multilingual speakers’ lives by supporting their participation in society. Facilitating multilingual speakers’ participation has the potential to positively impact both the individual lives of multilingual speakers and enhance their many contributions to the economic, social, and cultural fabric that makes Australia a successful multicultural nation that celebrates and embraces the diversity of all its people, providing an example for other countries to follow.
References


Note: Some of the slides in the following presentation have been updated since the Webinar.
Updating accent modification practice: Intelligibility Enhancement for multilingual speakers

Helen L. Blake
Charles Sturt University
University of Technology
Helen.Blake@uts.edu.au
@helenlblake

Speech Pathology Australia CPD Live event webinar
11 October 2018

Acknowledgment of Country

We acknowledge the people who are the traditional custodians of the lands on which we work and study.

We also pay respect to their elders both past and present and extend that respect to other Indigenous Australians who are participating in this presentation.
Acknowledgments

- Charles Sturt University
- The University of Newcastle
- University of Technology Sydney

All photographs are reproduced with consent
All client names are pseudonyms

Overview

- Terminology relating to Intelligibility Enhancement
- Multilingual speakers in Australia
- Assessment, intervention, and resources
A little about me

- Bachelor of Arts
  Double major in English & German
- TESOL teacher
  Poland, England, and Kazakhstan
- Bachelor of speech pathology
  Honours thesis on communication in multilingual speakers
- Clinical Educator
  The University of Newcastle Speech Intelligibility Clinic
- PhD thesis
  English proficiency, intelligibility, and participation of multilingual speakers in Australia
- Associate Lecturer in speech pathology at University of Technology Sydney

Multilingual speakers

“are able to comprehend and/or produce two or more languages in oral, manual, or written form with at least a basic level of functional proficiency or use, regardless of the age at which the languages were learned”


Are you a multilingual speaker? Type Yes or No in the chat box.
Cultural diversity in Australia

- 26% of residents born overseas
  (Australia Bureau of Statistics, ABS, 2018a)
- 4th largest proportion of countries within the Organisation for Economic Co-operation and Development (OECD, 2016)
- Source countries changing from European to Asian (ABS, 2018a)

Australia’s unique linguistic diversity

<table>
<thead>
<tr>
<th></th>
<th>Census</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2011</td>
</tr>
<tr>
<td>Primary language spoken at home is not English</td>
<td>20.5%</td>
</tr>
<tr>
<td>Additional languages spoken other than English</td>
<td></td>
</tr>
<tr>
<td>Mandarin</td>
<td>1.6%</td>
</tr>
<tr>
<td>Italian</td>
<td>1.4%</td>
</tr>
<tr>
<td>Arabic</td>
<td>1.3%</td>
</tr>
<tr>
<td>Greek</td>
<td>1.2%</td>
</tr>
<tr>
<td>Cantonese</td>
<td>1.2%</td>
</tr>
</tbody>
</table>

(Australia Bureau of Statistics, 2018b)
Spoken English proficiency

- Affects income and participation in education and employment
  (Blake, McLeod, Verdon, & Fuller, 2018)
- Significantly impacts humanitarian migrants’ settlement experience
  (Blake, Bennetts-Keeebone, & McLeod, 2017)
- Is significantly affected by home language, age, time studying and
  using English in conversations, and number of languages spoken
  (Blake, Verdon, & McLeod, 2019b)

Spoken English proficiency

Multilingual speakers with high English proficiency were more likely to have
- post-graduate qualifications
- full-time employment
- higher income
  than monolingual English speakers
  (Blake, McLeod, Verdon, & Fuller, 2018)

Globally, monolinguals are the minority (Clyne, 2004)

English-dominant nations may support
- multilingualism
- English proficiency
  to increase economic, cultural, and social benefits
  (Blake, McLeod, Verdon, & Fuller, 2018)
Definitions

- **Accent**  
  A distinctive manner of speech production influenced by a speaker’s native language or dialect  
  (Carlson & McHenry, 2006)

- **Intelligibility**  
  The extent to which a native speaker understands a speaker’s utterance  
  (Munro & Derwing, 1995)

- **Comprehensibility**  
  The listener’s perception of intelligibility based on how much effort they need to understand  
  (Munro & Derwing, 1995)

- **Interactional competence**  
  Communication skills in interaction jointly used with an interlocutor, such as turn-taking and clarifying  
  (Long, 1983)

Intelligibility

- An essential element of spoken language proficiency

- Contributes to effective verbal communication  
  (Miller, 2013)

- Affected by aspects of

  - **the speaker**  
    Proficiency of articulation, rate, fluency, stress, intonation, volume, non-verbal cues, grammar, vocabulary, interactional competence

  - **the listener**  
    Familiarity with the individual speaker’s speech as well as other speakers with similar intelligibility, acoustic-phonetic similarity, attitude to that accent, hearing ability, interactional competence

  - **the environment**  
    Background noise and context  
    (Kent, Mioio, & Bloedel, 1994; Miller, 2013; Stringer & Iverson, 2019; Rajadurai, 2007; Weismer, 2008)
Factors affecting degree of accent

- **Age of learning** (Long, 1990)
  Early learners speak with a lower degree of accent than late learners

- **Length of residence** (Flege & Fletcher, 1992)
  Not an effective predictor because it does not explain the quality of interactions

- **Formal instruction** (Moyer, 1999)
  Little evidence unless it involves training in perception and production of sounds

Factors affecting degree of accent

- **Amount of target language use** (Flege, Yeni-Komshian, & Liu, 1999)
  Compared to home language use

- **Language distance** (Ellis, 2008)
  Difference between target language and home language

- **Motivation** (Moyer, 2007)
  Most studies report some influence

- **Language learning aptitude** (Flege, Yeni-Komshian, & Liu, 1999)
  Ability to mimic unfamiliar speech sounds has repeatedly been identified as a significant predictor of degree of foreign accent
How multilingual speech may differ

Arif said  [ip]

He meant  /waɛf/  /waɪf/

Bengali
- doesn’t have /w/
- has more short vowels
- has few fricatives

Accented speech may vary from the standard pronunciation due to phonemic substitutions

- No /v/ in many South Asian languages
  e.g., Putonghua speakers may confuse vine and wine
- No /ʃ/ so speakers may substitute with /s/
  e.g., Greek speakers may replace show with so
- Voicing pairs are allophonic
  e.g., Arabic speakers may use /p/ and /b/ randomly
- Many languages have less vowel distinctions than English
  e.g., French speakers may confuse leave and live or pool and pull
- No dental fricatives in many other languages
  German speakers may back them, e.g., think to sink
  but Russian speakers may stop them e.g., other to udder
  and Putonghua speakers may do both
Accented speech may vary from the standard pronunciation due to **spelling confusion**

- Some languages have a regular sound-to-spelling correspondence e.g., Spanish
- Silent letters may be pronounced e.g., *sword, lamb, knee*
- Sounds not represented by spelling may be omitted e.g., *due, squash*

Accented speech may vary from the standard pronunciation due to **phonotactic structure**

- English syllables can be open or closed, e.g., CV or CVC
- Some languages have a higher proportion of open syllables e.g., Vietnamese has 24 consonants, only 8 can occur in a coda e.g., Putonghua has 22 consonants, only 2 can occur in a coda
- Final consonants may be deleted e.g., past tense and plural morphemes
- Some languages may have different or more or less consonant clusters resulting in schwa insertion or cluster reduction

*Przepraszam = excuse me* in Polish
Accented speech may vary from the standard pronunciation due to

**Prosodic differences: Stress, rate, intonation**

- In some languages, stress is placed regularly in words of more than one syllable e.g., French is on the last syllable
- English stress is not that predictable, you need to learn the stress when you learn a new word
- In English, stress can change the meaning of a word e.g., *permit* (noun) versus *permit* (verb), and *record, insult, content, present*
- Speakers may transfer home language intonation patterns e.g., they may use rising intonation (suggesting uncertainty) where we use a falling intonation
- Speakers may use a monotonous intonation pattern, especially when reading

Accented speech may vary from the standard pronunciation due to

**Vocal quality: pitch, volume, nasality**

- Voice quality may even vary when an individual speaks multiple languages
- Differences in vocal style such as pharyngeal resonance in Arabic or nasal tone in French may be seen as deviations in another society
- In Japanese culture, low volume and high pitch are perceived as indications of good education (Behlau & Murry, 2012)
- It is important to have an understanding of the norms within that cultural group as well as determining the individual’s preferred voice
Speech pathology intervention

- Multilingual speakers may request support because they believe that others
  - have difficulty understanding them
  - concentrate more on their accent than their message
  - have negative attitudes towards a speaker with an accent
    (ASHA, 2019)

- Intervention to improve intelligibility of English speech of multilingual speakers is known as
  - accent modification
  - accent improvement
  - accent reduction
  - pronunciation training (Fritz & Sikorski, 2013)
  - Intelligibility Enhancement (Blake & McLeod, 2019b)

Speech pathology intervention

- Controversy around this form of intervention with debate over whether the goal should be native-like pronunciation or intelligible speech

- Resistance to speech pathologists working in this field
  (Jenkins, 2004; Müller & Guendouzi, 2007)

- Specialists in speech and behaviour change have skills to improve multilingual speakers’ communicative ability in English (Sikorski, 2005)

Are you providing this intervention? Type Yes or No in the chat box
Intelligibility Enhancement

- Adheres to the principle of intelligible speech rather than the goal of native-like production
- Clients typically are multilingual speakers of English rather than English speakers with regional dialects
- Provides the speaker with
  - Awareness of differences between their speech and a native speaker
  - Perception and production training
  - Practise with multiple productions per session
  - **Specific feedback from speech pathologists**
    (Blake & McLeod, 2019b)

Note on terminology

- Differences in multilingual speakers’ pronunciation perceived as an accent are influenced by speakers’ home languages and therefore, **do not reflect a disorder**
  (ASHA, 2019)

- **Intelligibility Enhancement** uses non-medical, non-judgemental terminology to ensure multilingual speakers are not pathologised
  - *clients* rather than *patients*
  - *differences* rather than *disorders*
  - *substitutions, distortions, and deletions* rather than *errors*
   (Blake, 2019a)
Where do clients come from?

1. University
2. Hospital/medical
3. School
4. Private practise
5. Other?

In which of these contexts are you providing this intervention?
Type 1-5 in the chat box

A typical client

- Name: Arif
- Home language: Bengali (5th most common language in the world)
- Age: 37
- Role: PhD candidate (Finance)
- How learnt English: At school from Bengali teacher
- Age began learning English: 12
- Age began using English in conversations: 21

(Blake & McLeod, 2019)
Motivation for seeking Intelligibility Enhancement

Career aspirations

If somebody can’t speak it, he or she is not going to be selected.
Kanchan

Meeting expectations

Oh, if I’m pronouncing something wrong, what they will think?
Chiara

(Blake, Verdon, & McLeod, 2019a)

Barriers to increasing intelligibility

Ineffective strategies

If you speak fast, they will not realise the mistakes that you are doing
Eulalia

Lack of opportunity

We just learn from books
Binh

Lack of awareness

I think ... people can understand ... [if] I say “play”, it means “place”
Giang

(Blake, Verdon, & McLeod, 2019a)
Barriers to increasing intelligibility

Language differences
Some countries ... pronounce English well, because they already have the sounds in there
Chiara

Attitudes of others
I usually afraid of talking to native speakers
Dinh

Challenging conversation partners
In the end it’s like my brain is, it hurt
Eulalia

(Blake, Verdon, & McLeod, 2019a)

Facilitators to increasing intelligibility

Support
Yes we have quite a lot [of support], and people are willing to help us in English
Binh

Useful strategies
If I say something they don’t understand and I remember ... and I correct
Giang

Opportunities to practice
(They) make an effort to speak slowly and to use a plain English
Eulalia

(Blake, Verdon, & McLeod, 2019a)
Understanding **motivations, barriers** and **facilitators** to multilingual speakers' intelligibility in English assists in

- Building rapport with a client
- Gaining a thorough and useful case history
- Designing an appropriate intervention program that considers an individual holistically

(Blake, Verdon, & McLeod, 2019a)

**International Classification of Functioning, Disability, and Health** *(World Health Organization, 2001)*

(Blake & McLeod, 2018)
Intelligibility Enhancement Assessment Protocol

- Research home language
- Case history (demographic data, home language acquisition, English experience, motivation for seeking support)
- Confidence communicating in English (5-point Likert scale)
- Difficulty communicating in English (5-point Likert scale)
- Oro-motor assessment (OMA) to determine potential impact of articulator functioning on effectiveness of oral communication
- Sentence level reading and conversation sample
- Speech rate (in syllables per minute) in reading and a monologue
- Speech intensity (in decibels) in reading and a monologue
- A perceptual judgement of voice (see Oates & Russell, 1997) and fluency

(Blake, 2019a)

Intelligibility Enhancement Assessment resources

- Resources to investigate client’s home language
- Digital recorder
- Sound level meter/app
- Stuttering rating tool/app
- Hand sanitizer for the OMA, rather than gloves
- Clearspeak Adult Pronunciation Test (Kimble-Fry, 2009)
- Torch for OMA
- A written initial assessment report to facilitate feedback

(Blake, 2019a)
Intervention Protocol

- Provides a structured approach
- Includes perception and production training
- Small group or individual sessions
- Face to face or via the internet
- Weekly sessions
- Aims not only to enhance English intelligibility, but also to teach metalinguistic skills that may improve comprehension and provide the skills and knowledge for lifelong learning

(Blake, 2019b)

Structure of sessions

- Auditory discrimination task
  - to assist with production and perception
- Explicit explanation
  - the articulation of consonants (place, manner, and voicing)
  - vowels (tongue position, length, and lip posture)
- Multiple repetitions with and without models
  - isolation, alternating voicing pairs (and alternating short versus long vowels), in syllables (CV and VC), in words, phrases, sentences, and conversation (include personalised vocabulary)
- Feedback
  - only given on session targets and phonemes previously targeted
  - is timely and specific, indicating those aspects of productions that are unclear (e.g., aspiration, voicing, tongue placement)
- Discussion, modelling, and feedback on features of prosody
  - speech rate, intensity, stress, pausing, intonation
- Clients are encouraged to self-monitor and correct unclear productions

(Blake, 2019b)
## Intelligibility Enhancement Schedule

<table>
<thead>
<tr>
<th>Session</th>
<th>Target</th>
<th>Additional Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial</td>
<td>Assessment</td>
<td>See Intelligibility Enhancement Assessment Protocol</td>
</tr>
<tr>
<td>1</td>
<td>/p/ and /b/</td>
<td>Feedback on assessment</td>
</tr>
<tr>
<td>2</td>
<td>/t/ and /d/</td>
<td>Past tense pronunciation rules; /t/, /d/ or /ad/</td>
</tr>
<tr>
<td>3</td>
<td>/k/ and /g/</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>/f/ and /v/</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>/θ/ and /ð/</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>/s/ and /z/</td>
<td>Plus ‘s’ morpheme rules; plus /s/, /z/ or /az/</td>
</tr>
<tr>
<td>7</td>
<td>/ʃ/ and /ʒ/</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>/j/ and /ʒ/</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>/w/ or /j/ or /h/</td>
<td>If clients produce these phonemes clearly during assessment, the session targets an area of their concern</td>
</tr>
<tr>
<td>10</td>
<td>Vowels</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Review of progress (Blake, 2019b)</td>
<td>Revision of all targets and practise in 3 tasks; reading, monologue, and conversation with feedback prior to moving to the next task</td>
</tr>
</tbody>
</table>

## Ji-woo

- Korean medical student
- Intelligible
- Stopped dental fricatives
- Used *other* regularly in conversation
- Surprised to know *udder* was the mammary gland of cattle, sheep, goats
- May want dental fricatives included as a functional goal because of negative perceptions of professionalism associated with unclear pronunciations of these sounds
Intelligibility Enhancement Intervention resources

- A written handout for each session that includes
  - an auditory discrimination task e.g., *copy* versus *coffee*
  - an explanation of how targets are produced
  - prompts and exemplars for producing targets in isolation, syllables, words, phrases, sentences, and conversation
  - spelling conventions (e.g., ‘gh’→/f/), rules for the pronunciation of morphological suffixes (e.g., past tense), and examples of homonyms/homographs (e.g., excuse/excuse)
- Charts representing the International Phonetic Alphabet (IPA) consonants and Australian vowel symbols (see Cox, 2008)
- Dictionary

(Blake, 2019b)

Consonants of Australian English

<table>
<thead>
<tr>
<th>Manner of Articulation</th>
<th>Place of Articulation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bilabial</td>
</tr>
<tr>
<td>Stop</td>
<td></td>
</tr>
<tr>
<td>Voiceless</td>
<td>p</td>
</tr>
<tr>
<td>Voiced</td>
<td>b</td>
</tr>
<tr>
<td>Affricate</td>
<td></td>
</tr>
<tr>
<td>Voiceless</td>
<td></td>
</tr>
<tr>
<td>Voiced</td>
<td></td>
</tr>
<tr>
<td>Fricative</td>
<td></td>
</tr>
<tr>
<td>Voiceless</td>
<td>f</td>
</tr>
<tr>
<td>Voiced</td>
<td>v</td>
</tr>
<tr>
<td>Nasal</td>
<td>m</td>
</tr>
<tr>
<td>Lateral</td>
<td>l</td>
</tr>
<tr>
<td>Approximant</td>
<td></td>
</tr>
<tr>
<td>Rhotic</td>
<td>r</td>
</tr>
<tr>
<td>Glide</td>
<td>w</td>
</tr>
</tbody>
</table>
Ding

- Spoke a Chinese dialect with no contrast between /n/ and /l/
- Auditory discrimination task – 0/10
- Undertaking a PhD in electrical engineering
- Given explanation of how the sounds are made
  - Same place and voicing
  - Different manner
- Given auditory bombardment task with homework recordings
- Practice focused on resonance

Vowels of Australian English

(Cox, 2008, p. 330)

---

Diphthongs of Australian English

(Cox, 2008, p. 330)

Table I. Comparison between phonemic vowel symbols for Mitchell (1946) and Harrington, Cox, & Evans (1997). Log onto www.informaworld.com/ijslp for audio files corresponding to each of the vowels and diphthongs.

(Cox, 2008, p. 329)
3 favourite tools

- A small hand mirror for clients to check positioning of articulators
- A pinwheel to promote aspiration
- Large rubber bands to facilitate kinaesthetic feedback for short versus long vowels (Blake, 2019b)

Conversation practice

More time conversing in English is associated with greater confidence and less difficulty communicating in English (Blake & McLeod, 2019a)

- Prepared activities extend clients’ English conversation skills, providing directions, circumlocution activities, and understanding idioms
Homework

- Audio exemplars of
  - words, phrases, and sentences used in session with pauses to allow repetition
- Recommend daily practice
- Decide on a weekly generalisation task
  - instigating conversations with strangers, making phone calls, asking for directions, and enquiring in stores

(Blake, 2019b)

Evidence

Aims
- To determine whether Intelligibility Enhancement increased
  - Percentage of consonant correct (PCC), final consonants, consonant clusters, and syllables
  - Acceptability of rate, volume, and stress
  - Participants’ perceptions of intelligibility, confidence, and ease communicating in English

Method
Single-case experimental design with 2 multilingual students
Home languages Vietnamese and Putonghua

Giang

(Blake, McLeod, & Verdon, 2019)
<table>
<thead>
<tr>
<th><strong>Giang</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>37</td>
</tr>
<tr>
<td><strong>Home language</strong></td>
<td>Vietnamese (Southern dialect)</td>
</tr>
<tr>
<td><strong>University program</strong></td>
<td>PhD in Management</td>
</tr>
<tr>
<td><strong>Age learnt English</strong></td>
<td>12</td>
</tr>
<tr>
<td><strong>Time known English</strong></td>
<td>25 years</td>
</tr>
<tr>
<td><strong>Time used English in conversation</strong></td>
<td>3 years</td>
</tr>
<tr>
<td><strong>IELTS overall score &lt;2 years</strong></td>
<td>5.5</td>
</tr>
<tr>
<td><strong>Domestic situation</strong></td>
<td>Lives with husband (of same ethnicity) and child</td>
</tr>
<tr>
<td><strong>Community support reported</strong></td>
<td>Extensive support from other Vietnamese families</td>
</tr>
<tr>
<td><strong>Speaks English at home</strong></td>
<td>No</td>
</tr>
<tr>
<td><strong>Additional languages</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>Context of English use prior to living in Australia</strong></td>
<td>Lectured in English to Vietnamese university students in Vietnam</td>
</tr>
<tr>
<td><strong>Motivation</strong></td>
<td>“I am PhD student and study at the country where English is the mother tongue. I really want my English suit my level.”</td>
</tr>
</tbody>
</table>

(Blake, McLeod, & Verdon, 2019)

**Initial assessment**
- Systematic substitutions and deletions of English consonants
  - Final consonant deletion e.g., *nine* to /n/ 
  - Cluster reduction e.g., *price* to /prar/ 
  - Bilabial plosives/labiodental fricatives e.g., *poor* as /fr/, *give* as /gbr/

**Result**
- PCC increased from 62.5% to 85.0%
- **Effect sizes** (>1.0 indicates improvement)
  - 5.5 for PCC (percentage of consonants correct)
  - 4.6 for final consonants
  - 2.3 for consonant clusters
  - 1.6 for syllables
- Reduced speech rate, volume remained unchanged, increased accuracy in word stress
- She perceived less difficulty communicating

**Conclusion**
Emerging evidence to support Intelligibility Enhancement
(Blake, McLeod, & Verdon, 2019)
Outcomes of Intelligibility Enhancement

- Enhanced intelligibility
  “After I did your course I have very few of the complaints about, like, tutor’s or lecturer accent is really hard to follow” Kanchan

- Metalinguistic skills
  “I have realised that some words depending on the sounds, they could have a different meaning” Eulalia

- Improved comprehension
  “I think the most benefits is I can hear what another people say” Giang

- Increased confidence communicating in English
  “I feel more confident after participating the clinic, it’s easier for me to engage in everything” Binh

- Lifelong learners
  “It’s something that you have to keep doing” Eulalia

Useful websites: Seeing Speech
http://www.seeingspeech.ac.uk/

(Lawson, et al., 2015)
Useful websites: The Speech Accent Archive
http://accent.gmu.edu

(Weinberger, 2015)
Useful websites: Multilingual Children’s speech
http://www.csu.edu.au/research/multilingual-speech/

Advice for clients
1. Slow down!
2. Pronounce the sounds at the ends of words
3. Use an appropriate volume
4. Use a dictionary for sounds and stress
5. Observe the mouth movements of native speakers and try to imitate them
6. Make a list of frequently used words and confirm how to pronounce them
7. Read aloud every day
8. Record your voice and listen for substitutions
9. Be patient
10. Find opportunities to speak to native English speakers

@helenilblade
Follow me on Twitter for tips on improving your intelligibility in English
Strategies

- More time using English in conversations is associated with better English proficiency outcomes
- Multilingual university students largely use individual strategies (e.g., listening and repeating)
- **Interacting** with native speakers to gain informal (e.g., conversations) or formal experience (e.g., Intelligibility Enhancement sessions) may be more effective

(Blake, Verdon, & McLeod, 2019b)

Key messages

A broad range of factors may contribute to a multilingual speaker’s intelligibility, not just their accent

**Multilingual speakers**

- May be unaware of their intelligibility in English and the factors that influence it
- May be hindered by their perceptions of negative attitudes and inadequate conversation skills of their listeners
- Require opportunities to practise their spoken English with supportive conversation partners in order to enhance their intelligibility
Implications for speech pathologists

- Incorporate a similar holistic approach in assessment and intervention protocols
- Provide awareness of those features influencing intelligibility
- Facilitate conversation opportunities
- Provide conversation partner training in accent listening and interaction competence where possible
- Promote the view that linguistic diversity is to be celebrated

Comments and questions
References


References


---

Updating accent modification practice:
Intelligibility Enhancement for multilingual speakers

Helen L. Blake
Charles Sturt University
University of Technology
Helen.Blake@uts.edu.au
@helenlBlake

Speech Pathology Australia CPD Live event webinar
11 October 2018
# Appendix B

Publishers’ Permissions to Include Journal Articles in This Dissertation

<table>
<thead>
<tr>
<th>Paper</th>
<th>Title</th>
<th>Publisher</th>
<th>Version</th>
<th>Permission</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Blake, H. L., &amp; McLeod, S. (2018). The International Classification of</td>
<td>American Speech-Language-Hearing Association</td>
<td>The authors’ accepted manuscript</td>
<td>Permissions to authors retrieved from: <a href="https://academy.pubs.asha.org/asha-journals-author-resource-center/maximizing-impact/#mi_sharing">https://academy.pubs.asha.org/asha-journals-author-resource-center/maximizing-impact/#mi_sharing</a> The Authors may post on their personal Web sites, on department or university intranets, or in university repositories the final, accepted manuscript along with the abstract from the final, published article when available, provided that publication information (including the Web address of the journal site) is provided as applicable. The following acknowledgement has been included on Page 52 of the submitted thesis: This is an accepted manuscript of an article published by the American Speech-Language-Hearing Association in Perspectives of the ASHA Special Interest Groups on 1 January 2018, available online: <a href="https://pubs.asha.org/doi/10.1044/persp3.SIG17.69">https://pubs.asha.org/doi/10.1044/persp3.SIG17.69</a></td>
</tr>
<tr>
<td></td>
<td>Functioning, Disability and Health: Considering individuals from a perspective of health and wellness. Perspectives of the ASHA Special Interest Groups, 3(17), 69-77. doi:10.1044/persp3.SIG17.69</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Blake, H. L., McLeod, S., Verdon, S. &amp; Fuller, G. (2018). The relationship between spoken English proficiency and participation in higher education, employment, and income from two Australian censuses. International Journal of Speech-Language Pathology, 20(2), 202-215.</td>
<td>Taylor and Francis</td>
<td>The authors’ accepted manuscript</td>
<td>See attached permission email from Taylor and Francis. The following acknowledgement has been included on Page 75 of the submitted thesis: This is the authors accepted manuscript of an article published as the version of record in International Journal of Speech-Language Pathology ©Taylor &amp; Francis Ltd 2018 Informa UK Limited, trading as Taylor &amp; Francis Group, <a href="https://doi.org/10.1080/17549507.2016.1229031">https://doi.org/10.1080/17549507.2016.1229031</a></td>
</tr>
<tr>
<td>doi:10.1080/17549507.2016.1229031</td>
<td>Taylor &amp; Francis has granted permission for the accepted manuscript to appear in this PhD thesis.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taylor and Francis</td>
<td>The authors’ accepted manuscript</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>See attached permission email from Taylor and Francis.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The following acknowledgement has been included on Page 121 of the submitted thesis:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>This is the authors accepted manuscript of an article published as the version of record in International Journal of Bilingual Education and Bilingualism ©Taylor &amp; Francis Ltd 2019 Informa UK Limited, trading as Taylor &amp; Francis Group, <a href="https://doi.org/10.1080/13670050.2017.1294557">https://doi.org/10.1080/13670050.2017.1294557</a></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Taylor &amp; Francis has granted permission for the accepted manuscript to appear in this PhD thesis.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unpublished</td>
<td>Not applicable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not applicable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taylor and Francis</td>
<td>The authors’ accepted manuscript</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>See attached permission email from Taylor and Francis.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The following acknowledgement has been included on Page 204 of the submitted thesis:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>This is the authors accepted manuscript of an article published as the version of record in Speech, Language and Hearing ©Taylor &amp; Francis Ltd 2019 Informa UK Limited, trading as Taylor &amp; Francis Group, <a href="https://doi.org/10.1080/2050571X.2019.1585681">https://doi.org/10.1080/2050571X.2019.1585681</a></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Taylor &amp; Francis has granted permission for the accepted manuscript to appear in this PhD thesis.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Blake, H. L., &amp; McLeod, S. (2019). Intelligibility enhancement. In J. S. Damico &amp; M. J. Ball (Eds.), The</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The authors’ contribution</td>
<td>Permission from SAGE author agreement:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>License to Contributor: SAGE grants to Contributor a non-exclusive license to use and reproduce, after the initial</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Source</td>
<td>Title</td>
<td>Journal</td>
<td>Permissions</td>
<td>Acknowledgement</td>
</tr>
<tr>
<td>--------</td>
<td>-------</td>
<td>---------</td>
<td>-------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>8</td>
<td>Blake, H. L., McLeod, S., &amp; Verdon, S. (2019). Intelligibility Enhancement assessment and intervention: A single-case</td>
<td>Taylor and Francis</td>
<td>The authors’ accepted manuscript</td>
<td>The following acknowledgement has been included on Page 265 of the submitted thesis: Elsevier has granted permission for this published journal article to appear in this PhD thesis.</td>
</tr>
</tbody>
</table>
experimental design with two multilingual university students. Clinical Linguistics and Phonetics, Advance online publication. doi:10.1080/02699206.2019.1608470

This is the authors accepted manuscript of an article published as the version of record in Clinical Linguistics and Phonetics ©Taylor & Francis Ltd 2019 Informa UK Limited, trading as Taylor & Francis Group, https://doi.org/10.1080/02699206.2019.1608470 Taylor & Francis has granted permission for the accepted manuscript to appear in this PhD thesis.