



TE WHARE WĀNANGA O  
AWANUIĀRANGI

# HE ARA KI NGĀ RAUTAKI E ORA TONU AI TE REO MĀORI

Pathways to Retention and Revitalisation of Te Reo Māori



THE UNIVERSITY OF  
**WAIKATO**  
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**MINISTRY OF SOCIAL  
DEVELOPMENT**  
TE MANATŪ WHAKAHIATO ORA

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## Contents

EXECUTIVE SUMMARY .....	4
INTRODUCTION.....	6
BACKGROUND .....	8
Revitalisation of Te Reo Māori .....	9
PREVIOUS RESEARCH.....	10
CURRENT POLICY SETTING .....	13
MAIHI MĀORI .....	14
MAIHI KARAUNA .....	14
Growing Up in New Zealand .....	15
OBJECTIVES OF THE RESEARCH.....	16
METHODS/METHODOLOGY .....	18
A KAUPAPA MĀORI LENS .....	18
STATISTICAL ANALYSES .....	19
Datasets.....	19
Language variables.....	19
RESULTS.....	22
What is the overall prevalence of Te Reo Māori in early childhood?.....	22
Prevalence.....	22
What are the demographic characteristics of being a Māori speaker during early childhood?.....	25
Who speaks Te Reo Māori?.....	26
What are the predictors of Māori language acquisition from the antenatal and infancy period? .....	28
How is cultural connectedness associated with Te Reo Māori use at 4.5 years of age? .....	28
What are the modifiable predictors of Te Reo use at age 2 and age 4.5?.....	30
DISCUSSION .....	34
Growth in Reo Proficiency .....	34
Te Reo Māori Strategies Beginning to Take Effect.....	35
Non-Māori Interest in Te Reo Māori .....	35
Te Reo Māori and Māori Development.....	36
Te Reo Māori Communities .....	36
The Value of Parent-Child Interactions .....	36
Modifiable Predictors.....	37
Strategies for Te Reo Māori .....	37
FUTURE DIRECTIONS .....	38
References.....	40

APPENDICES.....	43
Appendix A.....	43
Appendix B.....	45
Appendix C.....	46
Appendix D.....	47
Appendix E.....	49
Appendix F.....	50
Appendix G.....	51
External Advisory Board Members and the Terms of Reference .....	51
Terms of Reference of the External Advisory Board.....	51
Appendix H .....	52
TE WHARE WANANGA O AWANUIĀRANGI.....	52
Appendix I.....	53
RESEARCH TEAM .....	53

## **Table of Figures**

Figure 1: Te Whare o Te Reo Mauriora .....	13
Figure 2: Percent of children with at least some use of Te Reo Māori, as determined by the Basic Te Reo Scale administered at Age 4.5 years.....	23
Figure 3: Who Speaks Te Reo Māori - Mothers' indicators.....	27
Figure 4: Who Speaks Te Reo – speakers' indicators .....	28
Figure 5: Unique predictors of Te Reo Use at 4.5 years, focusing on those predictors considered to be modifiable and therefore possible targets for policy intervention .....	31

## **EXECUTIVE SUMMARY**

The past three decades have seen considerable investment in a range of initiatives designed to promote, sustain, and revitalise Te Reo Māori. And, while these strategies have often been simply framed within the context of language use and revitalisation, they have also contributed to a growing interest in Aotearoa New Zealand's national identity and cultural distinctiveness.

The research objectives of this project asked:

- 1. What are the demographic characteristics of being a Te Reo Māori speaker during early childhood?**
- 2. What are the predictors of Te Reo Māori language acquisition from the antenatal, infancy and early childhood period?**
- 3. How is cultural connectedness associated with Te Reo Māori use at 4.5 years of age?**

Answering these questions has been achieved through an analysis of data from the *Growing Up in New Zealand* longitudinal study (GUiNZ) via a kaupapa Māori lens. GUiNZ follows the development of approximately 7000 children.

The GUiNZ study collects data across six domains – Family and Whānau; Societal Context; Education; Health and Wellbeing; Psychological and Cognitive Development; and Culture and Identity. The resulting dataset therefore presents a unique opportunity to examine the barriers and enablers to acquiring, using, and retaining Te Reo Māori in ways that were not previously possible. To this end, the data can suggest the impact of current strategies, and identify opportunities for new policy approaches, investments or directions.

Positioning the data within the wider strategic context of our nation's broader aspirations for Te Reo Māori allowed insight into the direction and potential growth of Te Reo Māori in Aotearoa New Zealand. Findings included evidence for growth in Te Reo Māori proficiency, indications that Te Reo Māori strategies are beginning to take effect, an increasing trend of non-Māori interest in Te Reo Māori, the potential of communities of Te Reo Māori, and the value of parent-child interactions for Te Reo Māori development.

The findings of this study revealed that 77% of the full cohort in the GUiNZ study had at least some Te Reo Māori by the time they were 4.5 years old. Almost 10% of the full cohort had further developed Te Reo Māori skills, including speaking and understanding simple questions and sentences. Having a parent who speaks some Te Reo Māori and who is culturally connected, as well as attending a Kōhanga Reo, were indicators linked to higher levels of Te Reo Māori usage in children. Early language development was shown to be important for continued language learning, with a child's English vocabulary at age 2 one of the strongest predictors of their Te Reo Māori use at age 4.5 years. Our models also explained the majority of the variation among speakers with further developed Te Reo Māori, highlighting the comprehensiveness of the contextual measures collected within GUiNZ.

A positive predictor for Te Reo Māori development was parent-child interactions which is unsurprising considering the proven importance of this predictor on other language development. Reading books, playing games, telling stories, singing songs, and engaging in counting routines were all shown to be important predictors for Te Reo Māori acquisition. Higher levels of screen time predicted lower rates of Te Reo fluency; screen time is a modifiable predictor that can impact negatively on children's language development. Given the longitudinal nature of the research, these findings also highlighted the importance of taking a long-term and strategic approach to investing in Te Reo Māori. While positive growth can be expected in the short term, strategies will need to be afforded with the time and resource for this growth to manifest fully across the longer term.

Aligning these findings with both the Maihi Māori and Maihi Karauna has highlighted the potential of these two strategies to positively impact Te Reo Māori retention and revitalisation. Specific findings include the importance of whānau (parent) interactions with tamariki; supporting spaces – such as Kōhanga Reo – where Te Reo Māori can be nurtured; and recognising the need for communities where access to cultural capital and enhanced local identity is fostered. These particular findings point to the impact that the strategic focus and resourcing of both the Maihi Māori and Maihi Karauna are having on

Te Reo Māori revitalisation. An audacious goal of the Maihi Karauna of “Mātauranga” is that our country has increased levels of knowledge, skill and proficiency in Te Reo Māori. This is supported by the findings of this study (77% of the full cohort have some Te Reo Māori). Similarly, insights reveal that initiatives such as Kōhanga Reo enhance Te Reo Māori usage, and which likewise supports a Maihi Māori goal of “Tuakiri” – Te Reo Māori use in iwi and communities enhances local identity and community cohesion. By focussing on these areas, clear pathways can be created to ensure that Te Reo Māori is able to flourish and evolve.

We consider the findings of the report to be significant for several reasons. First, the report has a specific focus on identifying enablers and predictors of Te Reo Māori revitalisation.

Second, the report has been authored by a wānanga that was successful in being awarded a Children and Families Research grant, enabling a kaupapa Māori approach to the research design, analysis, and interpretation – the first time that we are aware that such an approach has been taken for analysis of GUiNZ data.

Finally, the findings point to the continued opportunities that lie in analyses of this type of data – particularly with the ongoing collection of information through the GUiNZ data.

The age 8 year data collection wave (and beyond) presents an exciting future opportunity to build on the findings of this study, investigating further the impact of a range variables on the retention and revitalisation of Te Reo Māori for the tamariki (and their whānau) of Aotearoa.

Te Whare Wānanga o Awanuiārangi would like to take this opportunity to thank the Ministry of Social Development for their support.

## **INTRODUCTION**

Contemporary Aotearoa New Zealand is well-accustomed to celebrating its indigenous culture and identity. Cultural events and activities such as Matariki are commonplace, and although not universally embraced, reflect a growing collective interest in Māori iconography, traditions, and language. Te Reo Māori – at least in the past two decades – has made gains in terms of both presence and support. Its visibility in the mainstream

media has increased, supported by initiatives such as Kōhanga Reo, kura kaupapa, Māori television, radio, and more recently, multiple digital platforms to access Māori language content (Middleton, 2010). Tertiary providers have likewise embraced the opportunity to teach Te Reo Māori, to offer qualifications in the Māori language, and to meet the increasing demand for language courses and programmes.

Despite these developments, the status and survival of Te Reo Māori is far from assured. The gains that have been achieved have neither been universal or consistent. Although many tamariki have flourished within an immersive language environment, other tamariki have not had opportunity to acquire Te Reo Māori. In addition, concerns have been raised about the quality of Te Reo Māori now being spoken and whether this is declining, and the ability of older Māori who don't have Te Reo Māori to access the same opportunities to learn or experience Te Reo Māori.

Agencies such as Te Taura Whiri I Te Reo Māori, Te Mangai Paho, Te Mātāwai, and Te Puni Kōkiri, have each played significant roles in the development and design of Te Reo Māori policy initiatives. A lack of sustained resources has, however, limited the reach of their endeavours and accordingly required strategically targeted investment – which wisely opted to support initiatives with the broadest reach or greatest potential to generate long-term gains. Therefore, informed advice on where investment might best be placed has become increasingly relevant to ensure that limited resources are used in the most effective manner. Our research has been driven by this need, with a desire to provide evidence and research-informed advice about where maximum gains from existing investment can be made. Other researchers and previous studies have sought to offer this type of strategic advice and have done much to inform where resources can best be targeted.

A unique aspect of this study, however, is that it uses data collected as part of the GUiNZ Study - a longitudinal study designed to provide robust information on what shapes children's early development and what interventions might be developed to provide them with the best possible start in life.

GUiNZ has collected a significant amount of data, including information on Te Reo Māori. Examining and linking this data across the study's 7000 participants has afforded the research team an opportunity to undertake a unique analysis into the early predictors



and environments associated with acquisition of Te Reo Māori within the broader context of child development and family life. This has enabled research into Te Reo Māori which has not previously been possible, providing new opportunities to explore ways in which more effective and targeted strategies for Te Reo Māori might be developed. This particular research will also highlight opportunities to strengthen acquisition of Te Reo Māori in an individual's youth, therefore strengthening Te Reo Māori revitalisation in the long term.

## **BACKGROUND**

Prior to the arrival of Europeans, Te Reo Māori was the only language spoken in Aotearoa. The subsequent colonisation of Aotearoa involved movements, policies and legislation intended to stop traditional Māori practices, with the ultimate aim of assimilating (or annihilating) the Māori people and invalidating knowledge, language and culture. Despite these explicit policies and processes, Te Reo Māori was the language used in all aspects of Māori social, commercial, community, and political life throughout the 19th century and the beginning of the 20th century (Mita, 2007). By the mid-20<sup>th</sup> Century, however, despite the signing of a treaty in 1840 intended to uphold the rights and responsibilities of Māori including protection of their '*taonga tuku iho*', Te Reo Māori was at risk of being permanently lost.

By the 1970s, Te Reo Māori was marginalised to specific community activities and it was predicted that once the older generation of Māori had passed on, "Māori would be a language without native speakers" (Ministry of Māori Development, 2003). In the face of such risk, Māori mobilised to assert their *tino rangatiratanga* over what had been taken during early colonisation, including land, culture and language.

It was in this decade that Māori began to insist that their language was prioritised in the education system. A petition supported by 30,000 signatures was presented to parliament on September 14, 1972, calling for courses in Māori language and culture to be offered in schools. Consequently, Māori language was offered as a subject in some secondary schools, but there were limitations due to the number of hours available to study (usually only four hours a week) and the types of content taught (limited to grammar and written Māori).

In 1978 the first bilingual school opened in Ruatoki. This saw a further development in the type of language education offered in Aotearoa. Positive outcomes included a greater willingness of Māori participate in education, variable amounts of Māori language used throughout the curriculum, and the nurturing of the language by the wider (predominantly Māori) community. These types of milestones in the history of Aotearoa, were precursors for the emerging actions of self-determination by Māori in the education space.

Movements including Te Kōhanga Reo, Kura Kaupapa Māori, Wharekura and Whare Wānanga, were all efforts to protect and revive Māori ways of being, doing and thinking (Mita, 2007). Despite ongoing struggles, Māori continue to assert spaces where they can assert their self-determination through reclamation of traditional practices, revitalisation of their language and ensuring that a Māori world view informs wider New Zealand policy and legislation.

A cornerstone to this resistance for Māori is the important connection between Te Reo Māori and the collective, tribal and familial identity as Māori (Te Huia, 2015). For Māori, language forms the basis of personal interactions with others, connects Māori to the intergenerational knowledge of ancestors, and provides a unique cultural lens through which to make sense of the world. It is imperative that Te Reo Māori is alive and used by all if citizens of Aotearoa are to see the potential of Māori, and Aotearoa New Zealand as a whole, realised. To move towards a language that is thriving, we must first understand the context of our current use of Te Reo Māori, language learning mechanisms, and Te Reo Māori proficiency and sustainability. In providing a precise picture of current language use, there will be more accuracy when attempting to impact change at the national and local levels, by ensuring that existing and future policy and legislation can act as enablers for the types of language strategies that support retention and revitalisation.

### **Revitalisation of Te Reo Māori**

It is widely accepted that the revitalisation of Te Reo Māori emerged during the 1970's. The shift occurred as part of a larger push for cultural revitalisation which was led by younger, urban-based Māori. Within the education sector, Te Kōhanga Reo that targeted early childhood education, began in 1981 and the number of Te Kōhanga Reo that exist

today tally over 460 (Te Kohanga Reo National Trust, 2019). The first Te Kura Kaupapa Māori (Māori language immersion school) opened in 1985 and today pupils who are exposed to Māori medium education (where the student is taught and exposed to more than 51% of their education in Te Reo Māori) numbers over 20,000 (Ministry of Education, 2019).

In the legislative space, it was the 1984 Wai II claim lodged by Ngā Kaiwhakapūmau i te Reo with the Waitangi Tribunal that led to the recognition of Te Reo Māori as an official language of Aotearoa, New Zealand. The subsequent Māori Language Act 1987 legislated Te Reo Māori as one of New Zealand's official languages, and established the Māori Language Commission. Benton (2015) analysed Te Reo Māori revitalisation within the education sector since the passing of the Act and in reference to the development of Te Kohanga Reo, Te Kura Kaupapa Māori, and bilingual schools noted that "The combined effect of these developments led initially to an exponential increase in the number of people able to speak Māori, especially at the younger age levels, which plateaued in the 1990s and has held fairly steady – increasing numerically but declining as a proportion of the total Māori population – since then." (Benton, 2015) Comparing the plight of Te Reo Māori educational opportunities to Basque language schools, Benton observed that bilingualism played a pivotal role in ensuring that the language became widespread. Going further, Benton wrote "During this time, in New Zealand, about 80% of students have had little or no exposure to Māori language in school, so it is little wonder that knowledge of the language has plateaued." (Benton, 2015)

## **PREVIOUS RESEARCH**

Te Reo Māori research has previously focussed on understanding groups of people's Te Reo Māori use within specific contexts, or as a result of specific interventions. This includes a rich body of research highlighting the impacts of education initiatives, policy changes, community movements and strategy implementation (Tocker, 2015); (Smith L. T., 1994); (Stewart, 2014); (Lourie, 2013); (Lourie, 2016); (Hill, 2017). This prior research has greatly helped shape our understanding of the historical effects of language loss because of colonisation, but it has also helped to acknowledge and celebrate the contexts and initiatives that enable Te Reo Māori to thrive.

In the 2013 Census, only 3.7% of the total New Zealand population reported they could hold a conversation in Te Reo Māori. Approximately 21% of Māori reported that they could hold a conversation in Te Reo Māori about everyday things (decreased from 25.2% of Māori in 2001) (Ministry of Social Development, 2016).

The proportion of under-15-year olds who could speak Te Reo Māori also decreased, from 20% in 2001 to 16.7% in 2013. The proportion of Māori who are proficient Te Reo Māori speakers (as opposed to only being able to hold a simple conversation) remained static between 2001 and 2013 at approximately 11%; however, this group tended to be older than the rest of the population (Te Puni Kōkiri, 2019).

The *Te Kupenga – the Māori Social Survey*, undertaken in 2013 (Statistics New Zealand, 2019), provided more detailed information on the use and proficiency of Te Reo Māori. It reported that 55% of Māori adults stated they could speak more than a few words or phrases in Te Reo Māori (Statistics New Zealand, 2019). In 2015, 40% of Māori primary-school aged students participated in education programmes that integrated Te Reo Māori instruction (Hill, 2017). The Ministry of Education's 2017 ECE census reported 454 Kōhanga Reo throughout Aotearoa with 4% of ECE enrolments in Kōhanga Reo (a decrease from 6% since 2005) (Ministry of Education, 2018).

In 2012 the Education Review Office produced a report where the key findings included that 23% of early childhood services valued highly Māori language, culture and identity of Māori children, 47% registered the importance of such factors to some extent, and 27% to a limited extent (Education Review Office, 2012). While the report focussed on the partnership between ECE and Whānau Māori, it showed that only 23% ECE's valued the Māori language, culture and identity of Māori children to a high extent (Education Review Office, 2012). Some five years later, ERO (2017) developed a framework to assess if Te Kōhanga Reo children learned successfully (Education Review Office, 2017). The critical areas of influence underpinning the framework that takes a holistic view of both a child's well-being and learning Te Reo Māori were:

- the child is the focus (ko te tamaiti te pūtake o te kaupapa);
- intellectual, physical, spiritual and emotional wellbeing (ngā ahuatanga) are paramount;

- te reo Māori, tikanga Māori, te ao Māori and mātauranga Māori are dimensions (korahi) used to illuminate the Māori paradigm;
- the strands of te whāriki (taumata whakahirahira) provide a learning platform that reflects depth and embodies the kōhanga reo philosophy (kaupapa);
- whānau, kaumātua, kaiako and kaiāwhina create a nurturing, loving and caring environment.

(Education Review Office, 2017)

Another report produced by the ERO (2017) in 2017 regarding children’s oral language development from birth to 8 years, made little reference to the use of Te Reo Māori within the wider ECE sector apart from some examples of specific ECE’s and relevant learning outcomes from Te Whāriki (Education Review Office, 2017). Under Goal Two “Children experience an environment where they develop verbal communication skills for a range of purposes” it stated that children should develop “an appreciation of Te Reo Māori as a living and relevant language.” (Education Review Office, 2017)

A gap exists, however, in our understanding of language use, acquisition, proficiency and retention for Māori and non-Māori in New Zealand. Researchers do not yet fully understand the ways in which children’s Te Reo Māori development is nurtured from birth through to early childhood and beyond. Longitudinal data provides opportunity to examine trends in language use and retention over time within the context of individuals’ lives. These analyses – in combination with information about the individual, whānau, and community context for language use – provide a deeper understanding of the circumstances required to support Te Reo Māori sustainability, and provide an opportunity to suggest possible new approaches. With this depth of data, it is possible to integrate across different levels of influence, including social, environmental and cultural contexts, thus strengthening the resulting recommendations.

## CURRENT POLICY SETTING



Figure 1: Te Whare o Te Reo Mauriora  
(Te Puni Kōkiri, 2019)

Affirmed in *Te Ture mō Te Reo Māori Act* (2016) as “a taonga of iwi and Māori, a language valued by the nation and an official language of New Zealand” (Te Puni Kōkiri, 2018), Te Reo Māori empowerment, support and development at the community level is prioritised by both the Crown and Māori (Te Puni Kōkiri, 2015). This partnership of ongoing Te Reo Māori development and revitalisation is expressed by the metaphor of Te Whare o Te Reo Mauriora (Te Puni Kōkiri, 2018). Te Whare o Te Reo Mauriora (Figure 1: Te Whare o Te Reo Mauriora) acknowledges the unique and complementary roles that both iwi Māori and the Crown have in the revitalisation of Te Reo Māori and provides a space where a shared sense of purpose can be envisioned and enacted. The partnership is represented by the two *maihi* (bargeboards) of the whare – te Maihi Māori symbolising iwi, hapū, whānau, Māori and communities, and te Maihi Karauna symbolising the Crown.

Te Mātāwai – an independent statutory entity established in the 2016 Act to provide leadership for the implementation of te Maihi Māori – work closely with iwi Māori and Māori language communities on a range of investment and research initiatives.

	<b>OUTCOMES</b>	<b>AUDACIOUS GOALS</b>
<i>MAIHI MĀORI</i>	<b>TUAKIRI</b> Te Reo Māori use in iwi and communities enhances local identity and community cohesion.	By 2040, one million people (or more) will be using Māori language in community immersion domains.
	<b>WHAKATUPURANGA</b> Whānau (homes) are supported to re-establish and maintain Te Reo Māori as a first language.	By 2040, the Māori language will be the first language of 25% of all Māori children (aged 0-7).
<i>MAIHI KARAUNA</i>	<b>AOTEAROATANGA</b> Te Reo Māori is valued by Aotearoa whānui as a central part of national identity.	By 2040, 85 % of New Zealanders (or more) will value Te Reo Māori as a key element of national identity.
	<b>MĀTAURANGA</b> Aotearoa Whānui has increased levels of knowledge, skill and proficiency in Te Reo Māori.	By 2040, one million New Zealanders (or more) will have the ability and confidence to talk about at least basic things in Te Reo Māori.
	<b>HONONGA</b> Aotearoa Whānui is able to engage with Te Reo Māori.	By 2040, 150,000 Māori aged 15 and over will use Te Reo Māori as much as English.

*Table 1: Maihi Māori and Maihi Karauna Outcomes and Goals*

(Te Mātāwai, 2017) (Te Puni Kōkiri, 2019)

The Section 8I report for 2017-2018 on the progress of the implementation of recommendations made to the Crown by the Waitangi Tribunal (Te Puni Kōkiri, 2018) states that more work is needed to identify the types and costs of interventions that will achieve the goals of Te Whare o Te Reo Mauriora. This included determining whether the current level of funding accords with the status of Te Reo Māori, and if not, what level of funding would be required to achieve the goals in the Maihi Karauna.

Within this current setting lies the opportunity and necessity to base policy and funding decisions on robust and accurate research. Recent data showed that only 15% of New Zealand adults were able to speak basic Te Reo Māori (*General Social Survey 2016*) and only 13.2% of Māori over the age of 15 years old speak as much Te Reo Māori as English (Statistics New Zealand, 2019). This data shows the need for accurate Te Reo Māori usage research, and more importantly, information about the use and retention of Te Reo Māori by children. The potential benefits of this research project are two-fold – first, a more accurate picture of current numbers of Te Reo speaking children in New Zealand, including demographic descriptors, and second, an ability to understand why they are speaking Te Reo Māori and why they are retaining the language throughout childhood.

### **Growing Up in New Zealand (GUiNZ)**

The GUiNZ longitudinal study follows the development of approximately 7000 children from before their birth in New Zealand in 2009 and 2010. There are over 1500 children in the study who are identified (by their parents) as Māori and the study has involved interviews with the children's parent(s), the children, as well as other data collection methods. Face-to-face interviews occurred during pregnancy, and then when the children were 9 months, 2 years, 4.5 years, and 8 years of age. Data is collected across six domains – Family and Whānau; Societal Context; Education; Health and Wellbeing; Psychological and Cognitive Development; and Culture and Identity.

The GUiNZ study holds a unique opportunity to examine the barriers and enablers to acquiring, using and retaining Te Reo Māori that has not previously been possible (Growing Up in New Zealand, 2015).



A focus on identifying what works and what doesn't for Te Reo Māori development during early childhood offers new insights into language use, proficiency, drivers and impediments. With these insights, we can consider the impact of current strategies, identify opportunities for new policy approaches, ensure that resources are effectively targeted, and that policy change leads to language gains.

An important outcome of understanding the use of Te Reo Māori is the benefit to all New Zealanders associated with a thriving indigenous language. The Crown's strategy for Māori Language Revitalisation, 2019-2023, has the vision that Te Reo Māori will be an inherent part of Aotearoa/New Zealand's national identity. This aspiration of Te Reo Māori as a normal part of everyday life for wider Aotearoa/New Zealand, where it is used by everyone, every day, every way and everywhere, recognises the value of Te Reo Māori not just to Māori, but to all New Zealanders and indeed to the world. It also lays down the challenge for all New Zealanders to understand and recognise the importance of Te Reo Māori to our collective progress and the role we can all play through our active participation in speaking Te Reo Māori. Full and genuine recognition of indigenous languages also provides opportunity to address the exposure to historical wrongs and the inequitable distribution of resources and determinants, and to restore recognition that identity and autonomy are vital (United Nations, 2007). The insights from this study will contribute to the ongoing revival of Māori ways of being and knowing, so that Māori can live as Māori and experience success as Māori, we can also start to promote the benefits of all New Zealanders recognising the importance of Te Reo Māori as a lever to positive cultural and social change.

## **OBJECTIVES OF THIS RESEARCH**

The primary objective of this research was to understand the current state of Te Reo Māori among pre-school children and to identify the enablers and barriers that contribute to the acquisition of Te Reo Māori in children. This project is a critical step in understanding the current state of Te Reo Māori in New Zealand and highlighting the barriers and enablers that currently contribute to the acquisition and retention of Māori language in children. Using the GUiNZ longitudinal data, we ask the following questions:

- 1. What are the demographic characteristics of being a Te Reo Māori speaker during early childhood?**
- 2. What are the predictors of Te Reo Māori language acquisition from the antenatal, infancy and early childhood period?**
- 3. How is cultural connectedness associated with Te Reo Māori use at 4.5 years of age?**

These questions will allow some explicit statements to be made about the speakers of Te Reo Māori in New Zealand. They also enable a more focused look at the factors that contribute to the acquisition, retention and proficiency of Te Reo Māori. This will highlight opportunities to strengthen acquisition of Te Reo Māori in early years for all New Zealand tamariki, therefore strengthening Te Reo Māori revitalisation in the long term.

The size and scale of the data set available for analysis, and the longitudinal aspect of the GUiNZ study, also provides a unique opportunity for insight. A wide range of child, family and societal variables can be analysed alongside Te Reo Māori usage, over time, to elucidate the characteristics associated with language retention. The other advantage of using this data set is that it includes language tools that allow an accurate indication of language proficiency. In contrast with other studies, where self-reporting on language fluency is the main tool used to collect data, this allows an objective and consistent understanding of the level of Te Reo Māori being used and what factors contribute to this being sustained, improved or decreased over time.

The participant groups represented within the GUiNZ study also allows a broader understanding of who is speaking Te Reo Māori in New Zealand. Of particular importance for this study, the make-up of the cohort can provide information generalisable to the current population of New Zealand children (Morton, et al., 2015). There is currently a lack of readily available data regarding speakers of Te Reo Māori who are not Māori, so this project adds to an understanding of the role of all New Zealanders in the revitalisation of Te Reo Māori.

## **METHODS/METHODOLOGY**

### **A KAUPAPA MĀORI LENS**

Central to the Kaupapa Māori approach to research is ensuring that any work around Te Reo Māori is carried out with a clear understanding of the transformational potential of any outcomes for the benefit of Māori communities (Smith, Hoskins, & Jones, 2012). With this in mind, it was critical that this project be conducted by Māori, for Māori. To ensure that a Māori world view informed both the approach and the outcomes, an advisory board was set up that included a range of perspectives from Māori researchers, Te Reo Māori experts, and policy representatives from multiple contexts.

This component of the research process allowed discussions that focussed on the potential of Te Reo Māori, including an understanding of what is working well, and celebrating those communities where Te Reo Māori is strong by highlighting these in the analyses. Board members were able to bring their policy expertise to the table to make recommendations that can translate the findings into deliberate acts of transformation in multiple contexts (including language, iwi, health, research and education).

Consequently, a key part of this project was that a Māori perspective has informed the research design and analysis, the interpretation of the research findings, and ensured that the outcomes and recommendations are shaped in a way that represents the self-determination of Māori to lead the revitalisation efforts of Te Reo Māori for the benefit of all New Zealanders.

## STATISTICAL ANALYSES

### Datasets

To conduct our analyses, we used longitudinal data from the GUiNZ study. Our sample set consisted of all available data from the 2 Year (n=6327) and 4.5-year (n=6052) data collection waves.

### Language variables

At the age 2 time-point, mothers in the full cohort (N = 6327) reported on their children's language development in Te Reo Māori and other languages, including New Zealand English, using adapted versions of the *MacArthur Communicative Development Inventory* (Fenson, et al., 2000) validated for a New Zealand sample<sup>1</sup> (Reese, et al., 2017).

At the age 4.5 time-point, mothers in the full cohort again reported on their children's Te Reo Māori proficiency using a scale created for GUiNZ (*Appendix C*)<sup>2</sup>. This scale consisted of 9 items in total: 5 items which were answered by all questionnaire participants (referred to in this report as the 'basic Te Reo Māori scale'), and an additional 4 items answered by the subset of participants who identified their children as Te Reo Māori speakers (referred to in this report as the 'advanced Te Reo Māori scale'). Mothers were asked to report on the 4 advanced Te Reo Māori items if they had previously answered "Māori" to the question "What language(s) does {NAME} speak?". The Te Reo Māori scale was developed specifically for the GUiNZ study, and was based on published curriculum guidelines for teaching and learning Te Reo Māori (Ministry of Education, 2009). These guidelines enabled the development of a series of questions representing the eight levels that defined progressions of increasing difficulty. Structuring the scale in this way meant it would be possible to elucidate the proficiency of both emerging and more advanced speakers of Te Reo Māori. For the present analyses, we will focus on Te Reo Māori use by

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<sup>1</sup> The age 2 tool validation has been peer-reviewed and published in a highly recognised child language journal (*Journal of Child Language*, Cambridge).

<sup>2</sup> It is common in longitudinal child development studies to have to change instruments over time to capture growth in children's skills. The Te Reo Māori language tool at age 2 measured single vocabulary items, whereas at age 4.5 there was a need to measure children's phrases and sentences. Both measures are parent report and there is a large body of international literature now on the validity of parent report for child language assessment.

Māori and non-Māori children in the cohort. At age 2, using a different parent report instrument, a total of 6025 mothers reported on their children's English skills, and 584 on their children's Te Reo Māori skills (Reese et al., 2017). At age 4.5, a total of 6052 mothers reported on their children's Te Reo Māori skills, using the basic Te Reo Māori scale, and 585 mothers also reported on their children's advanced Te Reo Māori skills. Appendix A contains the Age 2 New Zealand English word list; Appendix B contains the Age 2 Te Reo Māori word list; Appendix C contains the 9 Te Reo Māori items administered at age 4.5 years; Appendix D contains a list of all derived variables used in analyses and validity information.

## **Statistical Analyses**

**Objective 1.** To first identify the demographic characteristics of speaking Te Reo Māori during early childhood, we conducted separate univariate analyses of variance (ANOVAs) to assess children's proficiency in Te Reo Māori at ages 2 (Appendix E: Table 1) and 4.5 years (Appendix F: Table 2); as a function of: socioeconomic status (area deprivation index classified into 3 levels of low, moderate, and high deprivation), child gender (male vs female) and birth order (first-born vs later-born), parents' highest level of educational qualification (No secondary school qualification, Secondary school/NCEA 1-4, Diploma/Trade Certificate/NCEA 5-6, Bachelor degree, Higher degree), parental ethnicity (Māori vs non-Māori), parental report of Te Reo Māori proficiency (none vs some vs fluent), parental estimate of Te Reo Māori spoken in the home (none vs some), parental reports of their own first language in early childhood and at the start of schooling (te Reo Māori vs another language), rurality (rural vs urban) and parental country of birth (New Zealand vs outside New Zealand). We conducted bivariate correlations between proficiency in Te Reo Māori at ages 2 and 4.5 years and the following continuous demographic variables: maternal age, number of siblings, and individual deprivation (at 9 months). Univariate associations were considered statistically significant at  $P < 0.05$ .

**Objective 2.** To ascertain the early childhood predictors of Te Reo Māori acquisition, we used multivariable regression analyses to assess the unique predictive factors of Te Reo Māori proficiency among cohort children at ages 2 and 4.5. As predictor variables, we

used data collected at the antenatal, 9-month, 2-year, and 4.5-year time points. Only those predictor variables with a significant bivariate association with Te Reo Māori proficiency at ages 2 and 4.5 were included in the final multivariable models. In addition to the demographic variables identified as significant from the analyses of objective 1, other variables included in the final models were: child temperament at 9 months; family structure (a measure of parents living with partners and/or extended family members at 9 months and 2 years); early childhood education experiences (amount and type of ECE attended up to age 4.5 years as well as the use of informal and family care); media use (amount and type of media use up to age 4.5 years); and parent-child interactions (reported at 9 months, 2 years and 4.5 years; observed at 2 years).

**Objective 3.** To explore whether cultural connectedness was associated with Te Reo Māori usage in early childhood, we used multivariable regression analyses to identify associations between parental perceptions of cultural connectedness and children's use of Te Reo Māori at age four. The cultural connectedness variables used were those collected as part of the antenatal questionnaire and the 54-month (4.5 year) questionnaire. These include aspects of the *Multigroup Ethnic Identity Measure* (MEIM), which comprises the process of exploring the meaning of one's identity and sense of commitment or belonging to that identity (see Appendix D).

## RESULTS

### What is the overall prevalence of Te Reo Māori in early childhood?

#### Prevalence

At 2 years of age, 763 of 6327 children (12%) from the cohort were reported by their mother to understand Māori. Of those children, the Māori vocabulary checklist was completed by mothers for 584 children (9% of the cohort)<sup>3</sup>. At age 4.5 years, there were 4634 of 6052 children (77%) from the cohort who were reported to know at least some Te Reo Māori. This was most commonly a greeting/farewell (N=2986, 49%) or other simple words (N = 4197, 68%). Only 1418 children (23%) were reported to never use Māori language or words (Figure 2).

#### *AGED 4.5 YEARS, BASIC TE REO SCALE*

Sample (N =6052) at age 4.5 years – Te Reo Māori capability on the basic Te Reo scale

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<sup>3</sup> At age 2 parents were asked “What languages does your child understand?” 763 parents answered “YES” for Māori language to this question. Completion of the vocabulary checklist requires a different level of ‘understanding’ with a different level of proficiency described. Thus, while we had 763 described as ‘understanding’ we only have 584 who were able to complete the checklist. This is information itself about perceptions of language understanding, and importantly not non-response/missing data. This highlights the strength of the study in providing additional information over and above the perceived ‘understanding’ that is the typical question in survey instruments.

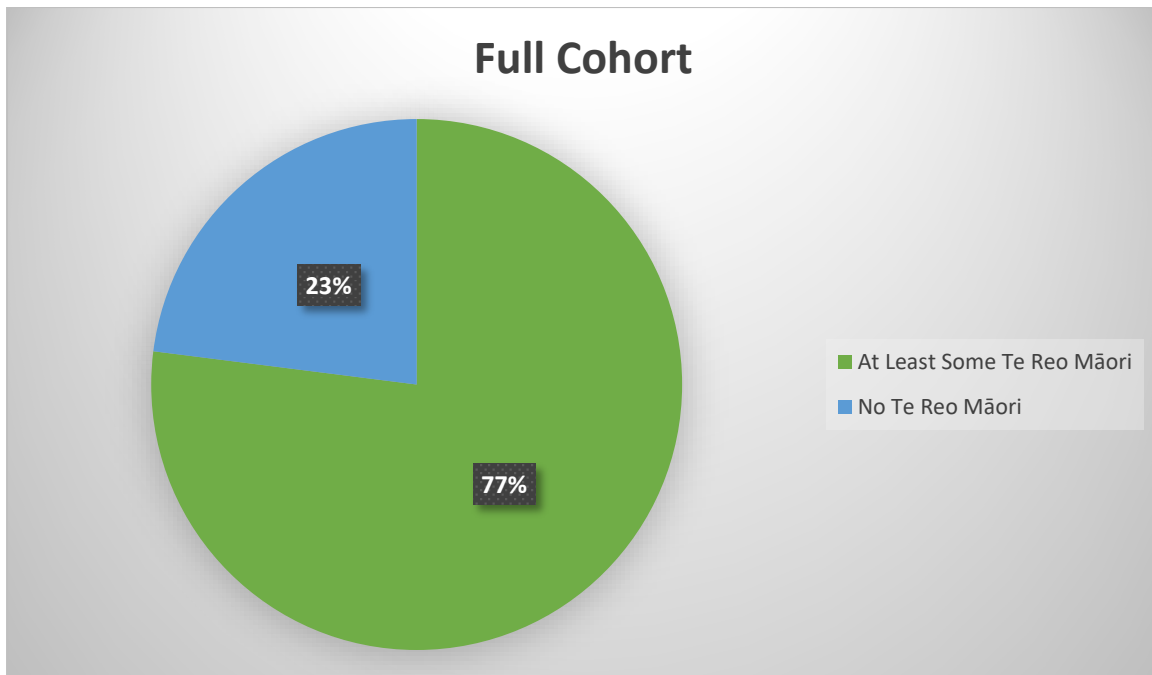


Figure 2: Percent of children with at least some use of Te Reo Māori, as determined by the Basic Te Reo Scale administered at Age 4.5 years

*Table 2: Parental report of Te Reo Māori usage by children at 4.5 years of age (basic scale; n = 6052)*

<b>How often does {NAME} do any of the following?</b>				
	Often	Sometimes	Rarely	Never
Greet and/or farewell people in Te Reo Māori	394(6%)	1301(21%)	1291(21%)	3116(51%)
Introduce [HIMSELF/HERSELF] to others in Te Reo Māori	93(2%)	314(5%)	667(11%)	5028(82%)
Speak simple words in Te Reo Māori	523(9%)	2109(34%)	1565(26%)	1907(31%)
Communicate about personal information in Te Reo Māori, such as iwi, hapū, mountain and river; or hometown and place of origin	98(2%)	214(4%)	402(7%)	5383(88%)



Recognise and respond to simple spoken words in Te Reo Māori	650(11%)	1672(27%)	1253(20%)	2499(41%)
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All participants were asked the following questions:

- What language(s) does the child speak?
- Five initial questions (Basic Te Reo Māori Scale, Table 2) on Te Reo Māori regardless of what languages were reported.
- If “Māori” was reported as a language spoken by the child in the first questions, an additional four questions were asked (Advanced Scale, Table 3)

In addition to the basic Te Reo Māori scale, which was completed by the full cohort of 6052 children, a more advanced set of 4 questions was reported on by those mothers who indicated that their child spoke Te Reo Māori (n=585; 9% of the cohort)<sup>4</sup>. Of these children for whom the advanced Te Reo Māori scale was completed at age 4.5, most (468 children, 80%) of these children were identified as Māori.

Table 3: Parental report of Te Reo Māori usage by children at 4.5 years of age (advanced scale, n = 585)

<b>How often does {NAME} do the following when using Te Reo Māori?</b>				
	Often	Sometimes	Rarely	Never
Speak simple sentences or phrases in Te Reo Māori	140(24%)	164(28%)	149(25%)	139(23%)
Ask simple questions in Te Reo Māori	98(17%)	103(17%)	141(24%)	249(42%)
Recognise and respond to spoken sentences or phrases in Te Reo Māori	203(34%)	215(36%)	90(15%)	83(14%)
Read and understand written words in Te Reo Māori	27(5%)	65(11%)	149(25%)	346(58%)

<sup>4</sup> Responses of ‘often’, ‘sometimes’ or ‘rarely’ counted as reported speaking of Te Reo Māori

Table 4: Te Reo Māori Ability in 4.5-year-old children, as reported by their mothers

<b>Ethnicity*</b>	<b>Basic Te Reo scale</b>	<b>Advanced Te Reo scale</b>
European* <i>M</i> (SD) n=3844	0.87 (0.70), n = 3844	1.48 (0.71), n = 340
Māori <i>M</i> (SD) n=1289	1.27 (0.85), n = 1289	1.66 (0.74), n = 426
Pacific <i>M</i> (SD) n=1043	0.82 (0.81), n = 1043	1.65 (0.73), n = 118
Asian <i>M</i> (SD) n=825	0.62 (0.67), n = 825	1.48 (0.60), n = 26
MELAA <i>M</i> (SD) n=146	0.71 (0.70), n = 146	1.48 (0.39), n < 10

\* *Ethnicity variable was Level 1 Child Intended Ethnicity at Antenatal, reported by the child's mother. Participants could choose more than one ethnicity, so total n is greater than 6052, the number of participants.*

Table 4 shows the average Te Reo Māori ability of children at age 4.5 years by Level 1 ethnicity. The means are higher on both the basic and advanced scales for Māori children compared to non-Māori children, indicating greater Te Reo Māori usage on both scales.

### **What are the demographic characteristics of being a Māori speaker during early childhood?**

Our first objective was to identify the demographic characteristics associated with being a Māori speaker during early childhood. The study aimed to explore the associations between whānau, parental, and child variables and the use of Te Reo Māori in the critical before-school period. Importantly, this analysis also enabled an exploration of how language development and socio-economic indicators may be associated for Te Reo Māori. It also investigated the potential “language gap” in Te Reo Māori as a function of socioeconomic indicators. The language gap – by which children growing up in poorer families have smaller vocabularies than children growing up in wealthier families – has now been established in English-speaking and non-English speaking countries around the world (e.g. Farkas & Beron, 2004; Schady et al., 2015) as well as in New Zealand for the English language at age 2 years (Reese, et al., 2017).

## Who speaks Te Reo Māori?

Univariate analysis of Te Reo Māori use within this cohort have found that at age 2 years, Māori children use more Māori words than non-Māori children. At age 2, statistically significant univariate predictors of being a Te Reo speaker were: having a mother who was born in New Zealand, who had obtained a secondary school educational qualification or higher (Level 1-4), who was Māori herself, who spoke Te Reo Māori herself, and who knew her waka (Figure 3: Who Speaks Te Reo Māori - Mothers' indicators). Te Reo speakers were also more likely to live in neighbourhoods which are consistent with the broader socio-economic profile of where many Māori whānau reside, to have one or more siblings, and to attend childcare (Figure 5: Who Speaks Te Reo – speakers' indicators).

At age 4.5, Te Reo Māori speakers who had higher scores in the basic Te Reo Māori scale (greetings/farewells and simple words; scale completed by the full cohort of 6052 children) were more likely, based on univariate analyses, to have a mother who was born in New Zealand, who was a single parent, who was younger, who was Māori herself, and who spoke Māori herself.

In addition, based on univariate analyses, speakers who were more proficient in basic Te Reo at 4.5 years old were more likely to live in rural areas and neighbourhoods which are consistent with the broader socio-economic profile of where many Māori whānau reside, to be of Māori ethnicity, to attend Kōhanga Reo rather than kindergarten, and to be girls (Figure 5: Who Speaks Te Reo – speakers' indicators).

Also at age 4.5, speakers who had higher scores in the advanced Te Reo Māori scale (speaking or understanding simple sentences; a scale completed by a subset of 585 children) were more likely, based on univariate analyses, to have a mother who was born in New Zealand, who was Māori herself, who spoke Māori herself, and who knew her iwi and waka (Figure 4: Who Speaks Te Reo – Mothers' Indicators). Again, based on univariate analyses, speakers of advanced Te Reo were more likely to live in neighbourhoods which are consistent with the broader socio-economic profile of where

many Māori whānau reside, to be of Māori ethnicity, and to attend Kōhanga Reo instead of kindergarten or a childcare centre (Figure 4: Who Speaks Te Reo – speakers' indicators).

Sociodemographic correlates were as expected across basic and advanced measures and across both ages. Although some new indicators compared to age 2 emerged at age 4.5 on the basic Te Reo scale (maternal age, rurality, child gender), these effects were weaker, so are probably due to greater power with the full sample rather than a shift in indicators with age.

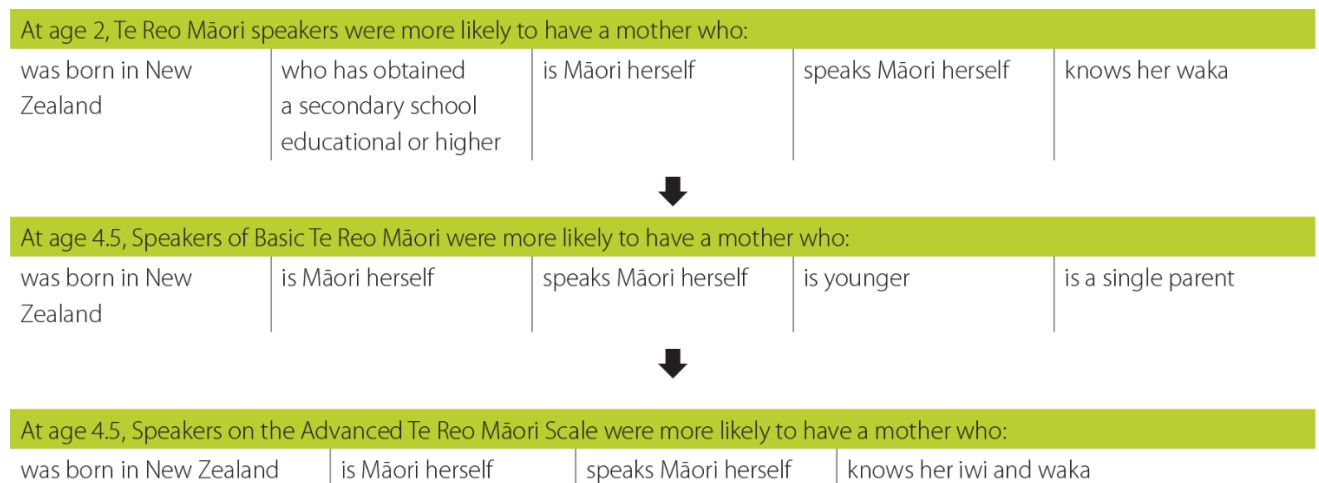


Figure 3: Who Speaks Te Reo Māori - Mothers' indicators

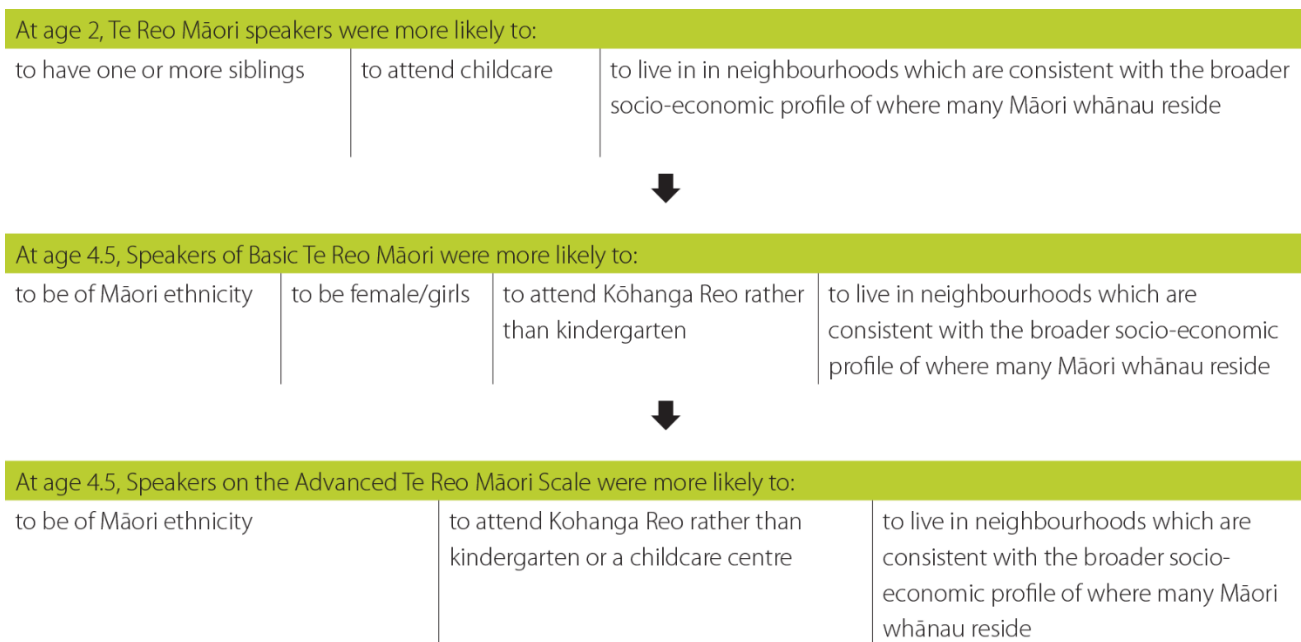


Figure 4: Who Speaks Te Reo – speakers’ indicators

**What are the predictors of Māori language acquisition from the antenatal and infancy period?**

**How is cultural connectedness associated with Te Reo Māori use at 4.5 years of age?**

These two questions aimed to identify the most likely targets for early intervention efforts to promote Te Reo Māori in the early years, and to develop policy and programmes that support Māori success as Māori. These aims connect directly to the policy targets across the government sector (in health, education and social services, for example), as well as the specific objectives of Maihi Karauna and the 2014 Māori Language Commission, as described earlier. Some of these success factors for Māori language use and proficiency will be more malleable than others by policy and programme intervention. For instance, children’s temperament is a less malleable factor, but maternal health and well-being and children’s early childhood education experiences are more amenable to early intervention efforts, particularly in the short- to medium-term. The researchers were particularly interested in exploring the role of parents’ cultural identity to both optimise efforts for the revitalisation of Te Reo Māori and to further the development of resilience in New Zealand children. For these analyses, we conducted

separate hierarchical multivariable regression models for age 4.5 Basic and Advanced Te Reo, with demographic variables entered in the first step and all other variables in a second step, including only those variables in each model that were identified as significant univariate predictors. Thus, the tables below (Table 5: Unique predictors for Basic Te Reo at 4.5 years; Table 6: Unique predictors for Advanced Te Reo at 4.5 years) list the percent of variance explained by the full model, along with the unique predictors of Basic and Advanced Te Reo at age 4.5. Note that the sample size for these full models is slightly lower than in the univariate analyses due to small amounts of missing data on some of the predictor variables.

Table 5: Unique predictors for Basic Te Reo at 4.5 years

<b>Statistically Significant Unique Predictors for Basic Te Reo at 4.5 years</b>	
<i>N</i> = 5007	
Overall $R^2 = 0.17^5$	
<b>Predictor</b>	<b>Beta<sup>6,7</sup></b>
Attending Kōhanga	0.19
Child's English vocabulary at age 2	0.14
Mothers' Te Reo fluency	0.12
Cultural Connectedness	0.10
Mother born in NZ	0.09
<i>NZDep</i>	0.07
Parent tells stories with child at age 4.5	0.06
Parent teaches counting to child at age 4.5	0.06
Parent reads books to child at age 2	0.05
Total screen time	-0.04
Child's Temperament - Effortful control	0.04
Number of children's books in house at 9 months of age	0.04
Rurality	0.03

<sup>5</sup> Overall  $R^2$  indicates 17% of the variance in Basic Te Reo is explained by the predictors in the final model

<sup>6</sup> The beta coefficient indicates the strength of the effect – the bigger the beta, the stronger the unique relationship between that predictor and Basic Te Reo Māori at 4.5 years

<sup>7</sup> All beta values included in this table are statistically significant at  $p < .05$ .

Child's Temperament - Surgency	0.03
Parent plays games with baby at 9 months of age	0.03
Parent started to read books to baby before 9 months of age	0.03

Table 6: Unique predictors for Advanced Te Reo at 4.5 years

<b>Statistically Significant Unique Predictors for Advanced Te Reo at 4.5 years</b>	
N = 321	
Overall $R^2 = 0.53^8$	
<b>Predictor</b>	<b>Beta<sup>9,10</sup></b>
Attending Kōhanga	0.58
Child's Māori vocabulary at age 2	0.18
Cultural Connectedness	0.15
Parent sings songs or plays music at age 4.5	0.04

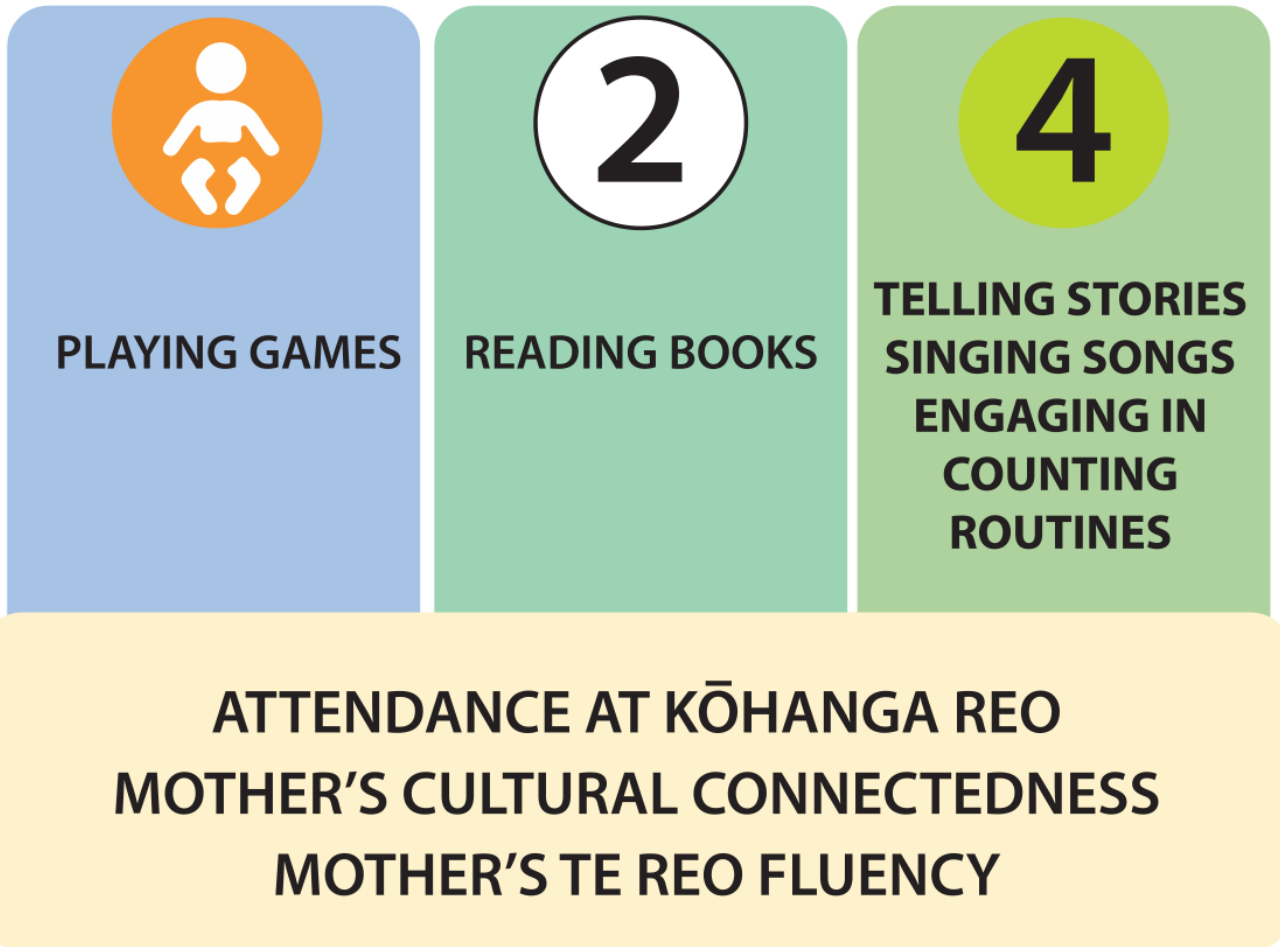
### **What are the modifiable predictors of Te Reo use at age 2 and age 4.5?**

<sup>8</sup> Overall  $R^2$  indicates 53% of the variance in Advanced Te Reo is explained by the predictors in the final model

<sup>9</sup> The beta coefficient size indicates the strength of the effect – the bigger the beta, the stronger the relationship between that predictor and Advanced Te Reo Māori at 4.5 years

<sup>10</sup> All beta values included in this table are statistically significant at  $p < .05$ .

## POSITIVE PREDICTORS



## NEGATIVE PREDICTORS

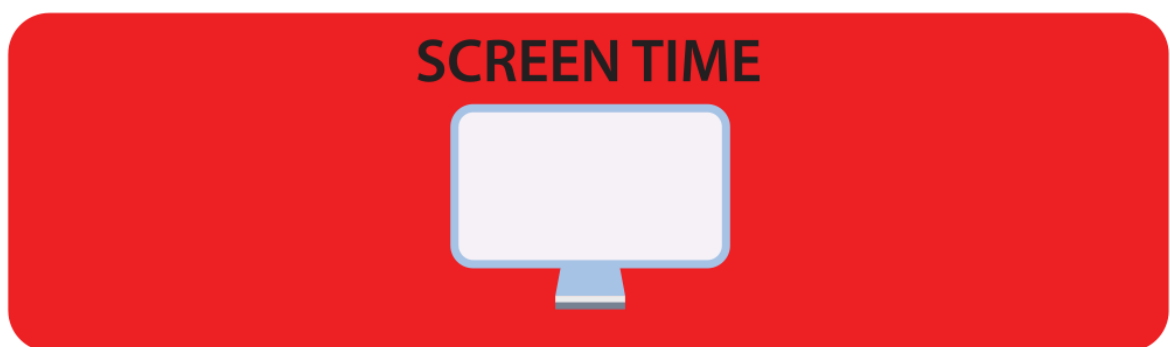


Figure 5: Unique predictors of Te Reo Use at 4.5 years, focusing on those predictors considered to be modifiable and therefore possible targets for policy intervention



These multivariate statistical models revealed that parent-child interactions of all sorts, and from an early age, were positively linked to children's Te Reo use at 4.5 years. These patterns are similar to previous reports regarding children's English language fluency (Reese E. , 2013). It is encouraging to see that these interactions are also predicting children's Te Reo knowledge because it highlights the need for policy that supports parents in engaging in more frequent interactions of higher quality with their young children (see (Reese E. , 2013)).

The specific parent-child interactions that were linked most strongly to Te Reo knowledge at age 4.5 were: playing games with babies, reading books with toddlers, and telling stories, singing songs, and engaging in counting routines with young children (Figure 5: Unique predictors of Te Reo Use at 4.5 years, focusing on those predictors considered to be modifiable and therefore possible targets for policy intervention). Please note that although the unique predictors differed slightly at each age, the parent-child interactions were correlated across time. Thus, it is important to send out the message to parents that all of these interactions (games, reading books, telling stories, and singing songs) are beneficial across early childhood.

It is unknown from the parent-report questions how many of these interactions were taking place in Te Reo. Even parent-child interactions that occur in English could indirectly be important for Te Reo use because one path to a second language is to first strengthen children's English language skills, allowing them to acquire a second language more easily (Pearson, 2008). In fact, children's age 2 English language skill uniquely predicted their later basic Te Reo use, which indicates a pathway from strong English language skills to emerging Te Reo skills. For advanced Te Reo users, it was instead their earlier age 2 Te Reo - not their age 2 English vocabulary - that uniquely predicted their Te Reo fluency at age 4.5. These patterns suggest two different paths to Te Reo acquisition: a *sequential path* through strengthening a first language before introducing a second language, and a *simultaneous path* through introducing both languages from an early age, with immersion in the non-dominant language via an ECE setting (which could be Te Reo in a Kōhanga or other early childhood learning service if English is the primary home language). These two paths to bilingualism are observed in other countries and languages around the world (Pearson, 2008).

Notably, children's total screen time at age 4 predicted lower rates of Te Reo fluency. Screen time is a clear, modifiable predictor that parents may not realise is linked negatively to children's language development (Figure 5: Unique predictors of Te Reo Use at 4.5 years, focusing on those predictors considered to be modifiable and therefore possible targets for policy intervention).

By far, however, attendance at Kōhanga Reo was the strongest predictor of Te Reo knowledge. Mothers' cultural connectedness and their own Te Reo knowledge were second in strength in the full models (Figure 5: ). Living in neighbourhoods which are consistent with the broader socio-economic profile of where many Māori whānau reside remained a unique predictor of basic Te Reo use (but not advanced Te Reo) at age 4.5; this effect could be occurring because of a higher density of Te Reo speakers in these neighbourhoods.

## **DISCUSSION**

One of the key objectives of this research was to understand the current state of Te Reo Māori among pre-school children and to identify the enablers and barriers that contribute to the acquisition of Te Reo Māori in children. Positioning the data within the wider strategic context of our nation's broader aspirations for Te Reo Māori allows for additional insight into the direction and potential growth of for Te Reo Māori within New Zealand. Important to this process has been the application of a Māori lens, so that data can be contextualized alongside more qualitative insights, experiences and knowledge. Located at this interface is where the Advisory Group for this study have been able to share and apply their knowledge; to reflect on the data, and to draw meaning from it, to explore possibilities, discuss potential solutions, and to suggest better informed strategies for Māori language revitalisation.

### **Growth in Reo Proficiency**

Methodological challenges across studies will always make it difficult to compare and contrast this investigation with others. Nevertheless, there is some evidence to suggest that the language profile of young New Zealanders (those who informed this study) is somewhat different to that of our older or adult population. Although the 2013 census data reveals that only 3.7% of the population could hold an everyday conversation in Te Reo Māori, this research has shown that closer to 10% of our participants were using Te Reo Māori in everyday conversations. Again, a cautious approach is required to comparing these figures and what is measured. Nevertheless, it is likely that a differential language profile exists. The reasons for this are unclear but may suggest that Te Reo Māori has become more prominent as a language of expression – at least among our tamariki. More significantly, it is possible that past efforts to increase language use are now beginning to take effect and that Te Reo Māori will likely play a more prominent role in the future lives of New Zealanders – both Māori and non-Māori.

## **Te Reo Māori Strategies Beginning to Take Effect**

The fact that more than three quarters of children in the full cohort at age 4.5 years use at least some Te Reo Māori further supports the idea of future growth. Moreover, and while it is unclear as to how this profile might change over time, this result is both unexpected and encouraging. This data may suggest an increasing willingness by parents to equip their children with at least some Te Reo Māori, or it may simply mean that Te Reo Māori is now more obvious within society and in the media. If the latter, the implications are that past efforts to promote and better socialize Te Reo Māori are now beginning to take effect. Accordingly, short-term measures of success should be avoided in favour of strategies afforded with the time and resources to promote longer term and more sustainable gains. While the success of Te Reo Māori strategies is often derived from a blunt estimation of the current number of Te Reo Māori speakers, a more insightful approach would be to consider a broader range of indices and especially those which are able to profile future gains and anticipated challenges.

## **Non-Māori Interest in Te Reo Māori**

Unsurprisingly, Māori children made up the majority of the group who answered the advanced Te Reo Māori scale (80%). The study shows that 30% of Māori children were able to complete the advanced Te Reo Māori scale. This is an encouraging trend when the long-term goals of the Maihi Māori are that 25% of Māori children will have Te Reo Māori as their first language by 2040 (Te Mātāwai, 2017). However, the fact that 20% of this group were non-Māori was unexpected. For these children and their parents, it appears that active steps have been taken to embrace the language. The implications are that strategies to promote Te Reo Māori are having a reach beyond the Māori population and that a large proportion of non-Māori children are actively engaged with Te Reo Māori at some level. This is again encouraging for the strategic focus of the Maihi Karauna as it indicates that non-Māori are seeing value in the language and the benefits this brings to the growth and development of their children (Te Puni Kōkiri, 2019).

## **Te Reo Māori and Māori Development**

The association between mothers' knowledge of various cultural markers (including Te Reo Māori) and their child's ability to speak Te Reo Māori (at 2yrs) was expected. Likewise, childcare attendance was another expected correlate, given the bicultural emphasis of Te Whāriki. However, the positive association with the mother having a secondary school education qualification was of more interest and likewise suggests that educational gains for Māori have the potential to contribute to wider cultural developments. In general, the importance of the role of parents in their child's language development is confirmed with this research. This finding can also support the focus of building whānau and communities with strong Te Reo Māori, as outlined by the Maihi Māori outcome of Tuakiri and Whakatupuranga (Te Mātāwai, 2017).

## **Te Reo Māori Communities**

Unsurprisingly, the research highlighted an association between Te Reo Māori proficiency and retention with the types of neighbourhoods where Māori were more likely to be living. These initial insights suggest that where there exists a higher number of Māori, there is likely to be more regular access to cultural capital and language support. The Maihi Māori highlights the potential of community cohesion and enhanced local identity as one mechanism for increased Te Reo Māori usage. This finding therefore tends to support this approach and points towards a potential policy lever that could encourage more spaces (for example workplaces, schools, town centres) to nurture Te Reo Māori.

## **The Value of Parent-Child Interactions**

Parent-child interactions (of all kinds) from an early age were shown to be positively linked to a child's use of Te Reo Māori at both 2 and 4.5 years. This finding is encouraging in that these factors are malleable (in contrast to factors such as children's temperament). Given this, implementing strategies to encourage these types of positive behaviours or engagements will likely have associated impact on a child's Te Reo Māori development. Moreover, and in this regard, there exists an opportunity to work more closely with aligned agencies (such as "All-Right", Plunket), child development experts (Parent Centre, Talking Matters), and academics to develop more integrated approaches to Māori language development.

## **Modifiable Predictors**

A number of “modifiable predictors” were identified. The importance of these is that they offer clues as to what potential investments might be explored to develop or sustain Te Reo Māori capability. Positive predictors such as playing games, reading books, telling stories, singing songs, and engaging in counting routines, while limiting screen time, have been shown to be incredibly important. Likewise, and as expected, attendance at Kōhanga Reo, mothers’ fluency in Te Reo Māori, and cultural connectedness are all positive predictors that can be strengthened.

As many of these predictors are likely to have broader impacts on the child’s development, it will be important that language revitalisation strategies are seen to work in concert with other initiatives to educate and support child development. The manner in which this could occur will very much depend on how these relationships are formed. Nevertheless, it would make sense that language revitalisation efforts are positioned as having a positive relationship with broader aspirations for Māori development.

## **Strategies for Te Reo Māori**

As illustrated, a number of key strategic opportunities have been identified as part of this investigation. Future growth in the number of Te Reo Māori speakers can be expected and suggest that past efforts to better socialize and encourage Te Reo Māori use have had the desired effect. While the efficacy of current investments and strategies have often been assessed through reviewing a suite of binary indices – such as current levels of language use and proficiency – these measures may in fact provide an imperfect assessment. What will be required are longer-term markers of success. Likewise, strategies and investments that are afforded with the time and resource to ensure that positive outcomes are achieved.

The idea of developing Te Reo Māori communities has been promoted as a key revitalisation strategy and certainly this research tends to support the utility of this approach. Te Reo Māori investments should not be viewed as benefiting Māori exclusively – rather, bilingualism is becoming increasingly important to non-Māori as well, with cognitive and social benefits for Māori and non-Māori alike (see Pearson, 2008). Positive parent/child interactions and a range of modifiable predictors were also

identified. These factors may not fall within the current scope of what might be considered as investment in Te Reo Māori. Nevertheless, they are likely to be vital. To this end, greater cross-sectoral collaboration will be required and in order to build on and sustain current gains. The nature of this collaboration will however need to be carefully considered and so that investments are well targeted, orchestrated, and measured.

## **FUTURE DIRECTIONS**

This research has provided an opportunity to examine Te Reo Māori in ways which have not previously been possible and notwithstanding the existing limitations and parameters of the GUiNZ data sets.

The data collected in the early data collection waves includes maternal reports on language use at the age 2 and 4.5 year timepoints. The instruments used to collect information from the mothers about their child's language development have been validated and this method is regularly used to assess language development. The tools in this particular study are detailed to enable a high degree of accuracy around proficiency, while still being a self-report mechanism. It must be acknowledged that although mothers reported on children's Te Reo Māori at both ages, it was harder for mothers to do so at age 2. This is due to questions about specific Māori words, which meant mothers with no Te Reo Māori themselves were unable to complete the checklist without the aid of an interpreter. At age 4.5, mothers were asked only if their child could use different types of structures (greetings, farewells) and not specific words, so they weren't restricted by their Te Reo Māori knowledge.

The opportunity exists for further investigation into questions about Te Reo Māori retention as the GUiNZ study continues to collect data. While the current data provides some clear and encouraging messaging around the level of Te Reo Māori use among both Māori and non-Māori children in New Zealand, there is a greater opportunity for investigating the longitudinal impacts of Te Reo Māori in coming years. Of particular interest will be the 8-year-old data collection wave, where for the first time the children themselves can be interviewed and direct measures of children's Te Reo Māori proficiency are made. As more data collection waves take place, stronger relationships can be drawn across the six domains within the *GUiNZ* study which may have the

potential to highlight further the impact of language use and retention on multiple aspects of children's, whānau and community wellbeing.

With the encouraging results of this project supporting some of the work already happening in the Te Reo Māori space (particularly through Te Mātāwai and Te Kōhanga Reo), it is hoped that the continued analysis of longitudinal data will provide ongoing insight and direction for New Zealand.

Broader and deeper analyses that cover multiple domains will allow greater insights into the connection between Te Reo Māori usage and retention to wellbeing, resilience, identity and other measures of success. The opportunities across multiple policy sectors (health, education, social) are exciting and warrant continued investigation.



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## APPENDICES

### Appendix A

Short Form of the NZ English CDI: II (NZE CDI:sf) administered to mothers at Age 2  
timepoint

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1 baa baa	34 broom	67 listen**
2 meow	35 comb	68 like**
3 ouch	36 mop	69 pretend
4 uh oh	37 plate	70 rip
5 woof woof	38 rubbish	71 shake
6 bear*	39 tray	72 taste
7 bird**	40 towel	73 gentle
8 cat*	41 bed*	74 think**
9 dog**	42 bedroom	75 wish*
10 duck	43 bench	76 all gone
11 horse**	44 oven	77 cold**
12 aeroplane	45 stairs	78 fast**
13 boat*	46 flag	79 happy*
14 car**	47 rain*	80 hot*
15 ball*	48 star*	81 last**
16 book**	49 swing	82 tiny*
17 game*	50 school**	83 wet
18 cracker	51 sky*	84 after**
19 fizzy drink	52 party*	85 day**
20 juice	53 friend**	86 tonight
21 lollies	54 mum**	87 our**
22 meat*	55 person*	88 them**
23 milk*	56 bye	89 this**
24 peas	57 hi	90 us**
25 tomato sauce	58 no**	91 where**
26 hat*	59 shopping	92 beside*
27 necklace	60 thank you	93 down**
28 shoe*	61 carry**	94 under**
29 sock	62 chase	95 all**

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30 chin	63 dump	96 much**
31 ear*	64 finish*	97 could**
32 hand**	65 fit*	98 need**
33 leg*	66 hug	99 would**
		100 if**

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\*on list of 1000 most frequent English words, <http://www.k12reader.com/03119408-6124-4e9d-8e65-3a907742296f>

Fry High-Frequency Word Lists – Top 1000 words in spoken and written English for K-12<sup>th</sup> grade (24%).

\*\* on list of 400 most frequent English words, <http://www.k12reader.com/03119408-6124-4e9d-8e65-3a907742296f>

Fry High-Frequency Word Lists – Top 1000 words in spoken and written English for K-12<sup>th</sup> grade (32%).

## Appendix B

Short Form of the NZ Māori CDI: II (NZM CDI:sf) administered to mothers at the Age 2 timepoint

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1 baa baa	34 puruma	67 whakarongo**
2 me ow	35 heru	68 pai**
3 mamae*	36 mapu	69 takune
4 uh oh	37 pereti	70 tihae
5 woof woof	38 rapahi	71 ueue
6 pea**	39 pereti	72 hā*
7 manu**	40 tauera	73 hūmarie
8 ngeru*	41 moenga*	74 whakaaro**
9 kurī**	42 rūma moenga	75 hiahia**
10 rakiraki	43 tēpu*	76 kua pau
11 hoiho*	44 umu	77 makariri*
12 waka rererangi	45 arawhata	78 tere**
13 pōti*	46 haki*	79 koa*
14 waka**	47 ua*	80 wera**
15 pōro*	48 whetū**	81 whakamutunga*
16 pukapuka**	49 tāwēwē	82 iti**
17 kemu**	50 kura**	83 mākū**
18 pihikete	51 rangi**	84 muri**
19 inu reka	52 pāti	85 rā**
20 wai arani	53 hoa**	86 pō**
21 rare	54 māmā**	87 (ō) mātou**
22 mīti*	55 tangata**	88 rātou**
23 miraka*	56 ka kite	89 tēnei**
24 pī*	57 kia ora	90 mātou**
25 wairanu tomato	58 kāo*	91 (kei) hea**
26 pōtae*	59 hokohoko*	92 i te taha
27 tāhei	60 kia ora	93 raro**
28 hū**	61 hari*	94 raro**
29 tōkena*	62 whai**	95 katoa**

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30 kauwae	63 putunga	96 nui**
31 taringa*	64 mutu**	97 taea**
32 ringaringa*	65 uru pai	98 hiahia**
33 waewae**	66 awhiawhi*	99 āhei*
		100 mehemea**

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\*on list of 1000 most frequent Māori words, New Zealand Ministry of Education, 2010 (25%)

\*\* on list of 360 most frequent Māori words, New Zealand Ministry of Education, 2010 (39%)

## Appendix C

*Te Reo Māori Items administered to mothers at Age 4.5. The administration rules are also described. These items make up the 'basic Te Reo Māori Scale'.*

**The following set of questions is about {NAME}'s use of Māori language or words**

<b>How often does {NAME} do any of the following?</b>	
<i>Question stem</i>	<i>Response options</i>
Greet and/or farewell people in te reo Māori	Often; Sometimes; Rarely; Never; Don't Know
Introduce [HIMSELF/HERSELF] to others in te reo Māori	
Speak simple words in te reo Māori	
Communicate about personal information in te reo Māori, such as iwi, hapū, mountain and river; or hometown and place of origin	
Recognise and respond to simple spoken words in te reo Māori	

The following questions were administered ONLY for those who answered “Māori” in a previous question “*What language(s) does {NAME} speak?*” These items make up the ‘advanced Te Reo Māori scale’.

How often does {NAME} do the following when using te reo Māori?	
Question stem	Response options
Speak simple sentences or phrases in te reo Māori	Often; Sometimes; Rarely; Never; Don’t Know
Ask simple questions in te reo Māori	
Recognise and respond to spoken sentences or phrases in te reo Māori	
Read and understand written words in te reo Māori	

## Appendix D

### *Derived Variables Used in Analyses*

Area Level Deprivation: Total\_Individual\_Deprivation\_9m = The sum of the 6 individual deprivation items at 9 months; Cronbach’s alpha = .70.

Te Reo Māori Vocabulary at Age 2: LD\_Total\_Māori = Age 2 te reo vocabulary. Sum of 100-word te reo checklist for all children whose mothers said they understood te reo and who could complete the checklist without an interpreter.

English Vocabulary at Age 2: LD\_Total\_English = Age 2 English vocabulary. Sum of 100-word English checklist for all children whose mothers said they understood English and who could complete the checklist without an interpreter.

Basic Te Reo Māori Proficiency at Age 4.5: LD\_tereo\_scale\_54mo\_trichotomous = Basic te reo at age 4. Summed 5-item te reo scale at age 4.5 for whole sample (N = 6052); Cronbach’s alpha = .82. The summed variable was not normally distributed because of a large number of zeroes, so the final variable was trichotomised into no te reo (0), some te reo (1), and more te reo (2).

Advanced Te Reo Māori Proficiency at Age 4.5: LD\_advanced\_tereo\_scale\_54mo = Advanced te reo at age 4. Summed 9-item te reo scale for Māori speakers (N = 585),



Cronbach's alpha = .91. This summed variable was normally distributed so was used in analyses as a continuous variable.

Cultural Connectedness: ETHID\_m54M\_scale = Age 4.5 mothers' summed 12-item ethnic identity scale (cultural connectedness) is reliable for both mothers of non-Māori children (Cronbach's alpha = .89) and for mothers of Māori children (Cronbach's alpha = .91). For the overall sample (N = 6014), the scale is normally distributed so was used as a continuous variable. The scale is also normally distributed for mothers of Māori children (N = 1485) and for mothers of Māori-speaking children (N = 582). The cultural connectedness tool was aimed at measuring ethnic identity, pride, and belonging and was adapted from a previously developed multigroup ethnic identity measure (Phinney,1992). All 12 items were used in with a minor modification to include the word "culture" rather than just "identity".

## Appendix E

Table 1

*Demographics of Families Responding to the New Zealand English and Māori CDI:II short forms at Age 2 (Reese, et al., 2017)*

	English speakers <i>N</i> = 6025	Māori speakers <i>N</i> = 584
Child gender (% male)	52	50
Birth order (% firstborn)	42	43
Child ethnicity (total response)		
European (%)	72	64
Māori (%)	24	81
Maternal education (highest level)		
Intermediate school (%)	7	12
High school qualification (%)	23	26
Trade certificate/diploma (%)	30	36
Bachelor's degree (%)	23	16
Post-graduate degree (%)	17	9
Maternal birthplace (% born in NZ)	68	93
Area-level deprivation		
Most deprived (%)	34	49
Moderately deprived (%)	36	36
Least deprived (%)	27	13

## Appendix F

Table 2

*Demographics of Families Responding to Te Reo Māori scale at age 4.5*

	Basic Te Reo <i>N</i> = 6052	Advanced Te Reo <i>N</i> = 585
Child gender (% male)	51	48
Birth order (% firstborn)	42	43
Child ethnicity (total response)		
European (%)	72	68
Māori (%)	24	80
Maternal education (highest level)		
Intermediate school (%)	6	11
High school qualification (%)	23	25
Trade certificate/diploma (%)	30	39
Bachelor's degree (%)	24	15
Post-graduate degree (%)	17	9
Maternal birthplace (% born in NZ)	66	90
Area-level deprivation		
Most deprived (%)	33	54
Moderately deprived (%)	36	32
Least deprived (%)	31	14

## **Appendix G**

### **External Advisory Board Members and the Terms of Reference**

Te Waihoroi Shortland	Te Mātāwai, Te Kōhanga Reo National Trust
Professor Tairahia Black	Te Whare Wānanga o Awanuiārangai
Dr Agnes McFarland	Te Whare Wānanga o Awanuiārangai
Dr Tanya Allport	Te Whānau o Waipareira
Tracey Peters	Te Puni Kōkiri
Tina Leach	Ministry of Education
Leonie Simpson	Te Rūnanga o Ngāti Awa
Vyletta Arago-Kemp	Te Taura Whiri I Te Reo Māori

### **Terms of Reference of the External Advisory Board**

1. Provide some analysis, interpretation and discussion of the GUiNZ data
2. Offer constructive feedback regarding the implications of the findings of the GUiNZ data in relation to policy, strategy and future research implications
3. Give context of the findings of the GUiNZ data with a particular focus on existing Te Reo Māori revitalisation strategies

Chaired by Te Waihoroi Shortland, board member of Te Mātāwai and Te Kōhanga Reo National Trust Board, this project advisory board met twice during the project's duration to provide feedback and guidance and provided advice and mentoring throughout the project.

## **Appendix H**

### **TE WHARE WĀNANGA O AWANUIĀRANGI**

Te Whare Wānanga o Awanuiārangi was formally opened in 1992. In 1997 the Government confirmed that Te Whare Wānanga o Awanuiārangi met the requirements of being a Wānanga and the institution was formally registered.

Te Whare Wānanga o Awanuiārangi has grown and currently has three schools (Indigenous Graduate Studies, Iwi Development and Undergraduate Studies) that offer a range of qualifications such as certificates, diplomas, graduate programmes, masters and doctoral degrees. Te Whare Wānanga o Awanuiārangi also teaches across three campuses: Whakatāne, Tāmaki Makaurau and Te Tai Tokerau. As such, it continues to provide quality education to not only Te Ao Māori, but to Aotearoa/New Zealand as a whole. The aspirations of Te Whare Wānanga o Awanuiārangi into the future is to empower the descendants of Awanuiārangi and all Māori to claim and develop their cultural heritage and to broaden and enhance their knowledge base so as to be able to face with confidence and dignity the challenges of the future.

Te reo Māori me ōna tikanga is the central focus of all that is taught at Te Whare Wānanga o Awanuiārangi. The first course offered by Te Whare Wānanga o Awanuiārangi was a Certificate in Māori Studies that involved a large component in te reo Māori. Te Whare Wānanga o Awanuiārangi also offers a full suite of te reo Māori qualifications via Te Pōkaitahi Reo (a reo rumaki programme that begins with learners and ends with total immersion). Te Whare Wānanga o Awanuiārangi is proud of its past involvement in the promotion and revitalisation of te reo Māori and has positioned itself to continue to be a leader in this area by conducting innovative research which informs novel approaches towards teaching te reo Māori.

## **Appendix I**

### **RESEARCH TEAM**

Professor Te Kani Kingi is Executive Director of Research and Innovation at Te Whare Wānanga o Awanuiārangi. He has been involved with the Growing Up in New Zealand Study since before the first data collection wave and has been a co-lead of the Culture and Identity Domain since the studies inception. He has contributed to the design of the study, the construction of relevant tools and instruments and especially Kaitiakitanga arrangements and the analysis of Māori specific data.

Professor Elaine Reese is an expert on child development in the Psychology Department at the University of Otago. She received her MA and PhD in Developmental Psychology from Emory University in Atlanta, Georgia, and has worked at the University of Otago since 1993. She has conducted longitudinal studies of cognitive and language development since 1989 and is the early education advisor for the Growing Up in New Zealand longitudinal study. Her role was to lead the appropriate analyses of Growing Up in New Zealand data, and to support interpretation and reporting.

Associate Professor Polly Atatoa-Carr is a practicing Public Health Physician in paediatrics, Associate Professor of Population Health at the University of Waikato, and previous Associate Director of Growing Up in New Zealand. She remains co-lead of the Culture and Identity Domain of Growing Up in New Zealand with Professor Kingi. She has worked on multiple analyses of the longitudinal dataset, including early analyses of te reo Māori use. She has particular expertise and experience in the translation of research evidence for policy relevance, and the broader determinants of health and wellbeing - including cultural affiliation and identity.

Dr Sarah Berry is Research Manager at Auckland Museum. She was previously Senior Research Fellow at Growing Up in New Zealand where she was integrally involved with the design of data collection tools and preparation of study datasets. She has worked on a diverse range of projects within Growing Up, including longitudinal data analyses and policy translation documents, resulting in a detailed understanding of the Growing Up in New Zealand dataset. She has also authored 18 peer-reviewed publications and multiple Growing Up in New Zealand study reports and policy briefs.

She has developed relationships with the cross-sector members of the Growing Up in New Zealand policy forum and will contribute to the writing up and presentation of project outputs, and the policy translation of evidence. Her role in this project was to support and advise on the analyses of the Growing up in New Zealand Data, and to support interpretation and reporting.

Hannah Simmonds is an emerging researcher at Te Whare Wānanga o Awanuiārangi with a particular interest in Māori education and the relationship between culture and educational outcomes. She has a background in secondary school education and is currently studying towards her Masters in Indigenous Studies degree. She supported the project management, reporting, and worked closely with the advisory group to ensure a kaupapa Māori lens was applied to the initial findings of the analyses.