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Abstract

This paper draws on a longitudinal, qualitative case-study which documents aspects of the language socialisation and acquisition of two children growing up with te reo Māori and English from birth. In the early stages of acquisition, only one of the children, Puhi, produced output predominantly in te reo Māori, and so the data analysed in detail here on the emergence of grammatical structures in Māori is drawn exclusively from her. The principal finding is that the types of structure in Puhi's two-word Māori utterances are markedly different from those found in European-language acquisition studies. This leads to the hypothesis that, following an initial one-word period, the first structures acquired and produced by young children learning L1 te reo Māori consist of a grammatical particle and a base, and therefore reflect the basic phrase-structure of Māori, rather than structures combining two content words that are typical of early L1 English production. The finding supports the notion that children target language-specific structures.

Keywords

te reo Māori, early language acquisition, Indigenous language case study

1 Introduction

This paper describes some of the findings from a study of the natural acquisition of te reo Māori 'the Māori language', the Indigenous language of Aotearoa New Zealand. This is the first study of its kind on the earliest stages of the acquisition of te reo Māori, and one that is rare in the field of language acquisition, where most research has focused on young children acquiring English and other world languages (see, for example, Berk, 2009; de Houwer, 2009; Gathercole & Thomas, 2009; Law & So, 2006, MacWhinney & Snow, 1990; Slobin, 1985).

For most of the twentieth century the usage of te reo Māori — and consequently its natural acquisition — was in rapid decline due to the effects of colonisation in Aotearoa New Zealand

(see, for example, Reese, Keegan, McNaughton, Kingi, Carr, Schmidt, Mohal, Grant & Morton, 2017). However, concerted revitalisation efforts over the past 50 years have led to the re-establishment of natural intergenerational transmission in an increasing number of communities (Hutchings, Higgins, Bright, Keane, Olsen-Reeder, & Hunia 2017). The 2021 General Social Survey conducted by Statistics New Zealand shows that "almost a quarter (23 percent) of Māori said they spoke te reo Māori as one of their first languages, up from 17 percent in 2018" (Statistics New Zealand, 2022). This development, which is fundamental to strengthening both language revitalisation and language maintenance, made the study behind this paper possible.

The research involved a longitudinal, qualitative, kaupapa-Māori (philosophically Māori) case-study, which documented the natural language socialisation and acquisition of two young children growing up with te reo Māori and English from birth within their bilingual whānau 'extended family' and their communities (Hunia, 2016). The families and communities of the two children were rather different and, not surprisingly, led to rather different paths of language development over the period of the study. (Another paper discussing the factors which influenced these different paths of development is in preparation.)

Like children around the world, the two case-study children produced mainly single words as their first utterances. As the study progressed and the children began producing utterances consisting of two discernible words, it became clear that one child, Ngātai, was producing mostly English output, while the output of the other child, Puhi, was predominantly in te reo Māori. For this reason, the detailed analysis of the emergence of the grammatical structures of te reo Māori presented in this paper is confined to the data collected from Puhi as she developed into a bilingual speaker of Māori and English. The types of structure in Puhi's two-word Māori utterances are markedly different from the content word + content word combinations typically found in European-language acquisition studies. This supports the notion that children target language-specific structures (Slobin, 1982). Furthermore, since most of Puhi's structures parallel the function-marking particle + content word structure of the basic phrase in te reo Māori, the findings signal that young children target not only word order, but also other salient aspects of the structure of the language(s) they are acquiring.

2 Background

2.1 Research on the acquisition of te reo Māori

There is very little research on early-stage Māori language acquisition. Reese et al., (2017) assessed development in te reo Māori in two-year-old bilingual children using data gathered in a longitudinal study entitled *Growing up in New Zealand*. However, their focus was on vocabulary rather than structure. One of the major research goals of the study behind the current paper was to examine the order in which structures of te reo Māori are learnt through first language acquisition. While there is no previous description of the structures in early Māori-language acquisition in the literature, there are a number of structural descriptions of adult Māori, and the analysis below draws particularly on the first modern description, that of Biggs (1969), together with Bauer (1997).

2.2 Te reo Māori in Ōtaki

Puhi's hometown, the lower North Island town of Ōtaki, is one of the communities where natural intergenerational transmission of te reo Māori is increasing. When research in the 1970s identified that intergenerational transmission in that area had almost ceased (Benton, 1982),

local Māori responded by developing and implementing a localised language strategy, *Whakatipuranga Rua Mano* 'Generation 2000' (Winiata, 1979). As a result, the Māori-speaking community in Ōtaki is now stronger than in many other areas of NZ: in 2018 (the statistics most relevant to the time of the study) 41.4% of the population of Ōtaki identified as ethnically Māori, and 19.2% of the total population there were speakers of te reo Māori (Statistics New Zealand, 2018). This suggests that somewhere approaching 50% of the ethnically Māori residents there at the time spoke te reo Māori, approximately 15% of the total Ōtaki population. This in turn means that there was, and continues to be, relatively strong support for whānau raising their children as first-language speakers of te reo Māori. Puhi was born into one such whānau, and the first author is Puhi's grandmother.

Puhi's language input as an infant predominantly came from her large whānau, most of whom spoke mostly Māori to her throughout the study. A few spoke English to her, and adult-adult conversation was mostly English. She attended Kōhanga Reo from the age of 1;4 (1 year and 4 months), where she heard mostly Māori from and between adults, and both English and Māori from and between children. In the wider community, she heard both te reo Māori and English.

2.3 Structures of te reo Māori

For the benefit of readers unfamiliar with te reo Māori, this section outlines the basic structures of the language that are relevant to the data. We have used the Leipzig conventions for the glosses, with some additional abbreviations where necessary. All abbreviations are listed at the end of the paper in Appendix 1.

The basic unit of te reo Māori is the phrase (Biggs, 1969), unlike English where it is the word. This means that in te reo Māori, even lexical words (as opposed to particles) almost never occur as entire constituents: they are almost always preceded and/or followed by particles (see 2.3.6 below). Compare English *Thunder frightens animals,* where each constituent consists of a single word, and this Māori translation: *Ka mataku ngā kararehe i te whaitiri*, (glossed TAM be.frightened the.PL animal cause the.SG thunder), where each constituent consists of a functional particle and a lexical base or a phrase. It is this characteristic of Māori that is most significant in determining the structures acquired by children. Even an answer to a question in Māori is almost never a single word. To ask *Who is that?* (answered in English by a single word, e.g., *Peter*), a Māori speaker asks *Ko wai tērā?* (glossed: equative.preposition who that), and the answer is not *Pita*, but *Ko Pita*. It is this difference that underlies the different types of two-word utterances that children learning these languages acquire.

Thus the canonical Māori phrase is comprised of a particle (PART), a base (B), and an optional modifier (MOD). The PART + B (+ MOD) structure is the same for two of the basic phrase types of te reo Māori: nominal phrases and verb constituents. In preposition phrases, the prepositional particle is followed by an NP rather than a BASE (+ MOD) (Bauer, 1997). These three structures are described in more detail below.

In phrases of te reo Māori, particles are markers of functional categories, and this relates to the fact that lexemes in Māori all have the potential to function in any major functional category: e.g., *mōhio* can function as noun 'knowledge', verb 'know', adjective 'knowing', adverb 'knowingly' and only the accompanying particle communicates their functional category.

Given the importance of particles in te reo Māori, the concept of "protomorphemic fillers" (Peters & Menn, 1993, p. 750), proved useful in the linguistic analysis of our data. Peters and Menn hypothsised that, across languages, children experiment with grammatical morphemes,

such as determiners, pronouns, tense-aspect-mood markers, and conjunctions. Their approximations provide them with "phonological toeholds" as they gather information about, and eventually acquire, adult grammatical morphemes.

There is considerable homonymy in the particles, and glossing them in isolation is problematic. Therefore, the contextually-appropriate sense of each particle is clarified in the discussion section following the presentation of each set of data.

2.3.1 Phonology and morphology

Phrases in te reo Māori must be at least three moras long. A mora has the form (C)V, where V is a short vowel, e.g., *te, a*, whereas a syllable has the form (C)V(V)(V), e.g., *pai*, *tōu*, *āe*, *ō*. Since no base in Māori has fewer than two moras, the combined length of a base and a particle means that canonical phrases meet this rule.

Reduplication (DUP) is common in te reo Māori and has a variety of functions. The meanings of reduplicated forms are not predictable, for example: *peke* 'jump' but *pekepeke* 'jump repeatedly'; *kani* 'dance' (uncommon) but *kanikani* 'dance'; *kata* 'laugh' but *katakata* 'smile'.

A passive verb in te reo Māori has a suffix of variable form, either *-a* or -(C)*ia*, but the suffix does not appear on verb bases consisting of a bound base and a directional particle, even although the rest of the construction has the characteristics of a passive sentence.

2.3.2 Nominal phrases

Nominal phrases consist of a determiner (DET), a base that acts as a noun, and an optional modifier that may be a word, a phrase, or a clause. The determiner is where number is principally marked in Māori, most often by the contrast between a form with *t-* and one without, e.g., *tēnei* 'this', *ēnei* 'these'. However, the definite singular and plural determiners are *te* and *ngā* respectively; and *he* (indefinite) and *a* (personal article, used under some circumstances before personal names) are not marked for number. In *he* + B structures, the base may be either a noun (see examples (2a)–(3) in Section 4) or a state intransitive verb (see examples (5)–(6)); the latter can be analysed as stem (or bare) nominalisations, see Bauer, 1997).

Personal names require the personal article when used as the subject of a sentence and also after locational prepositions and the DO preposition *i*. Names do not require the personal article when they follow possessive prepositions.

The personal pronoun system of Māori distinguishes three persons, singular, dual and plural numbers, and in the first person dual and plural, inclusive and exclusive reference. Personal pronouns are free with the exception of singular pronouns following any of the six possessive prepositions (see 2.3.3) and the singular-pronoun possessive determiners *(t)a/(t)ā/(t)ō*. In that context, first, second and third person singular pronouns are realised as the clitic forms *=ku*, *=u*, and *=na* respectively.

2.3.3 Preposition phrases

Preposition phrases (PPs) consist of a preposition (PREP) followed by a NP. The prepositions in the data are almost all from two groups: locational and possessive. Locational prepositions, including *kei* (PRS) (see examples (25)–(26)), and *i* (PST), give information about space-and-time, or just time, and appropriate glosses are given in context in the examples below. There are six possessive prepositions (*mā, nā, mō, nō, a, o*) with different senses and functions (see

examples (16)–(17)). The first four of these are bi-morphemic: the *n-* and *m-* morphs realise respectively the morphemes {actual possession} and {intended possession}, and the *-a* and *-o* morphs realise two morphemes expressing different possessive relationships. While the difference bears some similarity to the alienable/inalienable distinction found in other languages, this characterisation is not entirely suitable for the distinction found in Māori where it is sometimes termed 'dominant' (A) and 'subordinate' (O), (e.g., Biggs, 1969), but other terms are also used. Here they are glossed A and O.

2.3.4 Verb constituents

Verb constituent' (VC) refers to a phrase in te reo Māori consisting of a tense/aspect/mood marker (TAM), followed by a base and an optional modifier. Tense/aspect/mood markers are particles that are mostly written as single words, but a few are written as two words, and a null TAM is also common. Most TAMs encode both tense and aspect. Some are absolute and some are relative, e.g., *i* as a TAM is always past punctual, while *e…ana* (a discontinuous TAM) is imperfective, but refers to past, present or future depending on the context. There are two TAMs which historically derive from PREP + DET, but now function just like other TAMs: *kei te* (non-past continuous), and *i te* (past continuous). Context plays a major role in interpreting TAMs, so appropriate glosses are given in context in the examples in this paper.

The bases in VCs act as verbs. According to Bauer's (1997) description, there are two transitive verb classes, namely canonical transitive and experience verbs; and three intransitive verb classes: action intransitive, neuter verbs, and state intransitive verbs. State intranstive verbs occur following TAMs (see example (8)), but also commonly occur in predicates introduced by the nominal particle *he* (see examples (5)–(6)).

2.3.5 Declarative sentences

Te reo Māori has sentences with verbs, and sentences without verbs. The basic phrase order in verbal sentences is VC-SBJ-DO-ADV, and thus, word order is VSO. Non-verbal sentences have non-verbal phrases in the (nominal) predicate (NPRED) that are either NPs or PPs. Predicative NPs have the structure *he* + B, where the base may be either a noun (see examples (2a)–(3)) or a state intransitive verb (see examples (5)–(6)). The PPs have a preposition that indicates either location (examples (25)–(26)), or actual or future possession (examples (16)–(17)), and a NP follows the preposition. Existential sentences do not have a subject, so may be complete in the form *he* + B, but may be followed by an adverbial word, phrase or clause.

When the subject is known from context, it is often omitted from a sentence. Thus predicative PART + B phrases may stand alone as complete utterances, as illustrated by the nominal utterances in (2)–(7), and the verbal utterances in (8) and (9). Except where otherwise specified, 'Ø' refers to a null subject in the examples in this paper.

Indefinite direct objects are typically incorporated into the verb, e.g., *e hoko pukapuka ana ahau* 'I am book buying', 'I am buying a book'. *Hoko pukapuka* is a compound verb, and the discontinuous TAM *e…ana* occurs on either side of the compound: *e hoko pukapuka ana*.

2.3.6 Imperative structures

If the verb in an imperative VC has only two moras, it requires the particle *e* before the verb unless the verb is followed by certain modifying particles. (This maintains the minimum phrase length of three moras.)

Intransitive imperatives have the structure (*e* +) V (+ MOD) while the transitive structure is V-PASS (+ MOD). All passive verbs have at least three moras, and thus never require the preceding particle *e*. (Imperatives with three or more moras are thus amongst the very few exceptions to the generalisation in 2.3, that bases in Māori occur with a preceding particle.) The only VC modifiers in the data are three directional particles (DIR): *mai* 'towards the speaker', *atu* 'away from the speaker', and *iho* 'downwards'. In the data, *iho* occurs only with a bound base (*wa–* in *waiho* i.e., *wa+iho*), while *mai* and *atu* are free morphs, although both also occur with bound bases elsewhere.

2.3.7 Interrogative structures

Yes-no questions in Māori have the same structure as the corresponding declarative but are distinguished by intonation. Some question-word questions use the same structure as the corresponding declarative but have the appropriate question word in the constituent about which information is sought. Other question-word questions require the use of a structure which puts the question-word constituent in a position of focus.

3 Data scope and source

The data is sourced from video recordings of the two case-study children taken between the ages of 1;6 and 2;0, during which time they each began producing two-part combinations (referred to as the 'early-combinations period'). The resulting corpora of productive and input language provided the data set analysed here. This comprised all interpretable utterances of at least two morphs in length produced by Puhi, who was recorded for approximately half an hour each week as she interacted in natural settings with her whānau. Analysis focused on Māori-language utterances that consisted of two words. Utterances consisting of two discrete holophrases, or two-part names, such as Pāpā Karl 'Uncle Karl' were omitted from the analysis. Data from the second case-study child, Ngātai, provided a useful comparison.

The data captured from Puhi consisted of a total of 148 utterances (148 tokens). 139 tokens consisted of two discernible words, of which 131 were unilingual Māori utterances, 7 were unilingual English utterances, and 1 was mixed Māori-English. The remaining nine tokens were single words consisting of at least two morphs. Of these, eight were Māori words and one was English.

Table 1. Tokens and types in Puhi's early combinations

Utterances	Tokens	Types
Unilingual Māori 2-word	131	51
Unilingual English 2-word	7	5
Mixed 2-word	1	1
Unilingual Māori 2-morph	8	6
Unilingual English 2-morph	1	1
TOTAL	148	64

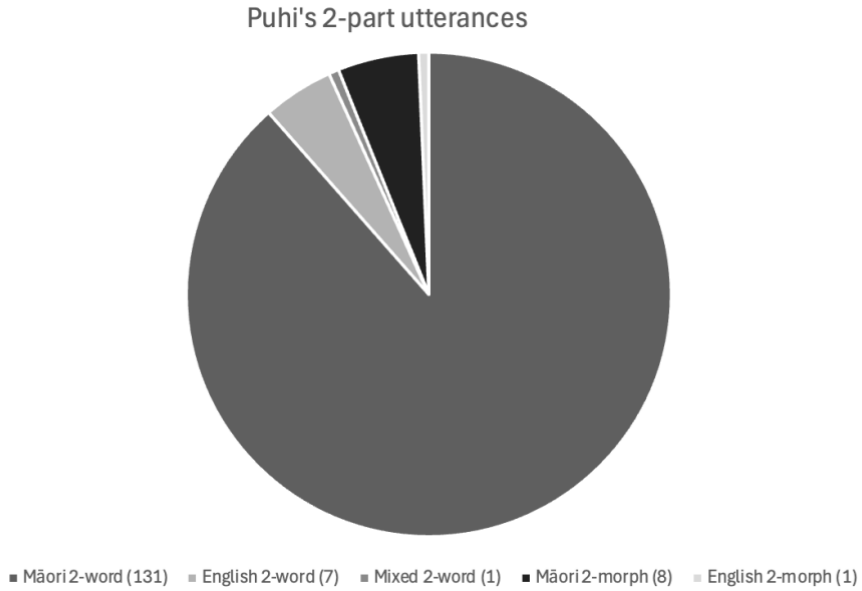

Figure 1. Tokens in Puhi's early combinations

3.1 Data analysis

The analysis presented here concentrates on syntactic structures. The analysis may use as many as five layers of description of Puhi's utterances, as illustrated below.

Example (1)

Layer	(i)	Puhi's utterance	/ka	e	te	katu/
	(ii)	Interpretation kei	hea	te	kapu	
	(iii)	Gloss prot loc n	def	n		
	(iv)	Sentence constituents	NPRED	SBJ		
	(v)	English translation	'Where is the cup?'			

Notes to Example (1)

(i) Puhi: Puhi's articulation, mostly in phonemic script between slashes /.../

(ii) Interpretation: interpretation in adult reo Māori of imperfectly-articulated forms; this is the interpretation given to the utterance by the adults interacting with Puhi

(iii) Gloss = gloss for Puhi's forms: lexical items have lexical glosses if they conform to adult Māori and grammatical glosses if they do not; grammatical items have grammatical/functional glosses

(iv) The sentence constituents are those appropriate to the adult interpretation of the utterance.

4 The acquisition data

The current linguistic environment in NZ means that children who are raised in te reo Māori are also exposed to English from birth. The presence of English-only utterances, mixed-language utterances, as well as Māori-only utterances in the case-study children's production

reflected their bilingual home environments. However, the predominance of Māori-only utterances in Puhi's production (90% of all the utterances she produced in the analysis period) indicated that her preferred productive language was te reo Māori and provided a rare opportunity to explore early acquisition of this language.

4.1 First words

Puhi's earliest utterances did not show obvious differences in type from those that a child learning only English might produce. They were mostly single words and holophrases, including nouns, exclamations, verbs, and reflected both languages in her environment, but were predominantly Māori words. As expected, both children continued to produce many single-word utterances after they began to combine words.

Table 2. Examples of Puhi's first words

Puhi's Word	Interpretation	Translation/Explanation
/mama/	Māmā/Pāpā	KINSHIP TERM
/aba/	Awa	NAME
/wɪ wɪ/ /wɪː/	waewae	leg
/ɪp/	oops	(Eng)
/aɔ/	kāo	no
/ata/	arā	*voila (French)*
/teːteʊː/ /teːte/	mutu	(to be) finished

4.2 Early combinations

The analysis that follows is organised according to the adult structures in te reo Māori that Puhi appeared to be targeting. It begins with nominal phrases, followed by preposition phrases, and then verb constituents. The analysis shows that Puhi produced multiple instances of each of the basic phrase types of te reo Māori, and in all cases, they appear to be predicative. The verb constituents fall into two categories: declarative and imperative. The non-verbal predicates (ie those in the form of nominal phrases and preposition phrases) are discussed first.

4.2.1 Nominal phrases

Throughout the early combinations period, Puhi tended to produce common nouns without nominal particles (i.e., one-word utterances). However, the data set of Puhi's early combinations contained ten tokens of nominal phrases with the structure DET + N, all of which were predicative. These included seven PROT-DET + B utterances that approximated the *he* + *B* structure, as shown in examples (2a)–(4). Example (2a) was uttered in imitation of an adult saying *He wai?* 'Some water?' when offering Puhi a drink of water. She uttered (2b) when she came within sight of the sea, some months later. These utterances are both existential sentences, which cannot have a subject. However, examples (3)–(4) can be considered single-phrase null-subject sentences which classify an object as being of a particular type, or as having a particular quality. While (2) and (3) have nouns in the base slot, (4) has a state intransitive in that slot. The determiner in (2)-(4) is still a proto-form, but was interpreted as targeting the indefinite determiner, *he*.

(2a) /e ʋai/
(2b) /i wai/
he wai
DET water
'There is water'

(3) /e pɒðɒː/ Ø
he pōro Ø
DET ball SBJ
'[That] is a ball'

(4a) /a wirawira/ Ø
(4b) /e wijawiða?/ Ø
he werawera Ø
DET hot~DUP SBJ
'[That] is hot'

In addition, Puhi clearly articulated the adult form, *he*, in three further instances of the same structure.

(5) he mamae Ø
DET hurt SBJ
'[That] is sore'

(6) he werawera Ø
DET hot~DUP SBJ
'[That] is hot'

(7) he porohita Ø
DET round/circle SBJ
(a) '[That] is round';
(b) '[That] is a circle'

The two translations provided for example (7) are both possible because *porohita* can be interpreted either as a state intransitive verb (which acts in sentences like this in a similar way to a predicative adjective in English) or as a noun.

If Puhi was indeed targeting *he* + B in examples (2a)–(7) then she combined a greater diversity and number of bases with *he* than with any other particle in the early-combinations data. This alone indicates that Puhi may have been generating this structure. She combined *he* with bases that she acquired in other contexts and was using before the early-combinations period. In keeping with adult language, the bases she combined with *he* included bases that usually act as common nouns (*pōro* 'ball'; *wai* 'water'), bases that usually act as state intransitive

verbs (*mamae* 'hurt'; *werawera* 'hot'), and a base that can function as either of these (*porohita* 'round/circle').

The data also provides further evidence that Puhi was generating *he* + B structures herself. During one interaction when an adult was ironing with Puhi watching, adults produced five tokens each of the state intransitive verbs *mamae* 'be hurt/sore' and *wera/werawera* 'be hot/burnt' holophrastically, and also used them in the structures shown in (8A)–(13A). These examples are recorded in the standard orthography. 'A' for 'Adult' follows the example numbers to distinguish them from Puhi's output.

(8A) ka mamae Ø
TAM hurt SBJ
'[It] will be sore'

(9A) kei mamae Ø
TAM (warning) hurt SBJ
'[Beware] lest [you] get hurt'

(10A) tō mamae
SG.POSS.DET pain
'your pain/sore (lesion)' (simplified infant-directed talk)

(11A) tō mamae wera
SG.POSS.DET pain hot
'your burn lesion' (simplified infant-directed talk)

(12A) i wera tō ringa
TAM hot SG.POSS.DET hand
'Your hand got burnt'

(13A) i wera i konā
TAM hot LOC there.PROX2
'[It] got burnt there [on your hand]'

Although the adults did not produce any instances of *he mamae* or *he werawera*, Puhi (aged 1;11) produced one clear token of *he mamae* and two clear tokens of *he werawera* and two further possible tokens: /a wɪrawɪra/ and /e wijawiðaʔ/. As she achieved this without direct repetition or imitation of adult production of either utterance during the interaction, it suggests that she generated *he werawera* and *he mamae* herself. This is the clearest indication of structure analysis and application from Puhi across the early-combinations period, and signals that the structure *he* + B (and its associated function) became established in her production across this period. In addition, the context makes it clear that these NP structures are predicative, and are thus non-verbal sentences with omitted subjects.

In contrast to the presence of *he*, there is little clear evidence of determiners such as *ngā* (def pl), *te* (def sg), or *a* (pers) in Puhi's production at this period, despite their high-frequency

in adult sentences. Nevertheless, examples (14) and (15) provide evidence that Puhi may have begun targeting these determiners.

(14) a məhəi
PROT greet
'greetings' [Lit. 'the greetings']

In example (14) Puhi was repeating an adult's utterance, *ngā mihi* 'greetings', which indicates that she was targeting the determiner *ngā*, and also that she was probably using this utterance holophrastically. This greeting is a modern one that exemplifies an untraditional use of a noun phrase, since NPs — other than predicates starting with *he* — do not traditionally occur alone as utterances except in answer to certain questions. In example (15), neither context nor articulation provide sufficient clues as to whether Puhi was targeting either of the determiners *te* (15a) or *he* (15b).

(15) kə wai
PROT water
(a) 'the water'; (b) '[there] is water'

It is not surprising that there are no clear examples of the determiners *te* (definite sg) and *ngā* (definite pl) in Puhi's output. All Puhi's two-word noun phrases are predicative, and the only determiner that initiates predicative NPs is *he*. In this environment, *he* is a one-item functional category, and thus presents a straightforward learning task. This provides a possible explanation for the fact that Puhi shows greater mastery of the particle *he* than of any other type of particle at this stage in her development.

By 2;0 then, Puhi was generating structures that approximated the adult nominal-phrase structure with the form PROT-DET + B, where the proto-determiner she used was an approximation of *he* and the base was one of a small set of common nouns or state intransitive verbs. In addition, all the NPs she produced were predicative. While all the examples included here were interpreted as declarative, the same structure can be used to ask yes-no questions: *He wai?* (with appropriate intonation) is the adult enquiry 'Is there water?' or 'Is it water?' This implies that Puhi had the means of asking such questions at this stage, even if she did not do so during the periods of data collection.

4.2.2 Preposition phrases

Puhi's earliest preposition phrases had personal names as the complement NP following the preposition. The first prepositions she trialled were probably predicative possessive prepositions, targeting the adult set *mā, nā, mō, nō*. Proper names following these do not require a DET, so the target adult structures are two-word combinations. For example, at around the age of 1;7, while one-word utterances continued to dominate Puhi's productive language, a recurrent combination appeared that family members interpreted as the adult possessive preposition phrases *nā Nēni* and *mā Māmā* illustrated in examples (16) and (17) (see also 2.3.3).

(16A) n-ā Nēni Ø
ACT-ANP SBJ
'[It] is Nēni's' (Puhi's term for her grandmother)

(17A) m-ā Māmā Ø
INT-A NP SBJ
'[It] is for Māmā' (Puhi's term for her mother)

The full set of Puhi's utterances of this type is shown in (18)-(24).

(18) /ma: ma:ma/ *nā Māma* 'Māmā's'

(19) /na nene/ (X3), /ne nenei/ (x4), /ne neni:/ (x2), /ne nene/, /ne: nene/, /ne nei/(x2), /ne ne:ni:/ (x3), /a: e:ni/ nā Nēni 'Nēni's'

(20) /a awa/ /a: awa/ *nā Awa* 'Awa's'

(21) /a amo/ 'Amo's'

(22) /pa pui/ 'Puhi's'

(23) /pa papa/, /pa: pa:pa/ (x 3), /pa: pa:paʔ/, /pa pa:pa/ *nā Pāpā* 'Pāpā's'

Puhi's grandmother interpreted such combinations in real time as indicating possession. However, in her role as researcher, she later analysed the combinations by comparing them to the adult predicates in (16A) and (17A), in which *nā* + NP indicates actual (ACT) possession and *mā* + NP indicates intended (INT) possession (see 2.3.3). This is illustrated in (16) and (17), where the NP is interpreted as a personal noun and the possessor, and the initial particle is interpreted as a proto-possessive preposition.

While some of the utterances in (18)–(23) occurred in contexts where the possessive-phrase interpretation seemed appropriate, on other occasions the context did not point to a clear possessor-possessee relationship. If Puhi was experimenting with possessive expressions in examples (18)–(23), her combinations shared some structural and phonological similarities with adult possessive preposition phrases, but there were also some significant differences. These two facts together point to the need to consider other possible explanations for this data.

Adult grammars describe predicative possessive prepositions as being drawn from a closed group of four: *mā*, *mō*, *nā, nō* (see 2.3.3). By contrast, Puhi's proto-prepositions were more variable (i.e., /a/, /a:/, /pa/, /pa:/, /ne/, /ne:/, /na/, /na:/, /ma/, /ma:/), even when taking into account the experimental articulation of a young child. Puhi's forms have the phonological structure (C)V(V), which signals that Puhi may have developed an understanding that a syllable of this form usually goes before a base in te reo Māori, but that she was unsure of the rules governing those syllables. Thus, Puhi may have been trialling proto-particles in general rather than specific possessive prepositions. This is consistent with the notion that children's proficiency with phonology and syntax develop together, and are inter-related (Peters, 2009). Examination of the data suggests that Puhi's trial rule for particles was that her own proto-particles should have the same initial phoneme as the base, so that the particle and base alliterate. This would explain both the variety of forms she used, and the instances where there was no indication of a possessee in the context. Further evidence from Puhi's VCs (see 4.2.4) supports this non-possessive explanation.

While all the examples above have personal names as the base, the following forms suggest Puhi may also have been targeting a possessive form with an appropriate pronoun as possessor when she produced /ŋga:ku/ /ja:ku:/ and /na:ku/ in a single event. (Pronouns, like personal names, do not require a determiner following the possessive prepositions.)

(24) /na:ku/
n-ā=ku
ACT-A=1SG
'[This] is mine'

This (24) was interpreted in real time as *nāku* (for explanation of the construction of this adult form, see 2.3.2 and 2.3.3).

Two further preposition phrase types emerged in the early-combinations data, *kei* + LOC N in examples (25)–(26); and *ko* + NAME in example (27). (25) and (26) have the form of an adult's non-verbal location sentence with an omitted subject. The preposition *ko* in (27) introduces the predicate of a non-verbal equational sentence, in which predicate and subject are equated; the subject is again omitted.

(25) kei konei Ø
PREP.PRS LOC N SBJ
at here
[It] is here'

(26) kei hea Ø
PREP LOCQ SBJ
at where
'where is [it]?'

(27) ko au Ø
EQ 1SG SBJ
equals I/me
'[It] is me'

The NP complements of the prepositions in examples (25)–(27) consist of the local nouns *konei* and *hea*, and a personal pronoun *au*, none of which require a determiner in the above structures. Thus, all of the examples in the data that are analysed as NPs and PPs have a surface structure that manifests as a particle and a noun. (26) is also notable as the first question-word question in the early combinations data, but the possessive structures illustrated in (16)–(24) can be used as yes-no questions, i.e., 'Nā Nēni?' with appropriate intonation is the adult question 'Is it Nēni's?'. Some of Puhi's tokens of these structures listed above were questions about possession, rather than declaratives.

There are two further differences between Puhi's proto-phrases and adult PPs. Whereas the NP complements in adult PPs are varied, Puhi's NPs are limited to names, pronouns and local nouns, which do not require determiners in the target adult structures. Adult PPs also contain a range of prepositions that did not appear in Puhi's first combinations, including possessive *mō, nō, a,* and *o*, the passive agent *e*, and multi-functional *i, ki,* and *hei*.

In summary, by 1;8, PROT + NAME structures that approximated adult preposition phrases had emerged in Puhi's production. Puhi's proto-prepositions were variable (C)V(V) syllables, usually with the same initial phoneme as the name, i.e., they alliterated. By 1;10, *kei* + LOC N had emerged, where the local noun was either *konei* 'here' or *hea* 'where', and *ko* appeared with

the first person singular pronoun *au*. Like Puhi's NP structures in examples (3)–(7), her PP structures are predicative, and are also non-verbal sentences with omitted subjects.

4.2.3 Declarative verb constituents

Nearly a third of the data set, 46 of 148 tokens, were TAM + V (+ MOD) structures, illustrated in (28)–(30).

(28) /ta tete/
ka kite
TAM see
'[I] will see' (used in te reo Māori as the equivalent of the farewell 'See you')

(29) /pa pai/
ka pai
TAM good
'[That] is/was/will be good'

(30) /pa: pa:u/
kua pau
TAM be.used.up
'[It] has [all] gone'

Examples (31) and (32) differ from (28)–(30) in the number of moras that Puhi produced, but the basic TAM + V structure of the phrase remained.

(31) /pe pe paipai/
kei te pai~DUP
TAM good
'[That] is good'

(32) /t ɔta/
k[ia] ora
TAM life/health
'Greetings' (Lit. 'Be healthy')

Across the combinations period, the TAMs in (28)–(32) appeared with other verbs in Puhi's speech, so that by age 2;0, she had produced the following PROTO-TAMs with the range of verbs shown below; there is at least one verb from each of Bauer's five verb classes (Bauer, 1997):

ka + V (V = *kite* 'see' x 14, *pai* 'good' x 4, *mamae*' hurt' x 2, *kaukau* 'bathe')

kua + V (V = *pau* 'be used up' x 17, *kai* 'eat')

kei te + V (V = *pai* 'good', *tangi* 'cry', *tiko* 'poo' x 2)

kia + V (V = *ora* 'healthy', *tūpato* 'careful')

Each of these TAMs thus appeared with more than one verb, and one verb, *pai* appeared with more than one TAM in the data set. Each occurrence of the structure was linked with others across her production and input, signalling Puhi's growing proficiency with the structure of verb constituents. The fact that most of her particles had the form (C)V(V) and began with the same initial phoneme as the base indicates that she was analysing the structures she heard, but also suggests that she was trialling the same rule for the particles in verb constituents as she used for the prepositional particles illustrated in 4.2.3. Thus, while one hypothesis for these particles is that they are PROTO-TAMs, the alternative hypothesis that they are proto-particles is more likely, given the parallel with the the proto-particle analysis suggested above for preposition phrases. This would suggest that the different functions associated with prepositions and TAMs were still in the development stage.

To summarise, the first TAMs to emerge in her speech, in order of their frequency in the recorded data, were approximations of *ka* (in both past and future contexts in Puhi's output), *kua* (inchoative), *kei te* (present progressive) and *kia* (subjunctive). Each TAM was combined with one of a small set of verbs in combinations that occurred mostly as formulaic units in the input data. However, Puhi's approximations demonstrated significant and variable phonological differences from adult TAMs, including /taː/, /ta/, /teː/, /te/, /to/, /paː/, /pa/, /pe pe/, and /a/. Either hypothesis for their analysis indicates that, by 2;0, Puhi was generating PROT-TAM + V structures, which approximated adult verb constituents.

Five of the main TAMs of te reo Māori were not present in her early combinations. Those TAMs, with approximate glosses, are *i* (past), *i te* (past continuous), *me* (obligation), *kei* (cautionary) and *e…ana* (relative time imperfective).

4.2.4 Imperative verb constituents

In addition to the declarative utterances illustrated above, Puhi produced a variety of imperative structures during the early-combinations period, including both transitive and intransitive imperatives. There were three possible tokens of transitive imperatives, one with the passive suffix (example (33)), and two with a base containing a directional particle and accordingly lacking a passive suffix (e.g., example (34)). There were several possible intransitive imperatives of the form *e* + V (V = *heke* 'get down', *noho* 'sit', *piki* 'climb', *peke* 'jump', *tū* 'stand') (e.g., examples (36)–(37)), and several which do not require an introductory particle, some because the base was longer (e.g., example (37)), and one V + DIR type (example (38)).

(33) /tata/
kati-a
V-PASS
'shut [it]'

(34) /waːhɔ/
wa-iho
V-DIR
'leave [it] down [there]'

(35) /e ete/
e heke
IMP descend
'get down'

(36) /e nɔː/
e noho
IMP sit
'sit'

(37) /pəke pəke/
pekepeke
V~DUP
'jump [up and down]'

(38) /ɔki mai/
hoki mai
return hither
'come back'

Puhi's approximations conformed to complex adult rules for imperatives, including the three-mora rule. They had a range of communicative functions in her production, not limited to commands, but also including narrative or request. This is consistent with adult use, and signals that Puhi was developing an understanding of the grammatical forms and communicative functions of imperatives.

Across the early-combinations period, high-frequency types of V + *mai* are present: *hoki mai* 'come back' (lit. 'return hither'), of which there are four tokens from a single recording session, and *haramai*, a well-established adult contraction of *haere mai* 'come here' (lit. 'move hither'), which is recorded once across the early-combinations period (but also appears both before and after this period). In standard orthography, *haramai* is written as a single word, as are *homai* 'give [me]' (lit. 'give hither') and *waiho* 'leave [it]' (lit. 'put down'). *Ho-*, *hara-* and *wa-* are all bound bases. *Homai* is present in the data both before and after the early-combinations period, but not in that data set.

One further example is included with the imperatives: *whakamaua* is a transitive imperative consisting of the base, *whakamau* 'to wear/attach' and the passive suffix *-a*. This item occurred frequently in the input data as a single unit in dressing routines, and also in the research context, such as when Puhi's grandmother attached the portable microphone to Puhi's clothing. It was in this latter context that Puhi approximated the imperative twice while objecting to having the microphone attached. Puhi omitted the adult-required passive suffix, as did her grandmother, in the same event.

(39)	/paka	mau/
	whaka-	mau
	cause	wear/attach
	'attach'	

This is a reminder that adults do not always use 'adult-acceptable' structures, particularly in informal infant-directed talk when they may simplify or otherwise modify their speech (see, for example, Baldwin & Meyer, 2007; Fernald & Morikawa, 1993).

The examples above signal that, whether or not Puhi was analysing the syntax in her language environment, she was absorbing quite complex rules about imperative formation: she used *e* appropriately according to phonological rules for phrase length; she chose the passive form for transitive verbs, but not for intransitive verbs. She also used adult-acceptable exceptions with no passive suffix despite transitivity (e.g., *waiho* and *homai*). This means that the foundation for being able to use these complex patterns in a generative way was established by 2;0, even if Puhi used them only as holophrases across the early-combinations period.

4.2.5 Base + base and English two-word combinations

L1-English children typically produce a two-word structure that is characterised by two content words and an absence of function words. Brown (1973) described the structure in terms of the semantic relations it expressed, as illustrated in the English examples (40)–(42), produced by Puhi, and (43)–(47), produced by Ngātai.

(40)	/ti ja/	see ya	action + object
(41)	/awawei/	go away	action + direction
(42)	/du it/	do it	action + object
(43)	/ai put/	I put	agent + action
(44)	/itdis/	eat this	action + object
(45)	/biʔ boi/	big boy	mod + subject
(46)	/mai puː/	my spoon	possessor + possessee
(47)	/a^{i} dæ^{o}/	I down	agent + direction

These examples are consistent with L1-English combinations, which do not typically include function words (Israel et al., 2000). By contrast, function words featured in most of Puhi's Māori combinations, as is consistent with adult Māori production, because bases — the content words of this language — almost always occur with function-marking particles. However, Puhi also produced some Māori BASE + BASE combinations that were more similar to L1-English two-word combinations. For example, (48) was produced in partial imitation of an adult's utterance (see example (49A)).

(48)	/wedewed̄	dɔtɔ/
	werewere	roto
	N	LOC N
	'spider inside'	

(49A)	he	pūngāwerewere	kei	roto
	DET	spider	LOC PREP	LOC N
	NPRED		ADV	
	'(There is) a spider inside'			

Puhi's imitation presumably consists of the second half of *pūngā<u>werewere</u>* 'spider' and <u>*roto*</u> 'inside'. Her omission of the initial nominal particle *he,* and the locational particle *kei* resulted in a SBJ + LOC structure, comparable to an L1-English structure, with no function words. Note, however, that her utterance follows the word order of the adult she is imitating and therefore of a sentence of te reo Māori. (It would be out of place in this paper, which is about the acquisition of te reo Māori, to consider whether a child learning English, for instance, might produce occasional utterances of the same kind as those produced by Puhi, but we think it unlikely, since English does not have functional particles of the same kind.)

Three further nominal BASE + BASE utterances in te reo Māori have the form N + PRON (see (50)–(52)) and are consistent with the NPRED + SBJ word order of non-verbal sentences. In these examples, Puhi has omitted the particle (shown as Ø) from the nominal predicate phrase and used a deictic pronoun as the subject.

(50)		/mama	teːja/
	Ø	Māmā	tērā
	PREP	NAME	that.DIST
	'That [is for] Māmā'		

(51)		/ame	teːdða:/
	Ø	Amo	tērā
	PREP	NAME	that.DIST
	'That [is] Amo['s]'		

(52)		/wɒi	teːna:/
	Ø	wai	tēnā
	DET	water	that.PROX2
	'That [is] water'		

Three BASE + BASE verbal structures are shown in (53)–(55). In (53), the pronoun is the semantic direct object, and in (54) *awhi* has the same semantic relationship to the verb. It is unclear whether *awhi* is an approximation of an independent direct object phrase, or whether it is incorporated into the verb (see 2.3.5).

(53)	/həɾəi	teːnei/
	horoi	tēnei
	V	PRON
	'wash this'	

(54) /iʔaʔ a:fi/
hia awhi
V N
'want hug'

Examples (53) and (54) are consistent with VO order in null-subject adult sentences of te reo Māori, or in imperative sentences with passivised verbs such as *horoia tēnei* 'wash this'. However, since function words and function morphs are absent from these examples, they are also comparable to an L1-English structure expressing an ACTION + OBJECT semantic relationship.

Example (55) is perhaps comparable to an L1-English two-word structure of the form SBJ V such as 'I going', from which a function word such as 'am' is omitted; Puhi's utterance has no TAM particle before the verb.

(55) /fiɾaŋi au:/
pīrangi au
v PRON
'I want'

Puhi's B + B utterances in English (3 of 7 tokens) or Māori (7 of 131 tokens), occurred with much lower frequency and than her PART + B Māori-language utterances . However, when analysed together with the rest of the data set, they indicate that Puhi was experimenting with different parts of the adult sentence structures she heard in her environment, while determining the word order of each language, and the importance of the PART + B structure that is the building block of Māori sentences.

5 Summary of findings

Analysis of early combinations in Puhi's production from age 1;6 to 2;0 compared Puhi's two-word and two-morph combination types with the three basic phrase types of te reo Māori, as described by Biggs (1969) and Bauer (1997), and with two-word structures typically produced by L1-English children (Brown, 1973). Puhi's early combinations signal that, by 2;0, she had targeted and was gaining proficiency with the three basic Māori phrase types, and had developed consistent word placement. Some of the most significant advances were:

- By 1;6: PROT-PREP + NAME structures that approximated adult predicate preposition phrases had emerged. The proto-prepositions in these structures were variable (C)V(V) syllables that usually alliterated with the name.
- By 1;10, *kei* + LOC N predicate preposition phrases had emerged, where the local noun was either *konei* 'here' or *hea* 'where'.
- By 1;11, DET + B had emerged, mostly in predicate phrases, and where the determiner she used most often was an approximation of *he* and the base was one of a small set of common nouns or state intransitive verbs. The definite plural determiner *ngā* was probably also emerging.
- By 2;0, verbal constituents with the form PROT-TAM + V had emerged as holophrastic, formulaic units. In order of frequency in the data, Puhi's proto-TAMs were *ka*, *kua*, *kei te*, and *kia*. In addition, a variety of imperative forms had emerged, including action

intransitive verbs with appropriate distribution of the filler *e*; passive forms of transitive verbs; adult-acceptable exceptions: e.g., *waiho* and *homai* with no passive suffix despite transitivity.

- A few of Puhi's two-word utterances were inconsistent with the adult (PART +) B (+ MOD) form, and more closely resembled the content word + content word structure typical in the production of young L1-English children. However, the word order of these utterances was typical of te reo Māori.
- By 2;0, Puhi had shown evidence of using declarative, imperative and interrogative structures in appropriate contexts.

However, it is not entirely clear which particles, and therefore which phrase types, Puhi was targeting, and for this reason the recurrent phrasal structure that emerged in Puhi's production between 1;6 and 2;0 is described as (PROT +) B (+ MOD). The form of Puhi's proto-particle was mostly consistent as a (C)V(V) syllable, but differed from the closed sets of adult particles in that it was more variable, and did not include all particles in the adult sets. Also, Puhi appeared to have developed a hypothesis about the form of particles, namely that the particle and base have the same initial phoneme. Imperative sentences with the forms (*e* +) V (+ DIR) and V-PASS had also emerged by 2;0. The only functional categories that are clearly demonstrated at this point are the function of *he* in non-verbal predicates, and the function of imperative sentences.

Puhi's NP and PP structures were predicative and equated to non-verbal sentences with omitted subjects, which are a common form in adult Māori language.

6 A hypothesis about the earliest structures of te reo Māori

Across the data, the majority of Puhi's early two-word combinations were consistent with (PART +) B (+ MOD), which is the basic structure of te reo Māori phrases. This finding is significant for two reasons: first, it confirms that Puhi was targeting the structure that is basic to te reo Māori; and second, it clearly defines most of Puhi's production as unlike the typical two-word phrases produced by L1-English children, which consist of two content words and no function words. This holds true in cases where Puhi reproduced adult phrases and also in cases when it appeared that she was generating her own combinations. The difference is clearly accounted for by the point made in 2.3, that in te reo Māori, a constituent very seldom consists of a single word, whereas in English single-word constituents are quite common.

We note that although the findings in this paper derive from just one child, there is anecdotal evidence from other whānau that their children who are L1 speakers of te reo Māori are also producing this form in their early utterances.

Accordingly, we put forward the following hypothesis: that children learning other languages (e.g., other Polynesian languages) which have the phrase and not the word as the basic unit would be expected to follow the pattern used by Puhi, while children learning languages where the word is the basic unit would be expected to follow the English pattern. (Note that this is not related to the fact that te reo Māori and English have different word orders; many VSO languages, such as the Celtic languages, are word-based, and there may be languages with SVO or other word-orders which are phrase-based.) In other words, following an initial one-word period, the first structures produced by young children learning te reo Maori and other phrase-based languages will have a form consistent with the phrase-based structure of such languages, in contrast with the structures produced by children learning word-based languages, which will follow the English pattern.

7 Conclusion

These findings make a significant contribution to our understanding of the natural acquisition of te reo Māori. It is clear from the data that Puhi's two-word utterances, including a few that parallel the structure of typical children's two-word English utterances, are consistent with the VSO word order of te reo Māori. This finding alone supports the notion that children target language-specific structures (Slobin, 1982). However, this study shows that the acquisition of language-specific structures goes deeper than word order: most of Puhi's two-word Māori utterances have the function-word + base structure characteristic of adult Māori, and are markedly different from the two-content-word structures found in European-language acquistion studies. They thus support Biggs' (1969) assertion that the phrase is the basic unit of te reo Māori.

The fact that children acquiring Māori produce structures markedly different from those of children acquiring English also provides a significant diagnostic indicator of which language is a child's principal productive L1. This may have important implications for later educational choices for that child, since a number of different studies summarised by Oller and Pearson (2022, p. 13) suggest that " first-language training may be important to ultimate success in the second language…".

There may also be implications for educational materials in te reo Māori, for instance the language used in early readers for young children, and also in the design of courses for the acquisition of Māori as a second language, since Pienemann (1998) claims that language acquisition by L2 learners follows the same sequence of acquisition as that followed by L1 learners. From this point of view it is desirable that studies of the later stages of the acquisition of te reo Māori are undertaken in the future. It is also clear that the field of language acquisition would benefit if further studies were carried out into the early acquisition of a wide range of languages including languages of different structural types and languages in the process of revitalisation, such as te reo Māori. This would deepen our understanding of what is involved in 'targeting language-specific structures', and potentially contribute to the maintenance of minority languages world-wide.

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Appendix 1: Abbreviations

1, 2, 3	first, second and third person respectively
ACT	actual possession, indicated by the morph *n-,* in the prepositions *nā* and *nō*
ADV	adverb
A/O	possessive morpheme, discussed briefly in 2.3.3 below (see also Bauer, 1997)
B	base
C	consonant
DEF	definite article
DET	determiner

DIR	directional particle
DIST	distant from both speaker and addressee (*rā*)
DO	direct object
DUP	reduplication
EQ	equational preposition
IMP	imperative particle
INT	intended/potential possession, indicated by the morph *m-,* in the prepositions *mā* and *mō*
LOC	locational preposition
LOC N	locational noun
LOCQ	locational question word 'where'
MOD	modifier
N	noun
NAME	personal name or kinship term
NP	noun phrase
NPRED	nominal predicate
O	a possessive morpheme, see a/o above
O	relating to word order: object
PART	particle
PASS	passive
PERS	personal article
PL	plural
POSS	possessive
PP	preposition phrase
PREP	preposition
PRON	pronoun
PROT	proto-particle: an experimental form produced by a child, probably targeting a conventional adult particle (see also Peters and Menn 1993). E.g., PROT-DET (proto determiner); PROT-TAM (proto-tense/aspect marker); PROT-PREP (proto-preposition)
PROX1	near speaker (*nei*)
PROX2	near addressee (*nā*)
PRS	present (tense or location)
PST	past (tense or location)
SBJ	(grammatical) subject
SG	singular
TAM	tense/aspect/mood marker
V	verb
V-PASS	verb with passive suffix
VC	verb constituent
~	links reduplicated morphs
.	used where a single word requires more than one abbreviation or word to gloss it, eg prep.prs is the gloss for a preposition which marks present location

References

Baldwin, D., & Meyer, M. (2007). How inherently social is language? In E. Hoff & M. Shatz (Eds.), *Blackwell handbook of language development* (pp. 87–106). Blackwell.

Bauer, W. (1997). *The Reed reference grammar of Māori*. Reed Books.

Benton, R. (1982). *The Maori language in Otaki, Manukau, Kuku, and Poroutawhao*. New Zealand Council for Educational Research.

Berk, L. E. (2009). *Child development* (8th ed.). Pearson Higher Education.

Biggs, B. (1969). *Let's learn Māori: A guide to the study of the Māori language*. A. H. & A. W. Reed.

Brown, R. (1973). *A first language: The early stages*. Harvard University Press.

de Houwer, A. (2009). *Bilingual first language acquisition*. Multilingual Matters.

Fernald, A., & Morikawa, H. (1993). Common themes and cultural variations in Japanese and American mothers' speech to infants. *Child Development, 64*(3), 637–656. https://doi.org/10.1111/j.1467-8624.1993.tb02933.x

Gathercole, V. C. M., & Thomas, E. M. (2009). Bilingual early language development: Dominant language takeover, threatened minority language take-up. *Bilingualism*, *12*(2), 25. https://doi.org/10.1017/S1366728909004015

Hunia, T.M. (2016). *He kōpara e kō nei i te ata: Māori language socialisation and acquisition by two bilingual children: A case-study approach*. [Doctoral dissertation, Victoria University of Wellington]. http://researcharchive.vuw.ac.nz/xmlui/handle/10063/5045

Hutchings, J., Higgins, R., Bright, N., Keane, B., Olsen-Reeder, V., & Hunia, M. (2017). *Te ahu o te reo | Te reo Māori in homes and communities: Overview report | He tirohanga whānui*. New Zealand Council for Educational Research. http://www.nzcer.org.nz/research/publications/te-ahu-o-te-reo-overview-report

Israel, M., Johnson, C., & Brooks, P. J. (2000). From states to events: The acquisition of English passive participles. *Cognitive Linguistics, 11*(1/2), 103–129.

Law, N. C. W., & So, L. K. H. (2006). The relationship of phonological development and language dominance in bilingual Cantonese-Putonghua children. *International Journal of Bilingualism*, 405–428. https://doi.org/10.1177/13670069060100040201

MacWhinney, B., & Snow, C. (1990). The child language data exchange system: An update. *Journal of Child Language*, *17*(2), 457–472. http://psyling.psy.cmu.edu/papers/years/1990/jcl-update.pdf

Oller, D.K. & Pearson, B.Z. (2022) Assessing the effects of bilingualism: A background. In Oller, D.K., & Eilers R.E. (Eds.), *Language and literacy in bilingual children* (pp. 3–21). Multilingual Matters.

Peters, A. M. (2009). Cracking the language code: Processing strategies in first language acquisition. In S. Foster-Cohen (Ed.), *Language acquisition* (pp.40–61). Macmillan.

Peters, A. M., & Menn, L. (1993). False starts and filler syllables: Ways to learn grammatical morphemes. *Language, 69,* 742–777.

Pienemann, M. (1998). *Language processing and second language development: Processability theory*. Studies in Bilingualism, Vol. 15. John Benjamins Publishing Co.

Reese, E., Keegan, P., McNaughton, S., Kingi, T., Carr, P. A., Schmidt, J., Mohal, J., Grant., & Morton, S. (2017). Te Reo Māori: Indigenous language acquisition in the context of New Zealand English. *Journal of Child Language*, *45*(2), 1–28. https://doi.org/10.1017/S0305000917000241

Slobin, D. I. (1982). Universal and particular in the acquisition of language. In E. Wanner & L.R. Gleitmann (Eds.) *Language acquisition: The state of the art* (pp. 128–170). Cambridge University Press.

Slobin, D. I. (1985). Introduction: Why study acquisition crosslinguistically? In D. I. Slobin (Ed.), *The crosslinguistic study of language acquisition Volume 1: The data* (pp. 3–26). Lawrence Erlbaum Associates.

Statistics New Zealand. (2018). *2018 census place summaries: Otaki*. https://www.stats.govt.nz/tools/2018-census-place-summaries/otaki

Statistics New Zealand. (2022). *Te reo Māori proficiency and support continues to grow*. https://www.stats.govt.nz/news/te-reo-maori-proficiency-and-support-continues-to-grow/

Winiata, W. (1979). Whakatupuranga Rua Mano, Generation 2000: An experiment in tribal development. In (no ed.) *He Mātāpuna/A source: Some Māori perspectives.* New Zealand Planning Council.