Ko tōku reo tōku ohooho:

Towards culturally located te reo Māori augmentative and alternative communication

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By

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He Pātaka Kupu: Glossary of Māori Terms

Note that many of these words can take noun, verb, or modifier forms; the nouns are given here unless identified. All meanings from Te Aka Online Māori Dictionary (Te Aka, 2019) unless otherwise referenced.

Te reo Māori	English translation
Ao/Te ao Māori	World/Māori worldview
Aroha	Love, compassion, empathy
Hauora	Health, vigour
Hinengaro/Tinana	Mind, thought; psychological (stative)/Body
Hui	Gathering, meeting
Iwi/Hapū	Extended kinship group, nation, people/Kinship group, subtribe
Kaiako/Kaiawhina	Teacher/Teacher aide
Kaiārahi	Guide, counsellor, mentor, leader
Kaitakawaenga	Mediator; support and liaison role at the Ministry of Education, Special Education (Ministry of Education, n.d.)
Kaitiakitanga	Guardianship, stewardship
Kanohi kitea/Kanohi ki te kanohi	The seen face/Face to face
Kapa haka	Māori performing group
Karakia/Waiata/Mōteatea	Ritual chant or incantation/Song/Lament, chant, sung poetry
Kaupapa	Topic, plan, purpose, agenda, theme
Kete	Basket
Koha	Gift, donation; has connotations of reciprocity
Kōhanga reo	Māori language preschool
Kōrero/Whaikōrero	Story, discussion, conversation/Formal speech, oratory
Kuia/Kaumatua	Female elder/Male elder
Kupu	Word, vocabulary
Kura	School, education
Kura kaupapa Māori/Rumaki reo	Primary school operating under Māori custom and using Māori as the medium of instruction/Immersion in te reo Māori
Mahi/mahi tahi	Work, job/Work together, collaborate (verb)
Mana	Prestige, authority, control, power, influence, status
Marae	Courtyard in front of the wharenui (meeting house); the complex of buildings
Mātauranga	Knowledge, wisdom, understanding
Maunga/Awa	Mountain/River
Mauri	Life principle, life force, vital essence
Mihimihi	Speech of greeting
Mita	Rhythm, intonation, pronunciation and sound of language, dialect
Moko/Moko kauae/Tā moko	Māori tattooing designs on the face or body done under traditional protocols/Chin moko/Traditional tattooing

Pākehā	New Zealander of European descent
Pepeha	Tribal saying, proverb about a tribe, set form of words
Pono	Be true, valid, honest, genuine, sincere (adjective)
Pōwhiri	Invitation, rituals of encounter, welcome
Pūkana	To stare wildly, dilate the eyes (verb)
Pūrākau	Myth, ancient legend, story
Rangahau	Research, survey
Raru	Problem, trouble, conflict
Reo	Language, dialect, tongue, speech
Tamaiti/Tamariki	Child/Children
Tangata whenua/Manuhiri	Local people, hosts/Visitor, guest
Tangata/Tāngata	Person/People
Tangihanga	Funeral, rites for the dead
Taonga	Treasure, anything prized
Tapu	Sacred, prohibited, set apart, forbidden (modifier/stative)
Tautoko	Support, backing
Te Ataarangi	Method of learning to speak te reo Māori that is learner focused and interwoven with tikanga Māori (Te Ataarangi, 2011).
Tika	Truth, correctness, directness, justice, fairness, right
Tikanga	The customary system of values and practices that have developed over time and are embedded in the social context; correct, right.
Tino rangatiratanga	Self-determination, sovereignty, autonomy, self-government
Tuakana/Teina	Older sibling of the same sex/Younger sibling of the same sex
Ūkaipō	Mother, source of sustenance, origin
Wairua/Wairuatanga	Sprit, soul/Spirituality
Wero	Challenge
Whakaaro	Thought, opinion, plan, understanding, idea
Whakamā	Shame, embarrassment
Whakapapa	Genealogy, lineage, descent
Whakataukī	Proverb, significant saying, formulaic saying
Whānau	Extended family, family group
Whānau hauā/ Tāngata whaikaha	Māori terms for people with disabilities (Hickey, 2015; Ministry of Health, 2018)
Whanaungatanga	Relationship, kinship, sense of family connection – a relationship through shared experiences and working together which provides people with a sense of belonging
Whāriki/Whakairo/Tukutuku	Floor covering, mat/Carving/Ornamental latticework

Acknowledgements

Abstract

Māori individuals who require support for verbal communication sit at the intersection of several social and cultural inequalities in Aotearoa New Zealand. Not least of these is the lack of culturally located, evidence based augmentative and alternative communication (AAC) systems that can be used to express te reo Māori. This language is central to Māori culture and a right of the Māori people. Recognising this injustice, this research aimed to establish an evidence base for te reo Māori AAC using kaupapa Māori methodologies.

Data was collected through conversations with three Māori AAC users and their whānau, four Māori speech-language therapists who support tamariki in Māori medium education settings, and three tertiary level te reo teachers. Thematic analysis discovered thirteen subthemes under three key themes: Te reo Māori AAC is required to grant communication access justice to a multiply marginalised group; it must allow users to express the language as it emerges from a Māori worldview; and it must be created by people of various roles working together in mutually responsive relationships. The findings are represented by a poutama to reinforce the foundational nature of the justice and Māori worldview components of creating AAC resources.

A creative exploration of possible forms and sources of te reo Māori AAC systems follows. Clinical recommendations and future research directions to facilitate the establishment of culturally located AAC tools for te reo Māori AAC are proposed. These will support individuals who require AAC to communicate in te reo Māori to achieve communication access justice.

1. Introduction

Ko tōku reo tōku ohooho, ko tōku reo tōku māpihi maurea, kō tōku reo tōku whakakai marahi.

My language is my awakening; my language is the object of my affection; my language is my precious

adornment.

Tāngata Māori who are unable to communicate using speech live at the intersection of many social and cultural inequalities in Aotearoa New Zealand. Anyone who communicates via an augmentative and alternative communication (AAC) system has little access to tools, training, and opportunity to develop expressive communication in te reo Māori. They may not see a speech-language therapist who knows te reo Māori, or one who will support their language choice. However, with the precious role of te reo in Māori identity (Waitangi Tribunal, 1986), it is an impoverishment and a further disabling action to deny te reo Māori to tamariki Māori. This is both because it may impact on identity formation and participation in family and community, and because a strong first language is an important foundation for developing a second language (Soto & Yu, 2014). Not only this, it is a breach of the agreements of Article 2 of Te Tiriti o Waitangi, under which Māori are guaranteed tino rangatiratanga over all their taonga, which includes te reo Māori (Tiriti of Waitangi, 1840; Waitangi Tribunal, 1986). The aim of this project is to develop a pathway towards evidence based te reo Māori AAC systems that express and are informed by te ao Māori.

AAC systems are communication tools that supplement or replace speech (Dukhovny & Kelly, 2015). At present there are no AAC systems that enable users to accurately communicate complex or novel ideas in te reo Māori. This means that tamariki whose first language is te reo Māori and who have difficulty communicating with speech have little support for developing their expressive language and communication. Adult speakers of te reo Māori who acquire communication disorders also have access to few useful tools to support rehabilitation and communication in te reo Māori. In response

to this need, some speech-language therapists[1] (SLTs) across the country are translating, rearranging, and otherwise editing existing tools for Māori clients to support their language and cultural participation. The success and accuracy of these attempts are likely to vary widely. Given the essential place of te reo Māori at the heart of Māori culture, this is an injustice that results in further dislocation and dispossession.

This is a timely topic. Internationally, bilingual and linguistically diverse AAC is in rapid development as existing western language systems are appropriated, adopted, and adapted for more diverse languages, peoples, and understandings of the world (e.g., Baker & Chang, 2006; Bhattacharya & Basu, 2009; Pahia-Solé, 2012; Nigam, 2006). Recently, a whole issue of the peer-reviewed Perspectives of the ASHA Special Interest Groups journal was devoted to culturally and linguistically diverse (CLD) AAC (Hughes, 2018). At present in Aotearoa New Zealand, researchers, practitioners, and educators are creating different elements of AAC systems for Māori clients who need support for speech. A recent master's project has synthesised two "Māori accented" voices with 85 correctly pronounced te reo Māori words to use with speech generating communication devices (Westley, 2018). TalkLink Trust, the major provider of AAC services in Aotearoa New Zealand, is seeking funding for a project that would allow typed Māori to be correctly pronounced by a high tech AAC device (TalkLink Trust, 2017). I believe we have a short window of time in Aotearoa New Zealand to ensure that the AAC systems that represent the indigenous language emerge from within an indigenous worldview: te ao Māori.

The Māori language is essential to Māori identity, particularly for those with additional learning needs (Fortune, 2016). AAC representations depend on shared understandings of the metaphors of a language (Baker & Chang, 2006). A system that is intended to provide a complete language to Māori who use AAC must accurately represent these less tangible aspects of the language as well as the obvious differences of syntax and vocabulary (Soto & Yu, 2014). Truly bilingual and bicultural AAC systems need different vocabulary, grammatical structure, and voice outputs; different symbols,

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[1] Also called speech-language pathologists (SLP) in New Zealand and internationally.

alphabets, and visual features; different language for different contexts, cultural practices, and environments (Soto & Yu, 2014). Users of bilingual systems need to be able to code switch, a characteristic of competent bilingualism (Lightbown & Spada, 2013). The systems need to reflect the different interaction dynamics of different cultural groups, where meaning may be constructed by reciprocal interactions rather than by individual assertions. They need to facilitate participation in many kinds of community. They also need to work for families, to appear meaningful and facilitate communication within the home; for it is in the home that children develop language and are socialised into the roles, responsibilities and relationships of their family culture (Soto & Yu, 2014).

This thesis works from the premise that evidence based practice for Māori clients resides in Māori evidence. It is guided by the understanding that mātauranga Māori (Māori ways of knowing) and tikanga Māori (Māori ways of doing) are essential in creating expressions of te reo Māori. It acknowledges the power of relationship, conversation, and storytelling in creating meaning from experiences. Through conversations with Māori AAC users and their whānau, Māori SLTs, and Māori language teachers I sought the relevant evidence to inform this kaupapa: the development of a pathway towards te reo Māori AAC.

1.1   What is AAC?

Augmentative and alternative communication (AAC) is the use of tools or strategies that replace or supplement speech and writing to facilitate communication (Dukhovny & Kelly, 2015). AAC can be systematic or spontaneous, can use a physical aide or only the body in gesture or sign language (unaided), and can express single words, set phrases, or a whole language with grammar, pragmatics, and subtle variation in vocabulary (Dukhovny & Kelly, 2015). This study primarily considers aided and symbolic AAC systems: those that, whether high or low tech, are indeed systematic and allow users to employ combinations or sequences of symbols to convey complex meaning[2]. Many AAC systems are based on core vocabulary, which is a relatively small set of words that can be used flexibly in many

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[2] I have not explored sign language in depth, as many AAC users under consideration have mobility and dexterity limitations that may make this difficult as a supplementary or replacement form of communication.

contexts for many communicative functions. Different languages will have similar but different core vocabularies (e.g., Kempka Wagner, 2018). On English core vocabulary boards (also known as core boards), the words are grouped together in word classes and arranged left to right according to the basic English subject-verb-object structure: pronouns, verbs, prepositions, adjectives; question words and other functions are grouped together throughout (e.g., Appendix 1). Nouns are considered fringe vocabulary and are attached separately or indicated in the environment.

1.1.1   Organising language for AAC

There a several different ways of arranging vocabulary and language on AAC systems. Dukhovny and Kelly (2015) describe the main categories as follows:

- *Low tech systems[3]* are paper-based. They do not produce audible output and rely on the communication partner closely attending to the selections of the AAC user. Low tech AAC systems range considerably in form and function, and in the quantity and quality of language they give users access to. The most comprehensive aim to provide access to a whole language, allowing users to combine words and symbols into novel utterances. Whole language systems can arrange the vocabulary items pragmatically, as in the Pragmatically Organised Dynamic Display (PODD) system (Porter & Cafiero, 2009), or syntactically, as in a core vocabulary system (e.g., Appendix 1).

- *Mid tech systems[4]* have buttons programmed to produce a single word or phrase (phrase-banked). This is usually recorded (digitized speech) and can easily be changed. This limits the user's utterances to the number of buttons available and makes them dependent on others to provide the content of their communication.

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[3] Called "non-tech" in Dukhovny and Kelly, 2015; the preferred term in New Zealand is used here (TalkLink, 2019).

[4] Called "low-tech" in Dukhovny and Kelly, 2015; the preferred term in New Zealand is used here (TalkLink, 2019).

- *High tech systems* include electronic devices with software-based language programmes that allow the user to combine or sequence symbols and words to produce complex novel utterances. These output the user's messages via a synthesised voice. There are many ways of arranging and sequencing language on these systems. They can also include phrase-banked utterances that the user requires often, such as greetings or common requests. High tech AAC systems are also known as speech generating devices (SGDs) and have been previously called voice output communication aids (VOCAs). These can be on dedicated communication devices or may be application-based on a computer, phone, or tablet. They typically allow access to the internet.

- *Text-based or orthographic systems* require the user to type in words that are then "spoken" by the device (text to speech). They typically also include word prediction tools. This allows a literate user to produce complex novel utterances. Most high tech SGD systems will include the ability to input text in this way. A good quality synthesised voice that has been programmed to accurately pronounce the language, including intonation patterns, is an essential part of the effectiveness of all high tech systems.

- *Grids* are the most common way of arranging vocabulary items on symbol-based systems, whether low, mid or high tech. Systems are often named by how many buttons or squares they have on a page layout: for example, "Core77" (low tech), "GoTalk9" (mid tech), and "Unity144 Sequenced" (high tech).

- *Visual scene layouts* arrange vocabulary or phrase-banked items on a contextually relevant picture rather than a grid. For example, on a photograph of the school playground, when you touch the slide it might say "slide" or "I want to go on the slide". This may be a synthesised or recorded voice. The advantage of this is the contextual support provided by the picture for language located in an activity or distinct space.

1.1.2 AAC users

AAC systems are used by a vast diversity of people in a range of ways for many different reasons. A survey from 2008 found that approximately 1% of North Americans who have speech disorders use or would benefit from AAC to supplement or replace their speech (Castrogiovanni, 2008, as cited in Dukhovny & Kelly, 2015). From their survey of speech-language therapists in Aotearoa New Zealand, Sutherland, Gillon and Yoder (2005) estimated that 0.15% of the total population of New Zealanders under 21 had complex communication needs. More recently, Creer, Enderby, Judge and John (2016) suggested that as many as 0.5% of the total population of the United Kingdom could benefit from AAC.

Whether their communication disorder is temporary or permanent; developmental, acquired, or degenerative; cognitive, physical, social, or neurological, many people may find that an AAC system allows them to communicate in a way they cannot with speech. The preferences and needs of AAC users for their systems will vary widely. Consider:

A child with a cognitive impairment or social communication disorder needs to learn to use language. He has not learned to understand or encode the complex relationship between fleeting, abstract speech sounds and meaning. AAC provides a more concrete connection between symbols and meaning – makes explicit the function of communication.

A young man with cerebral palsy finds that his muscles prohibit him from speaking his message. He has language: He needs speech. AAC provides him a way to transmit his thought into speech through spelling or combining symbols using the muscle movements he can control.

A woman who has had a stroke now has difficulty remembering words at times, and when she is tired she finds it difficult to speak clearly due to muscle weakness. AAC provides her with a prompt or supplement to help her access language and can produce voice output when her speech is slurred.

Light and McNaughton stated:

> During the past 25 years, the field of AAC has witnessed significant increases in the numbers
> of people with complex communication who receive or might benefit from AAC services;

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furthermore, the population receiving AAC services is increasingly diverse in terms of age, disability, language, culture, and race/ethnicity. (2014, p. 14).

While the field of AAC research and practice has also been growing, the diversity of client population is not yet matched with an appropriate diversity of tools.

1.1.3   AAC assessment and intervention

AAC is typically provided and implemented by an SLT alongside other professionals such as occupational therapists (Dukhovny & Kelly, 2015). They will often use the SETT (Student, Environment, Tasks, Tools) framework to inform their assessment (Zabala, 2005). This prompts the team to consider the student's abilities, limitations and interests; the physical environment, materials, and surrounding attitudes; and the specific tasks the individual needs to complete, before thinking about the tools that will help the student to succeed (Zabala, 2005). With reference to this, the SLT will provide for the client's language needs and the best way to represent this via an AAC system, and the occupational therapist will support the client to access this language using their most accurate and least effortful movement, for example typing with their toes, selecting with their eyes, or pressing a switch.

Best practice education for AAC systems is a holistic approach that includes modelling or aided language input/stimulation provided by the user's regular communication partners talking with them using the AAC system (Kempka Wagner, 2018).
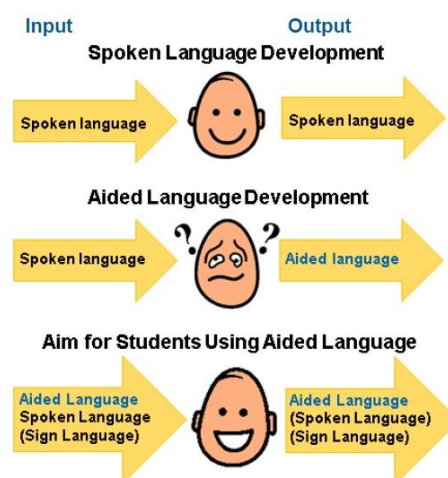
Figure 1: Aided Language Stimulation. (Porter & Cohen, 2011, as cited in Independent Living Cen*tre WA, n.d., p. 1)*

This figure demonstrates the simple premise of this approach: A person learning to speak a language needs to be shown how. The AAC team works with family members, teachers, and support staff to teach them to use the AAC system so they in turn can show the user how to communicate using this tool – modelling both the language to use and the way to access it. This embedded, naturalistic approach follows the process of typical language acquisition and recognises that language is learned from participation and interaction (Soto & Yu, 2014). An SLT aims to provide a system that allows the user to communicate at their current level and can grow to meet their developing language needs. One element of this is allowing the user to produce spontaneous novel utterances. Observe, however, that this concept of self-expression is dependent on a western cultural value of independence (Ripat & Woodgate, 2011). Additionally, it requires that the system can express the language that the user wants to use – the contended issue in the present study.

1.1.4   The languages of AAC

The different language organisation methods of AAC affect the development of new language representations via AAC. Word or phrase-banked systems are easily created in new languages as they do not require grammar or intonation patterns to accurately communicate (Dukhovny & Kelly, 2015). The limited set of words or phrases are easily recorded or spoken by a synthesised voice where one is available for the language. Buttons can be easily changed across contexts, or systems could have different languages recorded on different pages or buttons. In contrast, high tech whole language systems that allow users to produce spontaneous novel utterances "require language organization and grammatical support, and therefore must be developed individually in each new language" (Dukhovny & Kelly, 2015). Establishing these requires considering a complex set of linguistic and paralinguistic features. Such a complex language system is the type of AAC that SLTs ideally provide for their clients, particularly those whose primary impairment is the motor component of speech. Dukhovny and Kelly wrote, "The biggest challenge for an SLP is supporting multilingual individuals in need of a full-featured SGD that allows for grammatically correct, spontaneous, complex language." (2015, p. 34). This is the challenge we are facing in Aotearoa New Zealand for te reo Māori.

Te reo Māori AAC

At present, AAC communication options for te reo Māori are limited to:

- Simple exchange systems or schedules based around single word cards.

- A few different low tech core vocabulary boards adapted from English, with varied degrees of cultural and linguistic accuracy (e.g., Appendices 2 and 3).

- Whānau or support staff recording words or phrases onto mid tech systems.

- High tech systems with the capacity for text-based input, when te reo Māori is typed into these by the literate communicator. These mispronounce te reo Māori, except for about 85 words (since Westley, 2018).

There are Māori individuals who wish to communicate in te reo Māori using AAC. Their desire can be heard in my own work experience, in research in special education for Māori in Aotearoa New Zealand (Fortune, 2016), and in the public domain (e.g., the Giving Voice campaign, New Zealand Speech-language Therapists' Association [NZSTA], 2018). Like the claimants in The Waitangi Tribunal te reo Māori Claim, they say that "the dignity of the Māori race is in issue and the preservation of the Māori tongue is at the heart of the matter. They say that the unique quality of Māori culture is a special reason for its preservation and that to preserve the body one must nourish the soul." (Waitangi Tribunal, 1986, p. 17) These are the people who are waiting for an opportunity and supports that will enable them to speak their language.

1.2 Whakapapa rangahau: The genesis of this research

Tēnā koutou katoa

E rere taku manu ki te tihi o Aoraki

Rere iho taku manu mā te awa o Waikirikiri

Tau ana taku manu ki te whenua o Waitaha

Ko Ngai Tahu te mana whenua, te iwi whakaruruhau

Nō Kōtirana raua ko Ingarangi ōku tīpuna

Ko Brynlea Collin Stone tōku ingoa

Ko kaiwhakatika i te reo kōrero te mahi

Tēnā koutou, tēnā koutou, tēnā tātau katoa.

It is appropriate to introduce myself and locate myself in this research. My family are descended from Scottish and English settlers who have lived in Canterbury since the late 1800s. We acknowledge Ngai Tahu as the mana whenua of our home. I am Pākehā, a descendant of the early settlers, which means that I am in relationship with Māori under the Treaty of Waitangi.

I attended Richmond Primary School in the 1990s, and elements of te reo me ngā tikanga Māori were part of everyday life – things like waiata, karakia, pūrākau, and pōwhiri. This early experience laid down a foundation in tikanga and te reo Māori and contributed to shaping my worldview. A large part of this was the relationship my family had with Ritchie and Auntie Gail Tahana, who led us in kapa haka and taught us both official languages of Aotearoa New Zealand – te reo Māori and New Zealand Sign Language. I didn't realise how deeply I was formed by these experiences and relationships until I went to a private girls' school for intermediate. In this school no one even knew the story of Māui and the sun – and so I told them, every "auē!" in place, to my teacher's astonishment. This relocation (dislocation?) gave me a small taste of cultural alienation – though I was still among people 'like me'. I became confused about the worlds I lived in, sought out any connection to te ao Māori or my primary school, and was rude to Aunty Gail because I didn't like her to see me in my new uniform or this new place. I cannot imagine the pain when such a separation takes you away from what is your birthright

and forces you into something foreign. My self-protective response through high school was to become cynical of the school's inadequate attempts at te reo Māori and pōwhiri – but I was unwilling to get involved. I was too scared to get it wrong, but happy to criticise others.

In 2008 Ritchie Tahana passed away, and I attended part of his tangihanga at Rehua Marae. I was humbled to see the whaikōrero translated into New Zealand Sign Language and be excluded from understanding as an English monolingual. There are very few occasions to experience this as a Pākehā in Aotearoa New Zealand, and as a lover of languages I found this brief episode beautiful. However, I know that similar experiences are frequent for those who do not speak English, which is not beautiful: It is truly exclusion.

At university I found it easy to relearn my pepeha, but other than such basic assessments I thought my experience in the Māori world was over. Then, on block placement at hospital in Rotorua, I was asked to assess the language of a Māori kuia who had had a stroke. I was uncomfortably aware of how inappropriate the assessment's "cookie jar picture" language prompt was, and showed it to her son, saying "It is very old school American, not relevant at all, but I need to show it to her and ask her to tell me about it, okay?" He was opposed to me doing this, but both uncomfortable as a novice clinician and in my relationship with things Māori, I proceeded, to his visible disgust. Pursuing this research, years later now, I read a similar experience in the research of McLellan, McCann, Worrall and Harwood (2014). The whānau in this case felt that this didn't allow their mother to demonstrate her knowledge in her worldview, language or context; it didn't acknowledge her identity or her capability. As is common for the person who has power in these situations, while I emerged shaken from this and had no support to process it, I soon moved on; in contrast, my client and her whānau may well have left the experience feeling disrespected and unheard.

My undergraduate speech-language therapy degree complete, I went to work as an SLT in a special school. This research is motivated by my experience in this role, where I worked with a wide range of students and saw them awaken into communication using AAC systems. The whakataukī that has

become the title of this research captures the sense of responsibility to these students that I developed. I believe that the role of an SLT is to support all clients to access a "voice" that enables them to communicate with a variety of people in different contexts, in a manner that works for them – and in their preferred language. One year we had an intake of seven new entrants who were all candidates for AAC systems, and who had five different languages at home. I was stopped short by this challenge: How could we facilitate language development when the therapists and teachers could neither speak the child's language nor provide the tools to support or express this language?

One of these students had te reo Māori for her mother tongue. For her whānau, bilingual had been their compromise. But I couldn't 'meet them halfway' at bilingual – I had nothing to support her to communicate expressively in te reo Māori. I could only offer English, and was distinctly aware that we could not offer education like her sibling was receiving at kura kaupapa Māori. At the same time as this grew in and around me at work, I was involved in a church and community that highly values te reo me ngā tikanga Māori in its prayer and community practices. The Urban Vision community reminded me of the partnership we Pākehā have with Māori and our obligations as Treaty partners, as well as showing me that it is possible to speak te reo Māori and enjoy the gift that it is to all the people of Aotearoa New Zealand. Based on this and my childhood knowledge, I was able to increase te reo Māori in the classroom and therapy practice and used more Māori stories and histories in the class. Unfortunately, it was difficult enough for some staff to just learn to say the student's name correctly. I still had nothing that I felt could support her to communicate in te reo Māori.

This student and her Pasifika and South East Asian classmates initiated this research journey. Having a solid first language is essential both for identity and belonging and provides the foundation for second language development (Lightbown & Spada, 2013). In the Aotearoa New Zealand context, providing access to te reo Māori in this way precedes other languages, based on the promises of the Treaty of Waitangi (1840). I began to study second language acquisition to improve my skills and researched what options were available for expressing te reo Māori with AAC. The few resources I

could find were straight translations from English AAC, used western symbols, and were based on western concepts of language learning and self-expression (e.g., Appendix 3). This struck me as a justice issue and a colonization issue, and I became eager to look towards creating AAC systems that promote language and communication in te reo *and* te ao Māori.

I still hold strongly to the whakataukī "Ko tōku reo tōku ohooho: My language is my awakening". I wish to see all New Zealanders able to awaken into communication in their languages of choice.

1.3 Research focus and questions

This research aims to establish a pathway towards culturally located AAC systems that can support people to communicate in te reo Māori. Recognising that te reo Māori dwells within and expresses te ao Māori, these resources need to be based on Māori knowledge and perspectives. While acknowledging the common experience of barriers to SLT service for Māori clients, this study is more interested in potential. It is forward-facing: How can we do this right? The research questions to inform this kaupapa are:

1. Why are te reo Māori AAC resources needed?

2. What does a te reo Māori AAC system need to do?

3. How should te reo Māori AAC systems be created?

4. What could te reo Māori AAC be like?

The first question motivates the research; it seeks to determine and clarify the need. The others address the practical areas of function, creation, and form to establish te reo Māori AAC systems based on the evidences of tikanga and mātauranga Māori.

1.4 Thesis structure

The present chapter has provided an **Introduction** to te reo Māori AAC as an issue of communication access justice. It outlined the experiences that have led to this work, the research questions that guide it, the intended outcomes of the project, and the thesis structure. The **Literature Review** draws together national and international literature from the diverse fields of bilingualism, complex

communication needs, cultural and linguistic diversity and AAC, Māori education, Māori health, special education, and speech-language therapy. It locates the Māori child who requires AAC to access communication in te reo Māori at the centre of intersecting national and international policies including the Treaty of Waitangi. Finally, it explores the difficulty of immediately implementing AAC in te reo Māori and returns to the great need of and potential for te reo Māori AAC.

The **Methodology** section describes the theoretical foundations of the study and explains how this has been practically applied to the project. This broadly includes kaupapa Māori research methodology and the qualitative methods of data collection and analysis. The specific kaupapa Māori approaches that shaped the research process are explained in more detail and attention is given to the researcher's negotiation of this Māori space as Pākehā in partnership under Te Tiriti o Waitangi. This is followed by introducing the participants and the data collection process. The chapter concludes by describing how meaning was created from the data.

The experiences, views and ideas of the participants in their own words are presented in the **Findings** chapter. These are collated together as answers to research questions explicit and implicit in the research interactions. The findings are represented using a poutama framework that depicts the pathway to creating te reo Māori AAC systems and resources based on the foundations of language rights and accurate representations of te reo Māori.

The findings are reviewed in light of the literature and research questions in the **Discussion**. This chapter explores potential ideas and sources for creating te reo Māori AAC systems and resources and makes some practical suggestions for speech-language therapists. The limitations of the study are critiqued, and future research directions are explored. The thesis concludes by reflecting on the study and looking forward in hope for communication access justice for Māori at the intersection of cultural and accessibility inequity.

2. Literature Review

He rangi tā matawhāiti, he rangi tā matawhānui.

A person with narrow vision has a restricted horizon; a person with wide vision has plentiful opportunities.

Language is a way of expressing our experiences of the worlds we live in. It is intimately, inextricably entwined with culture; it often expresses elements of our cultures that we are blind to. In a diversifying world, many individuals and communities live across cultural worlds, the differences of which are expressed in the use of language. We may use different languages for different contexts, relationships, registers, and concepts. For example, a child may use Urdu at home, English at school, and Arabic for prayer (Jegatheesan, 2011); a Chinese parent in the US may work as a marketing manager in English yet not know the English word for "itchy" (Yu, 2013); one may translate "whanaungatanga" as "relationship", yet miss the depth of shared experience, belonging and reciprocity that the word conveys (Berryman, 2015b). Language is enculturating (Soto & Yu, 2014).

Many individuals with complex communication needs (CCN) live in such a cross-cultural, cross-linguistic context. They may require augmentative and alternative communication (AAC) tools to communicate, a service which is largely delivered by SLTs. However, they are often only able to access SLT support in one language: in Aotearoa New Zealand, English. Without support for their other language or languages, people with CCN may not be able to participate in their families or access the resources of their communities (e.g., McNamara, 2018). They may also struggle with acquiring English if they do not have strong understanding or expressive ability in their first language. There are many difficulties translating AAC systems between languages, including objective language features of syntax and vocabulary and less tangible cultural differences in symbolic representations and interaction dynamics (Soto & Yu, 2014). This is a hot topic in AAC research internationally, as evidenced especially by the recent Special Issue on Cultural and Linguistic Diversity and AAC published by the Perspectives of the ASHA Special Interest Groups (Hughes, 2018). A strong assertion permeates

this issue: Access to AAC is a right for all communicators, in all languages, and SLTs need to become advocates for this as an issue of social justice.

In Aotearoa New Zealand, protection and advocacy for te reo Māori is an obligation under the Treaty of Waitangi (1840). In its Principles and Rules of Ethics document, the New Zealand Speech-language therapists' Association requires its SLTs to "uphold and adhere to" (New Zealand Speech-language Therapists' Association [NZSTA], 2015, p. 3) the Treaty, to strive for equity in resource and service delivery, and be non-discriminative. However, it does not directly address the reality of the cultural and linguistic differences between clients and the critical, self-reflexive approach that practitioners need to provide equal access in what may be an unjust system (Hughes, 2018). "Nowhere is the cultural, social, and political context more significant than in cross-cultural service delivery and cultural competence" (Brewer & Andrews, 2016, p. 87) – yet rather than engaging in critical analysis of power distribution, most SLTs learn discrete behaviours that demonstrate external practices rather than internal understandings of culture. Beyond one or two te reo Māori courses and learning cultural assessments and frameworks, training to become a speech-language therapist in Aotearoa New Zealand remains heavily weighted towards a Eurocentric medical model – and towards assessment and intervention in English.

The first aim of this literature and policy review is to demonstrate that good quality, best practice te reo Māori AAC should by law, promise and aspiration be available in Aotearoa New Zealand. This accords with the Government's obligations under Te Tiriti o Waitangi[5] (1840), aligns with their promises as signatories to several United Nations agreements, and is expressed in their own policies in health, education, disability, and te reo Māori. As the Waitangi Tribunal affirmed over thirty years ago, "Ko te reo te mauri o te mana Māori" ("The language is the life force of the mana Māori"; Waitangi

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[5] The terms te Tiriti o Waitangi/te Tiriti are used interchangeably in this document with the Treaty of Waitangi/the Treaty, except where explictly discussed. Despite acknowledged textual differences, the implications of each document regarding protection for te reo Māori are the same.

Tribunal, 1986, art. 6.1.21). Without access to their reo, Māori AAC users cannot express their Māori identity.

The second part of this chapter explores several key issues related to AAC access for culturally and linguistically diverse (CLD) communicators. It examines the roles of SLTs in this work, affirms that AAC users can experience the benefits of bilingualism, explores the experiences of CLD AAC users, and lays out some of the considerations in establishing appropriate resources. Though international research dominates the field, the issue is relocated to the Aotearoa New Zealand context, and particularly to te reo Māori, through the work of kaupapa Māori researchers.

2.1 Te reo Māori: A right of Māori

The experience of Māori with CCN is well described by a framework of intersectionality. Intersectionality is concerned with how the interrelationships of multiple identities can increase oppression or exclusion for an individual or community (García & Ortiz, 2013). It emerged as a way of talking about the multiple dimensions of identity and experience of women of colour in the 1980s, who had felt that they were marginalised by the discourses of both feminist and antiracial politics (Crenshaw, 1991). Crenshaw felt that Black women were "theoretically erased" (1989, p. 139) by movements or policy that focused on the most privileged members of a group and did not consider the multiple burdens of race and sex. García and Ortiz (2013) suggested that this understanding could be employed as a transformative lens for special educational research. They wrote that intersectionality is the framework that best engages both with the simultaneous interactions of individual and family factors, including race, class, and ability, and with organizational responses such as policies and educator perspectives that may compound to have a detrimental effect on a child's learning or participation in a classroom (García & Ortiz, 2013, p. 34). They describe this approach to research as "transformative" – a word we will re-encounter in exploring kaupapa Māori research in the methodology section.

I contend that the discourse around disability, language, and cultural identity likewise marginalises potential users of te reo Māori AAC systems. Ripat and Woodgate (2011) considered the intersectionality of culture and disability with reference to assistive technologies including AAC. They wrote that differing cultural values and language preferences between AAC users, their communities, the dominant culture, and AAC providers may affect the efficacy of AAC provision and intervention. In Aotearoa New Zealand, Hickey writes about the "greater marginalization" (2013, p. 158) of indigenous persons with disabilities who may be excluded from the indigenous communities they prefer to identify with and be culturally dislocated in disability communities.

A review of international rights-based documents and Aotearoa New Zealand's educational and health policies reveals the intersectional experience of te reo Māori AAC users. How is it that communication justice is not afforded to a person who sits at the edge of many of these documents – but when they are overlaid, at the centre of all?
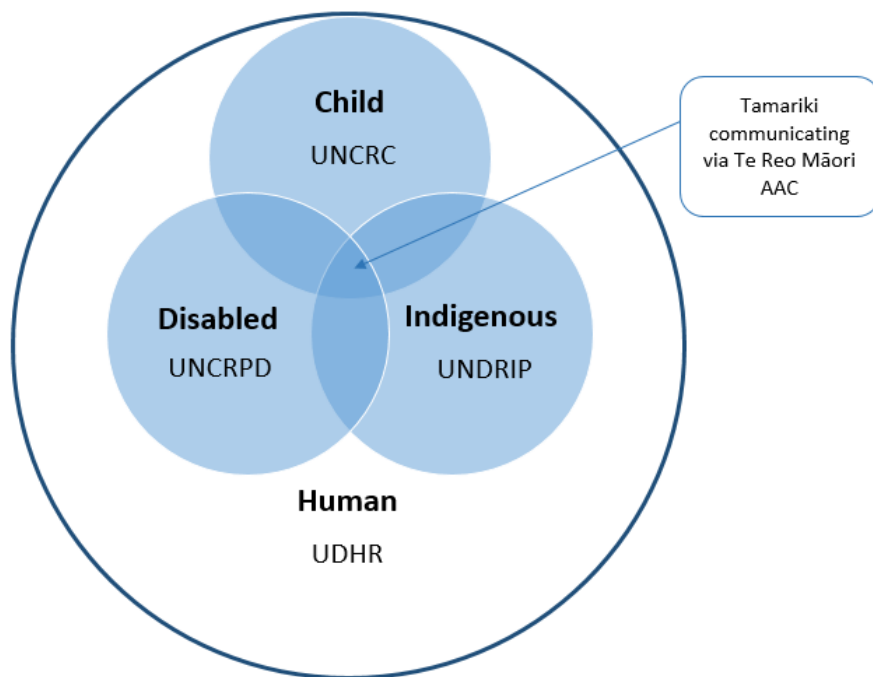
Figure 2: Intersectional position of tamariki who use AAC to communicate.

2.1.1 Indigenous language rights

Aotearoa New Zealand is signatory to and has ratified the United Nations Convention on the Rights of the Child (CRC, 1989) and the Convention on the Rights of Persons with Disabilities (CRPD, 2007), thus passing them into law. In 2010 Aotearoa New Zealand also accepted the UN Declaration on the Rights of Indigenous Peoples (DRIP, 2007; Power, 2010). Overarching these all is the Universal Declaration of Human Rights (UDHR, 1948), which Aotearoa New Zealand signed in 1948. I acknowledge the western bias of these documents; their emergence from a United Nations that is dominated by non-indigenous, colonial leadership. However, they express much of the idealism of the Aotearoa New Zealand Government and could perhaps be said to represent the best aspirations of the Crown as it engages in world and ethical issues.

The Universal Declaration of Human Rights asserts the rights of all people, "without distinction of any kind" (UDHR, 1948 art. 2), to the realization of their "social and cultural rights indispensable for his dignity and the free development of his personality" (UDHR, 1948, art. 22). This includes freedom of expression (art. 19); choice around education (art. 26); and the right to participation in "the cultural life of the community" (UDHR, 1948, art. 27). These are elaborated on for specific people groups in the CRC (1989), CRPD (2007), and DRIP (2007) documents, which recognise and legislate for the experiences of multiple social identities. Each folds back into the others in its assertions of rights to self-determination and identity. An indigenous child who requires AAC to communicate sits at the margin of each of these documents. When intersected, they meet at the heart, a hopeful position of multiple protection, we might expect (Figure 2). However, intersectionality discourse warns that this may rather result in multiple exclusion.

The United Nations Convention on the Rights of the Child (1989) particularly considers the rights of the indigenous child: "A child… who is indigenous shall not be denied the right, in community with other members of his or her group, to enjoy his or her own culture, to profess and practise his or her own religion, or to use his or her own language." (1989, art. 30). As the indigenous people of Aotearoa New Zealand, the right of Māori to their language is more specifically promoted in the United Nations

Declaration of the Rights of Indigenous Peoples. It asserts that "particular attention shall be paid to the rights and special needs of indigenous elders, women, youth, children and persons with disabilities in the implementation of this Declaration**.**" (2007, art. 22) Consider that a user of AAC is someone who experiences disability in most societies; further, many are children, requiring AAC for self-expression from infancy, and many others elders who have had neural accidents and access AAC as part of rehabilitation. The declaration further asserts indigenous peoples' rights to participate in self-determination and involvement in economic and social development (DRIP, 2007, art. 23), to practice their culture in all its manifestations – past, present and future (DRIP, 2007, art. 11), and to have the support of the government in ensuring their participation "on issues affecting them" (DRIP, 2007, art. 41). Self-determination for indigenous peoples and their right to have control over education, language and cultural identities are consistent priorities (e.g., DRIP, 2007, art. 13, 23, 41). These assertions are all pertinent to the issue of language and communication for those who require AAC.

Aotearoa New Zealand famously voted against this Declaration (United Nations, n.d.), finally signing it in 2010 with reference to New Zealand's agreement between its indigenous people and its colonisers: Te Tiriti o Waitangi (Power, 2010).

2.1.2   Te Tiriti o Waitangi

The Treaty of Waitangi was signed in 1840 by William Hobson on behalf of Queen Victoria and around 540 Māori rangatira or chiefs across Aotearoa New Zealand (New Zealand History, n.d.). Two different versions were signed: the Treaty of Waitangi in English, and te Tiriti o Waitangi in te reo Māori. At least nine copies were circulated to gather as many signatures as possible between February and September 1840, the majority of those signing te Tiriti o Waitangi. Although many rangatira did not sign it – some not getting the opportunity, and some actively refusing – the Colonial Office in Britain declared British sovereignty over Aotearoa New Zealand in May that year (New Zealand History, n.d.) This opened the way for the colonisation of Aotearoa New Zealand – a rapid increase in British settlers and a consequent decline in Māori lives and livelihood. The negative effects of this permeate Aotearoa

New Zealand society, particularly in justice for Māori in all domains of wellbeing, including access to their culture and language as well as to health and education support.

Understanding the purpose and consequences of te Tiriti through time is difficult, complicated by different perspectives of history and experiences of colonisation. Contemporary reports indicate that individuals on each side had different understandings, motivations and hopes of what it would achieve (Colenso, 1890). The work of Professors Ranginui Walker and Anne Salmond, who represent each half of the partnership – Māori and Pākehā – and who have each lived and worked across the two worlds of bicultural Aotearoa New Zealand, can help provide a basic and balanced understanding. While it is now well understood that the two versions differently describe the rights, roles and responsibilities of Māori and the Crown, it can be understood as "a symbol of the special relationship" (Walker, 2004, p. 266), and seen to "establish a sacred bond" (Salmond, 2017, p. 282). In interpreting Treaty disputes the Waitangi Tribunal has found that those who signed the Treaty "agreed to share power" (Waitangi Tribunal, 2014, as cited in Salmond, 2017, p. 285). Kawharu's translation of te Tiriti o Waitangi into English provides a clearer understanding of how Māori would have understood the document they signed (Kawharu, 1989). The preamble of both language versions expresses the Queen's desire to preserve the rights of Māori to their chieftainship over their lands, peace and good order (Tiriti o Waitangi, 1840; Treaty of Waitangi, 1840). Significant differences in meaning are evident in the first and second articles of the te reo Māori and English versions. The Treaty of Waitangi states that the Māori chiefs cede "sovereignty" to the Queen of England in Article 1 (1840). This was translated into te reo with the loan word "kawanatanga"[6] in Te Tiriti, however Kawharu's interpretation makes clear that "kawanatanga" more clearly expresses the idea of "government". In contrast, Article 2 of te Tiriti o Waitangi (1840) affirms the Crown's protection for Māori people to have "tino rangatiratanga", now interpreted as "unqualified exercise of their chieftainship" (Kawharu, 1989) and closer to the Māori understanding of sovereignty, over their lands and all their treasures. Agreement is restored in Article

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[6] "Kawana" is a transliteration of "governer" and was introduced by the missionaries to describe the role of Herod in the Biblical gospels – no very admirable position!

3, where te Tiriti/the Treaty establishes a partnership between peoples and offers Māori the protection and rights of British subjects. Walker summarises it simply: "The Treaty of Waitangi is a charter for equality between Māori and Pākehā." (2004, p. 396). New Zealanders must all recognise the decades of violent offenses and dispossession that have followed from Pākehā claiming and wielding power over Māori, in breach of this Treaty agreement. Now, these many years later and through all this complexity of understanding, we must seek to act justly in working it out together.

However, practically applying te Tiriti – a document laden with weighty ideals in English, translated into Māori with insufficient cultural and linguistic sensitivity, and now burdened with responsibility for decades of unjust relationship – to any work or policy is difficult in the extreme. It is often reduced to three principles, one per article: partnership, participation, and protection (e.g., Ministry of Health, 2014). These were derived from the early findings of the Waitangi Tribunal, who recognised that the three themes of "partnership, rangatiratanga, and active protection" underpinned their early decisions (Walker, 2004, p. 268). The "Three Ps" model is how the Treaty is often taught to student practitioners in health and education, including in speech-language therapy: Three abstract principles that, when "applied", mean that the Treaty is "honoured". This again is culturally determined, and Māori prefer to look at the articles, rather than the abstracted principles (Brewer & Andrews, 2016). For example, Brewer and Andrews see in Article 3 provision for "rights such as receiving a service in one's own language and worldview and attaining equitable health outcomes" (2016, p. 89) which may not be clearly communicated by the single principle of "protection". In my own experience in discussion with peers, listing off these "Three Ps" is seen as an answer to an interview question, and not a challenge to presumed ways of thinking or working. This wero must be accepted by speech-language therapists who wish to provide good and just services to Māori clients who are disabled by our society.

WAI 11
The Treaty of Waitangi has been used to affirm the treasured place of te reo Māori at the heart of Māori culture. In 1985, the Waitangi Tribunal heard a claim that asked for te reo Māori to be made an

official language of Aotearoa New Zealand (Waitangi Tribunal, 1986; hereafter "Wai 11"). Their report applies Te Tiriti to te reo Māori; moreover, it back-translates some of the extra complexities: the cultural and linguistic differences between the Māori and English versions, and the effects of decades of colonial oppression. It identifies te reo Māori language access as a justice issue at the heart of Aotearoa New Zealand's society. Wai 11 makes explicit several key ideas: that failure to protect te reo Māori is unjust and a breach of The Treaty; "ko te reo te mauri o te mana Māori" (Waitangi Tribunal, 1986, art. 6.1.21); and that Māori language instruction and intergenerational transmission should be available as a right. Wai 11 specifically recommends that all children who wish to learn te reo Māori be able to do so, and that te reo Māori be made an official language of Aotearoa New Zealand.

Ko te reo te mauri o te mana Māori

This idea is central to this research. It permeates the Māori literature reviewed and the data gathered in the research process. It is also evident in reading or indeed hearing any Māori text – research, literature, whakataukī, whakapapa, whaikōrero. Over the course of hearing the claim, the Waitangi Tribunal heard from many Māori and Pākehā contributors who made explicit in quote after quote that te reo Māori is integral to and at the heart of the Māori people and culture (Waitangi Tribunal, 1986, p. 1); that the "self-esteem, dignity and mana" (p. 32), the mauri or life force (p. 34), the "embodiment of the particular spiritual and mental concepts" (p. 17), the "very soul" (p. 34), the "mauri o te mana" (p. 34), and the identity (p. 43) of tāngata Māori are expressed in the language. It is, indeed, a "taonga" (Tiriti o Waitangi, 1840). Looking towards Māori belonging within te ao Māori, therefore, a knowledge of te reo Māori is essential, in the truest sense.

Official language status

Te Tiriti o Waitangi (1840) agrees to the Queen's protection of the people of Aotearoa New Zealand in the "unqualified exercise of their chieftainship over their lands, villages and all their treasures (taonga)" (Kawharu, 1989, art. 2). The English text guarantees the "full, exclusive and undisturbed possession" of this taonga (article 2); such a guarantee demands an active response from the Crown. Therefore, according to the recommendations of Wai 11, Aotearoa New Zealand has legislated for the

protection and revitalisation of te reo Māori. Te reo Māori was declared to be an official language of Aotearoa New Zealand in 1987 (Māori Language Act 2016). The Māori Language Act 1987 also established a Māori Language Commission, which promotes te reo as a living language (Te Taura Whiri i te Reo Māori, 2019). This entity was replaced in 2016 by Te Mātāwai, which takes responsibility for leading iwi and Māori in kaitiakitanga of the Māori language, affirmed as a taonga of iwi and Māori (Māori Language Act 2016, art. 4.1).

The evolution of Māori language strategies over time reveals the government's evolving understanding of its role in Māori language protection and revitalisation. The current status is a partnership for revitalisation between iwi Māori, represented by Te Mātāwai, and the Crown, represented by Te Puni Kōkiri, the Ministry of Māori Development, (Te Puni Kōkiri [TPK], 2019). Their strategy documents, Maihi Māori and Maihi Karauna respectively, have the partnered visions of "kia ūkaipō anō te reo" and "kia māhorahora te reo" (TPK, 2019, p. 7). In this, Te Mātāwai are responsible for revitalisation of te reo Māori as a nurturing first language, and the Crown for a society where te reo Māori is valued, learned and used openly and freely. Together, they support quality and daily use of te reo Māori in public, communities and homes. They celebrate intergenerational language transmission as the primary pathway for language revitalization (TPK, 2019). The government accepts shared responsibility for revitalising and providing access to te reo Māori in Aotearoa New Zealand.

Te reo Māori: Te ao Māori

Te reo Māori is connected with identity and pride in being Māori (Berryman & Woller, 2013, p. 833). Te ao Māori is full of whakataukī that express this centrality of reo to personhood, such as the one that leads this research. The Maihi Māori Strategy's vision that "Kia ūkaipō anō te reo – te reo Māori is restored as a nurturing first language" (Te Mātāwai, n.d.), reveals the intimacy between te reo Māori and Māori identity. "Ūkaipō" is an abbreviated form of the phrase that means "sucking milk at mother's breast" (Barlow, 1991, p. 143). Language, for Māori, is not merely a tool of self-expression: it is an infusion of life, essential for growth. "Language has a life-force, a power, and a living vitality. Language has a spirit…" (Barlow, 1991, p. 114). As discussed, Māori successfully argued "ko te reo te

mauri o te mana Māori." This means that without te reo Māori, Māori are unable to express themselves as Māori. This is a powerful statement that ensures the need to provide AAC in te reo for Māori with communication disabilities, who most often identify with their Māoritanga before their disability (Hickey, 2013; Ministry of Health [MOH], 2018). Hickey is clear from her work and her own experience that Māori with disabilities face compounded exclusion from both "mainstream" and Māori communities (Hickey, 2013); an exclusion that could be lessened by SLTs providing support and resources for communication in te reo Māori.

McLellan et al. (2014) spoke with Māori who had acquired aphasia through having a stroke and their whānau. Their stories expressed the deep value of language to Māori identity and participation: "For Māori, language is precious. And without it, well we are a bit lost I think. It is just the way the whole world ticks, through language and singing." (McLellan et al., 2014, p. 461). And again, "Talking, articulating with voice is foundational to our peoplehood." (McLellan et al., 2014, p. 461). This look at acquired language loss gives a strong sense of the importance of te reo Māori for identity and role in Māori communities. The same is true for whānau of children with special educational needs (SEN) who choose Māori medium education for their children – learning te reo Māori is a priority for relationships and identity formation (Berryman & Woller, 2013; Fortune, 2016). Again, we are impelled to recognise this as an injustice – a contravention of te Tiriti o Waitangi (1940) and of the UDHR (1948) – and a responsibility of speech-language therapists in Aotearoa New Zealand.

2.1.3 Policy documentation

Brewer, McCann, and Harwood stated:

> Striving to be decolonising, kaupapa Māori SLT does not need to have a relationship with He Korowai Oranga, Whānau Ora, or any other government documents. However, because SLT services for adults are only provided within the "mainstream" public health system, they are delivered by clinicians who have an obligation to follow government health policy. (2016, p. 77)

Similarly, most SLT services for tamariki are provided within the "mainstream" service offered by the Ministry of Education, Special Education (SE) service. The third main service provider for AAC users is the TalkLink Trust, who contract to the Ministry of Health to provide assistive technology for disabled people to communicate effectively (TalkLink Trust, 2019). Acknowledging, therefore, the role of government employees supporting communication for Māori with CCN and wishing to call the government to take on their responsibility for te reo Māori AAC, attention is drawn to the obligations of the Aotearoa New Zealand government according to its own frameworks and policies. This selection of documents again intersects, relocating Māori who wish to speak te reo and who are disabled to the heart. This develops understanding of te reo Māori AAC as a right and introduces the responsibilities of the New Zealand Government.

Global disability

Consider the role of speech-language therapists as disability service providers. The general principles and obligations of the United Nations Convention on the Rights of Persons with Disabilities (2007) locate the ideals of the UDHR (1948) in the realm of disability: non-discrimination and accessibility; respect for dignity, autonomy, and self-determination; participation and inclusion; equality of opportunity. As an element of accessing and fully participating in cultural life, it states: "Persons with disabilities shall be entitled, on an equal basis with others, to recognition and support of their specific cultural and linguistic identity." (CRPD, 2007, art. 30.4). With the recurrent theme of the State's obligation to provide assistive technology and communication support in appropriate languages and modes (e.g., art. 2, 4, 9, 24), their responsibility for linguistically specific AAC seems clear. Additionally, the United Nations Convention on the Rights of the Child (CRC) reasserts a child's rights to freedom of expression via media of the child's choice (1989, art. 13); to "active participation in the community" (art. 23.1), and to assistance appropriate to their needs and those of the whānau (art. 23.2). This assistance is to be:

> designed to ensure that the disabled child has effective access to and receives education, training, health care services, rehabilitation services, preparation for employment and

recreation opportunities in a manner conducive to the child's achieving the fullest possible social integration and individual development, including his or her cultural and spiritual development. (CRC, 1989, art. 23.3).

Such provision would seem to meet the needs of tamariki Māori.

Aotearoa New Zealand health and policy documents

It is unsurprising that of the policy documents reviewed, the disability literature is the most inclusive in its scope and attitude. This is a consistent feature of the work and contribution of disabled people who recognise the vast diversity of identities and experiences of people who are disabled by their societies. The vision of the New Zealand Disability Strategy is for Aotearoa New Zealand to be a non-disabling society (Ministry of Social Development [MSD], 2016). This reveals its underlying perspective: Disability occurs when barriers in society limit the ability of people with impairments to participate in and access the world. Disability "is something that happens when the world we live in has been designed by people who assume that everyone is the same." (MSD, 2016, p. 12). The policy firmly locates itself within te Tiriti o Waitangi (1840) and the CRPD (2007), further asserting tino rangatiratanga in ensuring the involvement and participation of people with disabilities in decision-making. Its first key outcome includes education that supports personal development, ensuring that individuals who use alternative modes of communication can access this for education (MSD, 2016). The strategy also acknowledges the unique marginalisation of people with complex communication needs (CCN) and goes so far as to demand that their voices be heard in decision-making:

The international catch-cry of disabled people is 'nothing about us, without us'. For our disability community in New Zealand, this also includes those of us who find it hard to, or are not able to, speak for ourselves. We are amongst the most vulnerable and marginalised members of our disability community… the thing we have in common is that we often rely on other people to support us to make decisions and to communicate. (MSD, 2016, p. 15).

It celebrates the increasing diversity of the disability community, affirms the rights of all disabled people to be valued in their participation and contribution in all their various communities, and is explicit about the centrality of identity and language, particularly among Māori:

> Most Māori disabled people identify as Māori first. The importance of their cultural identity, which encompasses language, whānau, cultural principles, practices and linkages to the land through genealogy, is paramount to how they live their day to day lives in both Te Ao Māori and Te Ao Pākehā. (MSD, 2016, p. 13).

This hints that Māori experience disability in different terms or as arising from different circumstances than how Pākehā conceive of disability.

Disability and health policies for Māori

Aotearoa New Zealand's Māori health and disability policies are encompassed in Whānau Ora (TPK, n.d.). This is the whānau-centred, whānau-focused kaupapa that was launched by the Government in 2010 to facilitate Māori to access support services including housing, work, health, and education. He Korowai Oranga, the Māori Health Strategy, is grounded in achieving Māori aspirations for the health of Māori individuals, families, and environments (MOH, 2018). It is consistent with other governmental policies in promoting standing in two worlds, te ao Māori and te ao Pākehā/wider society, and explicit that Māori views on health and wellbeing are required to inform effective services for Māori. Whaia te Ao Marama 2018-2022 weaves a Māori worldview through the New Zealand Disability Strategy (MOH, 2018). It introduces the term "tangata whaikaha" to describe individuals with disabilities, emphasising strength and ability (MOH, 2018, p. 4). Whaia te Ao Marama aims for tāngata whaikaha to actively participate in te ao Māori, including through leading and learning in te reo me ngā tikanga Māori courses (MOH, 2018). It also describes a commitment from the Ministry of Health to co-design new support services in partnership with tāngata whaikaha, and to listen and respond to the stories of these individuals and their whānau. This document expresses the energy in Māori disability communities for contributing their opinions and leading change in the way services

are delivered for Māori. Indeed, some indigenous ways of working have been adopted into health and education services.

2.1.4 Māori models of health and disability

Māori understandings of health consider hauora for individuals, whānau and communities. They are focused on enhancing holistic wellbeing rather than on remediating illness.

Te Whare Tapa Whā (Durie, 1994; as cited in Hickey, 2015) considers four equal domains of holistic wellbeing for Māori individuals: taha tinana, taha wairua, taha whānau, and taha hinengaro. The image of a four-walled house visualises the interdependence of physical health, spiritual wholeness, family belonging and connectedness, and mental and emotional balance. This view can come into conflict with the culturally dominant health model in Aotearoa New Zealand, which may only deal with physical health and can be especially hesitant to engage with spirituality (Rochford, 2004). Te Whare Tapa Whā is the model commonly taught to student practitioners in health and education to support their understanding of the holism of hauora. A similar model, Pere's Te Wheke (1984, as cited in Hickey, 2015), represents the interconnectedness of Māori domains of wellbeing by the eight tentacles of an octopus. This model includes Durie's four domains and an additional four: ancestral links, mauri or life force, whatumanawa or emotions/heart/mind, and the breath of life from the ancestors. Te Wheke emphasises whānau wellbeing – the head represents the whānau, and the gleam in the eye reveals the wellbeing of the individual. Hickey comments that non-Māori often sever one or more of these tentacles in considering wellbeing by disconnecting people from elements of their identity (2015). For example, separation from te reo Māori and whanau, which are at the heart of Māori cultural identity, can be considered disabling:

> We have a tendency to think of people like in wheelchairs but I think from my understanding…
> that disabilities is that people have lost that knowledge of whakapapa and how they are
> related to whānau, hapū and iwi. (Kingi & Bray, 2000, pg. 18, as cited in Fortune, 2016, p. 66)

Acknowledging the cultural and conceptual nature of intellectual disability, Bevan-Brown (2015a) researched Māori attitudes, expectations, and adaptations for children with intellectual disabilities. She reviewed traditional stories, whakapapa, and practices to hypothesise about traditional perspectives, and interviewed 16 participants who lived or worked with Māori with intellectual disabilities to explore contemporary understandings. Two contrasting perspectives were revealed from both traditional and contemporary sources. Some traditional evidence showed Māori "had little tolerance and sympathy" (Bevan-Brown, 2015a, p. 151) for those with disabilities, which were sometimes considered a spiritual result of a tapu infringement. In contrast, the holistic and collective attitudes to wellbeing, as well as the moral obligation to elders and those with disabilities, conveyed a more inclusive attitude. Hickey said, in conversation with Bevan-Brown, "A lot of our atua also had impairments," (Hickey & Bevan Brown, 2015, p. 139), referring to the ancestral stories of Māui, Mahuika, and Muriranga-whenua. Bevan-Brown's contemporary interviews revealed the same contrasting beliefs; however, there was a greater emphasis on inclusion and non-judgemental acceptance based on whanaungatanga and the inherent mana of each person (Bevan-Brown, 2015a). Researching the inclusion of tamariki with SEN in Māori medium education, Fortune (2016) found that both teachers and families believed that disability need not disadvantage tamariki from learning alongside peers in an inclusive kura environment that emphasised whānau and belonging. She also wrote that Māori with disabilities may be accepted in their own environments and that the word "disability" has little meaning within the Māori world (2016). This is expressed by the term "whānau hauā" which emphasises the belonging of disabled individuals within a family who share the collective role in establishing balance (Hickey, 2015). As Hickey wrote, "Whānau hauā, however, have the comfort of knowing that they belong within their whānau identity and that their impairment is simply a natural part of who they are – nothing more and nothing less" (2015, p. 82).

Māori experiences of disability

Despite the intentions and aspirations of the policy documents, such balanced and equitable service is not the experience of Māori disabled children or adults. Hickey (2015) also reviewed traditional and

modern Māori concepts of disability, but with a focus on the models used to describe health and wellbeing. Her findings contrast with those of Fortune (2016) and Bevan-Brown (2015a), as she found that no model addressed both the holistic and inclusion considerations of wellbeing for whānau hauā. She found that disability discourse, focused on individual access and participation in the mainstream culture, can conflict with the cultural relativism and collectivity of belonging in an indigenous culture (Hickey, 2013). Hickey (2013) criticized the CRPD (2007) and the DRIP (2007) for not truly legislating for the uniquely marginalized persons at this intersection, considering the relationship between the texts weak due to the exclusion of indigenous persons with disabilities from the discussion of each. The same is true within Aotearoa New Zealand's policy documents, and she writes, "Without including whānau hauā, we will continue to see this group suffer the consequences of their invisibility." (2015, p. 82). Hickey recommended considering the kaupapa Māori Tātau Tātau framework in forming policy related to this group. Tātau Tātau (Collins and Hickey, 2006, as cited in Hickey, 2015) was developed by Māori and views whānau hauā within a Māori worldview. It looks first at the individual and their relationships within their whānau, and then at how the whānau maintains its collective wellbeing. Kaupapa Māori values, including whanaungatanga, mana, and the holistic dimensions of health of Te Whare Tapa Whā, are expressed in this framework, along with such duties as mutual support, mahi tahi, and cherishing elders. Hickey (2015) sees that this model would allow whānau hauā to centre their identity in their whakapapa and to consider both individual and collective identities in constructing their wellbeing. It also encourages decision-making to remain with the individual and their whānau.

2.1.5   Education

A very brief history

Aotearoa New Zealand educational policy has a long history of getting things wrong for Māori learners. Through the 19th and 20th centuries, it moved through policies of assimilation, integration, multiculturalism, and eventually recognised its responsibility to Māori under the Treaty of Waitangi in bicultural Aotearoa New Zealand (Bishop & Glynn, 1999). The education of tamariki Māori has been

severely impacted over generations as a direct consequence of these colonial experiences. One particularly pertinent effect is the rapid decrease in use of te reo Māori over the 20th century due to the policies of English-only education that were enforced by corporal punishment. This severely disrupted intergenerational language transmission (Ministry of Education [MOE], 2013b).

Bishop and Glynn (1999) pointed out that Taha Māori ("the Māori side"), an attempt by the Ministry of Education to provide access to Māori perspectives in schools in the 1980-90s in response to this injustice, provided benefits to Pākehā and not Māori. It was effective in validating general aspects of Māori language and culture among Pākehā. However, its focus on adding a generic Māori perspective to curricula rather than planning in partnership with Māori further marginalised Māori learners, who were taught about their culture from a majority worldview (Bishop & Glynn, 1999). I was a Taha Māori child and thank my primary schooling for my grounding in Māori language and culture: It is upsetting to realise that this may have been rather a recolonising experience for my Māori classmates.

Policy and curricula

By the time of Wai 11 (1986), the Ministry of Education had recognised its role in the demise of te reo Māori and begun to make reparation in its policies (MOE, 2013a). Ka Hikitia, the present Māori Education Strategy, came into effect in 2008 (MOE, 2013a). Intended as a three phased kaupapa Māori approach, Ka Hikitia is driven by the vision of seeing Māori students "enjoy and achieve education success as Māori" (MOE, 2013a, p. 6). Staff and whānau at Māori medium schools perceived success for Māori as Māori includes "standing tall as Māori" to achieve bicultural and bilingual citizenship of Aotearoa New Zealand and the world (Berryman & Woller, 2013, p. 830). The importance of Māori culture, identity and language being valued within the education system is likewise an emphasis throughout Ka Hikitia. Its first proposed outcome is "All Māori students have access to high quality Māori language in education" (MOE, 2013a, p. 12). Tau Mai te Reo is the Government's strategy to strengthen the provision of te reo Māori in schools; the Government takes responsibility for the revival of te reo Māori in partnership with Māori (MOE, 2013b). In this document, the government recognises the need for education to celebrate and reflect Māori students' language and culture so that they can

build new learning upon a foundation of knowledge that is valued, and a foundation of knowing that they are valued (MOE, 2013b).

Te Whāriki (MOE, 2017a), New Zealand's early childhood curriculum, is celebrated for its biculturalism. Indeed, it starts with Te Tiriti o Waitangi and associates its understanding of children as confident, competent, active, interactive, and cultural beings at the centre of their own learning with the Māori concept of mana (MOE, 2017a). It encompasses the full range of diversity, including of culture, language and ability, and requires kaiako/teachers to actively support and respond to individual strengths, interests and needs. Te Whāriki recognises the multiple modalities in which language can be communicated and the importance of the early years for language learning. One of the reflective questions Te Whāriki poses is: "How do kaiako recognise and respond to cultural, linguistic and developmental diversity in language acquisition, including when working with children using alternative methods of communication?" (MOE, 2017a, p. 45). This is a model question for this research. Te Whāriki a te Kōhanga Reo (MOE, 2017b) is the curriculum for kōhanga reo, the "language nests" that were the first expression of Māori-led Māori language revitalisation. These are early childhood contexts in which te reo and te ao Māori are the medium of education. This curriculum has slightly different emphases that are more appropriate for the Māori worldview and environment of these kōhanga (MOE, 2017b).

Aotearoa New Zealand also has two curricula for two educational pathways for school-aged children – Māori medium and English medium. Each of these celebrate te reo Māori, but in different ways that reflect very different sets of cultural values. The dominant culture New Zealand Curriculum promotes inclusiveness and the individual learning and cultural needs of each student. It aims to educate children to recognise one another as Treaty partners and to develop knowledge of te reo me ngā tikanga Māori – the language and customs of Māori. The following excerpt reveals how te reo Māori is appreciated in Aotearoa New Zealand society: "By understanding and using te reo Māori, New Zealanders become more aware of the role played by the indigenous language and culture in defining

and asserting our point of difference in the wider world" (MOE, 2007, p. 14). What is important here is national self-identity, and Māori is useful for our distinctiveness. This is strikingly different than how te reo Māori is perceived in kaupapa Māori literature. Te Aha Matua o ngā Kura Kaupapa Māori is the foundation document for kura kaupapa Māori (MOE, 2010b). It is not literally translated from Māori into English but interpreted to convey its meaning. Though I have only basic te reo Māori, I can see that the introductions to Part 2: Te Reo of each text express vastly different worldviews. The te reo Māori text begins with the long form of the whakataukī that leads this research: Tōku reo, tōku ohooho; tōku reo, tōku mapihi maurea; tōku reo, tōku whakakai marihi (Ministry of Education, 2010b, p. 146). In stark contrast to this value for language as a treasure, the English explanation of this same section opens with a focus on research literature – the "principle of total immersion" (Ministry of Education, 2010b, p. 151) established in international communities and successful already in kōhanga reo. It uses determined language to "assert, expect, insist, affirm" total commitment to reo Māori development, and to "accept, agree" that English should, in time, be taught as a second language (MOE, 2010b). Where the Pākehā perspective speaks of best research evidence and makes te reo Māori a tool of self-identity for all New Zealanders in the world stage, Māori refer to the reo as their very awakening, their treasure, their adornment. It is not a marker of difference or uniqueness, it is a sacred taonga.

This perspective will be continually valuable through pursuing this research. Together, we must view te reo Māori from a perspective of deep inherent value and identity, rather than pragmatism or obligation. This will influence the conclusions reached and the way in which findings are interpreted.

Māori students with special educational needs

Both Māori students and students with SEN are identified by the MOE as priority learners (MOE, 2014). The literature indicates that tamariki at this intersection are best supported within kaupapa Māori settings. For example, whānau and kaiako in Fortune's (2016) study on inclusion in rumaki reo environments found that the support provided by SE services was frustrating to access, inflexible, driven by specialists rather than shared with whānau, and commonly provided in English only which

created a barrier to effective support in rumaki reo contexts. As a result, kaiako and whānau instead adapted assessments, curricula and resources themselves (Fortune, 2016). Bevan-Brown (2015b) wrote that whānau with children on the autism spectrum also struggled to access support services due to shortages of staff, high turnovers, lack of information, and funding issues. While Fortune (2016) critiqued SE specialists for having insufficient Māori knowledge, Bevan-Brown found that some professionals had insufficient knowledge about autism, and that some made patronising and even racist judgements about Māori mothers of children with ASD (2015b; note that this is based on 2004 research).

While whānau were urged to send their children with language learning difficulties to English medium schools by professionals concerned that Māori immersion would prohibit language growth, they instead found that the whānau-centred, nurturing kura kaupapa were supportive and inclusive environments that supported communication development for their tamariki (Fortune, 2016). This was because of the whānau atmosphere of genuine care, the tuakana-teina approach to learning, and the high degree of individualisation for all learners in kura kaupapa Māori. In Bevan-Brown's study with whānau of children with intellectual disability, there was unanimity on the importance of te reo Māori: "Everyone agreed that intellectually disabled Māori children are better off in a "good" bilingual or total immersion situation than in a monolingual class." (2015a, p. 156).

Berryman (2015a) and Berryman and Woller (2013) also considered how the inclusiveness of rumaki reo settings and supported inclusion for learners with SEN. Berryman (2015a) found that the holistic approach of kura, which focused on the individual located within the whānau and considered Te Whare Tapa Whā, made these effective environments for learners with SEN. Berryman and Woller, who collaborated with whānau, kaiako, and kaumatua to conceptualise their research findings, described four pumanawa or sources of potential that strengthened the educational practices of four kura: te ao Māori, whakapapa, wānanga, and te ao Pākehā (2013, p. 832). These pumanawa of Māori worldviews and language, collective identities, gaining and sharing knowledge together, and western

resources gave all students, especially those with SEN, understanding and access to support for their

identity, cultural, and educational development. A key finding of this study was that "these Māori

communities already had effective solutions for assessing and meeting the needs of their own

students, and that they also had the capacity for finding new solutions as required, from within their

own worldview" (Berryman & Woller, 2013, p. 836). Further, while they did want support from

external service providers, their priority was to first establish trusting relationships with these people

(Berryman & Woller, 2013). Bevan-Brown's (2015a) participants also expressed that inclusion, rather

than special education environments, are more in line with kaupapa Māori values such as aroha ki te

tangata or respect for people, but this relies on students being accepted by their peers and teachers.

While acknowledging their inclusive philosophies, Hickey perceived some access limitations in kura

kaupapa Māori for learners with disabilities from her whānau experiences (Hickey & Bevan-Brown,

2015). For example, she suggested that an environment suggests who is welcome in a space, and that

the absence of ramps in many kura sends a message of exclusion to learners or whānau members who

use wheelchairs. She is clear that schools and families have a shared responsibility to ensure that

Māori children with disabilities can enjoy their Māori identity: "The disability does not stop them from

being Māori. So give them the Māori experience." (Hickey & Bevan-Brown, 2015, p. 144). SLTs must

also take on this responsibility.

2.2   Augmentative and alternative communication for te reo Māori

The role of the speech-language therapist includes supporting the realisation of these language rights

and the administration of the responsibilities of the Aotearoa New Zealand Government to learners

of te reo Māori. This review now turns to consider AAC provision for those who require aided

communication to express te reo Māori. Withholding a tool that promotes both cognitive and

communicative development and participation in communities from people who need it is a denial of

their human rights (Hickey, 2013; Light & McNaughton, 2014; McNamara, 2018). McNamara charged

SLTs to become advocates for communication justice for bilingual users of AAC, understanding that

"support for bilingualism in AAC is not only best practice but, more importantly, essential to equitable

communication access for people with CCN." (2018, p. 142). This portion of the literature review asserts that people with complex communication disorders can and do become bilingual.

This relies on good quality intervention that supports both languages – the role and responsibility of the SLT. With a diversifying client base and a largely monocultural, monolingual workforce, how are SLTs to do this? What are the roles, relationships, and ways of working that will facilitate this? And how does this translate to the Aotearoa New Zealand context?

2.2.1   AAC and bilingualism

There is a lingering concern, a persistent caution from some practitioners that people having difficulty learning one language will experience disproportionate difficulty learning two. However, the research is clear across different types of developmental communication disorder: Some people with complex communication needs must, can and do become bi- or multilingual without risk to their general development (e.g., Cheatham & Hart Barnett, 2017; Kay-Raining Bird, Trudeau, & Sutton, 2016; McNamara, 2018; Yu, 2018). For example, over the course of a 17-month ethnographic study Jegatheesan (2011) found that three children on the autism spectrum whose parents were immigrants to the US developed language skills in English and their home languages of Bangla and Arabic, Urdu and Arabic, and Urdu and Hindi respectively. Kay-Raining Bird et al. (2005) found that eight bilingual children with Down Syndrome performed at least as well as monolingual peers on English language assessments and demonstrated varied levels of ability in their other languages. A systematic review of the literature related to bilingualism in children on the autism spectrum found a discrepancy between the ability of children to acquire more than one language and the advice given by professionals to promote a monolingual environment (Drysdale, van der Meer, & Kagohara, 2015). The potential for bilingual language development has become a base assumption of work in AAC (e.g., McNamara, 2018).

There are many advantages to bilingualism for an AAC user. As language is the doorway to a community and a way of thinking, being able to communicate in the language of the home is essential

to family and community belonging (Jegatheesan, 2011; McNamara, 2018). As language is learned through meaningful use, language skills grow through accessing conversations in the home (Cheatham & Hart Barnett, 2017; McNamara, 2018). AAC systems also support children to acquire language (Dukhovny & Kelly, 2015). The cognitive benefits of bilingualism are also available to AAC users, including cognitive flexibility (Lightbown & Spada, 2013), academic achievement, and emotional adjustment (McNamara, 2018; Ogletree, McMurray, Schmidt, & Evans, 2018). Specific skills that are important to AAC use are also strengthened by bilingualism, including attention, working memory, symbolic representation, and metalinguistic awareness (Ogletree et al., 2018). Acquiring additional languages can also be important for spiritual or identity reasons, as in learning Arabic to memorise the Qur'an (Jegatheesan, 2011), or te reo Māori to express whakapapa. Suppression of minority languages can stifle overall development, and enforced monolingualism or subtractive bilingualism may isolate individuals with AAC from their communities and further marginalise them (McNamara, 2018; Soto, 2018). This may be even more important when considering that individuals with disabilities may remain living with their families longer for care and support. Home language maintenance also contributes to cultural and linguistic identity (Cheatham & Hart Barnett, 2017), a very important consideration in the Aotearoa New Zealand context. On the other hand, many people require an additional language to participate in the wider community and to access education and work. In western countries this is often the language of intervention; in Aotearoa New Zealand and in much of the research, English. Bilingualism is thus necessary for equitable participation and identity realisation for many AAC users. To achieve this, they need appropriate service delivery and appropriate resources.

Bilingual intervention

In AAC as in any language modality, second language acquisition is built upon a strong first language (Cheatham & Hart Barnett, 2017; Lightbown & Spada, 2013; Ogletree et al., 2018). Using a child's native language to introduce words, patterns and concepts in subsequent languages has proven to be effective in AAC (e.g., Kempka Wagner, 2018). In fact, quality bilingual language intervention is

effective and necessary for bilingual development for children with CCN (de Valenzuela et al., 2016; Kay-Raining Bird et al., 2016; Kempka Wagner, 2018; Yu, 2018). The way this can be done is flexible: It doesn't have to mean both languages all the time (Soto & Yu, 2014). It also does not require a bilingual, language-matched SLT (Kohnert, 2010), as AAC intervention is best implemented indirectly, through families and educators in context, rather than directly by an SLT. Further, when parents are resourced with the skills needed to develop their children's language, they become less reliant on English-speaking professionals and interventions (Yu, 2013). Effective training for the AAC user's community is thus the important work of the SLT in this situation. This entails the SLT to pursue understanding of the specific needs of the family and community in order to provide training in relevant ways, contexts, and languages (McCord & Soto, 2004). Without effective relationships and understanding of wants and needs between the family, clinician and other parties such as teachers, AAC systems may well be abandoned as irrelevant (McCord & Soto, 2004). Where effective bilingual intervention is provided, children with complex language disorders can become bilingual, equipped and able to participate in their different worlds of belonging.

Barriers to bilingualism

The distribution of the world's population is rapidly changing, with a resultant diversification of languages and cultures. People of all languages are affected by communication disorders, and the population served by AAC providers is likewise diverse (Ogletree et al., 2018). Speech-language therapists worldwide work increasingly with students who are bilingual or who have different language and cultural backgrounds from themselves; the numbers are above 90% internationally (Soto & Yu, 2014). A largely monocultural SLT workforce is not easily able to meet the language and cultural needs of such a population. For example, Jordaan (2008) conducted an international survey of 99 SLTs in 13 diverse countries and found that all worked with at least one bi- or multilingual child. Seventy-four percent of these SLTs were monolingual and 84% were delivering monolingual intervention to their clients; Jordaan (2008) questioned the value and ethics of such a service.

Lack of culturally and linguistically appropriate service from SLTs is a significant factor in preventing AAC access for people with diverse languages. Soto and Yu (2014) refer to the limitations of time for collaboration and service planning as a barrier to effective cross-cultural SLT practice. Assessment across languages provides its own challenge: It is difficult for SLTs who do not share a client's language to get an accurate sense of their competence in each language (Dukhovny & Kelly, 2015). More significantly, many SLTs may not be well equipped with the cultural competency or reflexiveness required to respectfully engage with cultural differences in perceptions of disability, stigma, and parental roles and expectations that can prevent children from accessing appropriate services (McNamara, 2018). Families using a culturally non-dominant home language may be tempted, or worse, ill-advised by a professional to raise their child monolingually in the culturally dominant language (e.g., Kempka Wagner, 2018; Yu, 2013). For example, Jegatheesan (2011) was taken aside by the SLT working with one of the participants in the study she was conducting and asked to use her closer relationship with the mother to stop her using her native language with her son. Fortune's participants had similar experiences in Aotearoa New Zealand, one sharing:

> One time a speech language therapist told me that speaking te reo to her would not be a good idea as she needs to be able to speak English first. She told me that sending her to a kura would be too hard because they would not know how to look after her there. (2016, p. 166).

In some cases, this advice is given because special education and speech-language therapy are perceived to be available only in English (e.g., Yu, 2013), which is indeed largely the case in Aotearoa New Zealand. However, this has several negative effects beyond preventing access to the benefits introduced above. Firstly, the social consequences on parents, who may feel guilty if they forget this family policy or are unable to keep it up (Yu, 2013). In Jegatheesan's example, the mother expressed the importance of native language use for her son's relationships with his grandparents:

> What they [professionals] are asking is unreasonable. So it is best we don't tell them anything. They don't need to know what we speak at home because it's a headache for us to make them understand. They just don't. (Jegatheesan, 2011, p. 196).

Additionally, these parents may have language for professional or academic life but not for home (Yu, 2013), or may not have the competence required to model language forms and structures to support full internal representations of the language in their child (Cheatham & Hart Barnett, 2017). The difficulty that many people from immigrant, ethnic minority, and indigenous groups experience gaining access to the educational and medical services where AAC is provided is a further barrier (McNamara, 2018). On the other hand, learners with disabilities are less likely to access bilingual schooling (de Valenzuela et al., 2016; McNamara, 2018; Steeley & Lukacs, 2015).

This is a concern for children who use aided language internationally. Steeley and Lukacs (2015) published a case study of a Spanish-English bilingual mother whose son flourished in bilingual education, but whose school repeatedly moved him to special education classrooms due to his extra learning needs resulting from Down Syndrome. For this mother, accessing bilingual education required a long period of self-advocacy. De Valenzuela et al. (2016) found the same across six sites of research in Canada, the UK, the USA, and the Netherlands: Despite local and school language access policies, "special needs issues often take precedence over those related to second language learning" (p. 67). This conflicts with the child's equal rights to access special education and bilingual education (Cheatham & Hart Barnett, 2017; CRC, 1989; CRPD, 2007; de Valenzuela et al., 2016; DRIP, 2007). Kay-Raining Bird et al. (2016) considered the importance of contextual support including schooling for children to achieve bilingualism. They identified that learners with disabilities were unlikely to access dual, second language, or immersion education, and that there were even greater barriers for learners with more severe disabilities (Kay-Raining Bird et al., 2016). A Chinese mother in the US told Yu that the best education for her child on the autism spectrum would be provided by teachers who could "speak and understand Chinese, that they can be bilingual, and at the same time also trained in special

education. There are no programs like this." (2013, p. 16). Without contextual support for their heritage languages, such chiildren are at risk of language attrition (Kay-Raining Bird et al., 2016).

When SLTs lack cultural and linguistic competence and there few appropriate resources, many CLD clients with complex communication needs are not being provided with AAC systems that will give them access to their languages and communities (McNamara, 2018). Many others are not being educated in their languages and communities because these cannot provide specialist support. It is therefore not surprising that Kulkarni and Parmar's (2017) literature review found that the CLD users of AAC were situated at the margins, at the intersections of race, culture, language, and disability. Soto asserted that SLTs are responsible to do "everything in our power to minimize our client's marginalization" (2018, p. 136) through successful AAC provision. McNamara (2018) rightly identified this as a justice issue for which SLTs have responsibility.

Effective cross-linguistic speech language therapy practice
Speech-language therapy takes place within a cultural context: the socio-political background, physical environment, health or education system, professional culture, and individual cultures held by the client, their whānau, and the therapist (Brewer et al., 2016). Given the cultural mismatch that commonly occurs between client and clinician, cultural safety or cultural responsiveness is strongly advocated as an essential skill for effective practice across the international and local SLT literature (e.g., Brewer et al., 2016; Soto & Yu, 2014) and is part of SLT training in universities in Aotearoa New Zealand. The SLT profession also works on a framework of evidence based practice (EBP; Dodd, 2007). This framework prescribes clinicians to draw from the three evidence domains of research, clinical expertise, and client and family preferences in delivering speech-language therapy services. Macfarlane (2012) found that Māori participants in the SE service equated culturally responsive practice with evidence based practice. That is, engaging with Māori clients in ways that demonstrate respect and appreciation for their knowledge, values, and practices is essential to best practice. This orientation goes part-way to addressing the challenges faced by a workforce that does not represent its clientele.

All of this considered, the SLT should be a primary advocate for bilingualism for the families they work with. Where there is a difference between home, school, and community languages, SLTs should aim for bilingual intervention plus active home language maintenance by families to meet home and school goals (Cheatham & Hart Barnett, 2017; Jegatheesan, 2011). In addition to effective work with families, this may also require collaboration between SLTs and teachers of second languages for good understanding of each discipline's learning principles and effective differentiation of needs for assessment and language teaching (Cheatham & Hart Barnett, 2017). Working with good cultural and linguistic translators and bilingual teacher aides is also important for bilingual intervention for AAC (Kay-Raining Bird et al., 2016; Soto & Yu, 2014; Thordardottir, 2010).

Kempka Wagner (2018), who is experienced in delivering bilingual/bicultural AAC intervention in Spanish and English in the US, described a framework for this practice. First, SLTs must assure parents that early language learning in either language is easily mapped onto communication systems through interactive use of the AAC system. When they are ready to accept this mode of communication, the therapist then educates communication partners to adapt and model language on the system to provide the immersive experience that is required to develop language in any language or language modality (Kempka Wagner, 2018). The intervention plan should consider the current and future language needs of the individual and provide this language experience through aided language input in socially and culturally located, relevant interactions by familiar communication partners (Kohnert, 2010). It hardly needs to be stated that effective partnership with families is essential to the success of this.

It is important to understand that language learning is social – "rooted in children's participation in culturally meaningful activities" (Soto & Yu, 2014, p. 86). When denied opportunity to learn language within culturally situated, linguistically rich interactions by having no tools to represent it, learners are "starved" of communicative growth (McNamara, 2018, p. 140). Reciprocally, language access allows participation: Without tools to express the language of a community or interaction, an individual

cannot participate. In this way language learning and language use dance together, depending on and enlivening one another. The model of culturally grounded, meaningful interactions as a basis for language learning is thoroughly consistent with best practice AAC learning. However, there are some language learning practices assumed in both the SLT and second language teaching professions that may not be culturally valid. These include child-directed interactions, ascribing meaning to unintelligible utterances, adapting communicative style to the child or using "parentese", and encouraging children to participate as equal conversation partners (Lightbown & Spada, 2013; Thordardottir, 2010).

Therapists need to adapt their language learning recommendations to be appropriate for culturally situated language learning (Hoh, 2018). The family's perspectives on language and communication styles must be considered, and the choices they make should be advocated for by the professionals working with them. This may conflict with the professional's preferences because of different understandings of disability and intervention (e.g., McLellan et al., 2014; Stuart & Parette, 2002). Again, the effectiveness of this depends on critical reflexivity – understanding why you do things one way helps you to acknowledge that there are other valid ways (Mindel & John, 2018). Support can be provided by a cultural and linguistic translator (Soto & Yu, 2014) such as the kaitakawaenga provided by SE in Aotearoa New Zealand to support SLTs working with whānau Māori (MOE, n.d.).

2.2.2   Aotearoa New Zealand context

It is certainly the case in Aotearoa New Zealand that the SLTs are not representative of the population. Although it is difficult to determine exactly the ethnic makeup of Aotearoa New Zealand's SLT workforce due to voluntary registration with the NZSTA before 2019, Brewer and Andrews (2016) compared available data to show that approximately 1.6% of SLTs are Māori, compared with a general population of approximately 15% Māori. Considering language difference, Young (2012, as cited in in Brewer & Andrews, 2016, p. 90) found that the languages other than English spoken by SLTs included French, German, Māori, and Japanese, whereas those of the client base included Māori, Samoan, Hindi, Tongan, Mandarin, and Cantonese (in order of frequency). Aotearoa New Zealand is considered

a super-diverse country and is home to speakers of over 160 languages (Royal Society of New Zealand, 2013). Thus, much SLT intervention is delivered cross-culturally and cross-linguistically and requires practitioners to be both culturally safe and culturally competent (Brewer, McCann, Worrall, & Harwood, 2015). Aside from linguistic differences, disparities in accessing health services, implicit and explicit racism, and differences in priorities and approaches to intervention (Berryman & Woller, 2013; Brewer & Andrews, 2016; McLellan et al., 2014) result in ineffective or, worse, detrimental SLT service. Issues such as ineffective approaches to building and maintaining relationships, worldviews not being recognised or understood, and inappropriate intervention settings are some of the factors described as having a negative effect on SLT services to Māori (McLellan et al., 2014).

Recommendations from the international literature should be treated with caution by practitioners in Aotearoa New Zealand. For example, Mindel and John's (2018) implication that English should be a primary focus for AAC for students with a different home language (in this case, Spanish) would not be justly or accurately employed in Aotearoa New Zealand. Fortune (2016) found that communication in te reo Māori was the most important educational outcome for parents of tamariki with special educational needs in kura kaupapa in Aotearoa New Zealand. Indeed, this was more important to one parent for her child with SEN than for her other children. This is similar to what Bevan-Brown found when speaking with whānau members of children with intellectual disabilities, one of whom said, "If we appreciate that language is essential to our cultural identity then it is just as crucial for the identity of the disabled Māori." (2015a, p. 156). For speakers of te reo Māori attending kura kaupapa Māori, home and school language policies and practices of use of te reo and English may vary widely between whānau. Naidoo (2012) described five language learning contexts for tamariki learning te reo Māori: Children in Māori medium education may have English-monolingual parents, bilingual parents who use little te reo at home, or bilingual parents who frequently speak te reo at home; the parents of children in English medium education may or may not speak te reo Māori. She found that the widely differing abilities of children in te reo Māori resulting from different levels of exposure to te reo Māori made it difficult to determine whether a child in kura kaupapa Māori had a speech and language

disorder. This was made more difficult by the insufficient assessments and normative data (Naidoo, 2012). These elements further complicate language assessment and intervention for AAC for tamariki Māori.

Brewer, McCann and Harwood (2016) directly addressed the "complexity" of delivering speech-language therapy services to Māori populations, with a focus on aphasia. They worked from a kaupapa Māori perspective and identified that this work is "cultural and political" (Brewer et al., 2016, p. 75). Brewer's research group found that both Māori clients and whānau and the SLTs working with them desired culturally safe SLT services that acknowledged the clients' identities as Māori and reflected a value for mātauranga and tikanga Māori in practice (Brewer et al., 2015; McLellan et al., 2014). Such an approach would give whānau tino rangatiratanga in their therapy, support communication within and between generations and communities, and be holistic or cross-disciplinary (Brewer et al., 2016). They also found that SLTs in healthcare and the Māori clients and whānau they work with desire appropriate therapy resources and contexts for intervention (Brewer et al., 2015; McLellan et al., 2014). However, they cautioned that resources will not solve the problem of inappropriate therapy provision; the cultural safety of the practitioner is of greater importance (Brewer et al., 2016). In fact, they wrote about the foundational step of understanding why to be culturally safe, which includes critically engaging with the colonial reality of Aotearoa New Zealand, Te Tiriti o Waitangi, the power imbalances within clinical relationships, and the iniquity experienced by Māori in health and education systems. Recognising that many Māori with stroke-related communication disorders work with non-Māori speech-language therapists and in non-Māori systems, Brewer and colleagues developed a "proposed hierarchy of SLT skill and resource acquisition" (2016, p. 78) to depict this pathway to effective, culturally safe practice for speech-language therapists. This approach is represented by a poutama, indicating the progressive nature of this journey. With this understanding, and with support from Māori, culturally safe practices can be developed that allow SLTs to work in relationships of partnership with Māori clients and whanau, and to educate whānau in a way that privileges mātauranga Māori (Brewer et al., 2016). Unfortunately, Brewer et al. (2015) found that SLTs

considered elements of cultural safety such as building relationships as added extras; however, as culturally responsive practice for Māori is equivalent to evidence based practice (Macfarlane, 2012), this ought not to be an add-on but a core responsibility of the clinician.

Similar concerns and emphases can be seen in the special education service in the work of Fortune (2016) and Macfarlane (2012). They wrote about the inequitable service offered to Māori tamariki, especially those who speak te reo. Fortune's participants said that people working in SE "don't understand how to form relationships with people" (2016, p. 154). They spoke about relational values such communication kanohi ki te kanohi, establishing relationships before assessing, and individualised programmes delivered within supportive communities of learning. These are well established principles of kaupapa Māori practice that SE, despite policy and training, are not delivering on for whānau Māori (Fortune, 2016). Additionally, the structure of SE does not allow for the time to build these relationships or even to work together as kaiako, parents, and therapists from their respective areas of expertise to support the child (Fortune, 2016). The third main provider of AAC services in Aotearoa New Zealand is the TalkLink Trust (TalkLink Trust, 2019). Browne (n.d.) spoke with SLTs who had referred Māori clients to TalkLink and found that they perceived that inadequate relationship building, including time taken to build trust, prioritising school relationships above whānau relationships, and the logistics of negotiating with large whānau, were barriers to Māori accessing TalkLink services.

Whānau Māori with children with SEN and their kaiako are also calling for resources fit for Māori medium contexts – or giving up and creating their own (Fortune, 2016). While Fortune's participants described the best support for children with special needs as that developed internally, the natural response of an SLT is to question whether kaiako have the specialist knowledge they require to provide this support adequately, especially in the case of assistive or adaptive communication. This critique aside, we must accept the consistent challenge to Aotearoa New Zealand's education systems for failing to provide services that prioritise kaupapa Māori practices and orientations, despite the strong

evidence base that now exists for kaupapa Māori ways of working with Māori clients, particularly regarding whanaungatanga (e.g., Berryman, 2015b; Fortune, 2016; Macfarlane, 2012).

Implications for speech-language therapists

The complexities of interpretation and service limitations can make it difficult to apply te Tiriti to clinical work. Fortunately, Brewer and Andrews (2016) have begun this conversation for the speech-language therapy profession, recognising its essential place in our practice. They wrote, "Because SLTs are health practitioners, te Tiriti is also the foundation for SLT." (Brewer & Andrews, 2016, p. 88). This requires that as a profession SLTs honour the rights and privileges promised under Article 3 for Māori to achieve equitable health outcomes, including the provision of services in their own language and worldviews (Brewer & Andrews, 2016; Treaty of Waitangi, 1840). As it stands, there are few Māori SLTs, a lack of understanding around kaupapa Māori ways of working among non-Māori SLTs, and a severe shortage of Māori assessments, materials, and time to spend on delivering a truly equitable, culturally safe service (Brewer et al., 2015). It may be that if the promise of Article 2 for tino rangatiratanga was well applied to SLT service and resources, outcomes for Māori would be more equitable (Brewer et al., 2015; Tiriti o Waitangi, 1840). This would include equitable communication access and options for those who express themselves using aided language.

2.2.3   AAC resources

With the rights, responsibilities, and roles of SLTs and whānau understood, the next consideration is the resources that are required for communication for those with complex needs. Different language preferences and requirements will affect the type of AAC that users need. Across the world, researchers and practitioners have created resources that express the languages of diverse communicators with diverse communication needs. Rather than merely translating words they have looked at a range of metalinguistic and cultural elements that express different worldviews. They have also explored the perspectives of AAC users, their families, and their educators, to understand what makes AAC service delivery effective or ineffective, especially regarding cross-cultural or cross-

linguistic intervention. These concerns relate to the few stories of Māori whānau in Aotearoa New Zealand that have been told in the literature.

People require an additional language for a range of social and practical reasons. There are heritage language speakers who require different languages in their school or work settings; simultaneous bilinguals who have dual languages from birth; and those who choose to learn an additional language for employment or education opportunities (Lightbown & Spada, 2013). Except in this last case, not having access to a language evidently denies participation in immediate community, and thus denies a human right; the same is true for those who use aided language. This is also true for the AAC user in a context in which their culturally dominant language is not yet represented by AAC, such as is often the case in Eastern, Southern, and Pacific countries. Indigenous languages within a colonised context provide a slightly different set of considerations. In these cases, there are more likely to be aspects of linguistic hegemony and past experiences of linguistic suppression that make intergenerational transmission of language not only practical, but also political, as communicated by the Maihi Māori and Maihi Karauna strategies (Te Puni Kōkiri, 2019). This is the case in the Aotearoa New Zealand context, under the Treaty of Waitangi (1840) and through the promises of Wai 11 (Waitangi Tribunal, 1986). In these situations, educators and SLT service providers might be tempted to devalue the language choices of whānau and recommend intervention in English, without recognising the recolonising effect of this attitude.

Considerations in establishing AAC in different languages

Worldwide, researchers and practitioners have worked at diversifying and indigenising AAC systems. In 2015, Dukhovny and Kelly reported that high tech, dedicated communication devices were available to express relatively complex language in Arabic, Chinese, Danish, Dutch, English, Finnish, French, German, Italian, Japanese, Norwegian, Portuguese, Spanish, and Swedish (p. 32). Some of these allow bilingual communication by switching languages within the programme or app; for others, users must buy additional language sets and open them as separate applications. Reading these lists in Aotearoa New Zealand, the lack of Pacific and even Asian languages is glaring. The Boardmaker® software

(Mayer-Johnson, 2004) also allows therapists to work from English to over 40 languages to produce low-tech symbols for CLD clients whose language they don't share. For speakers of other languages, especially those who wish to produce correct, complex, creative language that is not limited to pre-programmed phrases, there are few options. However, work to produce local, indigenous forms of AAC is underway worldwide.

Working from an understanding of existing English language AAC systems, these studies have looked closely at how to express the languages and cultures of their clients via AAC. In India, Nigam (2006) focused on vocabulary for an Indian English system, recognising that the lexicon and symbolic representations for Indian speakers of English will be unique due to cultural and environmental influences. Without culturally specific vocabulary, he identified, communication will be ineffective (Nigam, 2006). The iconicity or translucency of symbols refers to how obvious their meaning is, and is also culturally bound (Blake Huer, 2000). The need for culturally valid symbols is evocatively described in Baker and Chang's work on Mandarin Chinese AAC (2006) with the example of a teapot – representative in China of aesthetics, relationships, specific historical periods, and life routines, but containing very little meaning for an American English speaker. They speak of the "folk linguistics" (Baker & Chang, 2006, p. 235), or ways of thinking about language that AAC relies upon. In an early work on cultural issues in AAC, Stuart and Parette wrote about the need to consider colours and symbols for Indigenous American systems, as well as acknowledging their spiritual reality (2002). Blake Huer (2000) conducted an analysis of the transparency of icons from three symbol sets for 147 people of four different cultural backgrounds living in the US. She determined that their varied language and life experiences led people living within the same wider cultural context to perceive symbols differently (Blake Huer, 2000). Ogletree et al. also suggested that children perceive symbols differently than adults, interpreting and drawing more concrete or contextual representations (2018).

Going beyond words and symbols to syntax and semantics, Battacharya and Basu (2009) developed an indigenous icon-based communication aid for AAC users to communicate in Bengali and Hindi.

Called Sanyog, this system converts a sequence of icons input by the user into a grammatically correct sentence. Similarly, Baker and Chang built an indigenous AAC system for Mandarin Chinese, considering syntax, lexicon and lexical organisation, written/symbolic output, and voice output in their design (2006). Similar recent work to represent language in different ways for AAC has been done for other languages including Thai (Chompoobutr, Potibal, Booribon & Phantachat, 2012) and Catalan (Pahisa-Solé, 2012). This small selection from the research demonstrates the many layers of consideration in creating AAC in a new language: It is not merely an issue of translation of vocabulary, but of building a system that expresses language in all its complexity, culture, and worldview. This is the difference between creating whole language systems and phrase-banked or "frame and slot" systems. These last two, in which users can produce pre-programmed phrases or variations through simple combinations (e.g., "Hello, my name is Brynlea"; "I like apples, I like boats, I like swimming"), allow for early communication for second language learners (Mindel & John, 2018). They are relatively easy to establish if the voice output is available; however, they can never allow a user to be independent with language. This demands a system that is created anew for the organization and grammar of each language (Dukhovny & Kelly, 2015), and this is the flexibility required for a te reo Māori AAC system.

Light and McNaughton wrote that a competent AAC communicator requires:

> Sufficient knowledge, judgment, and skills in the linguistic code of the language(s) spoken and written in the individual's family and broader social community, including receptive skills and as many expressive skills in these languages as possible. In addition, they must also learn the language code of the AAC systems that they utilize. (2014, p. 4).

See that communication competence for AAC includes skill in two different types of language codes: the language(s) of their socio-cultural context(s) and the way the language is represented on their AAC systems. There is a sense in which every AAC user is bilingual as they receive language via one means (spoken/auditory) and produce language by another (aided/visual) (Light & McNaughton, 2014). It

seems apparent that for an AAC user using more than one language code, close alignment between their receptive and expressive languages in each code will support effective communication; hence the desire for symbols and words that express the authentic words and metaphors of a culture.

From her experience as an interventionist, Kempka Wagner (2018) writes that carefully choosing words with similar morphology or generalizable use across languages will support early bilingual development with AAC. A well-selected core vocabulary, "stable across languages and across populations within a language," (Baker & Chang, 2006, p. 232), can go part-way to meeting this need, as it gives access to a range of meanings and allows more independent language production from the communicator. However, this must be treated with caution: Core vocabulary has limitations and risks. Users unfamiliar with a language must avoid over-generalising words with a different semantic range in another language (Kempka Wagner, 2018). For example, where "turn" in English is a core word with many applications across contexts, the same is not true in Spanish or, indeed, te reo Māori. Effective system set up should include a button to change between languages to allow the child the important experience of exploring both languages and code switching (Kempka Wagner, 2018; Soto & Yu, 2014) and a bilingual voice to enable consistency and comprehensibility across languages (Stewart, 2017).

The above considerations assume a system is available to represent each language. Even when good quality AAC is available, the social and linguistic demands of learning and expressing two or more languages using AAC is complexified by different communication styles, language content and structure (Light & McNaughton, 2014). This is not yet the case for te reo Māori, however is an encouragement that bilingualism for AAC is possible, and Māori AAC ought to be established soon. Doing so is a complex sociocultural undertaking.

AAC user, family, and educator perspectives
In all cases, AAC intervention requires the involvement of the whānau and teachers, and their experiences and perspectives can give insight into the cultural conflicts that may affect intervention efficacy.

Kulkarni and Parmar (2017) reviewed the literature on perspectives of CLD users of AAC and their families. They concluded that the pervasiveness of western biases in AAC assessment, intervention, and decision-making has a strong detrimental effect, often including device abandonment. This is due to ineffective relationship dynamics among the families and assessment teams, where differing concepts of disability, consensus, responsibility, interdependence, and obligation may lead to misunderstandings or conflicts between families and professionals (Kulkarni & Parmar, 2017). For example, where interdependence is valued above independence, assistive technology may not be considered necessary or valuable (Ripat & Woodgate, 2011). In these cases, it is important to ensure that families are well-informed and that the information provided acknowledges and honours their ways of thinking and knowing (Brewer et al., 2016; McClellan et al., 2014).

It is difficult to accept from a western perspective, but the very concept of "family-centred practice" employed to effectively "engage" diverse families relies on families participating as equals with professionals in decision making and intervention. This is a western understanding of power-sharing within the therapeutic relationship that is "deeply rooted in western cultural ideals of objectivity, individuality, and equality." (McCord & Soto, 2004, p. 209). Rather, in collectivist communities, therapists are assumed to have authority and families will not always share their true feelings or hopes for therapy (e.g., Hoh, 2018; McCord & Soto, 2004; Pickl, 2011). For example, a Pakistani parent in an Austrian school said:

> In my culture teachers are absolute authorities… Interfering is not expected and not wanted, any parental input would be completely unusual. Here it is the opposite: I am always asked to participate, for me it is still a strange situation! (Pickl, 2011, p. 234).

This is where it becomes important to work in the family's space, include wider family consensus, honour the family's ways of knowing and relation, and establish genuine relationships of trust and respect – a process that takes time for Indigenous Americans (Stuart & Parette, 2002), Mexican Americans (McCord & Soto, 2004), Asian Americans, and other cultural groups (Kulkarni & Parmar,

2017; Pickl, 2011) – including Māori in Aotearoa New Zealand (Fortune, 2016; McLellan et al., 2014).

It may also be important to look for implied meaning, to be sensitive to what parents want by close

attention to what they say in contexts outside of the goal setting meeting.

The limitations of devices and lack of education around aided language stimulation were also

identified as common themes across the literature (Kulkarni & Parmar, 2017; McCord & Soto, 2004).

This included devices that could not express home languages. Where these were inadequate, the best

practice model of home-based, family-centred intervention was not achieved, and students did not

receive the quality language input or experiences of communication success required to learn

effectively (Kulkarni & Parmar, 2017). Family perceptions of disability also affected intervention

efficacy in cases where therapy was seen to be inappropriate or supplementary to spiritual

intervention (e.g., Gona, Newton, Hartley & Bunning, 2013; Stuart & Parette, 2002).

Some research has found that AAC use impacts on family interaction dynamics and intimacy. This was

key to the findings of McCord and Soto with Mexican American families (2004; Soto & Yu, 2014), and

Singh, Hussein, Kamal and Hassan with Malaysian families (2017). It was also experienced by migrant

families visiting home countries where AAC was not well established as AAC could be confronting to

family members or socially uncomfortable (Pickl, 2011). Families may perceive that AAC systems are

not useful, a last and disappointing resort, and result in unnatural interactions (McCord & Soto, 2004;

Singh et al., 2017). This goes well beyond syntax and vocabulary – if a parent feels that a device gets

between them and their child (McCord & Soto, 2004), if they are able to understand their child's needs

without it, or if they feel stigmatized by the additional sign of disability (Ripat & Woodgate, 2011),

then it is easy to understand why they may not choose to use it. Further, it reveals another cultural

assumption: the relative value of accuracy over intimacy (McCord & Soto, 2004). Mindel and John

(2018) suggested that this could be remedied in part by setting up the system to provide rapid success,

as families may develop more positive perspectives of their children when more effective

communication is established via AAC. This occurred within families in rural Kenya when they were

provided with low tech AAC support for communicating with their children with severe disabilities (Gona et al., 2013).

The participation and access opportunities and demands on AAC users have increased with the widening scope of communication options including texting, email, and social media (Light & McNaughton, 2014). Rasid and Nonis (2015) found that adolescents in Singapore with cerebral palsy who use aided communication liked to be able to communicate using these universal forms of alternative communication. The ready access to the internet provided by many communication devices broadens the options for AAC users and gives them an opportunity to communicate on par with their verbal peers from the comfort of a familiar location. It also allows socialising with many others simultaneously, something that may be difficult for AAC users in face to face conversation (Rasid & Nonis, 2015). This is one expression of the call made by Ripat and Woodgate (2011), who explore the intersection between culture, identity and assistive technology, to ensure that assistive technology solutions are culturally valid. This type of work also goes some of the way to repudiate the challenge of earlier, pre-smartphone research that was concerned with reduced naturalness of AAC (e.g., McCord & Soto, 2004), as computer-mediated, text-based language becomes increasingly mainstream.

Pickl's (2011) work includes a teacher perspective, which is less prevalent in the literature. Some of her findings ring true to my experience: Teachers may give more attention to children whose behavioural difficulties disrupt to the class rather than to those who need communication support; they express frustration that parents do not look in the home-school notebook; they struggle with language barriers and false agreement; and their own lack of knowledge about AAC makes it difficult to support AAC intervention at school in their own native language, let alone in the many home languages of their diverse students (Pickl, 2011). Kaiako in Māori medium education feel unsupported by SE services to meet learners' additional needs (Fortune, 2016). In fact, Fortune's participants were recommended by SE professionals not to send their children with special educational needs to Māori

medium education as the support they needed would not be available and because they needed "English first" (2016, p. 166). What these whānau found in kura kaupapa Māori, however, was a flexible, individualised, and accepting education setting in which kaiako worked extra hard to meet the needs of their tamariki. This is consistent with the inclusion provided by kura kaupapa Māori described by Berryman and Woller (2013), in which meeting holistic cultural needs preceded meeting educational needs.

There has been no research focused on the potential for indigenous forms of AAC in Aotearoa New Zealand – yet. Fortune (2016) found a demand for AAC in te reo Māori among whānau whose children were in kura kaupapa Māori. They had been issued with assessment and interventions in English which did not accurately measure language skill in te reo, support expression of known language, or facilitate participation in Māori medium education. One child was provided with an English language core board: Te reo Māori was the language of her home and schooling (Fortune, 2016). Fortune critiqued the few resources available and the demand placed on staff and whānau to translate resources into te reo as "simply unsatisfactory" (2016, p. 199). Such irrelevant therapy and resource provision are a denial of human and indigenous rights; this is where the justice issue of culturally and linguistically appropriate AAC comes to the fore.

2.2.4 Looking forward

Thordardottir (2010) recognised that best-practice in bilingual intervention may be better informed by case studies rather than more objective randomised control trials, as these reveal insights and tell stories about individual experiences that yet may not be unique. In fact, a lot of this work is practice-based evidence – the musings, experiences, or recommendations of practitioners who have worked in the field of CLD AAC. This is representative of where this work is at and of the complexity of this population. It is just what Soto and Yu (2014) recommended as the pathway to inform a research agenda as they looked towards the emerging importance of this field and, not incidentally, inspired the present research.

As the relatively young SLT profession develops worldwide, practices may diversify to better reflect more diverse language learning practices and understandings of disability. This will add great richness to the international understanding of speech and language development and intervention. As the profession stands, it is questionable whether it is even possible to deliver services that are truly culturally situated (Brewer et al., 2016). To best serve CLD and indigenous communities, the SLT profession needs to be ready to accept change in what constitutes evidence based practice. "Will we see the development of radically different intervention styles as bilingual (or mono-lingual non-English speaking) SLPs… start to rethink therapy procedures from scratch from the perspective of these cultures?" (Thordardottir, 2010, p. 532). This is an exciting consideration for those who are alive to the cultural biases SLTs operate under as a profession. Indeed, it is hoped that the present research may contribute to the emergence of new practice kaupapa in Aotearoa New Zealand.

The literature identifies some of the practical issues that need to be considered to establish te reo Māori AAC, things like symbols, lexicon, and grammar. However, given the importance of privileging AAC user and whānau perspectives and mātauranga Māori, this information needs to be gathered first. Many of the studies reviewed concluded by suggesting that researchers ask similar questions in their countries to find cultural and linguistic barriers and facilitators, explore intimacy issues and parent perspectives, and analyse the impact of policies on AAC access for device users (e.g., McCord & Soto, 2004; Pickl, 2011; Thordardottir, 2010). Considering the importance of cultural specificity and the unique Māori language and culture, this is needed for Aotearoa New Zealand, and is the space this research sits in.

Brewer et al. (2016) suggested that the established principles of kaupapa Māori practice are the foundation on which Māori therapy resources can be developed and used. In accordance with kaupapa Māori principles, Māori therapy resources should be developed by, with, and for Māori, express mātauranga Māori, and be created or adapted for each user (this also holds true for AAC systems; e.g., Mindel & John, 2018). They concluded that this will not be an easy task and suggested

that the better approach is to provide very strong foundations of the why and how of cultural safety and teach SLTs how to use authentic resources from the whānau environment for therapeutic purposes in aphasia rehabilitation (Brewer & Andrews, 2016). This is a start, but it will not be adequate for the complex communication needs of reo Māori speakers with developmental communication disorders who need aided communication. There are pieces of this work towards te reo Māori AAC coming together from several directions. Westley (2018) has contributed at the output end, by creating a synthesised voice that can correctly pronounce 85 words in te reo Māori. She acknowledged that a fully synthesised voice is required to enable its effective use for speaking te reo Māori. Fortune (2016) advocated for the prioritization of research and funding for the development of te reo Māori resources, including communication applications and other assistive technologies.

It is my interpretation that the Treaty of Waitangi guarantees the Crown's participation in providing access to te reo Māori AAC for those children who require support or alternatives for oral communication. The government's own policies can also be seen to prioritise this, once it is understood that some people cannot communicate within their communities or participate and identify as Māori without it. Without a voice, it is very difficult to exercise tino rangatiratanga; Māori AAC users should be granted this right by the provision of well established, mātauranga Māori AAC. Brewer et al. (2016) questioned whether it is possible to deliver kaupapa Māori therapy within our established health (and, by extension, education) systems; the government's stated commitment to Whānau Ora and to partnership in promoting te reo Māori should make this a priority. It just remains to do it.

> For these reasons what has been thought to be satisfactory in the past may have to occupy a very different place in the scale of importance in our country than it has in years gone by. (Waitangi Tribunal, 1986, p. 17)

Providing English language AAC for Māori language users is no longer satisfactory. This research seeks to establish a foundation and a pathway towards augmentative and alternative communication

systems that allow users to speak te reo Māori as it emerges from and expresses te ao Māori by considering the following research questions:

1. Why are te reo Māori AAC resources needed?

2. What does a te reo Māori AAC system need to do?

3. How should te reo Māori AAC systems be created?

4. What could te reo Māori AAC be like?

The following chapter considers the kaupapa Māori methodology and methods that addressed these questions.

3. Methodology

Mahia i runga i te rangimārie me te ngākau māhaki.

With a peaceful mind and respectful heart, we will get the right results.

This chapter describes the theoretical foundations of the study and the practical steps taken to collect and interpret data. It begins with an introduction to kaupapa Māori research methodology and an exploration of the role of Pākehā in this inter-cultural space. It then outlines the theoretical frameworks that informed the research design, including a recount of the conversations that refocussed the analytical orientation. Finally, the study procedure is described.

A qualitative research approach was taken, comprised of data collection via interviews, a focus group discussion, and thematic analysis. This approach was selected to engage with the lived experience, story, subjectivity, and context that can most richly inform this topic. In seeking to establish language systems that emerge from te ao Māori, the research process must also embody itself within the first principles of te ao Māori; therefore, kaupapa Māori methodologies were applied.

3.1   Kaupapa Māori research

Smith wrote that obtaining accurate and valid data in research "is based on the skill of matching the problem with an 'appropriate' set of strategies" (Smith, 2012, p. 175). For Māori concerns, appropriateness, validity, and reliability are determined by kaupapa Māori principles. These are the foundations or "first principles" of te ao Māori, expressed in ancestral stories of creation and the acts of the gods and the myth heroes, and interconnected with tikanga or customary ways of doing things (Marsden, 2003, p. 66).

Kaupapa Māori theory stands up to colonialism. It declares that tikanga, whakaaro, and mātauranga Māori – Māori ways of doing, thinking, and knowing – are valid and valuable ways of living and making meaning for Māori people. In this it is political (Pihama, 2010). Kaupapa Māori research is theory bound together with transformational practice, and challenges western assumptions about what constitutes evidence: how we know, what we can know, and how we can prove our knowledge

(Pihama, 2010, p. 11). Kaupapa Māori research can be simply conceptualised as research by Māori, with Māori, for Māori (Smith, 1996, as cited in Smith, 2012) – and by extension or implication, within a Māori worldview. "It is an assertion of the right for Māori to be Māori on our own terms and to draw from our own base to provide understandings and explanations of the world." (Pihama, 2010, p. 14). There is no definitive list of principles that must be adhered to; rather, it is fluid, reflective, and guided by tikanga and te reo Māori (Pihama, 2010).

Some of the distinctive tikanga practices are evident to anyone who has had their eyes and ears open in Aotearoa New Zealand for a while. A sample list from Smith includes aroha ki te tangata; kanohi kitea; titiro, whakarongo… kōrero; manaaki ki te tangata; kia tūpato; kaua e takahia te mana o te tangata; and kia mahaki – interpreted as respect for people; the seen face or presenting yourself to people; look, listen… speak; generosity and sharing; be cautious; do not trample over the mana of people; and don't flaunt your knowledge (2012, p. 124). Other researchers prioritise the importance of whakapapa and whanaungatanga, which are about relationships of connection with people and the land across space and time and collaboration, mutuality, and commitment to one another (e.g., Fortune, 2016; Macfarlane, 2012, p. 109-10). Te reo Māori is another key element of kaupapa Māori research, and it is understood that some information can only be shared in te reo Māori (Fortune, 2016). The principle of tuakana-teina is recommended as a way for the researcher to position themselves, particularly as a Pākehā. This is a Māori understanding of learning, in which an older or more expert person – the tuakana – guides and mentors a novice teina. In acknowledgement of different domains of expertise, the tuakana and teina roles can swap across contexts. Encompassed within this are the principles of akō, or reciprocal learning, and whanaungatanga. Fortune explained, "Another way of looking at this is where the notion of learning/teaching is shared, supported and collaborated" (2016, p. 144). As a collection, these practices and values are tikanga Māori – "reliable and appropriate … proven methods" (Marsden, 2003, p. 66) – and many are now familiar concepts and practices to Pākehā.

Other kaupapa Māori research practices are more subtle, responsive rather to our colonial history: researcher reflexivity and credibility, analysis of power relationships, privileging mātauranga Māori, and an orientation to decolonising knowledge and empowering Māori whānau, hapū, and iwi (e.g., Brewer, Harwood, McCann, Crengle, & Worrall, 2014a; Jones, 2012; Pihama, 2010; Smith, 2012). In this sense, kaupapa Māori research also enters into intersectionality of identities and ideas. Smith wrote, "Spaces created by intersecting ideas, tendencies or issues are sites of struggle that offer opportunities for people to resist" (2012, p. 202). She conceived of kaupapa Māori methodologies as interventions into theoretical spaces, which have been colonised along with the land. Pihama (2010) viewed it similarly: Where many western theories have been prescriptive, elitist, oppressive, and inaccessible to Māori, a kaupapa Māori perspective views theory and practice as interdependent and informed by the social realities of Māori. Therefore, kaupapa Māori research also confronts a history of decades of western hegemonic research on Māori and reassures Māori that research can be valuable when it is centred on finding Māori answers to Māori concerns (Smith, 2012.)

Kaupapa Māori methodologies affirm that Māori have always been theorists, seeking to understand their world (Pihama, 2010) in a culture that has always highly prized knowledge and wisdom. One consequence of this value is that knowledge is not readily shared but may be entrusted as a gift or for a purpose (e.g., Brewer et al., 2014a, p. 1292), or withheld from those who may not use it rightly (Marsden, 2003, p. 57). Fortune pointed out that tikanga includes "the relevance of tapu" (2016, p. 118) with concern for sharing information and respecting those who do so. This must be kept in mind as I enter what is lightly known as "data collection" in the academic world: I am not merely gathering data to be analysed and tidily shaped into a publishable framework, rather I am hearing personal stories of frustration and hope while taking on responsibility to turn these towards specific tangible outcomes. Of course, I may not hear the whole story.

Pākehā involvement in kaupapa Māori research
Kaupapa Māori research is decolonising and based on mātauranga and tikanga Māori. Macfarlane found that her whakapapa was "a research enabler" (2012, p. 132), acknowledging that it granted her

access to the knowledge of other Māori. As a reaction to colonization, non-indigenous researchers may find themselves unwelcome in approaching research in Māori concerns; certainly, some Māori researchers assert that this should be solely the domain of Māori researchers (Smith, 2012, p. 180). As kaupapa Māori work arises from a Māori paradigm and worldview, there are practical and theoretical challenges to Pākehā working in this space. Smith (2012) indicates the range of different Māori perspectives on Pākehā involvement in kaupapa Māori research. There are those who say Pākehā participation is precluded. A moderate view is that non-Māori cannot do this rangahau on their own, and where they are involved they would "have ways of positioning themselves as a non-indigenous person" (Smith, 2012, p. 186). The views of Bishop can help locate Pākehā involvement, as he considered that as partners within the Treaty of Waitangi, Pākehā have an obligation to support Māori research (Bishop 1994, as cited in Smith, 2012, p. 186). In entering this cross-cultural space, I sought guidance from the writing of those involved in this "Dangerous Liaison" (Jones, 2012).

Barnes (2013) interviewed four Pākehā engaged in kaupapa Māori research. He spoke with them about how they came to their work and what they have experienced as barriers and facilitators. His Descriptive Framework visualises their stories of departing one worldview to arrive in another, persistently reorienting themselves towards Māori concerns (Barnes, 2013, p. 26). This begins with unsettling experiences such as the cultural displacement I experienced in childhood that upset a monocultural understanding of the world and push individuals into the unknown of another worldview. He described these kinds of personal and community experiences as departure from a Eurocentric worldview into a "commitment to mātauranga Māori and Māori success and wellbeing" (Barnes, 2013, p. 25). Barnes found that his participants' negotiation of these spaces was managed by their reflexivity as they engaged in questioning their roles, identities, relationships, ways of thinking, and limitations as Pākehā in te ao Māori. Releasing control of research processes and findings was one outcome of this reflexive process. He cautioned that it is naïve to assume that Pākehā will be welcome contributors in kaupapa Māori research.

In her own consideration of the subject, Jones, one of Barnes' participants, wrote that successful engagement in kaupapa Māori research requires Pākehā to "whakamāori" – to "become ordinary, at ease in Māori contexts, open to Māori knowledges, and familiar with te reo Māori" (Jones, 2012, p. 107). She writes that in this way the ahua, or orientation, of the researcher is more likely to invite good working relationships of mutual learning. This mutuality is essential to Pākehā identity: Pākehā exist because Māori exist (Jones, 2012), and to be Pākehā means to be in relationship with Māori under Te Tiriti o Waitangi. With Barnes, Jones affirmed that Pākehā involvement in Māori research will not be straightforward or a given: She referred to the negotiation, the engaged struggle together, the "politics of disappointment" (2012, p. 109) that demands commitment over time and rejects judgement and certainty. Dame Anne Salmond is an outstanding example of a Pākehā who has sat in the teina role as a learner in partnership with Māori through her lifetime in anthropology. In a recent article in The Press, she contrasted her occasional experiences of being objected to as Pākehā on the marae with the racism often experienced by her Māori friends: "I still know people who get it in the neck every day for being Māori, and if you get it in the neck for being Pākehā sometimes, you can understand it." (Dudding, 2018). Her recent work opens up the very essential differences between Māori and Pākehā ways of understanding and experiencing the world, from relationships and reciprocity to engaging with the land and the waterways (Salmond, 2017). She invites the reader to see that different worldviews are not just different ways of looking at things, but cosmic clashes caused by deep cultural conflicts (Salmond, 2017).

Such commitments to both appreciate and critique one's own cultural identity, rest and wrestle with the complexity of the political nature of the work, and work with Māori in committed, dynamic relationships demonstrate the reflexivity that characterises successful kaupapa Māori work for Pākehā. From their experiences, Jones, Barnes, and Salmond share the view that it is possible for Pākehā to be involved in kaupapa Māori research, but this should not be taken for granted. It is best done in partnership, with humility, within committed long term personal and community

relationships, and supported by Māori. Additionally, they acknowledge that there will be times, spaces, and information that Pākehā will not have access to.

3.1.1 Kaupapa Māori models of practice

With these warnings in mind, three Māori research and education frameworks helped to ensure that the design and praxis of this research were both shaped by kaupapa Māori. He Ritenga Whaimōhio (Macfarlane, 2012) provided the shape of the research design; collaborative storytelling (Bishop, 1997) was the method of data collection; and the Evaluation Model: Research in Māori Contexts (IBRLA; Bishop & Glynn, 1999) was used as a framework to analyse, critique, and address the distribution of power in the project. Given my independent responsibility for data analysis and the difficulty of sharing that with Māori participants within the constraints of the project, I used the clinically located interpretive description (ID) approach as the analytical orientation. The research of Brewer and colleagues (2014a) provides a precedent for using this alongside kaupapa Māori methodologies in speech-language therapy research in Aotearoa New Zealand.

Research design: He Ritenga Whaimōhio

Health and educational practitioners use the evidence based practice (EBP) triangle as a framework to achieve best outcomes. This model prescribes drawing from the three domains of research evidence, practitioner expertise, and client/family preferences when making clinical decisions (Dodd, 2007). These are the kete from which speech-language therapists draw their tools for practice, thus are appropriate evidence domains for the present research. However, the model is based on western priorities; for example, EBP is always visualised with clinical expertise at the top. I have challenged this priority by referring to whānau participants first in planning and discussing this research to ensure a benefit-focused process.

Macfarlane (2012) goes further to culturally relocate this model for Māori. In her doctoral thesis about culturally responsive practice in special education, she found that Māori equated evidence based practice in special education with culturally responsive practice. That is, they used these terms interchangeably, demonstrating "how significant, pervasive and all-encompassing key Māori cultural

concepts and evidences were to both." (Macfarlane, 2012, p. 143). With this understanding she developed an evidence based practice framework that is grounded in te ao Māori: He Ritenga Whaimōhio.
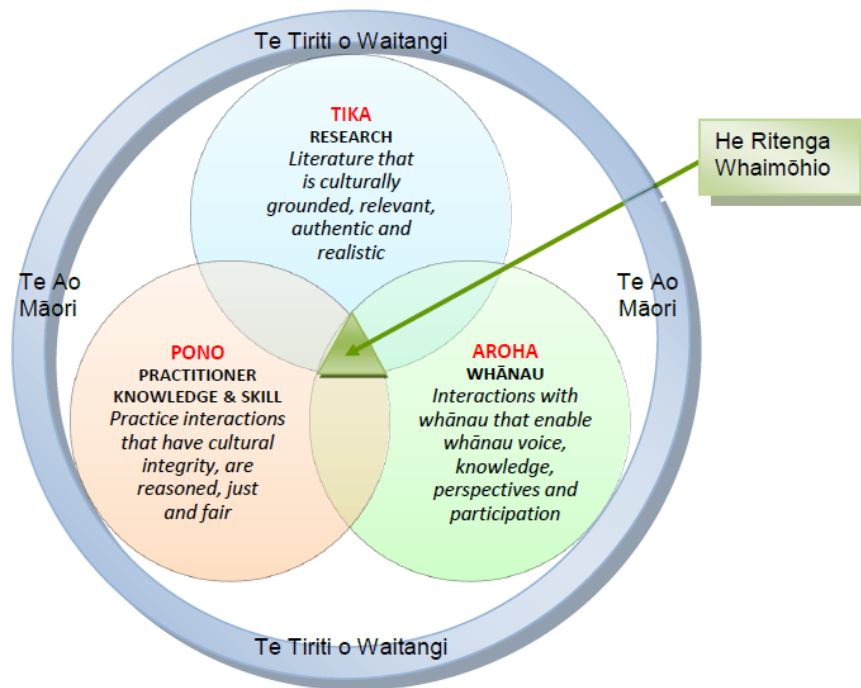

Figure 3: He Ritenga Whaimōhio: Culturally Responsive EBP. (Macfarlane, 2011, as cited in Macfarlane, 2012, p. 208).

This framework enriches and broadens the scope of each of the three evidence circles with a concept central to Māori: tika, pono, and aroha. These are held within the bounds of Te Tiriti o Waitangi and te ao Māori, which delineate the space in which culturally responsive practice can occur. Within He Ritenga Whaimōhio, whānau are related to with aroha, compassion and love, as they are invited to contribute meaningfully within genuine relationships established through whanaungatanga. Clinicians are required to be reflexive, demonstrating cultural competency and being honest and sincere – pono – about the bases of their knowledge. The boundaries of what constitutes research evidence are broadened by the inclusion of evidence that is tika – "culturally grounded, relevant, authentic and realistic" (Macfarlane, 2012, p. 208) within te ao Māori. In this approach, located within the partnership established by Te Tiriti and te ao Māori, there is a subtle shift in orientation towards learning with and from the contributors from each evidence domain. He Ritenga Whaimōhio –

evidence based practice – is found at the intersection of the three domains. He Ritenga Whaimōhio provided a framework for design of this research, seeking knowledge from the three kete of EBP in selecting participants and reviewing literature.

Research method: Interviewing as collaborative story telling

Research can be culturally located within te ao Māori by being considered as a process of whakawhanaungatanga or establishing relationships (Bishop & Glynn, 1999). A relationship demands commitment between parties, negotiation of power and control, and each person to bring their self as an integral part of the process. It also involves finding and building on commonalities of place, people, and interest (Bishop, 2012). The distance traditionally demanded between researcher and participants is replaced with getting to know one another and establishing trust; the objective semi-structured interview is replaced with collaborative storying (Bishop, 1997).

Collaborative storying is suggested as a way to ensure that the concerns of the participant guide and inform the discussion, once the kaupapa or purpose has been offered by the researcher. The participants' ideas and memories form the content; their self-disclosure is determined by them; any questions are explored together as the researcher reflects back their investment in the discussion. The interviewer also shares their ideas and opens themselves up to critique and correction; they are not depersonalised but inextricable from the interaction (Bishop, 1997). Bishop recommended a sequence of conversations in which participants are invited to discuss, critique, advance, and authenticate their earlier perspectives, negotiating meaning and co-constructing theories with the researcher (1997). This "spiral discourse" (Bishop & Glynn, 1999, p. 195) ensures representation, legitimation, and accountability remain with the participant. It is also the best way for a participant to speak directly through the researcher to the reader (Bishop, 1997).

This understanding can be extended with the concepts of pōwhiri and hui. The pōwhiri is a process of whakanoa; a way of moving from Te Kore (the potential) into Te Ao Marama (the world of knowledge), thus becoming known to one another and ready to work together (M. Tahi, personal communication,

August 14, 2017). The formal protocol of the pōwhiri will be familiar to readers in Aotearoa New Zealand. In the present context, it is important to note the initiation of the tangata whenua to the manuhiri and the time spent in mihimihi and whakawhanaungatanga that precedes entering the kaupapa or purpose of the hui, which is laid down by the manuhiri at the invitation of their hosts (Bishop, 2012). In every step, though it is the manuhiri who have come with a purpose, the tangata whenua lead the process forward. The aim is to achieve consensus before closing the interaction (Bishop, 2012). While less formalised, this process can be seen in clinical practice and research interactions, and the subtleties of initiation and response may affect the formation of right relationship and thus the success of the hui. The Hui Process has been used as a framework to improve the relationships of doctors and psychologists with Māori patients (Lacey, Huria, Beckert, Gilles, & Pitama, 2011; Pitama et al., 2017). These use the Meihana Model (Pitama, Huria, & Lacey, 2014, as cited in Pitama et al., 2017) to describe how clinical practice can be improved by engaging with clients through the four stages of hui: mihimihi – initial greeting and engagement; whakawhanaungatanga – building relationships and making a connection; kaupapa – attending to the clinical purpose of a session; and poroaki or whakamutunga – clearly closing the interaction including checking for mutual consensus. This approach results in good quality relationships and such outcomes as "connections, understandings, and the willingness to engage and to trust" (Lacey et al., 2011). This relocates power and ownership of the interaction to patients or participants and demonstrates respect for their mana (Macfarlane, 2012, p. 134). It also makes the whole interaction about relationship and agreement, not about information that can be taken away and decontextualized (Bishop, 2012).

The collaborative storying approach to interviewing was selected for the research. The depersonalised, neutral responses suggested by semi-structured interviewing would not demonstrate my genuine engagement with the contributors or the topic. Understanding the pōwhiri and hui processes also affected the prioritisation of mutuality and initiation for building relationships of trust.

This decision was made after using Bishop's Evaluation Model (Bishop & Glynn, 1999) to consider the potential for power imbalances to occur in the research process.

Assessing research method: Evaluation Model: Research in Māori Contexts

Russel Bishop's Evaluation Model: Research in Māori Contexts lays out the domains of the research process in which power imbalances can occur: Initiation, Benefits, Representation, Legitimation, and Accountability (IBRLA; Bishop & Glynn, 1999, p. 129). This framework questions what and whose concerns underlie a programme of research, and how its value is experienced, measured, and affirmed. It captures the concern that kaupapa Māori research should include Māori, benefit Māori, and be decolonizing in its power sharing and epistemology (Smith, 2012).

I used these five domains to question and critique my research protocol as it developed. Regarding **initiation** by Māori, the research responds to the need of a former student for a means to express her mother tongue. Exploring this, I read about Geneva Hakaraia-Tino, winner of the 2017 Attitude Award for her pursuit of a te reo Māori voice for her communication device (Peacock, 2017), and a kaiako in kura kaupapa Māori who had been given a core vocabulary board to use with a student: "but it's in English!" (Fortune, 2016, p. 146). Additionally, the research questions shifted in focus in response to the interests and concerns of the participants as I spent time with them in korero.

Benefits from this study are for Māori – those who wish to communicate in te reo Māori using AAC. The project aims to determine a way forward to construct language systems that emerge from and express te ao Māori. It also aims to benefit kaiako in kura kaupapa Māori who wish to provide language rich, inclusive education to tamariki with complex communication needs. In these ways it supports "Māori cultural and language aspirations" (Bishop & Glynn, 1999, p. 129). The research is structured to express Māori voices: to **represent** the concerns and hopes of Māori through collaborative interviewing with Māori participants. In addition to the participants, I met and spoke with many others who were willing to listen to my questions and emerging ideas and share thoughts to locate these in te ao Māori. These conversations significantly redirected the research questions and outcomes.

Legitimation and **accountability** were more difficult to place with Māori, due to my independent responsibility for this project. I shared some emerging ideas with a focus group to provide an opportunity for Māori to define their **legitimacy**. Brewer et al. (2014a) wrote about the validity of kaupapa Māori research being established when the literature and the community both call for it, which was the experience I had when my work and study aligned to reveal this communication access justice gap. This was also affirmed when I spoke with both Māori and Pākehā AAC communities as I began; over and over, I was encouraged in this work by those whom it will affect, and I rely on this affirmation to legitimate my participation in the work. As for **accountability**, I have been supported by Sonja Macfarlane in understanding kaupapa Māori principles in my work. Through the process I also developed personal accountability to my participants, whose persistent question, "What happens next with what I told you?" gave me responsibility for continuing beyond the scope of this project.

Data analysis: Kaupapa Māori and interpretive description

Kaupapa Māori research asks that analysis of data and control over what happens to data remain with Māori. This was not possible given the constraints of this study. However, I found a precedent within speech-language therapy research in Aotearoa New Zealand that combined kaupapa Māori methodologies with interpretive description (ID), an inductive, practice-grounded, qualitative methodology. Brewer and colleagues found that these approaches were "synergistic" (2014a, p. 1294) in their research into Māori experiences of post-stroke communication disorders and speech-language therapy. As this research looks towards practical steps to establishing culturally located te reo Māori AAC resources, ID and kaupapa Māori were selected as an appropriate pair of perspectives for creating and analysing data.

Interpretive description emerged from nursing to describe research that is closely connected to clinical practice (Thorne, 2008). It recognises the context of a piece of research, values subjectivity and multiple realities of experience, and is attentive to the interrelationships between individuals, knowledges, identities, and social contexts in research and practice (Brewer et al., 2014a; Thorne, 2008). It shares with kaupapa Māori research a mutual focus on practical transformation for

participants, an interest in contextualised and lived experience, flexibility, and a requirement for researcher-participant relationship and reflexivity (Brewer et al., 2014a; Thorne, 2008). Thorne (2008) also suggested the process of repeated interviewing to renegotiate meaning as promoted by Bishop (1997, 2012) as good practice for supporting data analysis in ID. Each orientation also acknowledges the researcher's curiosity and optimism. The ID researcher is a "curious learner – confident that what really matters will be that which you are going to learn from the interview process" (Thorne, 2008, p. 130), and Smith described research as "at its core an activity of hope." (2012, p. 203).

The analysis methods of ID are inductive. That is, the researcher develops patterns and relationships from the data rather than trying to manipulate it to confirm a hypothesis or theory (Brewer et al., 2014a; Thorne, 2008). The distinctiveness of ID from other qualitative methods is found in its focus on application to a clinical context (Thorne, 2008). Researchers using this model do not seek to create a unified theory, rather they take the patterns they find and use them to make practical recommendations for change. This demands that the researcher takes ownership of what she says she sees in the data (Thorne, 2008). ID and kaupapa Māori research agree that research is only useful if it informs positive change.

Seeking support: Reframing the analytical perspective

When I started to think about data analysis, I felt stuck between two ways of working – a way I know, and a way that seemed right. I sought support from the kaiārahi of Māori research at UC to help me understand how to create meaning from data while avoiding manipulating the participants' words to suit my theories, as cautioned by Bishop (1997). My question was, given what I understand of kaupapa Māori research and the study limitations, how do I move forward with this process? I was advised to avoid getting tied up by the rhetoric of kaupapa Māori but look at what underlies it. Three main messages reoriented me to this task:

- Advice: "Start with what you know. Don't get distracted."

- A simple statement of kaupapa Māori methodology: "Don't speak for me. I have a voice. I have a way of knowing that may be different but is valuable."

- A reframing question: "How does what is available for Māori/te reo Māori compare with what is available for Pākehā/English language?"

This added the analytical perspective of "What does te reo Māori AAC have to do?" This is quite different from the original research question about what it would be like. This kaupapa Māori question is one of function, access, and relationship.

Following this I contacted two staff members at the University of Canterbury who are raising their children to speak te reo Māori. I wanted to clarify what this choice means to understand potential effects of its rejection by a speech-language therapist. Again, their interests were access, justice, participation, and identity. They were determined that te reo Māori is not just for culturally designated settings but for the whole of life, and that it locates their children as Māori and gives them access to ways of knowing as well as communicating. It is not merely about self-expression, but self. They referred to learning te reo Māori as a process of decolonisation, of intergenerational transmission of language and knowledge, a right, and a natural decision. When I asked about how they would respond to SLTs recommending English only to their tamariki, they spoke about mourning, power imbalances, colonization, selfishness, and expectations to conform. They reminded SLTs of their responsibility to provide appropriate intervention given that kaupapa Māori ways of working are now widely known. When I asked a similar question of a mother and researcher at the New Zealand Educational Institute (NZEI) conference, she paused to think, rather taken aback; several of the Māori educationalists in the room turned to me and said, you need to learn te reo Māori so that you can help them.

3.1.2 Researcher factors

In this way, I have entered this study with the various stories, warnings, and encouragements from Māori and Pākehā involved in kaupapa Māori research to guide me. To orientate myself, I have spoken with Māori staff from several disciplines at the university and the NZEI conference to show my face,

hear their perspectives, and seek a better understanding of kaupapa Māori research. The consistent response was cautious encouragement: While I may not be the most appropriate to do this mahi, they sent me away saying that someone needs to; and that I must learn te reo Māori so I can continue the work. I have also been supported over the course of the project by Sonja Macfarlane, who has been consistently encouraging and affirming of my heart and intention for this work.

There were further limitations related to my current situation, including that I am in Christchurch for the period of this study, and though it is my hometown I am no longer connected to any Māori community here. This transience makes me unwilling to over promise and under deliver, which has made me whakamā about meaningfully engaging in local Māori communities over this brief period. I know that who I am as a researcher will affect the stories I am told.

The following section describes the specific methods I used to collect and interpret data, with attention to aspects of practice that demonstrate kaupapa Māori principles.

3.2   Methods

3.2.1   Participants

Three groups informed this study: three AAC users with their whānau, four speech-language therapists, and a focus group of three academic staff. Participants who identified as Māori were invited, and they self-identified in different ways including as "part Māori" and as Pākehā immersed in te ao Māori through their partners. Those who shared their iwi affiliations connected with the land right across Aotearoa New Zealand, North and South Islands, East and West Coasts. In each interview at least one participant continued to learn te reo Māori as an adult. This range of connection, identification, and knowledge and use of reo Māori recalls the diversity of Māori. Note that the only male contributors were whānau participants; however, the prevalence of women's voices is appropriate considering the central role of Māori women in health and education (Fortune, 2016). Example information and consent forms can be seen in Appendices 4 and 5.

All three AAC users identify as Māori, have lived in Māori communities and use to te reo Māori at home, school, and their wider communities. Each has an AAC system provided by TalkLink that enables them to communicate effectively in English and has positive relationships with TalkLink and their SLTs. All expressed that they could communicate in te reo Māori if they had the tools and have expressed the desire for a Māori voice. TalkLink is actively pursuing options to make this happen (TalkLink, 2017) and connected me with several of the whānau and SLT participants.

RV is a teenager whom I met with his parents, Leo and Jorja, and his siblings in their home, having first met at a camp a few months earlier. RV communicates by spelling words with his eyes on a Tobii with Gridpad and Wordpower. At home, RV's whānau mostly speak English, although his father is a fluent speaker of te reo Māori. Te reo Māori is RV's language of choice, and he learnt this from his Nan, in the wharenui, and from TV. RV and his whānau are identified by pseudonyms they selected.

Kere spoke te reo fluently in public and private contexts before acquiring aphasia after a stroke in 2016. He now finds it easier to speak English than te reo Māori; he and his partner Tracy wonder if this is because he is immersed in English since moving to access SLT rehabilitation. When Kere experiences word finding difficulties, he uses the Predictable app on an iPad which speaks aloud what he types. Kere can write in English and te reo Māori, but the app cannot accurately pronounce most words in te reo. Tracy is Pākehā and has lived with Kere in Māori communities for many years surrounded by te reo Māori. I first met them through a colleague and met with them in their home for this interview. Kere and Tracy share their story widely as advocates for communication support in te reo Māori and explicitly requested that their names be used in the research.

Geneva is an ambassador and project lead for TalkLink and the New Zealand Speech-language Therapists Association. In this role she publicly advocates to members of parliament and speech-language therapists for the establishment of a te reo Māori voice for AAC users. She communicates using a combination of MinSpeak and typed messages on her speech generating device. We were first

put in touch by TalkLink through an email stream for a special interest group. She suggested a Skype meeting and I also briefly spoke with her mother at the end of this. Geneva also asked to be named in this research.

Speech-language therapists

Deborah, Manawa, Elise, and Melissa (pseudonyms) are speech-language therapists who work with children through different organizations. All have experience providing SLT services in Māori immersion settings and working with AAC. I met Manawa in her home, Elise at her office, Melissa at a café, and spoke with Deborah on the phone. I connected with three of them through different contacts or projects, and they then accepted a direct request to meet for this research. Only one responded to the nationwide SLT recruitment email.

Focus group

The focus group were three tertiary level te reo Māori language teachers. Clare, Mere, and Rāhera (pseudonyms) agreed to meet at their workplace when I approached them individually and invited them to participate. A focus group was selected for these participants to capitalise on the "creative potential of interaction" (Thorne, 2008, p. 132) that arises when a number of people can question, extend, and affirm one another's views. Clare had done some work with low tech AAC systems before, and Rāhera and Mere were unfamiliar with AAC but experienced in Māori language and pedagogy.

3.2.2   Procedure

Ethical considerations

There were several ethical dimensions to this research project, considering the involvement of Māori participants, those with communication disorders, and children. I consulted with two kaiārahi in the College of Science to review my application and ethical considerations in light of kaupapa Māori concerns. They recommended spending extended time in the process of whakawhanaungatanga in each case to provide a basis for support if participants demonstrate distress. Participants were made aware that I am not fluent in te reo Māori and that the interviews would be run in English; however, I

am familiar with common words, phrases, and concepts in Māori, and used and welcomed these within the conversation.

Adapted information and consent forms using simplified language, pictures, and symbols were provided for all AAC user/whānau participants to support their understanding of the research and to ensure informed consent (see Appendices 4 and 5). The general information and consent form was also signed in each case, and verbal consent was granted to record at the time of the interview. Two whānau participants explicitly requested to use their real names, and this was noted on their signed forms. The research assistant signed a confidentiality agreement and listened only to the recordings she either transcribed or reviewed for accuracy. Only I viewed the video recordings of AAC user interviews. Audio and video recordings were deleted from devices promptly and, with written consent and interview transcripts, were kept in locked cabinets and password protected computers within locked rooms in the University of Canterbury, Department of Communication Disorders.

Approval was granted by the Ministry of Education, Special Education to include their speech-language therapists in the research. TalkLink also added their support to the research, both on paper and in action. The workplaces of each SLT and focus group participant were not revealed, and each focus group member could self-identify their profession. Ethical approval was granted by the University of Canterbury Ethics Committee (see Appendix 6).

Interview procedure

Interviews were conducted according to a collaborative storying approach, which entailed me entering fully into the conversation, raising my own experiences and questions for critique and response. Acknowledging my position as manuhiri in their spaces and to their stories, the research interactions followed a pōwhiri process. Each encounter began with an extended period of whakawhanaungatanga and I awaited their invitation to introduce the kaupapa. I led by sharing the story that prompted this research and then said, "I have a few questions written down, but I am mostly interested in your story, thoughts and ideas, and so am willing to be led by that." Typically, participants

asked for a first question and then the conversation flowed naturally until they indicated that they had finished. AAC users and their whānau were also provided with questions that were adapted for their communication needs to ensure they were able to express themselves fairly (e.g., Appendix 4). Encounters were closed with an affirmation of the value of this work and our shared goal of te reo Māori AAC, and I was encouraged to keep in touch. Interviews lasted between 40-100 minutes, not including the periods of whakawhanaungatanga and poroaki.

I audio recorded all interviews using an Olympus digital voice recorder (WS-833). I also videoed Geneva and RV's interviews using a Samsung S4 Mini to ensure that any non-verbal communication was captured. Recognising the role of silence, gesture and body language in Māori communication (e.g., Metge, 2005) as well as the non-verbal communication of AAC users, I also made notes after each interview to record emphases or impressions that audio may have missed. This also supported my reflexivity in thinking back over the conversations and helped me to shape and adapt conversations with subsequent contributors.

Data management

Recordings were translated verbatim by me and a research assistant. In each case, transcripts were reviewed several times to check for accuracy. I returned the transcripts to participants and invited them to add, change, delete or clarify anything that they wished as a way of legitimising their words. I removed most instances of fillers, false starts, and repaired utterances from all transcripts following the concern expressed by two participants. As some conversations were very long, I also excluded portions when we spoke off-topic for extended periods. When the participants returned their transcripts, I made the changes requested, and saved these new documents as the record of our conversation. In some cases, participants added a lot of clarifying information and removed large sections of text; some made few changes. Through this extensive process of transcribing, checking, and reviewing the interviews, I immersed myself in the stories and thoughts of the participants.

Data analysis

As mentioned above, the conversations I had between completing whānau and SLT interviews and running the focus group had a profound effect in reorienting my thinking for data analysis. I had begun to use software to 'code' the data into categories. However, as I returned to the conversations with the new analytical direction – "what does te reo Māori AAC need to do?" – I began to engage with the physical copies of each transcript. I looked at each interview as a whole and "asked it" some questions. These questions had been bubbling around my head in the weeks following the interviews, and were not directly the research questions or the things I had asked but rather the questions the participants appeared to have been answering:

- Why is te reo Māori AAC needed?

- What does te reo Māori AAC need to do?

- What would it be like, and how would it be developed?

Speech-language therapists and the focus group consistently addressed a further concern:

- Challenges to speech-language therapists and service providers.

With these questions before me on large sheets of paper, I cut and pasted portions of each transcript onto the pages, keeping data from each participant group separate. I reduced each idea to a few key words, collating similar perspectives within each group, then printed and cut these ideas up again, arranging and rearranging them on a large whiteboard into groups of connected ideas. At this point, ideas from contributors from the different groups were placed side by side to allow comparison and contrast. Through this process, I identified three major themes and thirteen subthemes. I could then use the original question sheets to reconnect the key ideas to the participants' words in the write-up phase.

The three major themes ended up as direct answers to each of the original questions. However, this was incidental. Through the repeated process of rearranging, reducing, connecting, and expanding the data, some ideas originally ascribed to each question ended up under different key themes. The close

relationship between the thematically organised data and the key research questions indicates the validity of the themes to address the research questions. To establish reliability of the findings, one of my supervisors reviewed one transcript from each participant group to identify key themes. We met together to compare and discuss what we had perceived in the texts to reach consensus.

The following chapter presents the findings of the research collection and analysis procedure.

4. Findings

E koekoe te tūī, e ketekete te kākā, e kūkū te kereru.

The tui chatters, the parrot gabbles, the wood pigeon coos: The voices of three birds make up the song of the forest.

The eight research conversations provided a wealth of fascinating data covering many elements of te reo Māori AAC. This chapter lays out the three major themes and the thirteen subthemes that I identified from what the participants shared. In order to help the participants speak more directly to the reader, I present specific excerpts from our conversations that reveal their experiences, views and ideas in their own words. These are linked together with some analysis to demonstrate context, connections and contrasts between their ideas.

The first major theme identified answers the first research question: Te reo Māori AAC is needed to grant communication access justice. The subthemes of this are access, choice, rights, and SLT attitudes. The second main theme addresses the second and fourth research questions: What does te reo Māori AAC need to do, and what could it be like? Each is addressed by the key theme of 'what' language is required: te reo Māori. AAC systems for te reo Māori need to represent te reo me ngā tikanga Māori through the subthemes of expressing Māori worldview, ways of interacting, symbols, kupu or words, and mita or voice. The final subtheme of this section is a call for SLTs to learn and use te reo Māori. The understanding formed by these questions becomes the pathway or foundation to how to create meaningful and appropriate systems. This third main theme is made up of the subthemes of relationship, roles, and, finally, resources.

Within each of the major themes there are specific messages to SLTs and service providers about understandings and ways of working they need to adopt for effective and culturally safe practice. These are relevant critiques and encouragements to SLTs delivering service to Māori clients across different client groups and interventions. Most of these come from speech-language therapist

contributors, who have first-hand knowledge and experience of practices that have been effective and ineffective, and who are eager to see good practice from SLTs supported by service providers.

4.1   Theme One: Why is this required? Communication access justice

Not having te reo Māori AAC is an injustice for those who need it. This was clearly expressed by participants from all three participant groups as a key theme. They discussed barriers to participation in many areas of life resulting from attitudes, systems, and lack of communication tools. The theme of justice was explored in four distinct areas: access, choice, rights, and SLT attitudes.

4.1.1   Subtheme: Access

Te reo Māori is required to access education and community. This was identified by AAC users and their whānau, SLTs, and focus group participants alike. Note that AAC was not considered important for home communication, due to the understanding brought about by intimacy and familiarity.

Rumaki reo education

Neither Geneva nor RV were able to access Māori medium education because of their communication impairments, despite the preferences of their whānau. RV has used high tech English language AAC since he was a pre-schooler. However, his mother Jorja explained that he was unable to attend kōhanga reo and kura kaupapa Māori both because he could not participate by expressing himself in te reo and because the kura was not set up to support him:

> I couldn't see a future … I knew it wouldn't work in te reo Māori. As well as that the kura is total immersion, and with all the different specialists coming in I'm not sure how it would have worked. So we just went mainstream. (Whānau)

Geneva's mother expressed a similar sentiment:

> I think kura kaupapa Māori is way behind in making their education more accessible for people like Geneva. Hence why she never grew up in that environment, because they couldn't cater for her needs. (Whānau)

Speech-language therapists and focus group participants were also concerned about the preparedness of rumaki reo education for AAC users. One SLT had observed a student with high needs at a kura who was left to his own devices except when the specialist teacher came to support him weekly. Another spoke about what she has seen happen for children with complex communication needs and how this does not reflect the Māori kaupapa of inclusion:

> Some kōhanga won't take them. Even though we know they have to. This undoubtedly happens in mainstream too. I don't know, unless they have a family link or a kura that is really set up for it, otherwise you'll get heaps of raru around "Will they come with a teacher aide" or "will they come with mum?" What? That's not Māori! We don't ask heaps of questions, we just take kids with open arms! I say, "Gosh! You're a teacher! Nau mai ki te ao hurihuri! [Welcome to the modern world!]" (SLT)

To overcome this access barrier, she described a need to educate trainee teachers in rumaki reo about communication, so students can justly access both:

> Because currently parents have no option but to learn themselves, and then where does the kid go? Into a special school with no reo, no nothing. But if the teachers were being educated around alternate ways of communicating with tamariki then, maybe that would be helpful. And more settling for the parents that make that decision ... there's heaps of parents that just don't feel like that's an option because they're not gonna get the support. And why would you put your tamaiti into an environment when they know they're not gonna get the support? (SLT)

On the other hand, kaiako may not be adequately taught how to use resources that they are given by SLTs; and the tools may in any case be unable to facilitate participation in Māori medium education:

> They said, "Oh yeah nah, we use it sometimes whaea, it's just we don't really know how to use it." ... I asked her, "Oh, is it, ko te reo te raru o tēnei?" like, "Is it because it's only in English

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or, that you sort of feel that you don't really wanna use it? And was there a Māori one offered?" … And even though that's the child's first language, te reo, that's the only language the child hears in the home and at kōhanga, they just, they didn't even get offered it. (SLT)

Community roles

Access limitations exist beyond schooling. Whānau participants spoke about the community roles they have difficulty filling because they do not have the tools to speak te reo Māori. Geneva has been restricted by her device in her university level study of te reo Māori as her knowledge of the language outstrips what she is able to express, even given her ability to manipulate her device to pronounce Māori more correctly:

> When I was doing te reo at uni, I was restricted when I was required to complete verbal assessments for the paper and simply having conversations in te reo. Initially, I would phonetically spell te reo Māori kupu or words into my device but as I learnt more of the vocabulary, it became difficult to make the words sound as close as possible to its pronunciation. (AAC user)

Kere can no longer fulfil his leadership role in his community as his device does not pronounce te reo Māori accurately. Tracy said, with Kere affirming her:

> There's certain cultural instances, where, like if we're with Hei Whakapiki Mauri and they want to do a karakia for the food, Kere would be the logical choice … but, he can't! But you see he knows … before, he would have said karakia really easily, we've got someone who could write that out for me, we could put it in there, and then it could say Kere's karakia for him. (Whānau)

In each of these cases, a device limitation prevents the AAC users' participation in their community.

4.1.2   Subtheme: Choice

The participants from each participant group spoke about the choices that AAC users and their whānau have made to speak te reo Māori. They also discussed the choice of Māori medium education settings to provide a monolingual reo Māori environment for their students. Failing to honour or provide for

this choice was identified as a justice issue. SLT contributors also challenged the expectation that Māori speakers should be bilingual.

RV, Geneva, and Kere all choose to use te reo Māori despite the limitations of their aided communication systems. This expresses their Māori identity and self-determination. Te reo Māori is RV's preferred language, and he "forces" his whānau to kōrero Māori. Leo said:

> I think that's our biggest thing ... he loves te reo Māori, he's really passionate about it. (Whānau)

This seems to be connected with his identification as Māori. Jorja explained:

> So anything to do with Māoridom, it's not just his reo. Even other little things, like he doesn't like the girls playing on his bed, and just a lot of tikanga as well, that he's picked up along the way, aye son. And he's pono as, he's so strict. (Whānau)

In response to this preference, RV and his whānau have adapted his system to correctly pronounce te reo Māori. They have changed pronunciation rules on his device word by word, which means that Māori-English homographs (such as "i, he, to") are now pronounced incorrectly in English.

Geneva spoke about language revitalisation, and described te reo Māori as an expression of tino rangatiratanga:

> As a Māori AAC user I am very happy that with TalkLink's support we will be part of the revitalization of te reo Māori for AAC users embarking on a journey of self-determination and decision making. (AAC user)

SLT participants also spoke about choosing te reo Māori as part of language revitalisation and intergenerational transmission. As Deborah said, it is:

> So important for some whānau especially, to be seeing that te reo Māori passed onto their next generation. (SLT)

This can be seen in Jorja's story about their whānau's experiences of language transmission, which skipped her generation. Her mother's parents had been caned for using te reo at school so did not teach it to their children. However, after Jorja had grown up her mother decided to learn te reo and has since been the main influence behind RV learning and preferring te reo Māori.

Manawa acknowledged the unfair choice that some parents must make between special education and Māori medium education given the access limitations of each:

> I feel for those whānau that feel they have to choose reo Māori or English, you know? … That sucks! (SLT)

She expressed the heart behind choosing te reo Māori in these cases:

> Te reo is their philosophy, that is their whole drive and passion and everything. Why are they are gonna use a device that is English speaking, when their baby, they want their baby to be te reo Māori speaking? (SLT)

Kere also made a choice to leave his Māori community, moving cities to access speech-language therapy rehabilitation following his stroke. He formerly worked and lived in predominantly te reo Māori speaking worlds. He and Tracy wonder if Kere's te reo Māori would have rehabilitated better if they had remained surrounded by te reo.

Bilingual or monolingual?

A further consideration of whānau language choice is the difference between Māori-English bilingualism and te reo Māori monolingualism. SLT participants pointed out that needs and preferences of communicators in different contexts and with different communication partners may go unrecognised by other SLTs. This is often a consequence of differing school and home language policies. Additionally, one SLT perceived that others may demonstrate a bias towards English in their response to the term "bilingual", which may not recognise the whānau's preference for te reo Māori.

A kaiako Deborah worked with responded positively to a monolingual te reo Māori core board, having rejected a bilingual one:

> So just gone through in my bilingual one that I'd edited, just took out all the English words and gave that to her and she was just like, "It's amazing, oh my gosh it's in te reo," and "We hardly have any resources in te reo," and "Just great to have this" and she was really receptive. (SLT)

Manawa told a story about a family who had been given an English core board by another SLT:

> I emailed mum and said, "…I know you were saying you want her to be bilingual, do you want me to make a bilingual one English and te reo for you, and then I'll make a te reo one for kōhanga?" So I make two ones because I know kōhanga are really tūturu [authentic]. (SLT)

There may also be different wishes within a family, and SLTs need to understand the shared responsibility for decision making:

> She was like, "Well, I talked to mum and mum wants her to be bilingual." … there's that whole twist too where the whānau want different things for this baby. Whereas "Māori" that baby's everyone's baby, it's not just the mum's baby, it's not just the dad's baby, it's everybody's baby, especially the nan's. And so what Nan wants might be different to what mum wants and you try and sort of cater to these different wants. (SLT)

Elise spoke about a colleague whose client was beginning to use an English core board successfully at home and was uncertain about how to transfer this skill to a bilingual education setting:

> I think it's good that he's going to have something, but I wonder if they would appreciate it more if it was in Māori, but then I don't know, I mean if he's speaking more English at home. (SLT)

4.1.3   Subtheme: Rights

Te reo Māori is a right for Māori. Participants were assured of their right to te reo regardless of communication difficulties. In part, this related to their rights to community participation and self-

expression, as discussed above. It is also related to Māori identity; Manawa asserted that if an SLT had provided te reo Māori options:

It would have been at least an acknowledgement that we, we're Māori. We learn te reo, we learn via te reo. (SLT)

More explicitly, participants spoke of their human rights and those under the Treaty of Waitangi as affirmed in Wai 11. Geneva spoke of her rights to access te reo Māori and to participate as a disabled person in te ao Māori, like this:

I believe everyone has the right to converse in their native tongue. My hope is that by providing a Māori voice to people who use AAC it will enable their voice to finally be heard in their whānau and te ao Māori. (AAC user)

SLTs described the inequity in service experienced by whānau, particularly regarding expectations around resources. One observed:

I just see that there's massive, massive gaps, massive inequity really about what is already available for children, English speaking children and reo Māori speaking children... And that it's not that they're having to create it themselves ... Whānau using English don't have to make everything themselves. (SLT)

Kere located these concerns in the promises the Treaty of Waitangi under Wai 11. His perspective was that his device prevented him from speaking te reo Māori, which means that these obligations have not been met, as communicated in the following interaction:

Kere: Do you know the, that? [points on paper: "Wai 11"] … So it's claim, you know yeah.

Tracy: A claim. Yep, a Waitangi Tribunal claim. … Yep it's about te reo as a taonga. And out of that claim,

Kere: Yep. And, and, and, and, and, and, Pākehā and Māori. Isn't it? About writing.

Tracy: Yep about the language becoming equal.

Kere: Yeah. They do. They the same.

Tracy: Yep so they are both official languages. Protected under law.

Kere: Okay. So you have to write, and what?

Brynlea and Tracy: Speak.

Kere: That's right! So they done it? … No they haven't. They haven't. (AAC user and whānau)

Kere returned to Wai 11 several times throughout our discussion, reasserting the importance of accurate representations of te reo Māori (Theme two). When I shared Manawa's reflection on parents forced to make a choice between kura and special education with the focus group, Rāhera's reply built on Kere's emphasis on the Treaty rights of Māori:

Well they shouldn't have to. Or it's not a Treaty partnership. (Focus group)

4.1.4 Subtheme: SLT attitudes

The attitudes of speech-language therapists can be an additional barrier to accessing te reo Māori language and language intervention. This was of concern to the SLT participants who have seen first-hand the practices of colleagues who lack understanding and readiness for working with whānau Māori, and who are eager to see them receive equitable service.

Manawa spoke about SLTs recommending English-only therapy out of concern for the child's ability to participate without English, disregarding the greater importance to the whānau of te reo Māori:

A non-Māori SLT might be like, "Oh but then, will they be able to participate in this world that's predominantly English speaking." You know, whānau want them to have a life, and then they feel, "Oh, they're not gonna get te reo because who will they speak to then?" … "They will speak to me and they will speak to people in kōhanga." (SLT)

This is connected with SLTs being ignorant about what te reo Māori means for whānau, as she later expressed:

> I don't know whether they are understanding what goes beyond the language. Cos if they did, then they would have given it [imperfect te reo Māori core board] and said, "Hey, it's a work in progress but we have this for you. ... They would have loved that. That whānau would have been in there straight away going "Oh thank you" cos that's not, that's not just an English one. (SLT)

One common result of this attitude is withdrawal from therapy. Melissa explained it like this:

> So big barriers are, so think of an SLT going into a Māori immersion setting, into a kōhanga, into a kura. Somebody rocks up, can't speak any Māori, has no resources that are language appropriate, culturally appropriate, anything, all of that, and then you're trying to help somebody and you, just, that big barrier … it's so hard to explain. Have you experienced this? … Have you had the wall? (SLT)

Manawa told a story about a whānau putting up this "wall" when an SLT brought an English only core board to a whānau whose child attended kōhanga reo:

> The trust was lost straight away. Straight away, as soon as that lady brought that in, mum doesn't wanna work with her. (SLT)

It is not just individual therapists: Education and intervention service models and environments are not set up for SLTs to support te reo Māori AAC users. Limitations included insufficient time allowed for building relationships and establishing trust, large caseloads, and lack of understanding between SLT services and Māori medium education providers. For example, Rāhera spoke about the child of a former colleague who was at kura kaupapa Māori and who had problems accessing speech-language therapy:

Because there was no one who could assist her in any of the services who could speak te reo Māori. So that's not the child's issue, it's the environment and the world we live in not being ready for our beautiful bilingual children and our parents who speak te reo. So we've gotta change, and this is a prime example of some of the things that are barriers for our kids, and their language. (Focus group)

This lack of provision by SLTs is a breach of Treaty obligations and fails to recognise te reo Māori as a taonga to be protected.

4.2   Theme Two: What language? Te reo Māori

Recognising that the language is a right, the right language must be expressed. Participants spoke long and often about the differences that should exist between Māori and English AAC systems because of the differences between the languages. This is the second major theme identified in the analysis. Manawa put it like this:

All I need is something that actually acknowledges that, "Oh they are learning in another language."" Like, "Ko te reo", in te reo. Like, "It doesn't matter!" As long as it's acknowledging these tamariki learn in te reo! In my mind, and I've talked with the kaiako too, based on my experiences, that we just get what we've got, and if it doesn't work then at least we tried the reo, acted like we didn't just go with English. Why is that, how is that even an alternative? (SLT)

Rather, AAC language representations must emerge from and express te ao Māori – Māori worldviews. They need to work for Māori forms of communicating and ways of learning, and use imagery from Māori stories. The words need to be Māori kupu and organised according to Māori grammar. And, essentially to AAC users themselves, they must be spoken with a Māori voice.

4.2.1   Subtheme: Te ao Māori

It is not enough that AAC exists: It must accurately represent te reo Māori as formed by and expressing many elements of te ao Māori. Tracy proposed some of the differences that would exist, when Kere asked, "Is it for Māori?" She said to Kere, who affirmed her:

> If this had come from Māori, it may have looked completely different. It may have had completely different pictures on it, they may have looked completely different, like the priority of what things are, how they are grouped together for it, could have been grouped together in a totally different way. (AAC user)

For Māori AAC to express Māori ways of thinking and knowing, Manawa suggested that it needs to be developed by elders:

> It's who the right people are. … The reo of the kuia is in my mind the best reo to be using off, to be based off. Because they're the originals. They are the ones that have all this, more than just the reo knowledge. They have the reo, they have the wairua, they have the tikanga. (SLT)

SLTs Elise and Melissa also reflected on new ways that AAC could be represented using tools or imagery that are authentically Māori, and the focus group spoke about their preference for tools that have been developed by Māori:

> Rather than just someone who's pulled out a dictionary and put some Māori words on it. (Focus group)

Kere and Tracy helped me to understand how Māori respond to these poor translations of te reo Māori. They told a story about a sexual education organization who had asked them to review their Māori programme to help make it more culturally responsive. They found that they were giving out sexual health information in "tutu packs", and explained that tutu translates as play, but has the colloquial meaning of paedophile. Using this example, they spoke about the complexities of cultural

and linguistic translations, and Kere described how his Pākehā-centric AAC makes him feel separated from himself as Māori:

> Tracy: It needs to have the Māori heart. … language has so much more meaning than just what it says. But the danger for this kind of work, is the sort of dictionary, the tutu pack, and it's never, it's never going to get anywhere. And the other thing, is that, that tutu pack stuff, as soon as Māori see it they go [grimaces], it's like fingernails on a blackboard for them. And it's like an almost instinctual that, see how long it's taking us to understand. That's, it's not just the aphasia, it's the whole concept of us understanding. But for Māori it's just, it's so in their face, aye Kere.

> Kere: Yeah. So if you want, if you want, if make, the thing is, okay? Like this. [sigh]. This needs, do you want to talk about Māori or Pākehā? Do you want to? Do you want to? … Where is he? Show me. …

> Tracy: He's not Māori.

> Kere: That's right. That's right. He's not there. You ask, you see me? But you're telling a lie now. Yep. You're not talking about me. If you want, if you ask it be me, tell me. (AAC user and whānau)

4.2.2   Subtheme: Interactions

The second component of expressing te reo Māori is supporting Māori forms of interaction and learning language. AAC users and their whānau spoke about barriers to interactive communication with AAC, and SLT and focus group contributors placed a high value on gestural communication. The different ways of learning AAC described by AAC users and the other groups may indicate different worldviews, where the SLTs and language teachers have been educated in western forms of language intervention and instruction.

Pragmatics

Geneva frequently used the word "converse"; for her, communication in te reo Māori was not about words but interactions. RV and his whānau demonstrated a similar orientation to interaction rather than just communicating a message when sharing about family members focusing on the device rather than RV as the communicator.

SLTs and focus group participants were interested in the gestural element of Māori communication. Melissa spoke about the rich communication via body language that also identifies Māori with a place or iwi:

> Cos you think of waiata, and songs, all the actions have meanings, action songs, haka, pūkana, they all have meaning. … You can tell what iwi someone is from, especially a woman, by the way they haka, and the way that they dance, the way they move. (SLT)

She spoke about sign language or gesture being a "natural" way of communicating for Māori. Manawa spoke about a whānau who gave up on their core vocabulary board and decided to do signing as it would allow them to support "te reo tonu", or just te reo. A third SLT also mentioned sign language as an AAC approach for Māori:

> Learning waiata at Te Wānanga, we always have gestures and stuff that go along, sometimes it is sign language… I have just thought of another whānau and they are using sign. And yeah, mum seems to be definitely liking that … maybe it's, they want the child's voice to be heard and, yeah. Like you say kinda come from them. (SLT)

The focus group participants spoke about the need for gestural support when using the core vocabulary board, adding gestures to support students to learn and understand tenses and pronouns.

Language learning

AAC systems should support language learning that works in Māori contexts. Participants discussed three ways of learning language: through relationships, by modelling, and independently. Some

connections and contrasts can be made between the way participants from different groups spoke about learning te reo Māori and communication via AAC.

The AAC users and their whānau talked about relationships as a medium of learning te reo Māori. Kere spoke about learning te reo Māori by Te Ataarangi alongside his children at kōhanga reo. RV stated that he uses te reo in Māori class at school, but learned it:

> From my friend who is my Nan and TV. (AAC user)

Interactions with other AAC users were highly valued by RV's family for learning AAC. Jorja spoke about meeting another young Māori man who uses AAC:

> RV loved that. Camp would have been effective for RV if they coulda just sat in the corner, and just chatted boy stuff, just normalized each other out pretty much. (Whānau)

Modelling language is a similar way of learning embedded in interactions that both SLTs and language teachers spoke about as important to language acquisition for AAC. However, the SLTs also critiqued the clinical perspective of the centrality of modelling:

> Because in our clinical mind, we have the structure of pragmatics and SVO, SVO [subject-verb-object], in our head, and how we think language should be, is learnt by normal language acquisition. But it's not always the case. We follow the developmental model so often, but if you can go from a top down model where you go with where they're at and they lead it, which is what we should be doing more of, it just takes practice to rethink that. (SLT)

Another SLT said modelling on the core board could feel "weird" if it replaced naturalistic gesture. She was also unsure if it works for learning sentence structures.

> I've only been doing the words, I haven't been doing big as rerenga korero [sentences] because that's how, it's just like, "Oh, titiro te blah blah" or "Ko koe tēnā" it feels weird, doing

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that too. But, doing "koe", whereas [mimes pointing at core board] instead of going "you" [points at me]. I dunno, it's… (SLT)

As can be seen from how the participants learned te reo Māori, whānau kotahi or doing it together is an important facilitator of language learning. One SLT spoke about getting parents, grandparents, siblings, and classmates involved. She dreamed about modelling language on a core board for all tamariki in rumaki reo as a way of supporting language development as second language learners, identifying the benefits for inclusion of all learners:

> I even think core boards would be cool using in rumaki, using those with our, with babies in the classroom, the new entrants, because most of them are bilingual … All of the kids. Let's normalise it, you know? It would be so cool. Having a teacher … that would do that, is brave, that's brave to me … That's inclusive education. (SLT)

The focus group also talked about the need for explicit instruction to establish links between pictures and spoken words.

In fact, in contrast to the therapists' and educators' focus on modelling, the device users mainly learned to use AAC through independent exploration of their devices, or "trial and error", as Geneva put it. RV's experience with his Tobii Dynavox was similar:

> Leo: We thought it was absolutely crap and then all of a sudden he just whacked out, he just started whacking out sentences, like, "What the hell?" We thought it wasn't working, cos at the beginning it was "the. and. I."
>
> Jorja: I think that was him learning to navigate it. (Whānau)

RV does not like his sisters or others accessing his device, the practice that SLTs and educators typically recommend to provide modelling or aided language stimulation.

4.2.3   Subtheme: Symbols

The SLT and focus group contributors were concerned about whose worldviews are represented in the symbols used to express words and concepts on AAC systems. They explored how we connect meaning to symbols or images through shared understanding of stories and suggested that symbols have a "cultural base" (Focus group).

While acknowledging the difficulty of representing abstract concepts and prepositions with symbols, participants had some ideas about how this could be done in a way that represented a Māori worldview. Deborah (SLT) explained that it's not a "straight symbol translation" from English to te reo, considering the difficulty of representing abstract concepts such as tapu ("the definition of not being able to put in a symbol"), whānau, and whakapapa.

Some participants were concerned about bodies without heads, and "disembodied heads" (focus group). The focus group suggested emojis and the Māori emojis (Emotiki®; Te Puia, 2018) as a solution. Mere said:

> That's why I like those, cos everyone knows them as emojis, rather than a human head. (Focus group)

Two SLTs spoke about the few Māori specific symbols now available on Boardmaker®, with contrasting responses:

> I thought they were quite cool. (SLT)

> Oh my gosh, they're terrible! (SLT)

Melissa spoke about how the symbols are learned by consistently ascribing meaning over time:

> Think of symbols. Anything can be anything, it's just what you learn it as. Like McDonald's, you know that M is for McDonald's because we've learned that. You know stop, or not available, that smoking thing, means that because we've seen that. So you can have anything really, that

can be taught to mean this, because repetition, auto suggestion, you just learn that that's what it is. (SLT)

This means that Māori imagery can be used to express meaning for communication as well as connectedness to iwi for individual communicators. Melissa shared:

Different patterns are associated with different iwi, so you can connect people back to their people. Just like with gestures, body language, movement, dance, all of that, you can help people identify with where they're from, based on how they move, how they have their moko kauae. Definitely. That's beautiful. (SLT)

Note that she said something similar about gesture above; that is, for Māori, these forms of expression are not just communicating words or ideas, but also identity and whakapapa.

As Manawa put it, speaking about providing a core board to a kaiako at kōhanga:

She said, "He pikitia, there's a picture on it, so it shouldn't be that hard. It shouldn't be, and if it is hard, then that picture's the wrong picture for the reo." (SLT)

Focus group participants responded to the example representation of "fast" and "slow" by Aesop's hare and tortoise, agreeing that Pākehā kids wouldn't know those fables now either and that we need "culturally competent symbols". Rāhera went on to say,

We have cultural narratives now, as the narratives, so we share stories from te ao Māori worldviews with our kids. (Focus group)

The whānau participants are all literate and do not rely on symbols to communicate.

4.2.4   Subtheme: Kupu

The third element of difference between Māori and English AAC is the kupu or words. Participants stressed that the words chosen must express Māori language forms for Māori contexts. The core vocabulary and organization of language will also be different to express Māori grammar.

Māori language forms

The whānau contributors use Māori in a range of contexts: home, school, university, work, email, and internet access. Some Māori-specific contexts require particular vocabulary or word forms, including the Ratana church, informal hui, and formal occasions on the marae. Geneva responded,

> I am able to communicate Māori ideas, thoughts and concepts with my device in English. In saying that, if I were speaking within a Māori setting like a hui or wānanga, I don't think it'd be as powerful as it would be if I was to speak about Māori ideas in te reo Māori. (AAC user)

Kere was certain of this for himself. He asked Tracy to get out a book written by their friend Mauriora Kingi, which contained formal language. He pointed them out to us, and Tracy read them:

> Karanga…Tauparapapa… Mihi Atua… Mihi to the marae and wharenui… A mihi to visitors by the hosts. So there's these formal kinds of structures, and these are Te Arawa specific… and karakia. … For Kere to be truly Māori, he needs this technology [iPad] to be able to do this for him [book]. (AAC user and whānau)

Kere affirmed this strongly. For him, traditional or "tūturu" te reo Māori is preferable to transliterations, as he described using two images on the study information I had given them:

> The other, this is Māori I can tell it [cell phone]. This is right. That's wrong [core board]. … That's Māori. [cell phone]. That's not Māori [core board]. That's not Māori [iPad]. (AAC user)

When questioned, he clarified that this was not about the way they looked, it was about the words on the cell phone: "No. It's old. … That is Māori I can tell." The cell phone had a picture that said "E hara e te tī" on it, which is part of a traditional Māori whakataukī that can be interpreted as "You only live once".

Whakapapa was also discussed as an important element to be communicated via AAC. RV's whānau had to change their perspective on writing whakapapa and sharing photographs so that RV could express his whakapapa, as Leo shared:

Well for us as Māori it's not for us to write it down, you're supposed to remember it… But … what we also have to remember is that he is learning, his is a little bit different to ours, so, you know, however he expresses it. (Whānau)

Elise had seen schools where pictures were used as a visual prompt for students' maunga and awa to prompt their pepeha, but was unsure how this could carry across into high tech AAC, and Melissa explained:

Because that's so important. Being able to do your mihi, and your pepeha, know your whakapapa. (SLT)

Core vocabulary

The SLT and focus group contributors thought that the core vocabulary may need to be different than in English. For example, Deborah used the example of "off", which combines with verbs as a core word in English but is not used in this way in te reo Māori. She later reiterated, "it's hard to translate each word directly and in isolation." She, another SLT, and the focus group also spoke about the inclusion of the different pronouns for te reo (e.g., tāua, māua).

Tracy and Kere brought up the example of "say-tell" translated as "kōrero", explaining that this means "talk" with the emphasis on reciprocity and listening. Such mistranslations result in Kere feeling like Pākehā are talking, not Māori, in the way the word is used:

That's right. So where did that, who's it talking there? [Pākehā] Yep. Well, it's dumb. You need Māori to do that. (AAC user)

Contributors from each group also spoke about how the words would need to be organised differently for Māori grammar. For example, Geneva said:

Te reo Māori is a complex language, and there are many aspects of the language to consider. I imagine that there would be different categories just for the words themselves. (AAC user)

The focus group brought some clarity to this, talking about the importance of correctly expressing Māori syntax. Clare talked about the intrinsic linguistic differences that affect this:

> While in English it's easy to distinguish between nouns and adjectives, in Māori, well, some people would argue that there isn't such a class as adjectives, because … almost every word can be used as a noun, verb or adjective. (Focus group)

When shown sample core boards, the focus group preferred the Māori Core 56 (Appendix 2). Its greater accuracy indicated to them that someone who knows Māori well had made it. They were concerned that English on a Māori system could be confusing for learners who know te reo Māori, particularly due to the syntactic differences that should be represented. Rāhera spoke about the need to provide accurate sentence starters, such as "ka, kei te, he" to support accurate grammar.

4.2.5   Subtheme: Mita

Mita refers to the rhythm, pronunciation, intonation, or dialect of the Māori language (Te Aka, 2019). All participants were clear that mita or voice is a highly important element of te reo Māori AAC; in fact, as they are all able to spell to input their messages, this output was the overarching concern of the AAC users. They have each tried the Mana and Wairua voices, and shared their thoughts on these.

Voice output

Geneva efficiently summed up the inadequacy of existing voices for te reo Māori:

> My device does an extremely poor job of converting written te reo words into intelligible speech. (AAC user)

She, RV, and others Geneva knows have both worked around this by spelling words phonetically into their devices so they will be pronounced more correctly, but this is difficult and time consuming, especially as their vocabularies grow. RV's parents have spent hours changing pronunciation rules for different buttons forward and back from English to te reo:

So he's written the speech and then we've spent nights on it, making each word make sense, phonetically. And then, I dunno how you reset it, so to go back, you have to make it say "I" again, E Y E." (Whānau)

RV shared that he does use replacement strategies since his parents changed "to" for Māori pronunciation on his device:

Too. From now I use to and too. (AAC user)

Tracy's words about the importance of accurate pronunciation of te reo Māori are evocative:

So pronunciation is really important to us, to Kere, but it's important to a lot of Māori. I mean if you're not saying it right, it's like saying, "The sky is blee." It just doesn't make sense. It's not a word it's just random sounds if you're not saying it right. (Whānau)

The need for regional dialectal variations were acknowledged by several participants as a long term goal. For example, Geneva spoke about the difference of a system made by Māori:

It would also cater to all iwi dialects. However, in terms of creating a te reo voice, there may be implications regarding this. I think if the voice is based on general te reo Māori, it would be a good start. (AAC user)

Mana and Wairua voices

Geneva, RV, and Kere are among the first to have tried the new Mana and Wairua voices. They were consistent in their responses: as Kere put it, "No use for Māoris." Their concerns were in two main areas: intonation (pitch, speed, and volume) and the effect this has on meaning; and the limited number of words that are pronounced correctly. This related to Māori being an oral language.

Geneva stressed that:

A computer-based system cannot express any emotion behind a language like te reo as you cannot control the intonation, pitch and volume of the voice compared to a human voice. (AAC user)

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Jorja expressed a similar sentiment, adding to this a concern for the few words available and a desire to code switch on the device:

> You can't even change pitch, you can't slow it down or speed it up. Because it's a guy's voice recorded and not, these other voices are digitally put in there, so you can change the speed and stuff. But once you alter the guy's voice, it makes it slow [decreases pitch] and fast [increases pitch] so it doesn't. The clarity as well … it's not always the same way that you'd say it in a sentence, that kinda thing. And it's only words, it's only a few words and not a sentence. So you can't actually speak with it. (Whānau)

The focus group participants listened to Mana say "Kei te haere au ki te toa" (I am going to the shop) on Predictable, the app Kere uses. They approved the banked words but said the noun "toa" was mispronounced. Mere responded, picking up on the sense of identity through a voice:

> No that sounds, that would sound ugh. It must be hard because whoever you pick, you'd be thinking "Doesn't sound like me?" (Focus group)

In response to this limitation, Kere, Geneva and RV have each continued to use their previous voice as it is better synthesised for English. Kere expressed that if te reo will be mispronounced either way, he would prefer to use a voice with an English accent than one that sounds Māori but can't speak Māori. His motivation for this is a lifetime spent correcting the pronunciation of others:

> Kere: Yep, you know, do you want to know what? … Over there. [points to TV]. I don't like it. The worst.

> Tracy: Oh yes. Okay. … there's nothing more annoying for, for a lot of people, for Kere and others, to have the weather guy say the names of places wrong. And for Kere to say that, you know it's not a communication tool for Kere if it gets the pronunciation wrong. … Because, you know how to say it right, and it really annoys you if you've spent your entire life correcting people on their pronunciation. (AAC user and whānau)

This high value on expression through the voice seems to originate in Māori being an oral language, as described by RV's parents. Jorja explained:

> Māoridom, or with te reo, it's not just the what you say it's the how you say it. Cos there's no swear words in te reo, there's no, apart from, what, "boiling your head", there's no actual derogatory ways of saying things. So it's more in the manner that you say things. (Whānau)

Leo continued this thought:

> Our people have always been known as orators, and that's how they express themselves. This machine like you were saying is very Western. … we talk about words having a feeling in them. And you'll get the gist of what people are expressing by the way they deliver their, deliver their kōrero. So with this, it's very hard to get the gist of what he's saying, even when he speaks Māori. (Whānau)

Elise and Melissa both also spoke about Māori as an oral language and the challenge of this for establishing AAC, where writing may be seen as a barrier or where low-tech may not be valued for lack of voice output.

4.2.6 Subtheme: SLT response: Learn and use te reo Māori

Given the high value participants placed on te reo Māori, there is a clear message to SLTs: Learn it and use it. This is both so we can implement te reo Māori AAC, and also as a responsibility under the Treaty of Waitangi.

Rāhera began the kōrero in the focus group by asking if speech-language therapists have a te reo Māori programme:

> That would be the first feedback I would give... for speech language therapy, because it's kinda compulsory for primary teacher trainees. … It's actually part of Treaty relationships, part of te Tiriti. … So I'm wondering why it would not be part of the Treaty relationship where you, yeah that it's part of any special ed services actually. Supporting our, our tamariki. (Focus group)

Later, Mere was concerned when I tried to demonstrate how to model language with the te reo Māori core board:

> So that's one of the issues, I reckon, straight away with these core boards. ... Is that the person, the teacher using it, you have to know te reo Māori. (Focus group)

An SLT also spoke about the challenges of Māori-speaking tamariki receiving intervention from SLTs who do not have te reo, which include making, changing and implementing resources:

> It's alright for me because I can use my te reo to adjust things or I can record things for people, but the majority of reo Māori speaking kids out there probably don't have a speech language therapist who speaks te reo. (SLT)

Beyond learning te reo and honouring the whānau language choices, SLTs should feel encouraged to use it in practice. One SLT found that kaiako have responded well to her learning and increasing her use of te reo Māori in their kura and kōhanga. She introduced AAC in a staff meeting in a bilingual school, and told them she was unsure of how to use correct sentence structures on it, and:

> One of the kaiako got up and had a go at using it in front of everyone to get a message across, so that was cool. And they were, they said at the end they were just really, they were happy that there were resources out there, in te reo. (SLT)

As seen above, SLTs consistently spoke about the greater receptiveness of kaiako when SLTs recognised te reo Māori as the language of the tamaiti and attempted to provide appropriate resources in te reo.

4.3   Theme Three: Towards te reo Māori AAC

The understanding formed by addressing these prior questions becomes the pathway to creating meaningful and appropriate systems. This considers relationships, roles, and, once these are established, resources. As well as learning and using te reo Māori, participants spoke about developing bicultural competence and confidence for working in kura and with whānau Māori. Many of these

were related to orientation and attitudes that support relationships and recognise differences. For this theme, the SLT response is contained within each of these subthemes.

4.3.1   Subtheme: Relationships

The first element of moving forward to create te reo Māori AAC is effective relationships. Participants described an approach based on whānau kotahi or working together as the most effective for both co-creating appropriate resources and delivering intervention. Relationships were also described as a way of receiving professional support in areas of weakness.

Deborah described the importance of working together to co-create systems, each inputting from their area of knowledge, like this:

> I think it could be a co-constructing thing that could work, you know, people like you who've got the knowledge and other people who've got knowledge of AAC and then… someone out there who is actually using it, in the Māori speaking community. I think it would have to be sort of a combination of people who have got the knowledge from, and experience from all the different facets of creating something. (SLT)

Relationships with whānau

SLT participants expressed that having a strong relationship with whānau means that they will both give their input to personalise and raise their concerns about AAC systems. Manawa talked about seeking out and responding to such feedback to maintain trust and demonstrate respect for elders:

> The kuia and stuff are real, "He aha tēnei te kupu", like "That's not the right kupu that we should be using with our moko." And it's like, "Cool, scratch it off, what kupu do you want?" Fix it then, because if you go, "Oh", and avoid their sorta, not addressing their raru then, they can be very stubborn. They can be very, that trust will be broken like that. (SLT)

She shared an example of a time when she felt that she needed to mediate between a whānau and an SLT who brought in an English core board:

Cos the trust was lost straight away. Straight away, as soon as that lady brought that in, mum doesn't wanna work with her. And I'm like, "I think she means well." Cos I'm just like, "The child has so much potential. We, we, we need them. And, and, they're the ones that have the money! (SLT)

Beyond establishing systems, AAC intervention is also best delivered whānau kotahi for tamariki Māori. Manawa also described the effect of a worldview clash she observed that she believed affected her supervisor's intervention efficacy with a Māori child. She gave an example of how she would change this to practice therapy whānau kotahi:

I'm always telling the whānau it's, it has to be a team thing. It has to be a whānau kotahi, who can we pull in, is there any older sibling that we can work with? … Because that whole whakaaro too … is that "Oh no but we don't want to be putting pressure on the sibling because, it's just not okay" … So I'm like, "mm, no, disagree" ... And if I see that there's a teenager that has the ability, oh I'll totally jump on that. "Oh hey babe... Oh just, can you just have a look?" … What do you mean, "Don't get them to help," cos then it even might spark something in them to go "Oh, I'm good at this." (SLT)

Whānau appreciate when SLTs do get the relationship right, as Leo affirmed:

I know for RV's SLT, she bends over backwards, to make sure that RV can use, so we can make that thing work in English and Māori… She's, yeah she's, she's a real pusher, she'll push and push and push… I think she sees something in RV that, yeah he could go further. (Whānau)

Relationships with kaiako

SLTs also spoke about the importance of time spent building relationships with kaiako. This gave space for them to initiate requests for interventions and helped establish trust and engagement. Melissa's approach, spending time in kōhanga reo before there were any referrals from there, resulted in a "terrible" case load but opened windows for kaiako to initiate discussion about students:

I build that relationship and then I wait for them to initiate. … I go in with love, yip yip, at the base, at the bottom of it. Go in with love, build the relationship, love on them, and wait. Wait. And you, you can't do that in a ***** role really, without the right permission, because your cases keep coming at you, and you've got to close and you, your time needs to be distributed in so many ways. (SLT)

This way of working was acknowledged by other SLTs as necessary but not easy within the limitations of their service. Elise also spoke about how working in Māori medium education is slower because of the time taken to establish relationships. Deborah spoke of a nana and a kaiako who had come to her asking for visual communication systems for two different tamariki, each having earlier turned these resources down:

I think it's if whānau or kaiako come to me and ask for an AAC resource it's more successful than if I go to them and initiate it. (SLT)

Relationships with colleagues

SLT participants also described professional relationships that help support their practice. One SLT was concerned that she did not have the skills in te reo Māori me ngā tikanga Māori, and another that she didn't know enough about AAC. However, professional relationships with other SLTs, kaitakawaenga, and TalkLink were suggested as ways to work around this. As one SLT put it, "with our powers combined" she and her Māori colleagues could create resources that neither could appropriately create alone.

All the SLTs stressed the importance of therapists who have expertise in AAC, especially TalkLink, being involved in creating te reo Māori AAC. Manawa spoke about how Māori SLTs could provide tautoko or support for these clinicians as they learn to work with Māori families. Otherwise there can be a lot of pressure on Māori SLTs:

It's just like, "Let's give it to the Māori speaking SLT…" And, I see that but I think we need to be giving other people the opportunity to be growing in that area too, because we can't save everybody, and then it gets too hard for us, the pressure's on us on our own. (SLT)

Two therapists talked about the support provided by kaitakawaenga. Their different perspectives seemed to be connected to their confidence in te reo and te ao Māori as well as their role. One also acknowledged that kaitakawaenga may be at different stages of their own learning. One participant did not find their support helpful when she was working as a teacher:

You really need someone that understands the process … Because you can have a kaitakawaenga that, who's just Māori. You know? And then they don't know anything about rumaki and kura, and how we have to run things. (SLT)

In contrast, as an SLT working in Māori medium settings, another found kaitakawaenga support helpful:

Cos they can speak more Māori than me, but massively because of the relationships, like they often know people working there. And they always do a really good job of, yeah supporting us and kind of selling us. (SLT)

Having appropriate support may help SLTs avoid damaging relationships because of misunderstanding whānau structures about decision-making:

It's different. Very different in our world. Where everybody's raising this child, not just mum and dad. … it's like, "Oh, you just made a whole lot more work for everybody else around", because you're trying to still keep that relationship with them, because, it's for the tamaiti aye. (SLT)

To support this as a Pākehā, Melissa encouraged me to find:

A kaumatua alongside you to wrap around you on this, that would be, that would be awesome. Because it sits well in Māoritanga, when there is that bigger tuakana-teina relationship. (SLT)

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She suggested how to develop language and relationships to support this work:

> I would encourage you to hang out in a kōhanga, a kura, or definitely a marae, link in, link in
> with an iwi and get the feel, because you'll, the language is so beautiful, but it's not just the
> spoken language, it's the songs, it's the mōteatea, it's karakia, it's whakataukī. It's so much
> more. So just immerse yourself in it. And get the heart of it. (SLT)

This is because relationship building adds to the mana of the client:

> That's huge, is building that relationship… That's relationship building which is huge in
> Māoritanga. So, cos it breaks down so many barriers when they know that you are there to
> help and not judge, and not try and take away any of their mana, you're just, you're gonna
> add to it. (SLT)

4.3.2   Subtheme: Roles

This subtheme is about the many different people and groups who have a role to play in creating te reo Māori AAC. Firstly, Māori must contribute to best express the worldview behind the words; in particular, Māori elders. Secondly, AAC users and their whānau should contribute from their experience. The role of Pākehā was particularly expressed through the participants' responses to me doing this research. Finally, based on the identified justice issue, some participants spoke about the responsibility of government services.

Māori elders

It was evident in every conversation that Māori should be involved in creating te reo Māori AAC tools. Behind this recommendation is the fact that te reo Māori expresses te ao Māori, so seeing the world from this perspective is essential to correctly representing the language on an AAC systems.

Kere's perspective was that Māori know what works for learning te reo Māori, using the example of Te Ataarangi. He also observed that the AAC systems he has seen express Pākehā voices and that it looks as though Māori are still being excluded and separated from their language:

What's the problem? You don't want a Māori, you don't want Māori. … Because what? Said what? You said? Where? What's the problem? [Writing: Wai 11] That's the problem. (AAC user)

For Manawa and Melissa, it was important that the language for AAC is chosen or informed by Māori elders to acknowledge their deeper understanding of what lies behind the language and respect their mana. Manawa challenged the western worldview that prioritises expertise and education, and the consequent expectation that she should be responsible and appropriate to do this work as a Māori SLT:

All I know is, it wouldn't feel right for someone like me to just come out and say, "Yup. This is the way that it should be," because, even with, with our reo and our rumaki and stuff we still have to ask our kaumatua and stuff, so why is it that people feel that an SLT with te reo can do it. Is that the right thinking space? Is that a, just a, I dunno, English influence space? "Oh but if they're an SLT, and they speak te reo, they should have the skills to do that." It's like, "Yeah we probably do, but do we want to? And do we wanna even go there?" Because that would be whakaiti of our tūpuna, of our kuia and our koro that might have a different influence. (SLT)

Demonstrating respect for the input, decisions and opinions of elders provides cultural safety supports relationships, and helps with buy-in:

When you have those kaumatua and you have other people around you, it makes you kind of safe. Not, not that you're unsafe, but for, for Māori who don't know you, like, "She's all good" yip, you know. You need someone who's like "kei te pai." (SLT)

Anything that makes her go … "That's been acknowledged, I'm gonna try and use this thing." (SLT)

Participants perceived AAC users and their whānau to have an essential role in contributing to the establishment of te reo Māori AAC. This is an expression of whānau ora and provides the necessary insight to make it truly relevant to the needs of the end user. This includes input to designing systems in a wider sense and contributing to individualising each user's communication system to local dialects and individual word preferences.

Deborah addressed the need for input from AAC users:

> I think something that's come from the community, from the AAC community and Māori AAC
> community probably would be the best way I think. (SLT)

AAC users' input is also necessary for understanding the specific wants and needs of AAC communicators. Leo spoke about how they try to gain RV's perspective and adapt for his needs, and gave an example of how they have done this despite their reluctance to share photos and write whakapapa:

> We have to sorta learn to make exceptions, because that's how he communicates, is visual.
> And if, because that reads out what he wants to say, it's us getting past some things (Whānau)

Jorja explained that this is because photos of elders who have passed on are sacred in the wharenui, and making space for this with the technology can be a challenge. Leo continued,

> But it's a story in itself, you know, those photos are a story. But it's just giving him the
> opportunity to be a part of that story and being able to express it how he has to. … Not like
> we're making exceptions but we can't, just because it's something we hold sacred, we can't
> deny him the way he wants to express his whakapapa. (Whānau)

Pākehā

Pākehā involvement was welcomed within supported relationships with Māori. Participants considered Pākehā responsibility to Māori under Te Tiriti and the specific roles of speech-language therapists. This was often discussed with reference to my position as a Pākehā SLT and researcher.

Kere and Tracy explained the different roles, obligations, and responsibilities of Māori, Pākehā, and Tauiwi under the Treaty of Waitangi. An implication of this is the partnership role Pākehā have in this kind of work. Tracy helped to clarify Kere's explanation:

> So there's Tauiwi, that's everybody, Pākehā, which is the descendants of the first settlers who came under the auspices of the Treaty and Māori. There's only three and they have very distinct obligations and responsibilities. (Whānau)

Kere concluded,

> Māori and Pākehā, the same. And them [Tauiwi] are under it. (AAC user)

Given the need and the lack of Māori SLTs available, Manawa encouraged my research:

> We need more people like you doing it, because unfortunately we don't have the people with the passion I guess, or the drive to do it that do speak te reo, or the ability, the capability … no time for doing additional study. … It's good that you're doing it, I love kaupapa Māori research, I make time for it. Cos it means a step forward for our reo, and for our process of revitalising it, and our babies, our rangatira o āpōpō [leaders of tomorrow]. (SLT)

This sort of encouragement was expressed by all participants, often later in the interview or as we chatted before I left. As for Manawa and Kere, this was based on the few Māori SLTs available and the participants' understanding of the role of Pākehā in partnership under the Treaty of Waitangi. One encouraged:

Don't let anybody else say, "You don't, you shouldn't be doing this," or "You, you're not, it's not okay for you to do this", because this is what God's put on you to do. And if you don't do it, who will? So just, go with that. (SLT)

SLTs had differing perspectives on the way in which Pākehā SLTs should approach relationships with Māori:

For me it comes back to the relationship stuff … you know I'm always honest … go in there and like, "I'm Pākehā and, you know, you just tell me what's what". They're like, "Oh but you speak te reo" and I'm like, "Yeah, yeah but, still Pākehā." So I haven't grown up in te ao Māori either … I'm immersed in it with my whānau now… As long as you're straight up about where you're at and where you're from, I think that's the most important thing. (SLT)

Another responded to this kind of approach:

I've met so many SLTs that aren't Māori but they try … they make a point of saying, "Oh, oh I'm not Māori", don't wanna, "Just, just be careful I'm not Māori," … I'm like, "You know, you don't have to start off with that." It's almost like you think I'm going to challenge, well, the way that I've grown up we don't do that, it's not how we roll, we don't challenge how Māori a person is. (SLT)

On the other hand, she spoke about how an SLT tightly holding onto their expertise does not give much flexibility for working with Māori:

There's this whole whakaaro that you do this master's degree and you have all this skill and rah rah rah. So, mm. You got no skills if you don't know that you listen to the oldies. (SLT)

Kere also welcomed the opportunity to share his whakaaro about this topic. In addition to this encouragement, the whānau participants all asked me, in the words of Geneva's mother: "So what are you going to do with the research once you've completed?" There was a strong sense of obligation to carry through to create a resource to make their contributions count.

Geneva and Kere believed that the Government and government agencies also have a responsibility for this work. Geneva asserted:

> Definitely Māori funding bodies like Te Puni Kōkiri and Te Mātāwai. I think government should also have a key role in the development of reo Māori AAC if revitalizing te reo is something they are passionate about. (AAC user)

Kere shared a similar perspective, as Tracy helped me to understand:

> So he's saying that the Māori Language Commission have authority over some of this stuff. Over transliterations and over, and, we believe, you [Kere] believe, over the development of this work. That the Māori Language Commission has authority over it, and that they have a role to play, and they have some obligations around the development of this work. (Whānau)

For Kere, who strongly affirmed Tracy's words, this comes out of Wai 11, as the Māori Language Commission was established after this.

All in all, Kere summed up the theme of roles:

> It's easy isn't it? It is! Get Māoris! Tell Māoris. Not fucking Pākehā! (AAC user)

4.3.3   Subtheme: Resources

Resources – though the intended outcome of this research – was in fact the final subtheme of the analysis. Any recommendations for resources are built upon the previous ideas. However, participants did share a few specific ideas for creating resources, suggesting ways to create a Māori voice, some novel ideas for representations and access methods that AAC users would require.

SLT participants shared that they and the whānau they work with want te reo Māori resources now – that they don't have time to wait.

I was like "Oh, I dunno if it's perfect whaea" but she was like "No, just give it to me and I'll

change anything I need to change I just need something to get going, I don't wanna wait." …

She didn't really have the time to wait around for us to talk about it and, trial it … She always

talks about how there's a lack of resources for her boy. (SLT)

I was like, "Okay cool, I just need something now." I'm not about waiting however many

months. "Oh no the child needs something now." (SLT)

Additionally, whānau, SLT, and focus group participants all agreed that whatever language system or

vocabulary is chosen, it must be able to grow to meet the changing needs of the user across their

development and lifespan and be flexible enough to be adapted to the whānau's wants or needs.

Voice

Participants had several practical suggestions for te reo Māori voices that can pronounce any te reo

Māori text accurately. They also wished for flexible intonation to express meaning. Kere spoke about

the simplicity of pronouncing te reo Māori due to the direct letter-sound correspondences, comparing

the example of "Ōtautahi" versus "Christchurch". Clare suggested programming phonemes to be

segmented and blended by the computer software:

Besides having those core words, if they'd done the sounds, you know the individual

phonemes, then they would be able to get "toa", with the 't' and the 'o' and the 'a'. (Focus

group)

The focus group had several additional ideas about creating accurate voices. Rāhera had a practical

response to voice banking: "Just each year, another fifty words." Mere suggested partnering with the

Te Aka dictionary and downloading their files, something a colleague had done for a different project.

Representations

The speech-language therapists suggested some novel representation ideas that might be more

authentically Māori. Elise spoke about a video resource that takes a Māori perspective on ASD and

likens visual supports to a kaumatua using rākau whakapapa as a physical prompt for their whakapapa. She considered other Māori imagery:

> I'm thinking of like, tā moko and whāriki, and how those kind of illustrate a story, make it visual, but I don't know. It would be cool if there was something really Māori that was AAC. (SLT)

When I shared this idea with Melissa, she spoke about moko kauae:

> It's a wairua thing, so it's soul connected with soul and that's the story. Which if you think of AAC and what I said before how it's individual, and whānau based, it's their story, it's the same with a moko kauae, the same with tukutuku panels, the same with whāriki, anything, they're all stories. … this is where this can get really spiritual, is because you're developing something that is so personal, so intimate, because communication is massive, and it's exactly the same as any tukutuku panel, any whāriki, any tā moko, anything it's personal, and it's somebody's own journey. So absolutely, you could, you could incorporate that. (SLT)

As mentioned earlier, the focus group also spoke about using Māori emojis or Emotiki® and basing symbols on pūrākau Māori/Māori stories.

Participants also considered the kinaesthetic element of language learning. Kere spoke about Te Ataarangi as "the best" form of language teaching, and communicated his desire to do this for rehabilitating his te reo Māori. Rāhera mentioned the gestural method for language learning, in which you use your hands to learn and indicate tenses, as a possible model for pictorial representation of sentence starters such as "he" and "kei te", as well as using gestures to support language learning. Melissa also talked about the naturalness of tactile symbols to Māori.

Access methods

It was apparent in each discussion that access methods need to be available to suit many different types of communicators. The AAC user participants demonstrate the flexibility required of the

systems: All three use spelling, Geneva finds MinSpeak best for more rapid communication, RV began

with head switches and now uses eye gaze and is waiting to try blink access technology, and Kere uses

his iPad to spell words to prompt or repair communication breakdowns. The SLT participants all spoke

about core vocabulary boards, and this was the main topic discussed with the focus group.

Deborah put it clearly from an SLT perspective. Her desire is that tamariki using te reo would have:

> As many options as children that speak English have. That there wouldn't be any kind of
>
> discrepancy in what I can offer to a child speaking English and a child speaking te reo or
>
> whānau, te reo Māori speaking whānau... both having some low tech options or high tech
>
> options. (SLT)

The focus group were interested in the portability and potential for increased buy-in of high tech

systems. Clare asked about the pathway from low to high tech, and when I showed the communication

apps to the focus group they liked the portability of this option on a cell phone. One SLT was concerned

that without high tech available, some of her students will run out of communication options. Another

SLT wondered if high tech options might be popular:

> I was thinking about how Māori is an oral language, so maybe that doesn't fit as well as using
>
> something else... You might get more buy-in if it was a high tech. (SLT)

Melissa also suggested PODD, because it allows for an extended vocabulary set with different context

specific vocabulary. It also allows for sentence generation and supports literacy. When I showed the

PODD to the focus group, they thought it was "overwhelming", but did like the pragmatic sentences

and starters for "full set phrases".

Two participants introduced novel access methods. Leo spoke about the AlterEgo (Kapur, Kapur, &

Maes, 2018), a head-mounted device that can process silent instructions and "actions on the words

he thinks". He thought this would "just absolutely change it" for RV, as his eye gaze system is effective

but slow. Mere spoke about a former student who was working on gestural computer access "like in

Minority Report"; while she was referring to him as a possible future collaborator, it relates to the gestural preference expressed by some participants earlier.

Rāhera was pragmatic about the resourcing need:

> All that it would need would be someone with some money to ask someone to create it. (Focus group)

4.4 Visualising the findings

This research began with questions about how to go about making te reo Māori AAC – what it would look like, what language would be on it, and who would be involved in creating it. However, the stories, experiences, and whakaaro of the contributors were more focused on backgrounding questions to this: Why is this resource needed? What does it need to do? That is, the creation of te reo Māori AAC is built upon a foundation of understanding need and language function.

These findings can be represented using a poutama. The poutama is used in tukutuku, whāriki, piupiu, and other Māori art forms as a representation of stepping up into knowledge or wisdom. It is said to communicate the story of Tāne-o-te-Wānanga, who ascended to the heavens to receive the three kete of knowledge; thus, it has spiritual and educational meanings (Te Aka, 2019). It is now often used in representing progressive levels of practice, understanding, or development in educational, business, and community contexts, for example by Brewer et al. (2016) and Macfarlane (2012). This structure is appropriate for representing these findings because it clearly visualises the foundational importance of the right of people with complex communication needs to speak using accurate representations of te reo Māori.

How? Towards te reo Māori AAC
- Relationships
- Roles
- Resources

What language? Te reo Māori
- Te ao Māori
- Interactions
- Symbols
- Kupu
- Mita

SLT response
- Work in relationship to create and provide relevant resources

Why? Communication access justice
- Access
- Choice
- Rights

SLT response
- Learn and use te reo Māori

SLT response
- Acknowledge and critique attitudinal barriers
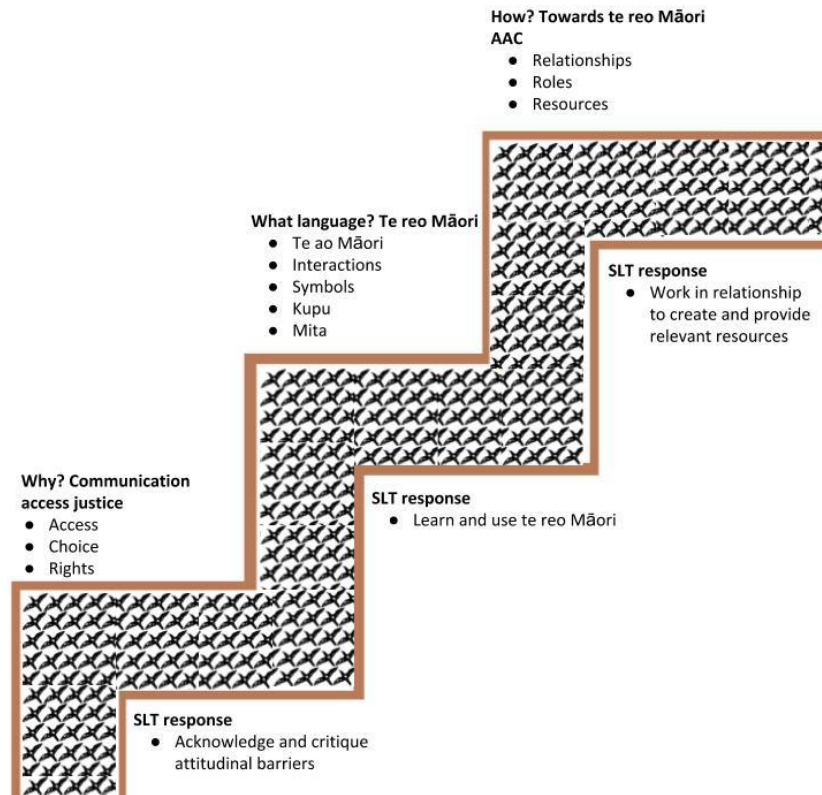
Figure 4: Poutama pathway to culturally located te reo Māori AAC.

There are two layers to the poutama. The top layer presents the three main themes and eleven of the thirteen subthemes, describing the pathway towards establishing te reo Māori AAC resources. The second layer represents the journey of the speech-language therapist, first recognising and critiquing their attitudinal barriers, and then learning and using te reo Māori, the remaining two subthemes. The final step for SLTs is to ascend the poutama in to work with others towards evidence based, culturally located and accurate te reo Māori AAC resources. Deborah expressed these steps in this way:

> You want something [resource] that all SLTs can use, but they need to have a little bit of understanding of te ao and te reo Māori, that they can't just say, "Here you go, this is something you can use." (SLT)

This following chapter discusses this pathway, starting with the foundation of communication access justice and then engaging with different ways that te reo Māori could be accurately represented via AAC. It reinforces the importance of relationship in creating these AAC resources.

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5. Discussion

Ko te kai a te rangatira he kōrero.

The food of chiefs is dialogue.

The aim of this study was to support the establishment of te reo Māori augmentative and alternative communication (AAC) systems. This chapter considers the findings in relation to the literature to determine a pathway towards culturally located te reo Māori AAC. Several new strands are woven in as a response to ideas introduced by the participants.

The first section explores the foundation of the poutama pathway to culturally located te reo Māori AAC (Figure 4): Access to te reo Māori is a basic right for communicators who use alternative and augmentative forms. This addresses the first research question: Why are te reo Māori AAC resources needed? The second step of the poutama addresses the second research question: What does a te reo Māori AAC system need to do? Te reo Māori AAC needs to equip users to communicate using Māori ways of learning and interacting, imagery, words, and voices. With this as the goal, the second section of the discussion explores ideas for creative thinking about AAC for Māori. This addresses the final two research questions together by exploring how to develop te reo Māori AAC in relationship with others, the forms it could take, and the sources that could be drawn on. These suggestions are conjectural rather than prescriptive and invite readers to engage their imaginations in thinking about te reo Māori resources that represent te ao Māori.

This exploration is followed by a more concise set of clinical recommendations that may support SLTs to apply the research findings and create and implement te reo Māori AAC with clients. It then reviews the project to critique both its kaupapa Māori and its scientific limitations and turns to look forward by making suggestions for future research. The thesis concludes, as Smith (2012) suggests, in hope: anticipating the establishment of te reo Māori AAC to support culturally located communication for Māori with complex communication needs (CCN).

5.1 Why are te reo Māori AAC systems needed?

Te reo Māori AAC systems are required to grant communication access to justice to a multiply marginalised group – who yet appear multiply protected by intersecting laws and policies. While the original research aim was to establish a pathway to establishing culturally located te reo Māori AAC, the participants first expressed the injustice of not having the means to communicate their reo. The ways forward to create resources, explored at the top step of the poutama (Figure 4), cannot be separated from the foundation of recognising why these resources are required. This has a strong correlation to the "proposed hierarchy of SLT skill and resource acquisition" presented by Brewer et al. (2016, p. 78) which also uses a poutama to indicate the progressive nature of this journey for practitioners. The poutama presented in this research (Figure 4) shares two steps with that in Brewer et al. (2016): the foundation and the apex. As discussed, Brewer and colleagues perceived that understanding why culturally and linguistically specific service is important entails engaging with the situational, structural, and attitudinal injustices and access barriers experienced by Māori receiving SLT support (2016). In this research, participants expressed that having no tools to express te reo Māori was an access barrier that resulted from such systemic and attitudinal injustices. As Brewer et al. (2016) found, creating resources is the final step, attained only after developing understanding, practices, and relationships for working with Māori. Educational researchers also emphasise the centrality and priority of whanaungatanga in working with and for tamariki and whānau Māori (e.g., Berryman, 2015b; Fortune, 2016; Macfarlane, 2012).

In insisting that SLTs and service providers recognise the injustice of Eurocentric ways of working and demonstrate value for Māori ways of knowing and doing, this research is in concordance with the existing literature. It too critiques the failure of the system to deliver services for Māori in ways that are effective for Māori: As Kere said, "Māori knew… It's the best." These findings extend the evidence base by demonstrating that SLTs learning to recognise the injustices that exist in their own attitudes, systematically, and in the wider cultural climate of Aotearoa New Zealand is a priority not only for Māori with acquired communication disorders following stroke and those receiving Special Education

(SE) support, but also for Māori who use AAC to communicate. Further, advocating for language access rights for all their clients is a responsibility of SLTs to support just access and participation.

5.1.1   Justice: Fundamental and human rights

AAC users experience a breach of their fundamental human rights and of their rights as Māori under the Treaty of Waitangi if they do not have access to tools they can use to speak te reo Māori (CRPD, 2007; DRIP, 2007; Treaty of Waitangi, 1840; UDHR, 1948; Waitangi Tribunal, 1986). For this reason, te reo Māori AAC systems are required. Awareness of the injustices experienced by Māori as a result of colonisation, especially those related to their reo, underlay the conversations that informed this research. Participants introduced terms like "inequity", "rights", "colonisation", "Treaty partnerships", and "Wai 11" into our conversations as they spoke about the limited availability of supported communication options. It was evident from the choices made by all participants including AAC users to learn and use te reo Māori that this connected with their identity as Māori.

RV's mother shared the story of language transmission in their whānau because of the oppressive language policies of the 20th century. She identified that, for her mother, returning to learn te reo Māori as an adult meant reconnecting to her roots, that she herself "missed out" by not learning te reo, and that RV is "the chosen one" whose ability and choice to use the Māori language are connected with his wairuatanga and his participation in Māori culture. The inability of RV's communication device to pronounce his preferred language in a way that can be understood directly contravenes Article 30 of the Convention on the Rights of the Child (1989), which affirms his right to enjoy his culture, profess his religion, and use his language – all of which are done through te reo Māori. It also ignores the articles of the Declaration on the Rights of Indigenous Peoples that ensure linguistic and cultural participation of indigenous people with disabilities (2007, art. 11, 22). Not having a way to communicate increases the marginalization of disabled people (MSD, 2016, p. 15).

Kere was explicit about the relationship between this injustice and Wai 11 (Waitangi Tribunal, 1986). When I told him about the kuia I had assessed in English rather than te reo Māori, he explained that

Wai 11 was for such moments: that in Wai 11 Māori had been promised language equality (Waitangi Tribunal, 1986). He questioned why this was still not experienced as a reality for those who need to use AAC. Geneva anticipated the time when a te reo Māori AAC voice would "finally" enable the voices of Māori who use AAC to be heard in their communities, recalling Hickey's (2013) hope that indigenous communities could come to recognise the importance of empowering their disabled community members in order to achieve the development of indigenous culture and identity. In the meantime, however, Kere cannot lead karakia or whaikōrero with his device, RV mispronounces his preferred language, and Geneva speaks with less "power" in hui and wānanga. The absence of good quality communication systems that can speak te reo Māori is an injustice that prevents enjoyment of culture, language, and religion, that undermines the promises of Wai 11 (Waitangi Tribunal, 1986), and that prevents Māori with disabilities from contributing their voices to the issues that most relate to them.

Right to recognition of language choice

Failure to respect the language choices made by whānau whose children have special educational needs (SEN) is a more specific injustice. Many whānau experience pressure to learn English from SLTs who do not recognise the value or usefulness of te reo. This is consistent with previous research – and inconsistent with Aotearoa New Zealand's educational policies (e.g., Ka Hikitia, MOE 2013a) and the UN declarations and conventions.

As Manawa said,

> When they say bilingual people interpret that as English, okay for English to be used. Te reo must be learnt by osmosis not through the process of communication.

Contributors to this research connected clinicians prioritising English with several different factors: their greater concern for the child's participation in an English speaking world (as in Yu, 2013), their ignorance about the valuable place of te reo to Māori, and, as in my experience, simply their inability to provide Māori language intervention and resources. Against this Eurocentric recommendation, they spoke about the right for Māori with disabilities to participate and contribute in language revitalisation

and in their Māori communities via te reo Māori. It was as simple as expecting that whānau and kura language choices should be honoured. As Fortune found (2016), and despite expectations, perhaps, clients may have other priorities than communicative competence in the English-speaking world. As discussed in the literature review (Chapter 2), parents nationally and internationally have experienced similar pressures and lack of understanding and effort from therapists (e.g., Fortune, 2016, Jegatheesan, 2011; Yu 2013). This conflicts with internationally recognised best practice (Hughes, 2018).

This kind of recommendation fails to perceive the value of te reo Māori. It does not look at a child holistically or in their cultural context. Who benefits from this? Certainly not the whānau – as Manawa (SLT) put it, "They're the ones that suffer, not the lady that just brought in the English core board." Denial of access to the home language can increase a child's experience of disability through further marginalisation from their communities, families, and cultural or religious participation (Soto & Yu, 2014; Jegatheesan 2011; McNamara, 2018). A just response for a speech-language therapist is to provide intervention in te reo Māori for a child in a reo Māori speaking home as a matter of best practice, both for linguistic growth and psychosocial wellbeing (McNamara, 2018) For some individuals with complex communication needs (CCN) in Aotearoa New Zealand, this means te reo Māori AAC is required.

Recall the first proposed outcome of Ka Hikitia, NZ's Māori Education Strategy: "All Māori students have access to high quality Māori language in education" (MOE, 2013a, p. 12). This so they can achieve educational success as Māori – an implicit association of Māori identity with Māori language that is made explicit in Wai 11 (Waitangi Tribunal, 1986). The CRPD (2007) legislates for the right of disabled people to support for their linguistic identity and the State's obligation to provide education and assistive communication technology in languages and modes that support this. As state-employed service providers, Ministry of Education and Ministry of Health SLTs ought to be able to provide such tools for te reo Māori. This is certainly the expectation – and not the experience – of the participants

in this research. The present reality is that if whānau and kaiako want resources in te reo Māori, they must set about creating their own. Providing people with te reo Māori AAC would restore to Māori who use aided communication their rights as the indigenous people of Aotearoa New Zealand.

Right to access to immersion education

Māori medium education settings have a kaupapa or policy of inclusive education, expressed in their commitment to honour all people and respect the uniqueness of each child (MOE, 2010). Other researchers have celebrated the inclusiveness of kura kaupapa Māori (e.g., Berryman, 2015a; Berryman & Woller, 2013; Fortune, 2016). However, this research has found that kura kaupapa Māori and kōhanga reo are not prepared for tamariki with CCN and may try to exclude them.

Geneva and RV's mothers each spoke about their child's exclusion from kura kaupapa, and SLTS in the study had observed this for other tamariki. This conflicts with the inclusive philosophy – in fact one SLT contributor perceived it as "not Māori!" An extract from Fortune (2016) can support understanding of why children with CCN may experience greater exclusion. She wrote that the individualisation of every student's programme and the tuakana-teina approach in kura kaupapa Māori meant that there was "at times, (a) total lack of awareness of any particular differentiation towards a child who happens to have special needs." (Fortune, 2016, p. 179). The phrasing highlights the difference: The disabling effect of a complex communication disorder that requires people to express themselves via AAC presents as more than just a "happening". Specialist support and communication technology are necessary to significantly reduce this disabling barrier. Without these things, inclusion and participation at the level of the person's cognitive ability, which may be significantly above their physical and communicative ability, are simply not possible. As at least 51% of instruction must be delivered in te reo Māori in a Māori medium education setting (Education Counts, 2019), a child whose device cannot pronounce te reo may be well excluded from participation by the Māori language kaupapa of the school. The simple solution here for cognitively able, literate AAC users who know te reo Māori is to synthesize a voice that can pronounce what they can write.

The limited SEN knowledge of kaiako in Māori medium education settings was another reason parents may feel they have to choose between rumaki reo and special education support. This appears to be a choice faced by the whānau I worked with. In the present study, Manawa strongly asserted that kaiako in Māori medium education settings have insufficient training in special education and communication support – sometimes they do not even receive appropriate training from SLTs on how to use specific systems issued to their students. Her suggestion to use core vocabulary boards as a visual and pragmatic support for all new entrants in rumaki reo classrooms is a simple solution that may provide support for second language learners and those with language learning difficulties alike without increasing marginalisation. Fortune (2016) and Bevan-Brown (2015b) have also written about the need for professional development for teachers and kaiawhina to support their use of these resources within the context.

The exclusion of children with disabilities from bilingual education has been identified as an intersectional gap (Cioè-Peña, 2017) that is not unique to New Zealand. As seen, it has been documented in literature across the globe and from various perspectives, including educators, policy makers, and families (e.g., de Valenzuela et al., 2016; Kangas, 2017; Steeley & Lukacs, 2015; Yu, 2013). A child's disability or special educational needs consistently drives the choices made by schools, regardless of the parents' priority, even when the child thrives in bilingual education (Steeley & Lukacs, 2015). This failure to support the realisation of cultural and linguistic identity for children with disabilities ignores that this may be preferred to their disabled identity (e.g., MSD, 2016).

Māori immersion education settings are not presently well prepared for children with CCN, especially those who require augmentative or alternative forms of communication. Thus, as this study joins others in calling for increased cultural competence among SLTs and special education providers, it also extends the invitation to those training teachers for rumaki reo to provide more specialist knowledge to support them to integrate tamariki with CCN into their classrooms. However, without te reo Māori

AAC, learners with CCN will remain unable to adhere to the Māori language kaupapa of these immersion settings: This remains a pressing issue.

The remainder of the discussion will consider the research linked to establishing specific elements of AAC systems that express different languages. However, the underlying story this research tells is the desire for communication access justice. This affirms and extends the stories told by Brewer et al. (2016), Macfarlane (2012), and Fortune (2016).

5.2   Exploring the pathway to te reo Māori AAC

This section moves forward to explore the 'how' and 'what' of creating te reo Māori AAC. It engages with the remaining three research questions, discussing a pathway to establish appropriate resources based on their required function of expressing te reo within te ao Māori, the collaborative approach needed, and potential solutions. These questions are addressed by the themes at levels two and three of the poutama pathway (Figure 4).

5.2.1   What does te reo Māori AAC need to do?

Te reo Māori AAC systems need to express Māori language as used by Māori speakers. They need to communicate te reo Māori as it emerges from te ao Māori. They need to look like they were made by, with, and for Māori, and they need to speak with Māori voices. This means that to create resources for te reo Māori AAC, Māori sources need to be drawn on. As Brewer et al. considered, creating resources is the final step in a process that includes understanding the need as a matter of justice and working together in effective relationships with people with different areas of expertise to inform good quality resources based on culturally located evidence (2016).

Recall that competent AAC communicators receive language through one mode (speech) and express themselves via another (AAC) (Light & McNaughton, 2014), and that communication is culturally located – that words and interactions express worldview and shape identity formation (e.g., Cheatham & Hart Barnett, 2017; Soto & Yu, 2014). A closer relationship between the way the language is typically spoken and its representation on AAC will support easier and more culturally located communication

for its user. One can differently understand and express tikanga Māori through te reo Māori, the language that informs, mediates, and is essential to Māori culture (Mead, 2003; Waitangi Tribunal, 1986). Thus, te reo Māori AAC must be based on evidence that is tikanga Māori.

This seems a simple answer to the question that so significantly reoriented the data analysis. However, it will be seen that it determines the focus on Māori forms, functions and sources in considering potential resources.

5.2.2 How should te reo Māori AAC be created?

This is described by the sequence at the top step of the poutama pathway to culturally located te reo Māori AAC (Figure 4): relationships, roles, resources. In establishing te reo Māori AAC, it is important that relationships precede creating resources; this is an evidence based, culturally located process for working with Māori.

Relationships

When speaking about the process for making resources for AAC, participants used terms like "co-create", "co-construct", "combination of people", "trust", "tuakana-teina relationship", "alongside you to wrap around you", and "building that relationship". They also spoke about intervention as "a team thing" and "whānau kotahi". Creating te reo Māori AAC systems was not seen as something that an SLT or anyone could do alone, but it was to be done together with others. Equally consistent were the messages about how these relationships were to be built up and maintained: "love on them, and wait"; "a lot slower"; "hang out in a kōhanga, a kura… a marae"; "immerse yourself"; and be "honest". It was clear that the participants are not describing merely good interactions; while you may have positive interactions with a person you have recently met, relationships or whanaungatanga demand time, reciprocity, self-disclosure, and accepting responsibility (Berryman, 2015b; Mead, 2003). This builds upon the SLT skill acquisition hierarchy where learning how to interact with clients and whānau precedes building relationships; which in turn precedes all other clinical interactions (Berryman, 2015b; Brewer et al., 2016). It echoes the importance of time taken to build genuine multifaceted

relationships with clients, whānau, kaiako, and other professionals as described by Fortune (2016). As McCord and Soto (2004) reported, and as described by SLTs in this research, ineffective relationships may see AAC perceived as useless or unnecessary at home, AAC service providers complaining about a lack of buy in from families, and no one having the relationship required to communicate what change is needed.

While the concept of whanaungatanga is commonly recognised as important to working with Māori, the present research suggests that it may not be well understood by SLTs in the workforce. Berryman wrote that a western perspective may perceive committed relationships as a breach of professional boundaries (2015b). Perhaps Pākehā think that whanaungatanga equates to a good working relationship, characterised by agreeing, getting things done efficiently, and enjoying your clinical interactions? In contrast, Fortune (2016) wrote that specialists working in kura need to become part of the extended whānau of the educational setting. This is what whanaungatanga entails; it is a concept that includes showing your face, nurturing the relationship, commitment, and following through on obligations (Mead, 2003). These elements can be seen in the participants' recommendations to build trust, spend time loving people, and work together whānau kotahi to create resources. In prioritising whanaungatanga when working with Māori whānau, the present research affirms the findings of many other researchers in the fields of Māori education and health. Relationship – or more properly whanaungatanga – is a widely accepted principle of working with Māori, and yet it seems still too little practiced by clinicians and not prioritised by the service managers who determine their timelines and waitlists. Recall He Ritenga Whaimōhio (Macfarlane, 2012; Figure 3), which enriches the evidence based practice framework with Māori principles and practices. This makes equally evident the prioritization for authentic relationships in clinical practice – tika, pono and aroha are not characteristics of programmes or tools, but of relationships with people.

Roles

The participants in this study also spoke about the range of people whose contributions are important to developing te reo Māori AAC systems. These people represent different roles and bring different kinds of expertise to creating resources. The importance placed on working collaboratively with whānau, AAC users, kaiako, and SLTs with supervision from kaumatua/kuia was anticipated. However, there was a significant emphasis on Māori elders making decisions around what language to include. The participants felt that the Māori language is best communicated through the worldview held by kaumatua and kuia, who know the reo, wairua and tikanga Māori. This is a culturally located perspective that conflicts with the assumptions of Pākehā. Manawa rejected as an "English influence space" the expectation that SLTs like her, who are Māori and who speak te reo Māori, should be able to create (or tell others how to create) appropriate, culturally located and linguistically accurate resources. Rather, actively seeking advice from, listening to, and addressing the raru of kuia and kaumatua is an important acknowledgement of their role. Additionally, both Geneva and Kere raised the responsibility of the government for this work. This was based on several factors: the promises of the Treaty of Waitangi affirmed in Wai 11, the government's commitment to language revitalisation, the funding responsibilities of Te Puni Kōkiri and Te Mātāwai, and the authority and responsibility of Te Taura Whiri i te Reo Māori/the Māori Language Commission for te reo Māori. This demonstrates the political awareness of users of AAC who wish to speak te reo Māori. As Kere asserted, Māori who wish to see justice done for them will never give up: "They won't. Māori won't."

We have already considered the important role of kaiako in implementing AAC in kura. The role of AAC users and their whānau was evident to the participants: It is those who will use the tools who best know what they want and need. Several participants spoke about the role of SLTs, especially those from TalkLink with expertise in AAC. Aware of this responsibility, and presumably inspired by their close relationships with AAC users, TalkLink are pursuing this work and added their support to this project. Pākehā are welcome collaborators, team members, and Treaty partners; the encouragement given for Pākehā to engage in this work has already been discussed. The research has

demonstrated that when SLTs prioritise the views of Māori, appropriately engage with the roles played by whānau, elders, and kaiako, and work in effective, collaborative, and respectful relationships, then they are welcomed to bring their expertise to the table, as one facet of creating something together.

Resources

Therapy and assessment resources are best built upon knowledge of te reo and te ao Māori and relational resources. Brewer and colleagues reminded their readers that "therapy is not so much about the resources used, but the relational ability and cultural safety of the person using them." (Brewer et al., 2016, p. 79). They also warned that using kaupapa Māori resources without having these foundations can be harmful. Understanding this, and in order to work toward culturally located AAC resources, the study now moves forward to explore potential sources and forms of te reo Māori AAC.

5.2.3 What could te reo Māori AAC be like?

With a strong sense of the foundations and the centrality of relationships, this section considers the final research question: What could te reo Māori AAC be like? This is a more imaginative exploration of ideas arising from the research interactions. Thordardottir challenged:

> Cultural adaptations of therapy materials and strategies are likely to be helpful, but ultimately… it cannot be assumed they have had the desired effect. Further, these methods are all adaptations of methods that were developed for Western middle-class children. Ideal methods for particular groups of bilingual children might require a radical change in focus. (2010, p. 532)

The following discussion presents some ideas that have arisen from the findings and the literature. Whether or not these are quite the right ideas – whether they are tika and pono – is best determined in discussion with others in pursuing future research and clinical application. They are presented here to stimulate this radical change in focus. Thus refocused, those with various areas of expertise can work together to explore the pathway forward to creating resources.

A Māori voice

A voice that can accurately and expressively pronounce te reo Māori is an essential component of te reo Māori AAC. This is the outcome most desired by the AAC users who contributed to this research project as an expression of their Māori identity and as a means of communicating emotion and nuance in the messages they speak.

The whānau participants asserted the importance of te reo Māori for expressing themselves as Māori, including for participation in Māori contexts such as hui and pōwhiri. They felt that inaccurate pronunciation of te reo Māori prevented them from this. The insistence of all participants on accurate pronunciation is consistent with what one hears in wider Aotearoa New Zealand culture, and it is becoming more widely appreciated. However, it is still common to hear incorrectly pronounced te reo; perhaps the long acceptance of this and a familiarity with a wide range of English accents may result in Pākehā New Zealanders discrediting Māori insistence on accurate vowel productions. However, Tracy's explanation that "It's like saying, "The sky is blee," makes obvious the significant effect of poor pronunciation on meaning in te reo Māori. Accurate pronunciation of te reo on AAC is not just a matter of preference but of effective communication.

In recognition of this need, Westley (2018) produced the Mana and Wairua voices as two of the ten "kiwi" accented voices she synthesised for New Zealand users of speech generating devices (SGDs). These were donated by te reo Māori speakers and accurately pronounce 85 common and core vocabulary words in te reo as well as being fully synthesised for New Zealand English (Westley, 2018). To bank these voices, Westley's participants recorded 1600 English sentences plus an additional 170 frame and slot English sentences with the 85 te reo kupu inserted into them (e.g., "*Mauiui* means *sick* and *nui* is *big; Taihoa* means *wait* and *I* is *au.*"; Westley, 2018, p. 113). One of the SLTs in the present project mentioned that she had considered asking her daughter to donate her voice as a young Māori but was concerned about the investment of time this would require; each voice in Westley's study took between 3-11 hours (Westley, 2018). Westley suggests that to fully synthesise te reo Māori voices the phonemes would need to be mapped onto a voice banking system and the software altered to

recognise macrons for long vowels (Westley, 2018). Donors would need to record connected

sentences in te reo Māori and word boundaries and intonation patterns would need to be identified.

Data for synthesising te reo Māori voices could be obtained from the MAONZE project (King,

Maclagan, Harlow, Keegan, & Watson, 2011). This acoustic analysis of historical, old and young

speakers of te reo Māori aimed to determine pronunciation changes over time. To do this, they

mapped out the first three formant frequencies and the fundamental frequency of each Māori

vowel/diphthong, the aspiration times of /t/ plosives, and the rhythm of some phrases/speakers (King

et al., 2011). This could provide a rich source of data, including typical vowel production characteristics

of speakers of different genders and ages, for creating te reo Māori voices. As one participant

suggested, this could be done by inputting these data points to represent phonemes and programming

the software to combine the phonemes into words. The relative consistency between orthography

and pronunciation of te reo Māori is favourable to this resulting in accurate pronunciation.

Participants also suggested partnering with Te Aka Māori Dictionary (2019) or Language Perfect

(Education Perfect, 2019) to use their sound files for voice output. As Rāhera concluded, this will

require finding someone with the money who is willing to back it. TalkLink have been seeking funding

and support for this for some time (TalkLink Trust, 2017).

Personalised voice technology is an area of present research and progress, particularly among those

concerned with acquired or progressive speech loss. Participants in this study and others worldwide

who communicate using SGDs have discussed the deep connection that exists between their identity

and their voice. In this study, Kere preferred a non-representative English voice to an inaccurate Māori

voice. He explained that he would prefer a British accented voice that consistently pronounced te reo

wrong, because you would expect this of a British voice, to a voice that sounds Māori but cannot

pronounce most words in te reo, which is offensive after years of correcting the pronunciation of

others. This response to the Mana voice may support the above hypothesis about accepting a range

of English accents and rejecting inaccurate te reo Māori. Geneva also prefers to continue using her

Australian accent than use the Wairua voice, and RV found Mana insufficiently flexible for his communication. All AAC users in the study are looking forward to a more fully synthesised voice for te reo Māori. As Kere put it:

If it gets better, I'll have a look, if it's better. But forget it. (AAC user).

After they had completed voice banking for her study, Westley (2018) asked her voice donors whether they would recommend someone whose voice were degenerating to bank it for the future. The donor of Wairua identified the need for this technology to be more fully developed for fluent speakers of te reo Māori, and other participants spoke about this being a means of retaining an element of their identity (Westley, 2018). In Howery's phenomenolical study (2017), she explored the connectedness of SGD users to their voices. One informant spoke of developing an identification with his voice over time, having originally considered it not a voice but "a tool that I use to allow me to speak" (Howery, 2017, p. 117). Stephen Hawking, one of the earliest and best known users of SGD technology, came to identify with his "robotic" American-accented voice and later in life turned down a voice with an accent closer to his native English (Nathanson, 2017, p. 76). The winner of Britain's Got Talent in 2018, Lee Ridley, also known as Lost Voice Guy, intends to spend his prize money on a Geordie accent for his SGD because, he says, "I'm sick of sounding like a posh version of RoboCop." (Joseph, 2018). In line with this pursuit of closer identification of voice to self, another AAC communicator felt like she was more often acknowledged as the originator of messages expressed by her "machine" once she finally got a female voice; that "her personhood was passed over before her female voice." (Howery, 2017, p. 118). A former student of mine chose a new voice when he got his SGD back after repairs; at age thirteen, he chose a deep African American voice.

An individual's voice is a tool of identity construction and social bonding and expresses "not only the content of their speech but also their age, gender, nationality, mood, sense of humour, state of health, educational background and much more" (Nathanson, 2017, p. 74). This, too, comes back to human rights: Nathanson (2017) concluded by recalling the marginalisation of those who do not have a native-

sounding voice and expressing the imperative to provide voices that express unique identities as a matter of self-determination, equality of opportunity, participation and contribution in communities, and ultimately social justice.

In addition to reflecting their identities, the participants in this study were concerned with the flexibility and naturalness of their voices for expressing paralinguistic meaning. This was considered especially important for te reo Māori, as RV's parents explained; in the absence of swear words, te reo Māori expresses emotion and emphasis through intonation patterns. For example, his mother described the different things she could express to her children by saying, "Haere atū" – whether "yes, sure, you can go" or "get out of here!"

Experiments have been done in several languages to establish the emotion commonly expressed by certain intonation patterns and to produce emotion and stress via text to speech devices. The fundamental frequency (F0) of speech is the frequency of the vibration of the vocal folds, and is significantly responsible for the intonation pattern and the emotion expressed in speech (Kamińska, Sapiński, & Anbarjafari, 2017). Busso, Lee, and Narayanan (2009) found that a computer could analyse the pitch patterns of sentences to identify different emotions based on variations in fundamental frequency. Intonation has been improved for synthesised Thai – a tonal language for which intonation is a crucial part of conveying meaning – by using F0 data (Chunwijitra, Nose, & Kobayashi, 2012). Similar research has begun for Mandarin, which is also tonal, including creating establishing intonation patterns for asking questions (Li, Tao, Hirose, Xu, & Lai, 2015; Li, Tao, Lai, & Xu, 2017). To move forward with the present kaupapa, perhaps a similar process could be done for te reo Māori to determine fundamental frequency, pauses, and stress patterns to covey different emphases and emotions using the MAONZE data (King et al., 2011). If the emotion is primarily communicated in the F0 frequency, then it could work independently of the vowels produced by the first three formant frequencies; could the two sets of information be combined using "emotion selection" buttons at the start or end of a

phrase? Perhaps the PODD pragmatic starter buttons (Porter & Cafiero, 2009) could be used in this way. This would need considerable exploration but is an interesting idea for possible future research.

Pullin and Hennig (2015) imaginatively explored the more diverse meanings expressed in intonation and how these could be brought across to AAC. In fact, they critiqued the research focus on intonation patterns as a medium of communicating emotions and proposed a turn to a social model of voice synthesis; that is, a model that considers how voices are used to communicate individuality, cultural context, environment, and relationships as well as emotion (Pullin & Hennig, 2015, p. 174). They piloted a "Tonetable" into which a user can insert cards to modify the tone of voice produced by a SGD. While not yet practically applicable, this kind of radical exploration towards flexible, natural, and personalised output of synthesised voice is exciting to consider given the participants' desire to communicate nuanced meaning using AAC systems. This appears to be a relevant future research direction, given the emphasis in the literature and the present study on Māori as an oral language in which meaning is expressed by nuanced mita. Indeed, synthesising a voice that correctly and flexibly pronounces te reo Māori to express the speaker's identity and nuanced meaning is a priority for AAC users. This will support their belonging as Māori within te ao Māori and their ability to communicate in a Māori way.

Māori kupu

When making te reo Māori AAC, it is important that it has accurate and appropriate vocabulary. Rather than translating an existing system from English, the kupu that is needed for a Māori system to support users to express themselves across a range of contexts must be considered. The participants in this study spoke of the need for Māori words for Māori settings and for establishing a core vocabulary in te reo Māori for flexible communication across contexts. This recalls the partnered strategies of Maihi Māori and Maihi Karauna – that te reo Māori would be a language both of the home and of the wider world (Te Puni Kōkiri, 2019).

Expressing whakapapa and contributing in pōwhiri/hui were two Māori-specific language requirements described by AAC users and SLT contributors. As these forms of speech are relatively formalised or ritualised, individuals could have these as phrase-banked passages on their systems for use in context. I observed this in RV's home when he gave thanks before our meal. However, more flexible discussion of whānau relationships would require programming different relational terms than is commonly found on English AAC systems, which tend to be focused on the nuclear family. For example, tuakana and teina, which are terms used both for older and younger siblings of the same sex as the speaker and for cousins of the same sex who are of higher or lower seniority, would not simply translate from brother and sister (Metge, 2005). This demonstrates the interrelationship between worldview and vocabulary.

A core vocabulary is a relatively small set of words that can be used flexibly in combination across many contexts to enable AAC users to communicate in the wider world. The participants in this research who had seen core boards in te reo Māori commented that the words were not all appropriate for te reo (e.g., "off"), that some had been translated incorrectly (e.g., "huri" for turn, used for "my turn/your turn" in English but not in Māori), and that some had been translated from two English words to the same Māori word in different places on the board (e.g., "do/work" as "mahi") (Appendix 3). Pronouns are another obvious difference, where boards translated from English have a square each for "he" and "she", both translated "ia", whereas a Māori system might have different squares for "tāua" and "tātou", to communicate the difference between "us two" and "us all" (see Appendices 2 and 3). The focus group participants were also concerned with the syntactic arrangement of the core vocabulary boards, preferring the Core 56 to to Core 77 (see Appendices 2 and 3) as it more closely represents the grammar of te reo Māori. However, given Clare's statement that word classes are more open in te reo, where words can be used as nouns, verbs, or statives/adjectives/modifiers depending on context and inflexions/affixes, a syntactic arrangement may not be the most appropriate for te reo Māori. Rather, words may be more appropriately

represented with stems, prefixes, and suffixes to combine to communicate meaning. However it is arranged, the basic lexicon of te reo Māori AAC needs to be determined.

A core vocabulary for te reo could be established by drawing from a few different sources and with the input of Māori elders. Te Kete Ipurangi (TKI) has created a list the thousand most commonly used words in te reo Māori, drawn from two print and broadcast corpora (MOE, 2010a). The list provides common meanings, explains word formation, and refers readers on for more information about function words. The most common 360 are particularly recommended for early learning of te reo. Nigam (2006) clearly lays out the way in which he conducted a sociocultural validation of vocabulary for Indian AAC. He invited 120 family members of AAC users and professionals to fill in a three-stage form. They were asked to first list words they thought would be most valuable for AAC users; second, nominate 5-10 words in each of 17 categories; and thirdly rate the usefulness of 180 words (randomised from 2482 words from the PCS lexicon into 15 balanced lists) on a 4-point Likert scale (Nigam, 2006). This model could be adapted for te reo Māori by considering TKI's thousand frequent words (MOE, 2010a) as well as the PCS lexicon (Mayer-Johnson, 2004) and appropriate nomination categories. For an Aotearoa New Zealand/Māori context it may be more appropriate to conduct the process kanohi kit e kanohi or in groups rather than based on a questionnaire. This research also suggests that it would be necessary to consider the perspectives of Māori elders in determining and validating a lexicon in addition to the family and professionals Nigam consulted (2006). Each AAC user will require their system further individualised for the local mita and their personal communication needs.

The pursuit of evidence based te reo Māori AAC includes establishing a lexicon that supports communicators to speak te reo Māori both in specifically Māori forms and flexibly across contexts. For this to happen, a core vocabulary for te reo Māori needs to be determined. The pathway towards this includes working with AAC users and their whānau, Māori elders, and SLTs to select kupu and affirm their validity for the expression of te reo.

Symbols

For AAC that truly represents te reo Māori, the language on it must be represented using symbols that emerge from pūrākau and ngā toi Māori – Māori stories and art forms. As Māori is a visually and symbolically rich language, there are many potential sources of inspiration or meaning to be considered.

Some participants expressed concern about the way in which the symbols used to represent words and ideas on English AAC systems translate into te reo and te ao Māori. Heads separate from bodies were considered especially offensive, as this communicates a tapu violation to Māori. Heads or faces are often used in AAC systems to represent emotions, especially in the popular Picture Communication Symbols® (PCS) used in the Boardmaker® software (Mayer-Johnson, 2004). Bodies without heads may also be used to represent verbs in some symbol sets to emphasise action. It is possible to edit the skin colour symbols by symbol, as some SLTs have done, but they start as Euro-normative peach. The following are five common PCS symbols, created using Boardmaker® (Mayer-Johnson, 2004).
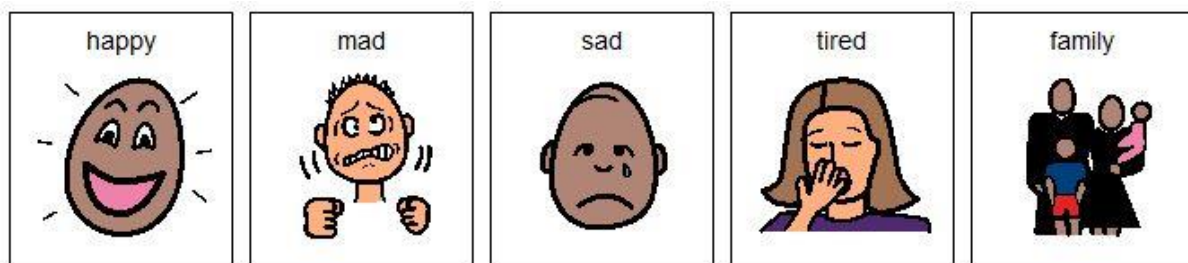
Figure 5: Five common Picture Communication Symbols (PCS). PCS Copyright 1981-2004 by Mayer-Johnson LLC.

The focus group suggested replacing these "disembodied heads" with emojis, in particular the recently developed Emotiki® (Te Puia, 2018). Emotiki® were originally created to provide young Māori with emojis that were relevant to the culture and discipline of kapa haka and "more truthfully Māori" (Haunui-Thompson, 2016). Developed alongside elders at Te Puia, two hundred images in seven categories express elements of Māori and modern Aotearoa New Zealand culture (Te Puia, 2018).

Here are the same five words[7] represented using Emotiki ® copied into a Boardmaker® set (Mayer-Johnson, 2004):

Figure 6: Five Emotiki® symbols. Emotiki® Copyright 2010 by Te Puia (NZ MACI).

The intention behind Emotiki® is to "help our people to communicate in a more cultural way" and "give a contemporary voice and medium to what is the values, expressions and the culture that is Māori in New Zealand" (Haunui-Thompson, 2016). This exactly describes what Māori communicators using AAC need of their symbols. Emotiki® could readily replace the Boardmaker® "disembodied heads" and Euro-normative people with images that are both distinctively Māori and based on the familiar cultural norm of emojis. Note that some Māori may find these offensive (e.g., Taiuru, 2015); as always, considering the individual needs and inviting input from whānau will be essential to making good decisions case-by-case.

While there are a few specifically offensive symbols, some representations are more generally irrelevant to a Māori audience. For example, the symbolic reference of fast/slow with hare/tortoise is from Aesop's fable, written in Greece over 2500 years ago; the hare is now a pest in Aotearoa New Zealand. As Rāhera alluded, the pūrākau or mythological stories, natural images, and traditional symbolic associations of Māori could provide rich sources of relevant, culturally located symbols for representing words and ideas in te reo Māori. Perhaps birds could be used, for example: the kāhu for rangatira/chiefly, the korimako for waiata/song, the grey duck for hiakai/hungry (Keane, 2015). Or, images could be drawn from the elements; perhaps the kowhai flower could represent spring, the star

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[7] Note that the Boardmaker® (Mayer-Johnson, 2004) keyboard does not allow the use of macrons, thus "pōuri" and "whānau" are misspelled.

Rehua/Antares summer, and the constellation Matariki winter, with reference to the regular appearance of these across the year (Keane, 2007). Whakataukī such as "Kia mate ururoa, kei mate wheke - fight like a shark, not an octopus" could inspire representations of toa/bravery with a shark and winiwini/fear with an octopus (Alsop & Kupenga, 2016, p. 63). Imagery could also be drawn from the unique Māori art forms of carving, weaving, and tattoo, as suggested by SLTs Elise and Melissa. Some familiar Māori symbols are used in pounamu or bone carvings: the toki for strength, the koru for whakapapa and new life, the matau for prosperity and safe passage over water (e.g., Mountain Jade, 2016). These art forms tell unique stories through combinations of standardised patterns with interpretable meanings. In addition to this, as Melissa (SLT) described, these art forms also express whakapapa; they are able to communicate where a person is from and who they are connected to, something that our voices typically express, and an element of identity that the participants identified as important for AAC users.

These suggestions recall the dependence of symbolic representations on the shared metaphors of a language or cultural group (Baker & Chang, 2006): Symbols, like vocabularies, are culturally validated. Recognising this, researchers suggest that AAC providers must select and modify symbols in consultation with clients and families, especially when they share different cultural and linguistic backgrounds (Blake Huer, 2000; Nigam, 2006). Soto and Yu invited consideration not only of words and symbols but also of "designs, colors, and referents that are compatible with the home culture" (2014, p. 89) when finding symbols to represent language on AAC.

Given the connection between Māori language, culture, and metaphor, representations ought to be considered that express ideas within a Māori worldview for speakers of te reo Māori. It is clear that ngā toi Māori, ngā pūrākau Māori, and te ao Māori can provide a rich source of such culturally validated symbols to enable AAC users to communicate te reo Māori using Māori symbols.

Alternative presentation methods

Other alternative presentation methods could be considered more appropriate for communicating te reo Māori. On high tech devices, these could be used in conjunction with or as a replacement for the traditional grid-based systems. More tactile or gestural methods may also facilitate language learning for Māori.

Recall Melissa's (SLT) description of the meaning that can be communicated by tā moko, whāriki, and whakairo. Elise (SLT) suggested that such authentic Māori forms could be used as bases for AAC – but didn't know how. Could they be used as an image on a visual scene access page, on which a user touches a specific area of the page and the device speaks about the user's contexts, whānau, interests, or gifts? Ogletree et al. (2018) explored the utility of visual scene displays, finding that their high contextual relevance and individualisation both support language learning and provide meaningful language to use in naturalistic contexts. They could therefore be used as the main access method for tamariki with emerging language (Tuthill, 2014) or for adults with aphasia, who may have difficulty combining decontextualized symbols (Beukelman, Hux, Dietz, McKelvey, & Weissling, 2015). Additionally, they could make up some context-specific sections of a communication device for a competent Māori communicator. For example, a visual scene display may also provide an alternative form of representation that could address RV's parents' concern about writing whakapapa – rather, perhaps he could use a uniquely designed image as a form for representing his whakapapa with hotspots on it that he could select to appropriately relate to family members. What form it would be appropriate for this to take – perhaps a representation of moko, rākau whakapapa, or whakairo from their marae? – is best determined by each AAC user and their whānau.

Considering other visual methods of presenting language, Melissa suggested PODD books due to their more contextually located presentation of language. PODD books present vocabulary in several different ways, including core or common vocabulary on the first few pages, activity or context-specific pages, and categories to allow creation of more novel utterances (Porter & Cafiero, 2009). At a simple level, this means pages of vocabulary for Māori specific settings could be easily included. The

pragmatic starters, which the focus group in the present study liked, are intended to add some of the paralinguistic meaning typically communicated by intonation or gesture (e.g., "I want something", "Something's wrong", "I don't like that", "I'm telling a story"; Porter & Cafiero, 2009). This could be adapted for te reo Māori AAC to address some of the concerns the participants raised about unclear meaning due to unvaried intonation patterns. Starters such as "It's already happened" and "It's going to happen" would also make clear which verb tense is to be used, addressing Rāhera's concern for sentence starters. The PODD may also provide a good layout for presenting stem words with affixes to combine for more able communicators to use kupu flexibly as nouns, verbs, or modifiers. Ogletree et al. (2018) challenged the received wisdom of presenting language for AAC users on static, grid-based systems. They recalled that children and adults do not experience the world the same and so it ought not to be assumed that linear, literacy based, left-right layout of vocabulary is the most appropriate. Different cultural worldviews may likewise affect the relevance of this layout.

Gestural or tactile methods were also considered important for expressing te reo Māori and facilitating learning. Kere's astute suggestion of using Te Ataarangi as a means of language rehabilitation is especially pertinent for learning or rehabilitation of te reo Māori AAC. Te Ataarangi was adapted by Māori for te reo Māori revitalisation from the Silent Way method of language learning (Paipa, 2010). It involves manipulating rods to represent words and concepts, and engages learners physically, spiritually, mentally, and relationally with others as they are immersed in and use te reo Māori (Paipa, 2010; Pohe, 2012). The role of the teacher is like that of the interventionist providing aided language stimulation:

> The role of the teacher is to focus the awareness of the learner. The teacher is a source of instant and precise feedback for learners trying to speak the language. The only way to learn a language is by speaking the language. (Pohe, 2012, p. 65)

This kaupapa Māori means of learning and representing language using tactile objects and engaging with the hauora of learners within relational groups holds a great deal of potential as an alternative or complement to modelling language on AAC. This is an area that warrants future research.

When considering te reo Māori AAC, SLTs need not be limited by the commonly practiced ways of presenting and learning language on AAC. Flexible use of technology is important to ensure that te reo Māori is best expressed in Māori ways, for communication in Māori contexts.

Gesture

The way in which meaning is communicated by gesture, expression and body language is a further component of the paralinguistic communication of te reo Māori within te ao Māori. This could be considered to extend or supplement paralinguistic meaning expressed by AAC systems.

When I told Māori friends and acquaintances about my research into "non-verbal forms of communication for te reo Māori", the most common response was a half-serious, "Oh, you mean Māori eyebrows?" It is uncertain how this accepted form of communication (Metge, 2005) can be captured or expressed by an AAC system. However, it recalls the paralinguistics of speech and the cultural differences in pragmatic and gestural communication. Several SLTs in this study (and I in my work) have found that some whānau preferred sign language to low tech aided communication systems, finding it natural and potentially more directly connected to the tamaiti's own voice. As discussed above, meaning is conveyed not merely by the words but also by the way they are said. In te ao Māori, as Melissa (SLT) described when talking about both kapa haka and moko kauae, movement and symbolic referents add meaning beyond emotion and mood; they can also communicate who someone is and where they are from; for Māori, whakapapa and iwi affiliations. The ability to identify with a people and place in this way is important to Māori.

Gruber, King, Hay, and Johnston (2016) connected the higher incidence of particular body language – flat-handed gestures, head movements and eyebrow flashes – among Māori than Pākehā while retelling stories with the prevalence of these in kapa haka. They suggested that these are a component

of the Māori "ethnolect"; that is, their use contributes to a cultural identification as Māori (Gruber et al., 2016). Many AAC users have mobility restrictions that may affect their expression through these modes. However, it is possible that naturalistic expressions could be used to support paralinguistic communication via AAC. Could eyebrow movements, already used as an access method for some communicators, be read by AAC systems as an additional input to select an intonation pattern for their messages? This could make use of a natural paralinguistic behaviour to add the nuanced meaning desired by participants. This is conjectural, but interesting – an area of potential further study.

It is already clear that gesture and body language are contextual and culturally located. They may or may not be impaired by the individual's communication disorder, and they could be a useful source of information when considering how an individual can complement or extend the meaning they express through their AAC system.

5.2.4 The SLT pathway

The response demanded of speech-language therapists is to develop their cultural safety by recognising systemic and specific injustices experienced by Māori, critically appraising their own practice, and learning to work with Māori in relationships that restore dignity, self-determination, and power to them (Brewer et al., 2016). This includes advocating for the language rights of clients with CCN (McNamara, 2018). SLTs then need to increase their knowledge and use of te reo Māori and join with others to work in partnership to provide appropriate resources for assessment and therapy. This journey is depicted at the second level of the poutama (Figure 4). As a profession, SLTs need to practice cultural competence that is not about external practices, learning specific health models, and leading a meeting with a karakia of their own choosing, but about critical self-awareness, truly understanding that people experience and interpret the world differently, and humbly asking for their input and guidance. When I mentioned SLT training in cultural competence, Tracy exclaimed:

Those terms and phrases are bandied about so lightly these days, that I think people have forgotten what it even means. You can't be competent in someone else's culture! You can't. And the best thing to do is just to acknowledge that. (Whānau)

Kere's enthusiasm for my pepeha and insistence on finding out where I was from based on the maunga and awa I had acknowledged demonstrate the difficulties of cross-cultural understanding. While I had provided this as a formal greeting and to be clear I am Pākehā, Kere deeply appreciated the opportunity it gave him find out where I am from. This example reinforces the idea shared by SLTs in this study that moving from doing practices to understanding their worth takes time, relationships, and a willingness to risk getting it wrong (also in Brewer et al., 2015). Increased cultural competence for SLTs can be achieved by working together with cultural advisors, and, in the longer term, by increasing the biculturalism of the SLT training programme.

SLT working models

The Ministry of Education, Special Education (SE) offers professional intercultural support to SLTs via kaitakawaenga (MOE, n.d.). Kaitakawaenga are professionals whose role is to bridge the gap between specialist service providers such as SLTs and Māori whānau and kaiako. They do this by supporting whānau in meetings, developing and maintaining relationships with all parties, and educating each party about programmes and systems (MOE, n.d.).

Fortune's (2016) participants reported that kaitakawaenga support was ineffective – a sentiment shared by one of the participants in the present research from her experience as a kaiako. In both cases, they spoke of somebody who was "just Māori" and did not understand the processes and ways of working in kura and kōhanga. SLTs in health settings have described similar experiences of working with kaitiaki (Māori liaison staff) who have tikanga Māori but limited specialist knowledge of therapy and assessment (Brewer et al., 2015). This contrasts with the SLT participant in this research who had found kaitakawaenga valuable to support her in kura. The difference may suggest that that the kaitakawaenga role works for SE and not for the kura – this is not equitable and may need investigating

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further. In response to this, Fortune (2016) suggested the establishment of an on-site Resource Teacher of Special Needs to serve a cluster of Māori medium education settings. Rather than kaitakawaenga going out from SE to broker an initial relationship, SE could come to this person and be supported by their relational resources to work effectively in the kura. This would return both the power and the responsibility for relational and specialist knowledge to the kura; a more appropriate position in kaupapa Māori. However, it would be important to ensure this was well managed to ensure it did not cost tamariki access to SLT support.

It can be difficult for SLTs who do not speak te reo to provide support within kura, as RV's whānau anticipated. However, the findings of this research suggest that an SLT who is determined to provide te reo Māori AAC and is willing to work in relationship with whānau and kaiako will be welcomed and accommodated in kura in order to provide effectively for the tamaiti. This is demonstrated in the positive relationship RV and his whānau have with the SLT who pushes RV to develop skills in both languages and by the SLT who shared her experiences of encouragement and welcome as she learned te reo Māori. This is closer to the understanding expressed in Brewer et al. (2015) and more consistent with the international literature, given that AAC intervention is best delivered by the SLT training familiar conversation partners to provide aided language stimulation in naturalistic, culturally located interactions (e.g., Cheatham & Hart Barnett, 2017; Soto & Yu, 2014; Yu, 2013). However, a clinician's inability to speak te reo Māori never gives them an excuse to provide a service that is not culturally and relationally safe; ultimately, too, clients still desire and have the right to intervention in te reo Māori (Brewer et al., 2015; Fortune, 2016).

SLT training

One of the SLT participants in this research spoke at length about the failure of her classmates to "get" the importance of te reo and tikanga Māori in their SLT training. She associated this with their not having experienced colonization. She also spoke about the confrontation of the medical model of SLT training having earlier studied in the collaborative context of a kaupapa Māori setting. There is a

challenge and opportunity here for the education of student speech-language therapists to work with Māori clients and speakers.

The present research and that of Brewer and colleagues (e.g., Brewer & Andrews, 2016; Brewer et al., 2015, 2016) indicate that SLTs are not entering the workforce with sufficient reflexivity and cultural safety for working effectively with Māori clients. SLT training already includes several elements of language and cultural competence education. This could be extended by more embedded and experiential teaching and learning such as that recently developed in the clinical psychology training programme at the University of Canterbury (Britt, Macfarlane, Macfarlane, Naswall, & Henderson, 2017). Recognising that cross-cultural skills ought to be acknowledged as equally important as clinical skills, something the participants in this research argue is equally true for speech-language therapy, they have developed their programme to increase the bicultural proficiency of their graduates (Britt et al., 2017). Two tangible elements include attending placements in Māori contexts and requiring all staff to include discussion of Aotearoa New Zealand research and bicultural practice issues in every course taught (Britt et al., 2017). Brewer and Andrews (2016) consider the specific education outcomes of the University of Auckland's Hauora Māori curriculum (Jones et al., 2013) as another source for developing cultural competency in SLT education. This assesses students on outcomes including critical self-awareness, recognising racism, acknowledging disparities experienced by Māori in the healthcare system, and the ability to analyse the cultural competence of clinical interactions (Jones et al., 2013). There may also be an opportunity for SLT training to lead the way in "mainstream" health/educational training by providing sufficient education and integration of te reo Māori into the clinical programme that SLT graduates have competence in te reo Māori upon entering the workforce. As a profession based on supporting language and communication in Aotearoa New Zealand, and as one that accepts its responsibilities under the Treaty of Waitangi (NZSTA, 2015), this seems appropriate.

When speech-language therapists engage with the injustices of the current service provision models and advocate for evidence based, culturally responsive service for Māori clients, they enter the advocacy journey described by McNamara (2018). This may entail moving beyond a clinical role to a social activist role, pursuing culturally and linguistically appropriate AAC to address the marginalization of Māori clients as a matter of human rights, indigenous rights, and is a true participation in the professional role of serving people with complex communication needs (CRPD, 2007; DRIP, 2007; McNamara, 2018; UDHR, 1948; Yu, 2018).

5.2.5 Looking forward

Given the many considerations above, it is possible to feel stuck. Resources for te reo Māori AAC need to be good quality representations of te reo Māori within te ao Māori. They need to be established by the representatives of several different perspectives/groups who have established relationships of trust over time. SLTs must learn and use te reo Māori and acknowledge their role in restoring communication access justice to their clients. However, this must not prevent SLTs from providing Māori resources to clients:

> I would rather have a reo that's unstructured, the wrong syntax, rah rah rah, but it's got reo on it, and it's got some sort of reo, where somebody tried. (Manawa, SLT)

Better something than nothing, the participants consistently asserted. And, if SLTs ask them to and have good relationships with them, clients and their whānau and kaiako will contribute to making the changes they see necessary to their systems. Māori are rapid adopters and adapters of technology. Kere shared the story of Aotearoa New Zealand's first flag, created by Māori so they could sail into Sydney Harbour to export flax. A Māori staff member at the University of Canterbury who helped develop the study focus spoke about Māori as a people of technology and solutions. In promoting the adaption and inclusion of indigenous peoples to include those with disabilities, Hickey recalls that "indigenous knowledge and beliefs can adapt as has already been shown through the ability to amend and change existing beliefs according to new knowledge gained." (2013, p. 169).

Thus, Māori will persist to develop solutions to express their language via AAC. This research aimed to provide a pathway forward to creating such resources in a way that is informed by the perspectives of those who will use them. Accordingly, the following section lays out some practical suggestions for clinicians.

5.3   Clinical recommendations

The following are some practical suggestions for therapists working to provide te reo Māori AAC for their clients. It will be important to test these recommendations with a wider audience and determine the appropriateness of each for specific clients.

Rights

- Understand that speaking te reo Māori is a valid language choice and promote this option for whānau who express uncertainty. Encourage them that AAC users can become bilingual.

- Provide te reo Māori resources: Something is better than nothing. Do not ask clients to add or translate Māori words onto an English language page or system as a primary option.

- Develop your own appreciation for the systemic injustices experienced by Māori in health and SE.

Relationships

- Work with Māori whānau, kaiako, and elders. Consider, who are the decision makers here?

- Consider a client's different contexts. What are the language needs in each? Mono or bilingual?

- Train wider whānau in the use of AAC.

- If the whānau or kaiako request a change, make it – maintaining the relationship is essential.

- Consider Te Ataarangi to support or replace aided language stimulation.

Resources

- Think about more flexible and contextual access methods and language layouts, for example visual scene displays, memory books, dynamic displays, and PODD, as well as core based systems.

- Use the TKI list of 360/1000 most frequent words to select a vocabulary, considering with whānau/kaiako what language a child needs in home and school contexts (MOE, 2010a).

- Offer example forms for representing whakapapa, pepeha, and karakia.

- Draw from traditional Māori stories, symbolic associations, Māori art and modern Māori imagery when choosing symbols to represent words or concepts, for example Emotiki® (Te Puia, 2018).

- Te Aka online dictionary (2019) has a large bank of discrete words recorded by fluent speakers of te reo Māori that would be particularly appropriate for older Māori AAC users (e.g., post-stroke). Note that these would have the same intonation problems in connected speech as Mana/Wairua.

- Provide a "code switch" button for high tech device users. This may mean duplicating pages and editing them for te reo Māori.

- Present several different resources (whether high or low tech) as templates for building something together. Ensure that the client and whānau role in making decisions is obvious, not a concession. Ask questions like, "Here are a few examples: What do you like? What words would you need? Which symbols do you prefer? What haven't I thought of?" (Compare that with: "Here is the system I have made, but we can change anything you like. Is there anything you want to change?")

5.4   Study limitations

This section critiques the application of kaupapa Māori theory to the study and acknowledges further study limitations. It recalls that the reliability and validity of research emerges from the appropriateness of its methods (Smith, 2012).

5.4.1   Te Ara Tika: Assessing ethical validity of research

Te Ara Tika is a framework for considering ethical issues in Māori research and policy-making (Hudson, Health Research Council of New Zealand, & Pūtaiora Writing Group, 2010). It defines the boundaries for ethical practice in Māori research and aligns aspects of research to tikanga Māori principles. Different levels of adherence to these four principles within the research design and practise determine minimum standard, good practice, and best practice for Māori research: Note again the alignment between cultural competency and best or evidence based practice.
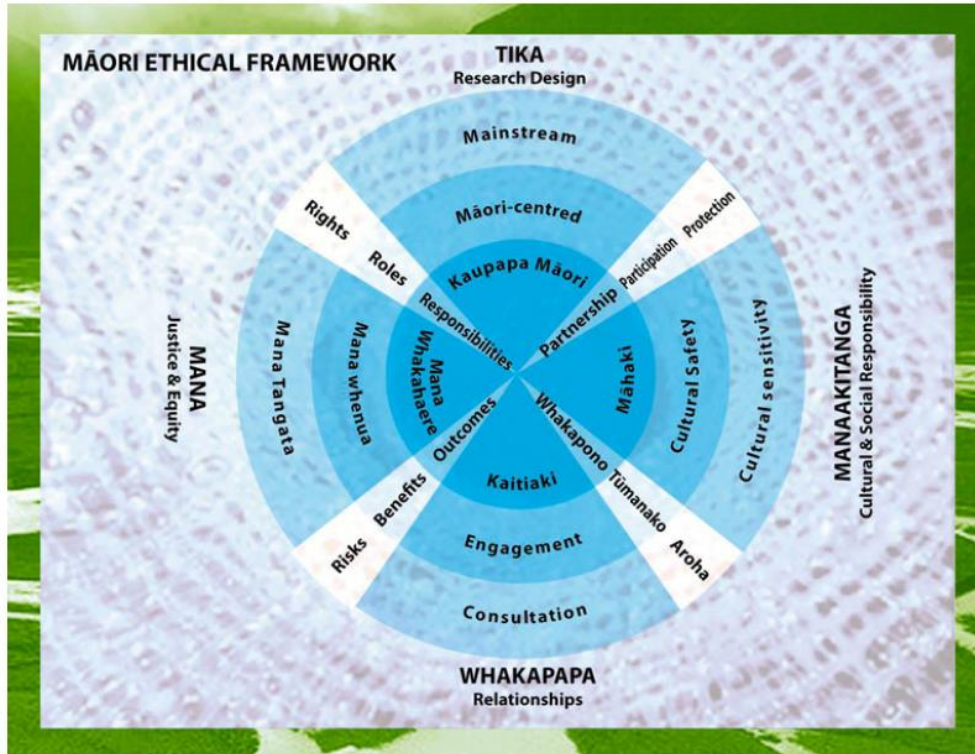
Figure 7: Te Ara Tika: Māori Ethical Framework. From *Te Ara Tika: Guidelines for Māori Research Ethics: A Framework for Researchers and Ethics Committee Members* (p. 4), by M. Hudson, Health Research Council of New Zealand, and Pūtaiora Writing Group, 2010, Auckland, New Zealand: Health Research Council of New Zealand on behalf of the Pātaiora Writing Group. CC BY 3.0 NZ.

I found this useful to assess my application of kaupapa Māori research. Appendix 7 provides an analysis using key questions and descriptors extracted from Te Ara Tika (Hudson et al., 2010) and examples from the research. Despite my aspiration to kaupapa Māori research practice, the analysis demonstrates that it is better described as "good practice" or "responsive to Māori". To increase the ethical validity of this research as Pākehā would require:

- Working with a team with significant Māori members, including support from kuia/kaumatua.

- Continuing to maintain relationships outside of and beyond the process.

- Sharing meaning-making from the data with contributors by returning and restorying.

- Following through to ensure systems are made so benefits do accrue to participants.

- Increased proficiency in te reo Māori.

There are yet time and space to carry through some of these obligations and relationships. As Barnes (2013) writes, Pākehā researchers' experiences of moving from Eurocentric worldviews to engage with Māori in their communities and concerns is a continual process.

5.4.2   Study limitations

Due to purposive sampling for rich data, few participants, the conversational nature of the interviews, and the uniqueness of each AAC user's experience, the findings are indicative rather than generalizable to all AAC users and SLTs. The experiences of these competent AAC communicators may not translate to tamariki who are pre-literate, have no reliable form of communication, or require symbol-based aided language to develop language skills. Additionally, they cannot be said to represent the views of monolingual or first language te reo Māori speakers or those who have had negative experiences of SLT or special education. SLTs participants all work with children, which extends the work of Brewer and colleagues with health-based SLTs (2015). However, the study would benefit from the input of health-based SLTs considering the AAC needs of adults with acquired communication difficulties. The focus group's relative unfamiliarity with AAC was intended to provide accountability and legitimation of ideas formed out of the initial interviews (following IBRLA, e.g., Bishop & Glynn, 1999; Macfarlane, 2012). However, it became apparent that this role would more appropriately be taken by Māori elders, which reveals the research bias towards academic perspectives.

Interviews were conducted according to the pōwhiri process, emphasising correct establishment of relationship before proceeding to the topic. Assuming the teina role appropriately redistributed power away from the researcher to the participants who have expertise and experience. Brewer et al. described this attitude as being a humble or "naïve listener" (2014a, p. 1293), an ethical principle of kaupapa Māori research. As an outcome of this, many participants seemed comfortable to address my involvement as Pākehā in this work. The collaborative storying approach means that I will have shaped the data, as participants will have chosen what to share based on their assessment of my interests, safety, and right to receive certain information (Bishop & Glynn, 1999; Brewer et al., 2014a). My limited proficiency in te reo Māori may also have affected the validity of the findings. I was able to

understand the reo used by all participants, however there is information that is best shared in te reo Māori (Fortune, 2016) and I could not access this.

Transcripts were returned to participants for review to edit and affirm their contributions (Brewer et al., 2014a) but there was variable engagement with this (Bishop, 1997). In the future I would recommend co-creating meaning through returning, restorying, and reinterpreting the information shared (e.g., Berryman & Woller, 2013; Bishop, 1997). Part of culturally sensitive research includes sharing study findings with participants in a way that respects their perspectives and personhood (Smith, 2012, p. 178). Creating accessible forms of feedback for AAC users will be an important part of the long-term outcomes of the research.

5.5   Future research directions

These suggestions work towards establishing different elements of culturally located te reo Māori AAC systems.

- Determine a core vocabulary for te reo Māori based on frequent word lists and the cultural validation protocol outlined in the discussion.
- Conduct a similar cultural validation procedure for symbolic referents.
- Pursue the establishment of te reo Māori voice via voice banking. Support for the analysis of Māori phonemes, intonation patterns, fundamental frequencies, and word boundaries could be found in the MAONZE project (King et al., 2011). Transcripts and some recordings are available if requested; perhaps these could be used to 'teach' te reo Māori to SGD software.
- Determine emotions and nuances expressed by different fundamental frequencies/intonation patterns. Explore how these could be connected with utterances on SGDs (e.g., PODD pragmatic starter buttons) so users can select a tone of voice to communicate their message.
- Extend research on the Tonetable (Pullin & Hennig, 2015) for flexible and nuanced voice output, including for te reo Māori voices.
- Explore how naturalistic gesture could be connected to AAC to select emotion/tone of voice.

- Consider vocabulary organization to best represent the syntax and parts of speech of te reo Māori, considering stems and affixes/inflections.

- Research Te Ataarangi as a framework for rehabilitation/aided language input of te reo Māori.

- Begin "pan-Māori", and allow flexibility for adaption by iwi and whānau.

- Develop integration of hauora Māori and cultural safety within SLT training schools, following the example of Britt et al. (2017).

- Develop special education and communication support training in rumaki reo teacher education.

- Call the Government's attention to their role and responsibility to this work under the Treaty of Waitangi and their various policies related to health, education, disability, and Māori.

5.6   Conclusion

This study concludes in hopefulness for change. It adds to the understanding of Māori perceptions of speech-language therapy and lays out a pathway for creating te reo Māori AAC systems and resources. This is based on recognising te reo Māori AAC as a communication access right; representing te reo Māori using Māori words, voices, symbols, and worldview; and working in relationships, with people from many roles, to create appropriate resources. This understanding is represented using a poutama image (Figure 4) to reinforce the foundational nature of the language rights of Māori with complex communication needs and the importance of evidence based, culturally located forms of communication. For speech-language therapists who seek to create and implement therapy resources for Māori AAC users that acknowledge the Māori language and worldview, this research provides challenge, encouragement, and a way forward. It presents several exciting clinical and research directions for those wishing to pursue this work further. It also considers some wider systemic injustices that may support inclusion for Māori with complex communication needs, including effective education of trainee SLTs and teachers in Māori immersion education.

This research bridges between Macfarlane's (2012) study of Māori responsivity at the Ministry of Education, Special Education, Fortune's (2016) exploration of the experiences of tamariki with special educational needs in kura kaupapa Māori, and the studies into Māori experiences of aphasia and

speech and language rehabilitation of Brewer's research team (e.g., Brewer et al., 2014b, 2015, 2016; McLellan et al., 2014). It draws attention to the communication support needs of a small and marginalised group who sit at the intersection of complex communication needs and cultural/linguistic dispossession, whose rights to their language ought to be guaranteed by the intersection of international rights-based agreements and national policies (Figure 2). The tamariki have a right to grow up knowing and using te reo Māori and to access kura kaupapa Māori. The adults have a right to rehabilitation in the languages of their choice and to participate and contribute in their communities. This study shows that Māori who need to use aided language to communicate have difficulty attaining these rights. It also locates some of the international conjectural and experimental studies into culturally and linguistically diverse AAC to Aotearoa New Zealand. Most importantly, this research looks forward, filling in some knowledge gaps for those who work with Māori with complex communication needs by presenting their own perspectives on their communication needs and engaging with their suggestions for representing te reo Māori in modes they can use to express it.

In this, it has found a possible way forward. The pathway to te reo Māori AAC may seem complicated by the complexities of technology, relationships, regional variations, language differences, cultural metaphors, and socio-linguistic features. However, there are energy, adaptability, and rich sources of potential in Māori AAC and SLT communities for establishing these tools. May these by explored and extended to support many individuals and whānau to express their language via aided communication – to awaken into their reo Māori.

He mana tō te kupu.

Words have great power.

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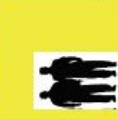
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Appendices

Appendix 1: Example core vocabulary board: Core77 (English). From TalkLink (2019).

Appendix 2: Example core vocabulary board: Core 56 (te reo Māori).

au / ahau	taku / aku	whea	tēnei / ēnei	o nāianei	reri	āno
koe	tō / ō	hia	tēna / ēna	kata	kino	pai
ia	tana / ana	hoa	tēra / ēra	māuiui	pōuri	harikoa
tā/ mā /kō / rāua	tā/ mā /kou / rātou	whakaaro	mōhio	miharo	tino	katoa
whakarongo	kōrero	tītiro	tiaki	āhua	nui	iti
āwhina	mahi	tākaro	kai	inu	tētahi	ōrite
haere / haere mai	mutu	taritari	hiahia	pātai	tangohia	rerekē
āe	kāu	ko wai	aha	he aha ai	pēhea	ahea

Appendix 3: Two te reo Māori Core77 boards: English syntax (top) and Māori syntax (bottom).

English syntax (top)

au /taku — I/me/my	mea — it	ko wai — who	he aha — what	homai — give to me	āhea — when	kia tūpato — careful	katoa — all	ētahi — some	tēnei — this	tērā /tēnā — that
ia /tana — woman/she/girl	ia / tana — man/he/boy	kaua ehara — not don't	haere mai — come	mahi — do	anō — again	ināianei — now	pēhea — how	te wā — it's time	mutu — finish	raru — problem!
koe /tau — you/your	inu — drink	kai — eat	rongo — feel	tiki — get	ā muri — later	kia rite — ready	kua pau — all gone	kino — bad	nui — big	whakapai hōroi — clean
hoatu — give (out)	haere — go	whakarongo — hear listen	āwhina — help	ka pai — like	kei hea — where	atu — away	makariri — cold	rerekē — different	paru — dirty	horo — fast
titiro / kite — look see	hanga — make	tuwhera kati — open close	kuhu — put	pānui — read	konei — here	korā /konā — there	pai — good	koa — happy	wera — hot	iti — little
kōrero — talk/say/tell	noho — sit	tū — stand	kati — stop	tuku/tango — take	roto — in	waho — out	anō/tāpiri — more	pōuri — sad	ōrite — same	māuiui — sick
huri — turn	tātari — wait	hiahia — want	mātakitaki — watch	mahi — work	runga — up	raro — down	runga — on	whakaweto — off	haututū — silly	pōturi — slow

Māori syntax (bottom)

āwhina — help	he aha — what	ko wai — who	haere — go	āhea — when	wā whakatā — break time	whakaaro — idea	etahi — some	hē — oops	katoa — all	tēna-tēra — that
haere mai — come	hanga — work	ehara-kāua — not - don't	homai-hoatu — give	huakina-katia — open-close	a muri — later	ano — again	pehea — how	e hia — how much	ētahi atu — more	tēnei — this
huri — turn	inu — drink	kai — eat	ki-kōrero — say - tell	mahi — do/make	ināianei — now	reri — ready	harikoa — happy	iti — small	kua mutu — finished	kua pau — all done
mātakitaki — watch	mutu — stop	noho — sit	rite — like	panui — read	hea — where	ake — up	makariri — cold	ma — clean	māuiui — sick	nui — big
pirāngi — want	tango — take	taihoa — wait	au ahau — I - me	koe-tou — you - your	atu — away	i roto — in	orite — same	pai — good	paru — dirty	poturi — slow
tiaki - protect / look after	tiki — get	titiro-kite — look - see	rātau — them / they	taku-naku — mine	konei — here	raro — down	pouri — sad	rerekē — different	tapu — holy	tere — fast
tākaro — play	waiho — put	whakarongo — hear/listen	tātou — us/we (2+ ppl)	tāua — us/we (2 ppl)	reira — there	runga — on	tango — off	waho — out	uaua — bad	wera — hot

Kia ora!

I am Brynlea Collin Stone.

I am a speech and language therapist.

I am from Christchurch.

I am studying at the University of Canterbury.

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I want to help figure out how to make communication systems (AAC) that can be used to talk in te reo Māori. It is hard to find good AAC in te reo Māori. It is mostly translated from English, and not made from a Māori point of view.

It is difficult to put different languages onto AAC systems. But it is really important to be able to use your AAC to speak the languages you want to...

And so, I want your help!

I would like to know all about how you communicate. No matter what AAC system you are using, I want to talk to you and your whānau about learning and using te reo Māori with AAC.

I can send you some questions before we meet, so you can prepare some answers if you wish.

I want to know things like...

he aha
what

?

hea
where

ki-korero
say - tell

ko wai
who

pehea
how

pirāngi
want

How did you learn to use AAC?

Where do you use te reo Māori?

Can you speak Māori with your AAC device?

What would help you do this better?

What is your experience of speech and language therapy?

What would good communication be like for you?

Who do you talk with and learn language from?

Where do you use AAC?

What would you like to speech and language therapists to know about learning language with AAC? About speaking Māori with AAC?

What are your hopes and dreams for using AAC in te reo Māori?

I would like to talk to you and your whānau about this. You have the best information for me, as you are the ones who know all about using AAC in Māori.

I will come and visit you to do this interview. You and your whānau can choose where we meet – somewhere that you all feel comfortable.

I will video you during our interview. This will help me to see your communication using your AAC system. I don't want to miss anything you have to say!
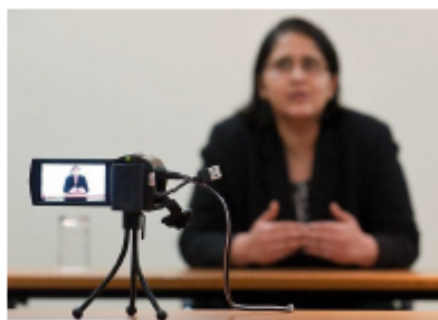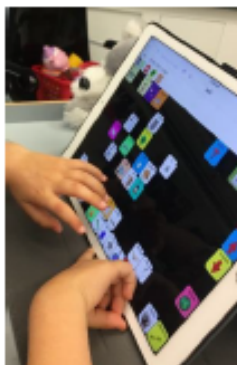
Afterwards, I will type up our interview and send it back to you to check and change. If you decide you don't want to be involved any more, I can take out the information you have shared with me. You decide!

I will put together the information you tell me with all the information from the others I interview. I will write into a thesis (a really long essay).

This will be available in the University library for anyone to read.
BUT
I will keep your name and information private.
Only my teacher and I will see the video of our interview.
You can choose a different name to be used in the research.
The recordings and your name will be protected by passwords and locked up.

If you have any questions for me, please ask. You can contact me at brynlea.collinstone@pg.canterbury.ac.nz.

Ngā mihi,

Brynlea Collin Stone
Speech and Language Therapist
Master of Science Student

Appendix 5: AAC user adapted consent for study.

Department of Communication Disorders
brynlea.collinstone@pg.canterbury.ac.nz

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Tōku Reo Tōku Ohooho:
Towards Augmentative and Alternative Communication in Te Reo Māori
Consent for participation: Adapted form for AAC users
Full consent form must be signed in addition to this form, by AAC user or parent/caregiver

		Mark "yes"
I have been given information about the project		
I have had a chance to ask questions		
I understand that Brynlea will video me during the interview		
I choose to participate		
I understand that Brynlea will keep my information private		
I understand that the final thesis can be accessed in the University library		
I know that I can contact Brynlea and/or her teachers about the research Brynlea Collin Stone brynlea.collinstone@pg.canterbury.ac.nz Dr Dean Sutherland dean.sutherland@canterbury.ac.nz Dr Sonja Macfarlane Sonja.macfarlane@canterbury.ac.nz		
I would like a summary of the research. Email address: _____		Yes or No
I would like to choose my own name for this project. I choose: _____		Yes or No

Signed (adapted signature accepted, e.g. assent via AAC or email):

_____Date: _____

Name and signature of parent (if under 16): _____

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Appendix 6: Ethics approval.

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HUMAN ETHICS COMMITTEE

Secretary, Rebecca Robinson
Telephone: +64 03 369 4588, Extn 94588
Email: human-ethics@canterbury.ac.nz

Ref: HEC 2018/37

11 June 2018

Brynlea Grace Collin Stone
Communication Disorders
UNIVERSITY OF CANTERBURY

Dear Brynlea

The Human Ethics Committee advises that your research proposal "Tōku Reo, Tōku Ohooho:
Towards Augmentative and Alternative Communication for Te Reo Māori, Within Te Ao Māori"
has been considered and approved.

Please note that this approval is subject to the incorporation of the amendments you have provided
in your email of 6th June 2018.

Best wishes for your project.

Yours sincerely

R. Robinson
pp.

Professor Jane Maidment
Chair
University of Canterbury Human Ethics Committee

Appendix 7: Assessment of ethical validity of research using Hudson et al. (2010).

Ethical principle Te Ara Tika (Hudson et al., 2010)	Level of practice achieved Adapted from Te Ara Tika (Hudson et al., 2010)	Project examples
Whakapapa *What is the genesis of this project?* Considers establishment and maintenance of project relationships.	**Good practice: Engagement** Research relationships established though mutual connections. Substantial and positive engagement with Māori communities. Project aligns with Māori aspirations and benefits Māori. **Best practice: Kaitiaki** Kaupapa Māori methodologies evidenced in application. Māori participants and whānau prime recipients and contributors of results. Project has tangible outcomes for Māori and relationships are of good faith and transparency.	Recruitment demonstrated value for principles of kanohi kitea and whanaungatanga; for all except one participant, the invitation to contribute followed contact through a different project or relationship connection. Contact maintained beyond data collection, e.g., catch up with SLT participants. Information given and talked through before consent was signed; adapted information and consent forms provided for AAC users and whānau. Project outcomes are for Māori and responds to desire expressed in Māori community. Kaupapa Māori frameworks for data collection and research design.
Tika *How will the project proceed correctly?* Considers the validity of the research proposal.	**Good practice: Māori-centred** Māori as significant participants in various roles. Māori involvement in research design Mentorship for researchers. Sampling frameworks that allow Māori contribution to analysis. Project prioritises Māori participation in various roles.	Kaupapa Māori research design selected in consultation with Māori researchers. Data collection via interview as collaborative storytelling. Participants affiliate with Māori identity. Māori research advisors in various roles consulted across course of project, e.g., project supervisor, kaiārahi, librarians, other academic staff. All participants reviewed and edited transcripts to ensure legitimation of their perspectives. Initial ideas presented for discussion by focus group to support accountability and legitimation.
Manaakitanga *Who will ensure respect is maintained?* Considers cultural and social responsibility and respect for persons.	**Good practice: Cultural safety** Goals and benefits of research are collectively set. Research includes Māori concepts, values, tikanga, and whānau support. Māori participation in establishment of goals and tūmanako/aspirations.	Research focus redirected following conversations with participants and advisors. Whānau present and active participants with AAC users. Research interactions characterised by hui process, including mihimihi, kanohi kitea, whakawhanaungatanga, and poroaki. Participants nominated interview location. Tikanga Māori values and practices of aroha ki te tangata and tuakana-teina demonstrated in researcher's orientation as learner within conversations. Koha/gift given and kai/food shared.
Mana *Who has control over the project?* Considers equity and justice.	**Good practice: Mana whenua** Local iwi and hapū recognised in authorising research. Engagement with mana whenua throughout process. Research is relevant to Māori and contributes to achieving Māori goals. Mana whenua have a role in determining project benefits.	Ethical approval process included consultation with Ngāi Tuahiriri/Ngāi Tahu. Support obtained from kaiārahi with mana whenua affiliations to reframe analytical perspective. Intended outcomes of the research benefit Māori in all rohe/regions, particularly tamariki in rumaki reo education. Participants affiliate with iwi across the country. Recognition of strength of local te reo Māori speaking population as study progressed.