Research Article

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Suffixation in Zhangzhou

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Abstract: This study is the first to comprehensively describe suffixing morphology in Zhangzhou Southern Min, an under-described Sinitic language spoken in southern China. Suffixation can be derivational in this language to create new lexemes and expand local vocabulary but can be inflectional to convey grammatical information. It can also induce special tone sandhi patterns on either the lexical bases or the suffix itself. The bases that can undergo suffixation are cross-categorical, ranging from nouns, verbs, adjectives, classifiers, noun phrases, verb phrases to adjective phrases. However, the occurrences of suffixes, lexical bases, and derived items are subject to severe constraints from diverse factors of semantics, word class, syntax, phonology, and pragmatics. These reflect that the suffixing is not an isolated morphological event but rather involves systematic and complex interfaces among different linguistic levels. This study is a breakthrough to fill the research gap, while substantially broadening and deepening our knowledge of suffixation as an important morphological device in Sinitic languages. The study also contributes well-attested empirical data to the typology of suffixation in the world's natural languages while shedding important light on how Sinitic languages and other so-called isolating languages should be better defined from a modern linguistic perspective.

Keywords: suffixation, distribution, function, constraint, Zhangzhou

1 Introduction

Natural languages vary considerably as to what morphological processes are available in their grammar, how frequently the processes are used, and what types of information, morpho-syntactic–semantic–phonetic–phonological–or–pragmatic, are encoded over the processes (e.g. Bauer 2009, Basciano 2017, Liao 2014, Onumajuru 2015, Arcodia and Basciano 2012, Bybee et al. 1990, Hall 2008, Hawkins and Gilligan 1988, McCarthy 2002, Haspelmath and Sims 2010). Given this variation, morphology is not expected to be equally prominent in all spoken languages. One language may use a morphological device to express a particular word formation, whereas others may use a separate word or maintain implicit in conversations. For example, English expresses the plurality of nouns using suffixation (e.g. apple/apples, house/houses). Zapotec, a language spoken in Oaxaca, Mexico, expresses plurality by prefixing *ka-morpheme* to nouns (e.g. Marlett 1985). Yoruba, a language of south-western Nigeria, uses a separate word to encode plurality, such as the word *okunrin* means '*the man*' and its corresponding plural form is *awon 'the men'* (e.g. Ajiboye 2005, 2010). As seen, the same information can be encoded differently in different languages.

Given such flexibility and diversity of morphological processes, languages are typically and broadly classified into either analytic or synthetic, with several sub-categories within each type, depending on their corresponding word-building competence and productivity (e.g. Bybee et al. 1990, Hall 2008, Liao 2014, Basciano 2017). For example, Sinitic languages, along with Yoruba and Vietnamese, are conventionally cited as isolating because they exhibit an extreme degree of analyticity with no affixation (e.g. Lin 2001, Liao 2014, Banfi

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and Arcodia 2007, Arcodia and Basciano 2012, 2021). In contrast, languages, like Ancient Greek, Russian, and Latin, are grouped as synthetic because of their extensive use of affixes to encode person, number, tense, mood, voice, and other grammatical information (e.g. La Fauci and Tronci 2009, Kakarikos 2009, Marvan 1983). However, in their inventory of affixal elements, inflectional and derivational affixes are increasingly discovered in those so-called isolating languages (e.g. Liao 2014, Banfi and Arcodia 2007, Arcodia and Basciano 2012, 2021, Cao and Liu 2008, Yang 2006, 2008a,b, Chappell 2019, Iljic 2001). For example, in Mandarin Chinese, nouns are generally not inflected for grammatical gender, number, or person but exceptions can be observed in the suffix *-men* to mark plurality for human nouns and pronouns, and in the suffix *-de* to mark possession, as illustrated in (1). Likewise, verbs can be exceptionally inflected for aspect, with various aspectual suffixes, including the perfective suffix *-le*, experiential suffix *-guo*, and progressive/durative suffix *-zhe* (e.g. Liao 2014, Arcodia and Basciano 2021, Basciano 2017). In addition to these inflectional suffixations, derivational suffixations have been extensively used to create new lexemes for new concepts. For example, nominal affixes *-zi*, *-tou*, and *lao-*; verbal suffixes *-hua '-ize'*; and adjectival prefix *ke- '-able'* are all highly productive in the formation of Mandarin words (Arcodia and Basciano 2012).

(1) Inflectional suffixes in Mandarin Chinese

Plural Suffix

ren35-men 'person-plural'	lao214.shi55-men 'teacher-plural'
hai35.zi214-men 'kid-plural'	ni214.-men 'you-plural'
nan35.ren35-men 'man-plural'	nü214.ren35-men 'woman-plural'

Possessive Suffix

wo214 '1 s.g.'	wo214-de 'mine'
ni214 '2 s.g.'	ni214-de 'yours'
ta55 '3 s.g.'	ta55-de 'his/her'

Aspectual Suffix

zou214-le 'go-perfective'
zuo51-guo 'do-experiential'
zou214-zhe 'go-progressive'

As indicated, so-called isolating languages are questionable to be labelled as being isolating as conventionally assumed, because affixation can also be an active morphological device in their grammatical system, and also there is an increasingly high ratio of morphemes per word (Lin 2001, Basciano 2017, Banfi and Arcodia 2007, Huang 2023a). Updated knowledge is imperative to understanding the nature of word formation in related languages, and a theoretical discussion may thus be raised as to how such languages should be better defined from a modern morpho-syntactic perspective. Meanwhile, it should also be noted that the conventional classification of languages into isolating, agglutinating, fusional, and polysynthetic are essentially fuzzy because they were proposed based on descriptive labels in the nineteenth century. From a contemporary typological perspective, it is challenging to posit clear-cut, sharp, and discrete criteria for classifying languages with respect to a particular linguistic category and/or phenomenon. The main importance of language studies is to uncover the diversity and dynamic properties of the world's natural languages, thereby advancing our understanding of how human beings construct the complexity of languages in their mental grammar and decode it in their practical conversations. Driven by this intriguing phenomenon, this study is the first to investigate how suffixing is encoded in Zhangzhou Southern Min from an interdisciplinary perspective and how suffixing contributes to its word formation process, which is an under-described Sinitic language spoken in the southern part of Fujian Province in mainland China. It is of significant theoretical and practical importance to conduct this research, especially owing to the following two important factors.

The most significant factor is that, based on the conventional classification, Zhangzhou Southern Min, as a Sinitic language, should be classified as being isolating; however, its suffixing system is shown to be extraordinarily rich. A considerable number of suffixes can be identified that perform multiple semantic–morpho-syntactic–phonological functions. For example, the single suffix *ʔɐ51* can deliver a wide range of semantic

meanings, including smallness, closeness, and affection; tool and equipment; people of a particular characteristic; people of a specific occupation; sense of lightless and slowness, and sense of small quantity among others (Huang 2023a). Likewise, this suffix can also fulfil multiple morpho-syntactic roles that include nominalizer, nominal marker, and adverbializer. The lexical bases that can undergo suffixation with this *ʔɐ51* are cross-categorical, comprising nouns, verbs, adjectives, verbal phrases, nominal phrases, adjective phrases, and classifiers (Huang 2023a). Apart from these, the suffixing process can induce special tone sandhi patterns on either the bases or the suffix itself. For example, before the suffix *ʔɐ51*, tonal pitches of the bases are found altering to either a rising contour or a high level. The suffix *ʔe*, which is toneless and meaningless on its own, is found to have several phonetic forms, including low level, mid-level, mid-falling, and high level, depending on the semantic–morpho-syntactic function that it performs over the word formation and also on the tonal pitch contour of the base being attached. In addition to the derivational suffixation, some suffixes in this language can express grammatical relations. For example, the suffix *ʔe* can convey possession; the suffix ɓɵ51 can denote the gender of female to animals and also denote superiority in size, and the suffix *n* can mark plurality.

While the suffixing can affect the morpho-syntactic–semantic–phonological–phonetic structures of this language, the occurrences of suffixes, bases, and also the derived items are subject to a series of constraints from a diverse range of factors (e.g. semantics, word class, syntax, phonology, and pragmatics). For example, the suffix *ʔɐ51* that functions as a diminutive suffix can only suffix those kinship terms denoting younger generations or younger members of the same generation to express affection and closeness. The suffix *ɦwɐt41* appears to occur exclusively on verbal bases, while the suffix *tʰɐw22* prefers nominal bases. As indicated above, suffixation in this language offers several significant insights that can supersede our understanding of morphology in conventionally isolating languages.

An additional significant factor is that no systematic work has been done until Huang (2023a)'s preliminary exploration into linguistic function and constraint of the suffix *ʔɐ51*. Only a few studies can be found in the literature, but the insights they can offer are very limited. For example, Ma (1994) documented several suffixes in Zhangzhou, but he only provided examples without any further discussion from a modern linguistic perspective. Yang (2006, 2008a,b) documented the existing of the suffix *ʔɐ51*, but the work did not address how diverse linguistic levels contribute to this suffixation. Cao and Liu (2008) described the grammaticalization of diminutive suffixes in four Southern Min varieties, including Zhangzhou, but they did not discuss any other suffixes that can perform semantic functions other than diminution. As can be seen, a breakthrough is imperative to fill the research gap and to improve our understanding of how suffixation is encoded as an important morphological device in the grammatical system of this language.

This study adopts an interdisciplinary approach to thoroughly explore the suffixing system in Zhangzhou Southern Min, particularly focusing on its distributions, functions, and constraints. Fourteen suffixes that are commonly used in local communities are examined in detail in this study. Five main research questions are addressed that include (a) What linguistic functions do individual suffixes perform over their suffixing procedure? (b) What consequences are induced in terms of semantics, morpho-syntax, and/or phonetic-phonology? (c) What linguistic factors have constrained the occurrence of individual suffixes and in what way? (d) How do the derived words relate to their corresponding lexical bases? (e) What are the overall characteristics of the suffixing morphology in Zhangzhou Southern Min? The study incorporates four main sections including (a) introduce Zhangzhou and speech, (b) describe 14 productive suffixes in this language, (c) discuss main characteristics of the suffixing system in Zhangzhou (semantic function, morpho-syntactic function, and phonetic-phonological characteristics), and (d) discuss occurrence constraints on suffixes, bases, and/or the derived words. This research is expected to broaden and deepen our knowledge of suffixation as an important derivational process to formulate new lexemes in this Sinitic language, while filling in our understanding that certain suffixes can serve as an inflectional method to express grammatical relations. This innovative description is supposed to contribute precious empirical data to the typology of word formation not only within the Sino-Tibetan language family but also in the world's natural languages. The discussion is also of important linguistic significance for a proper definition of Sinitic languages from a modern morpho-syntactic perspective.

2 Zhangzhou and speech

2.1 Zhangzhou city

Zhangzhou is a prefecture-level city situated in the southern part of Fujian Province, along the southeast coast of China. The city covers an area of approximately 12,600 km^2 and hosts a registered population of approximately 5.10 million based on the 2020 census (Huang 2020). Geographically, Zhangzhou faces the Taiwan Strait to its east and borders the Fujian cities of Xiamen, Quanzhou, and Longyan to its east, northwest, and west, respectively, while its southwest region borders Chaozhou, a city in Guangzhou province.

Its native people dominantly speak Zhangzhou Southern Min, known as Hokkien for the colloquial pronunciation of Fujian province as the cradle place of Southern Min. But it should also be noted that Mandarin Chinese has a strong tendency to replace Zhangzhou Southern Min as the mother tongue among younger generations, especially those under 10-year-old because of its dominance as the only national language in mainland China. The speech of Zhangzhou Southern Min is mutually intelligible with many other southern Min varieties, like Quanzhou and Xiamen in Fujian and Taiwanese. Still, it is unintelligible to all other Sinitic languages, such as Mandarin, Hakka, Cantonese, Wu, Xiang, and Gan. The language of Hakka can also be found but is only spoken by a small number of people living in mountainous counties of western Zhangzhou that borders a major-Hakka-speaking city of Longyan.

Certain regional variations can be perceived, especially in the sound system, among the 11 administrative areas of Zhangzhou city, including Xiangcheng, Longwen, Longhai, Changtai, Hua'an, Changtai, Nanjing, Zhangpu, Yunxiao, Dongshan, and Pinghe. For example, the pitch of tone 7, corresponding to Yangru tone in terms of the Middle Chinese tonal category, is documented as a short high contour [4] in Longhai, a mid-level contour [33] in Changtai, a low rising contour [13] in Dongshan and Zhao'an, and a convex contour of either [121] or [131] elsewhere (Yang 2008b). Given this variation, this study restricts the research locality to the urban area of Longwen and Xiangcheng districts, which is conventionally considered to be historically–socially–linguistically–culturally representative of Zhangzhou speech (Ma 1994, ZZG 1999, Huang 2020) and has received documentation since the nineteenth century, though the majority are from the phonetic and phonological perspective (e.g. Dong 1959, Lin 1992, Ma 1994, FJG 1998, ZZG 1999, Gao 1999, Yang 2006, Huang 2019, 2020, 2022a,b).

2.2 Zhangzhou syllables

A template of C(G)V(X) can be generalized to characterize the internal syllable structure of Zhangzhou Southern Min, in which the onset and nucleus are obligatory, while the glide and coda are optional (Huang 2018, 2019, 2020, 2022b). The segmental system of this language comprises 15 onsets, 2 prevocalic glides, 13 nuclei, and 8 codas, as summarized in Table 1. Prevocalic glides possess an independent (G) status, whereas post-vocalic glides belong to one type of syllable coda (X). Three types of segments (oral vowels, nasalized vowels, and syllabic nasals) can occur as nuclei, whereas three types of segments (glides, nasal consonants, and obstruent stops) can occur in the coda position. Four syllable types, including CV, CGV, CVC, and CGVC, can also be generalized as illustrated in Table 2, in which lexical tones are transcribed using Chao (1930)'s notional

Table 1: Phonemic inventory for Zhangzhou syllables

Component		Phoneme
C	onset	p, pʰ, ɓ, t, tʰ, ɗ, k, kʰ, ɠ, ts, tsʰ, s, z, ɦ, ʔ
G	glide	j, w
V	nucleus	i, e, ɛ, ɐ, ɔ, ɵ, u, ĩ, ɛ̃, ɐ̃, ɔ̃, m, ŋ
X	coda	j, w, m, n, ŋ, p, t, k

system with 5 standing for the highest pitch level and 1 for the lowest level of individual speakers' pitch range. All empirical examples provided in this study are transcribed based on this segmental inventory.

2.3 Zhangzhou tones

Zhangzhou possesses eight lexical tones (Huang 2018, 2019, 2020, 2022a), rather than seven tones as documented in all prior studies that rely on auditory impressions and rely on a single context of citation (e.g. Dong 1959, Lin 1992, Ma 1994, FJG 1998, ZZG 1999, Gao 1999, Yang 2006). The eight-tone system is posited based on two important factors. (1) Tones sharing an identical pitch contour can differ considerably in other parameters, such as duration, syllable type, vowel quality, and phonation. (2) Tones can have the same realization in the citation context but differ in other linguistic contexts, such as at the non-right dominant position of multisyllabic constructions (Huang 2018, 2019, 2020, 2022a). In addition, the newly posited tone 8 emerges from those syllables that are conventionally transcribed with a glottal stop coda in Yangru tone in terms of the Middle Chinese tonal category; however, synchronically the glottal stop coda is found being deleted that renders its related syllables to become open and have different tonal realizations from those syllables that are conventionally assigned with the same Yangru tone but end in obstruent codas (Huang 2018, 2020, 2023b). Table 3 illustrates the eight citation tones with their realization in pitch and duration. Their corresponding names in terms of the Middle Chinese tonal category are also provided to make them diachronically traceable and synchronically comparable with other Sinitic languages.

In addition, Zhangzhou has a typical right-dominant tone sandhi system (Huang 2018, 2020, 2022a). The tone sandhi domain is aligned with the boundary of syntactic phrases XP, in which X ranges from noun, verb, adjective, adverbial, to preposition. Tones at the non-right-most position of any syntactic phrase are expected to alter their realizations at both the phonological and phonetic levels. In contrast, tones at the rightmost position have their realizations categorically similar to their corresponding citation forms but are subject to certain variations at the phonetic level because of their sensitivity to preceding tones and the utterance-final declining effect. However, tonal alternation is only relevant to the boundary of syntactic phrases and is irrelevant to their internal structures. In other words, regardless of whether the syntactic phrase is verbal, nominal, or adjective, tones are supposed to change in the same way. This tonal alternation is referred to as the general sandhi pattern in Huang's (2018, 2020, 2022a) studies. Table 4 illustrates how individual tones alter their pitch realizations in disyllabic contexts, with tone 2 serving as the carrier.

Nevertheless, some special patterns can also be identified in the field, which occurs in very specific morphosyntactic contexts with their realizations dramatically different from those that are identified in the general tone sandhi process. For example, a special tone sandhi pattern can be found in the suffixing process with the suffix *ʔɐ51* that can function as diminutive marker, nominalizer, nominal marker, and adverbializer, because the tonal pitch of the morphemes or bases before this suffix *ʔɐ51* is changed to either a high level [55] or a rising contour [35], depending on their pitch contour shapes in citation (Huang 2023a). Similarly, special tonal alternations can also be found in the suffix *ʔe* that serves as a possession marker, diminutive marker, and nominal marker. This suffix is shown to be toneless at the underlying level, but has several pitch variants, including a low level [22], mid-level [33], mid-falling [31], and high level [55], in accordance with its changing

Table 2: Examples of syllable types in Zhangzhou

CV	CGV	CVC	CGVC
tĩ35 'sweet'	sjɐ51 'write'	sim35 'heart'	tsjɐp41 'juice'
bɐ41 'meat'	ts^{h}jɐ41 'laugh'	tit41 'bamboo'	kwɐj41 'odd'
kuɜ33 'worn'	kwɐ35 'song'	kɐw41 'arrive'	kjɐm22 'salty'
tɐ35 'knife'	swɐ̃41 'thread'	kut41 'bone'	ts^{h}jɐt41 'chop'
ʔɔ22 'lake'	ʔjɔ̃22 'sheep'	tɐŋ35 'east'	ʔjɐw35 'hungry'

Table 3: Examples of Zhangzhou citation tones

Tone		Pitch	Duration	Example 1	Example 2
1	Yinping	[35]	extra-long	/teŋ35/ 'east'	/kɔ35/ 'mushroom'
2	Yangping	[22]	extra-long	/teŋ22/ 'copper'	/kɔ22/ 'glue'
3	Shang	[51]	medium	/teŋ51/ 'to wait'	/kɔ51/ 'drum'
4	Yinqu	[41]	medium	/teŋ41/ 'frozen'	/kɔ41/ 'look after'
5	Yangqu	[33]	extra-long	/teŋ33/ 'heavy'	/ɦɔ33/ 'rain'
6	Yinru	[41]	short	/tep41/ 'answer'	/kɔk41/ 'country'
7	Yangru	[221]	long	/tsɐp221/ 'ten'	/tɔk221/ 'poison'
8	Yangru	[22]	extra-long	/tsi22/ 'tongue'	/kɔ̃22/ 'snore'

Table 4: Examples of Zhangzhou tonal realizations in disyllabic contexts

Tone	Non-right most position			Right-most position		
	X + **2**	pitch	Example	**2** + **X**	pitch	Example
1	**1** + 2	[33]	/tsʰɛ̃1.tɛ2/ 'raw tea'	2 + **1**	[34]	/tɛ2.hwɐ1/ 'camellia'
2	**2** + 2	[33]	/ʔeŋ2.tɛ2/ 'black tea'	2 + **2**	[211]	/tɛ2.ɗɐw2/ 'tea house'
3	**3** + 2	[25]	/tsɐ3.tɛ2/ 'morning tea'	2 + **3**	[52]	/tɛ2.bi3/ 'dried tea'
4	**4** + 2	[63]	/swɛ̃4.tɛ2/ 'unpacked tea'	2 + **4**	[41]	/tɛ2.tjɐm4/ 'tea store'
5	**5** + 2	[32]	/ʔjɔŋ5.tɛ2/ 'have tea'	2 + **5**	[33]	/tɛ2.tsʰju5/ 'tea tree'
6	**6** + 2	[65]	/sip6.tɛ2/ 'moisten tea'	2 + **6**	[41]	/tɛ2.sik6/ 'tea colour'
7	**7** + 2	[32]	/sik7.tɛ2/ 'colorful tea'	2 + **7**	[211]	/tɛ2.sit7/ 'tea dessert'
8	**8** + 2	[32]	/pɛ8.tɛ2/ 'Bai tea'	2 + **8**	[211]	/tɛ2.ɦjɵ8/ 'tea leaf'

mono-syntactic functions and also with the changing tonal phonetics of its preceding bases. The existence of special tone sandhi patterns reflects close linguistic interfaces between phonetics, phonology, semantics, and morphosyntax over the word formation process in this Sinitic language. This is discussed in detail in relevant sections of this study.

3 Zhangzhou suffixes

This section provides a detailed introduction to 14 suffixes that are the most often used in the speech communities of Zhangzhou. It particularly focuses on discussing their distributions, semantic–morpho-syntactic functions, and occurrence constraints.

3.1 *tʰɐw22*

The morpheme *tʰɐw22* 头, a cognate of Mandarin *tou35* meaning *'head'* on its own, is found to lose its original semantics and purely serve as a nominal marker in multisyllabic words. The bases that can be attached by this suffix are exclusively nouns, and there are no restrictions on what types of nouns can be suffixed. As such, a wide variety of nouns, regardless of whether they are concrete, abstract, countable, or uncountable, can undergo suffixation with this morpheme *tʰɐw22* 头. For example, in the word *tsjɵ32-tʰɐw22 'stone'*, the base *tsjɵ22* is a countable concrete noun that means *'stone'*. Likewise, in the word *tʰŋ33-tʰɐw22 'texture of soup'*, the base *tʰŋ35* is a concrete noun but uncountable. On the contrary, in the word *kwɐt65-tʰɐw22*, the lexical base *kwɐt41* is an abstract noun that means *'technique, skill'*. More specific examples can be referred to in (2).

(2) Suffix tʰɐw22
Nominal bases
Concrete
zit32-tʰɐw22 ‘sun-tʰɐw22: sun’
tsjɵ32-tʰɐw22 ‘stone-tʰɐw22: stone’
tsʰɐ33-tʰɐw22 ‘wood-tʰɐw22: wood’
tsʰɐj63-tʰɐw22 ‘vegetable-tʰɐw22: radish’
kut65-tʰɐw22 ‘bone-tʰɐw22: bone’
tsʰɐŋ33-tʰɐw22 ‘onion-tʰɐw22: onion’
tsiŋ35-tʰɐw22 ‘finger-tʰɐw22: finger’
Abstract
pʰɐj63-tʰɐw22 ‘maner-tʰɐw22: manner; style’
kwɐt65-tʰɐw22 ‘technique-tʰɐw22: technique; skill’
tsʰju35-tʰɐw22 ‘hand-tʰɐw22: financial status’
tʰŋ33-tʰɐw22 ‘soup-tʰɐw22: texture of soup’

Its suffixation does not induce any categorical change in related words because both the bases and derived words are nominal. In this regard, this suffix can be considered as a purely nominal marker. Semantically, the suffixing delivers a reading of the culmination, concentration, and crystallization. What deserves further attention is that the suffixing of *tʰɐw22* can change the type of noun from concrete to abstract. This can be seen in the word *tsʰju35-tʰɐw22*: the base *tsʰju51* lexically means *‘hand’*, but the derived noun is used to refer to one’s financial situation, which has little correlation with the meaning of its lexical base.

3.2 *ɦwɐt41*

The morpheme *ɦwɐt41*法, which means *‘law’* in isolation, can serve as a suffix to form consistent patterns that can be generalized in the empirical data. The lexical bases that can be suffixed by *ɦwɐt41* are dominantly transitive verbs; however, their derived words are exclusively nouns. In other words, this suffix mainly functions as a deverbal nominalizer that can induce a categorical change from verbal to nominal. For example, the noun *sjɔ̃32-ɦwɐt41 ‘thought’* is derived by attaching the suffix *ɦwɐt41* to the verbal base *sjɔ̃33 ‘to think’*. Semantically, the derived words are used to refer to a solution and strategy upon which a particular action as denoted in their verbal base can be accomplished. For example, the derived noun *kʰwɛ̃63-ɦwɐt41* is used to express an *‘opinion’*, while its verbal base *kʰwɛ̃41* means *‘to watch’*. The function of this suffix *ɦwɐt41*法 is similar to its cognate *fa214* in Mandarin Chinese. More examples can be seen in (3).

(3) Suffix ɦwɐt41
Verbal bases
sjɔ̃32-ɦwɐt41 ‘to think-ɦwɐt41: thought’
kʰwɛ̃63-ɦwɐt41 ‘to watch-ɦwɐt41: opinion’
tsɵ63-ɦwɐt41 ‘to do-ɦwɐt41: a way of doing a thing’
pɐn63-ɦwɐt41 ‘to deal with-ɦwɐt41: method’

3.3 *ɦɐt221*

The Chinese character学 has two phonological forms in Zhangzhou. One is /ʔɵ*22*/ that means *‘to learn’* and can be used independently in colloquial conversations. Another is /*ɦɐt221*/ *which* primarily functions as a suffix and can only occur in the literary context. Its derived words are exclusively nominal that express a specific

subject or discipline as denoted in their related bases, such as mathematics (*sɔ63-ɦɐt221*), linguistics (*ʤi35.ʤɐn33-ɦɐt221*), and literature (*ɓun33-ɦɐt221*), as shown in (4). The lexical bases that can be suffixed are mostly nouns, for example, in the word *sɔ63-ɦɐt221* that means *'mathematics'*, the base *sɔ41* is a noun meaning *'number'*. Some bases can be verbal, for example, in the word *ɦwɐ63-ɦɐt221 'chemistry'*, the base *ɦwɐ41* is a verb that means *'to transform'*. Only a very few bases are adjectives, for example, in the word *ɓi35-ɦɐt221 'aesthetics'*, the base *ɓi51* is an adjective meaning *'beautiful'*. Thus, for those non-nominal bases, the suffixation can cause a categorical change in their part of speech to derive new lexemes of a nominal category. What needs special attention is that the derived words with this suffix *ɦɐt221* are largely borrowed from Standard Mandarin, as they mostly reflect the disciplines that are cultivated in the modern era.

(4) Suffix ɦɐt221
Nominal base
sɔ63-ɦɐt221 'number-ɦɐt221: mathematics'
ɓun33-ɦɐt221 'text-ɦɐt221: literature'
ɦwɐt65-ɦɐt221 'law-ɦɐt221: jurisprudence'
ʤi35.ʤɐn33-ɦɐt221 'speech-ɦɐt221: linguistics'
Verbal base
ɦwɐ63-ɦɐt221 'to transform-ɦɐt221: chemistry'
ʔi33-ɦɐt221 'to cure-ɦɐt221: medicine'
Adjective base
ɓi35-ɦɐt221 'beautiful-ɦɐt221: aesthetics'

There are several nominal suffixes in Zhangzhou that are used to denote occupations and/or professional skills. These include *sɐj35*师, *su35*师, *su33*士, *kɛ35*家, *ʤwɐn22*员, and *ʔɐ51*. These suffixes largely bear a lexical meaning of either master or scholar, but they all cannot stand on their own in conversations. They are conditioned by different syntactic–semantic–pragmatic factors to construct lexical items that are grammatically well-formed and empirically adopted.

3.4 *sɐj35*

The suffix *sɐj35*师 is exclusively used in a colloquial setting to address someone whose occupation is prevalent in the old society of Zhangzhou Southern Min. The bases denote the type of occupation of the person being addressed and they are dominantly nouns. For example, in the word *tʰɔ33.tswi35-sɐj35*, the base *tʰɔ33.tswi51* is a noun that means '*soil and water*', while the derived word refers to *'builder'* whose occupation is about dealing with soil and water. Such an addressing is less often used in present-day Zhangzhou because people in the city area are not allowed to build houses on their own; instead, they move into places that local government or private corporate builts. Some bases can be adjectives but are very rare. For example, in the word *ɗɐw32-sɐj35*, the base *ɗɐw33* is an adjective that means *'old'*, but the derived word is used to address someone who is a senior worker in a particular area. More examples can be found in (5).

(5) Suffix sɐj35
Nominal base
tʰɔ33.tswi35-sɐj35 'soil-water-sɐj35: builder'
kun33.tʰɐw33-sɐj35 'fist-sɐj35: kung fu master'
Adjective base
ɗɐw32-sɐj35 'old-sɐj35: senior worker (male)'

3.5 *su35*

In contrast, the suffix *su35*师 is only used in a formal setting to respectfully address someone who has a distinguished occupation as a master particularly in modern society, such as prime minister *(kɔk65-su35 'country-su35: prime minister')*, doctor *(ʔi33-su35 'to cure-su35: doctor')*, teacher *(kɐw63-su35: 'to teach-su35: teacher')*, and supervisor *(tɵ32-su35 'to supervise-su35: supervisor')*. The bases that can be attached are cross-categorical, including nouns, verbs, and adjectives. For example, in the word *kun33-su35 'military advisor'*, the base *kun35* is a noun that means *'army'*. In the word *tɵ32-su35 'supervisor'*, the base *tɵ33* is a verb that means *'to supervise'*. In the word *twɐ32-su35 'great master'*, the base *twɐ33 'big'* is an adjective. As such, the suffix *su35*师 can be considered a nominalizer that can transfer a word from non-nominal to nominal. More examples as illustrated in (6).

(6) Suffix su35
Nominal base
kɔk65-su35 'country-su35: prime minister'
kun33-su35 'army-su35: military adviser'
ɦwɐt65-su35 'magic; method-su35: Daoist magician'
Verbal base
ʔi33-su35 'to cure-su35: doctor'
tɵ32-su35 'to supervise-su35: supervisor'
kɐw63-su35: 'to teach-su35: teacher'
Adjective base
ɗɵ35-su35 'old-su35: teacher'
tɐj63-su35 'senior-su35: prime minister (in ancient dynasties)'
twɐ32-su35 'big-su35: great master/expert (in modern society)'

3.6 *su33*

The suffix *su33*士, a cognate of Mandarin *shi51*, can be attached to lexical bases to address someone who is a professional in a particular area with a specific qualification. The derived words are predominantly used in formal settings. The lexical bases being attached denote the main characteristics of the person being addressed. For example, in the word *tsjɐn63-su33* which means *'solider'*, the base *tsjɐn41* means *'to fight'* that denotes this person conducts some actions about *'fighting'*. The lexical bases are largely adjectives, such as in the word *pʰɔk65-su33 'doctoral scholar'*, the base *pʰɔk41* is an adjective that means *'abundant'*. Some bases can be verbal, for example, in the word *ɦɔ32-su33 'to protect-su33: nurse'*, the base *ɦɔ33* is a verb that means *'to protect'*. Only a few bases are nominal, for example, in the word *tɵ32-su33 'Taoist priest'*, the base *tɵ33* is a noun that means *'doctrine or road'*. More examples of this suffixing can be seen in (7).

(7) Suffix su33
Adjective base
pʰɔk65-su33 'abundant-su33: doctoral scholar'
sɔk65-su33 'large-su33: master scholar'
ɗjɐt32-su33 'strong-su33: martyr'
ʔjɔŋ35-su33 'brave-su33: warrior'
Verbal base
tsjɐn63-su33 'to fight-su33: soldier'
ɦɔ32-su33 'to protect-su33: nurse'
Nominal base
tɵ32-su33 'doctrine-su33: Taoist priest'
ʔĩ32-su33 'college-su33: academician fellow'

3.7 *kɛ35*

The character *kɛ35*家in isolation means *‘home’*, but it is often adopted as a nominal suffix to specify individual persons who possess professional knowledge or skill in a particular area, such as a musician (*ʔin33.ɠɐk32-kɛ35 ‘music-kɛ35: musician’*) or scientist (*kʰɵ33.ɦɐk32-kɛ35 ‘science-kɛ35: scientist’*). This suffix is a cognate of Mandarin *jia*55 and corresponds to the English *-ist*, *-er,* or *-ian*. The lexical bases that can be attached by this suffix are primarily nominal, for example, the word *ʔin33.ɠɐk32-kɛ35 ‘musician’* is derived from the nominal base *ʔin33.ɠɐk221* which means *‘music’*. Though rare, this suffix can be attached to verbs, such as the word *ɦwɐ32-kɛ35 ‘painter’* has a verbal base *ɦwɐ33 ‘to draw’*, It can also be attached to adjective bases but not so many bases can be identified, such as in the word *tswɐn33-kɛ35 ‘expert, specialist’,’* the base *tswɐn35* is an adjective that means *‘specialized.’* More examples can be seen in (8).

(8) Suffix kɛ35家
Nominal base
ʔin33.ɠɐk32-kɛ35 ‘music-kɛ35: musician’
kʰɵ33.ɦɐk32-kɛ35 ‘science-kɛ35: scientist’
ɠɐ32.sut32-kɛ35 ‘art-kɛ35: artist’
su32.ɠjɐk32-kɛ35 ‘enterprise-kɛ35: entrepreneur’
tsiŋ63.ti32-kɛ35 ‘politics-kɛ35: politician’
Verbal base
tsɔk65-kɛ35 ‘to write-kɛ35: writer’
ɦwɐ32-kɛ35 ‘to draw-kɛ35: painter’
Adjective base
tswɐn33-kɛ35 ‘specialised-kɛ35: specialist; expert’
ɓjɛ̌33-kɛ35 ‘famous-kɛ35: famous expert’

3.8 *ɠwɐn22*

The morpheme *ɠwɐn22*员, a cognate of Mandarin *yuan35*, dominantly serves as a suffix to address someone who either (a) engages in a certain field of work, like *ʔjɐn35-ɠwɐn22 ‘actor’*, *ɠjɐn35.kju63-ɠwɐn22 ‘researcher’*, and *‘ɦu35.tɵ32-ɠwɐn22 ‘counsellor’*, among others, or (b) a member of a team, party, or organization. The lexical bases that can be attached are strictly conditioned by the semantic reading delivered by suffixation. For the semantics of indicating the qualification of individuals, the bases have to be verbal, for example, the word *ʔjɐn35-ɠwɐn22* that means *‘actor’* is derived from the verbal base *ʔjɐn51* that means *‘to perform’*. In contrast, for the semantics of indicating a member of a group, the lexical bases must be nominal. For example, in the word *twi32-ɠwɐn22* that means *‘team member’*, the lexical base *twi33* is a noun which means *‘team’*. Thus, there is a strict restriction on the type of bases that can be suffixed and on the semantics that are transferred. More related examples can be seen in (9).

(9) Suffix ɠwɐn22员
Verbal base
ʔjɐn35-ɠwɐn22 ‘to perform-ɠwɐn22: actor’
ɦɔk32.ɓu32-ɠwɐn22 ‘to serve-ɠwɐn22: servant’
ɦu35.tɵ32-ɠwɐn22 ‘to coach-ɠwɐn22: counsellor, assistant’
kwɐn35.dĭ35-ɠwɐn22 ‘to oversee-caretaker; administrator’
ɠjɐn35.kju63-ɠwɐn22 ‘to research-ɠwɐn22: researcher’
kɛ63.su35-ɠwɐn22 ‘to drive-ɠwɐn22: driver’
Nominal base
tɔŋ35-ɠwɐn22 ‘party-ɠwɐn22: party member’

ɦwe32-ɠwɐn22 ‘association-ɠwɐn22: a member of an organisation’
twi32-ɠwɐn22 ‘team-ɠwɐn22: team member’
kɔŋ33.ɓu32-ɠwɐn22 ‘public affair-ɠwɐn22: civil servant’

3.9 *ʔɐ51*

The suffix *ʔɐ51* is colloquially created by the local community and is shown to be the most productive in the word formation of Zhangzhou Southern Min (Ma 1994, Yang 2006, 2008a,b, Huang 2023a). This suffix is reported to be diachronically related to the lexeme *kjɛ̃51* that means *‘son, child’*, but evolves as a diminutive suffix in the synchronic speech of this language, which delivers a range of semantic senses that include smallness, affection, closeness, endearment, approximation, and imitation. This suffix also evolves into an important nominal marker that can be attached to a wide range of bases comprising nouns, verbs, adjectives, verbal phrases, nominal phrases, adjective phrases, and classifiers to enrich and expand the local vocabulary. Its suffixing can intrigue a special tone sandhi phenomenon on the bases and render them to have different tonal realizations from those that occur in general morpho-syntactic contexts. Thus, this most productive suffix can substantially affect the morphosyntactic–phonetic–phonological–and–semantic structure of this language. This suffix can be viewed as a combination of suffixes *zi214*子 and *er 35* 儿 in Mandarin but serves more linguistic functions. The following illustrates how the suffixing of *ʔɐ51* behaves multifunctionally in Zhangzhou and focuses on discussing its distributions, semantics, and grammatical functions.

3.9.1 Attached to nouns

The suffix *ʔɐ51* can be attached to nouns that cross a wide range of semantic domains, such as kinship term (e.g. *tsɐw55-ʔɐ51 ‘daughter’*), person name (e.g. *kwɐn35-ʔɐ51 ‘Juan’*), animal name (e.g. *ke35-ʔɐ51 ‘chicken’*), food (e.g. *kɐm35-ʔɐ51 ‘orange’*), plant (e.g. *tsʰju35-ʔɐ51’tree’*), vehicle (e.g. *tsun35-ʔɐ51 ‘boat’*), building (e.g. *tsʰu55-ʔɐ51 ‘house’*), stationary (e.g. *tsʰɐt55-ʔɐ51 ‘eraser’*), and clothing (e.g. *sɛ̃35-ʔɐ51 ‘cloth’*) among others. Morpho-syntactically, over suffixation, the derived words maintain the same part of speech as their nominal bases. Phonologically, the nominal bases that can be suffixed by *ʔɐ51* are dominantly monosyllabic, as illustrated in (10).

Functionally, this suffix *ʔɐ51* performs two main roles when it occurs after nominal bases: one as a diminutive marker and the other as a nominal marker. When serving as a diminutive marker, it typically occurs in kinship terms (e.g. *tsɐw55-ʔɐ51: daughter*), person name (e.g. *kwɐn35-ʔɐ51 ‘Juan’*), and animal name (e.g. *tsjɐw55-ʔɐ51 ‘bird’*) to convey a semantics of smallness and affection. In this regard, it behaves similarly to the suffix *er214* 儿 in Mandarin such as *nü214-er35 ‘daughter’*, *juan55-er35 ‘Juan’*, and *niao214-er35 ‘bird’*. More examples of this diminutive function can be seen in (10).

(10) Suffix ʔɐ51 as a diminutive marker
after a kinship term
tsɐw55-ʔɐ51 ‘daughter-ʔɐ51: daughter’
sun35-ʔɐ51 ‘nephew/niece-ʔɐ51: nephew/niece’
ku35-ʔɐ51 ‘brother-in-law-ʔɐ51: brother-in-law’
ʔi35-ʔɐ51 ‘sister-in-law-ʔɐ51: sister-in-law’
after a person’s name
ʔɔŋ33 sjɔk65.kwɐn35 → kwɐn35-ʔɐ51 ‘Juan’
tɐn33 ti63.ʔwi51 → ʔwi55-ʔɐ51 ‘Wei’
ɦwĩ33 ɠe32.ʔjɔŋ51 → ʔjɔŋ55-ʔɐ51 ‘Yong’
ɗim33 ʔjɐn63.ɦun35 → ɦun35-ʔɐ51 ‘Fen’

after an animal name
ke35-ʔɐ51 ‘chicken’
ʔɐ55-ʔɐ51 ‘duck’
tsjɐw55-ʔɐ51 ‘bird’
tʰɔ55-ʔɐ51 ‘rabbit’
kɐw55-ʔɐ51 ‘dog’

However, there are strict restrictions on what kind of bases can be suffixed by *ʔɐ51* to convey diminution. For the kinship term category, it can only suffix those bases that refer to people of a younger generation, such as *tsɐw55-ʔɐ51 ‘daughter’*, or people who are a younger member of the same generation, such as *ʔi35-ʔɐ51 ‘(younger) sister-in-law’*. For the person name category, this diminutive suffix *ʔɐ51* can only occur after the last syllable of the first name to express affection and closeness. For example, given someone is called *ʔɔŋ33 sjɔk65.kwɐn35* in which *ʔɔŋ22* is the family name, and *sjɔk65.kwɐn35* is her first name, it is only grammatically well-formed to address her as *kwɐn35-ʔɐ51,* in which *kwɐn35* is the last syllable of her first name. For the animal name category, it typically suffixes those bases that relate to domestic livestock of a small physical size to express a sense of smallness, such as chicken (e.g. *ke35-ʔɐ51 ‘chicken’*) and duck (e.g. *ʔɐ55-ʔɐ51 ‘duck’*).

In addition, this suffix *ʔɐ51* can also serve as a nominal marker that can occur after nouns of a wide range of semantic domains. These include food name (e.g. *ɗɐj35-ʔɐ51 ‘pear’*), plant name (e.g. *ɦjɵ35-ʔɐ51 ‘leaf’*), vehicle name (e.g. *ɗun35-ʔɐ51 ‘tire’*), utensil name (e.g. *tsʰjɐ35-ʔɐ51 ‘ladle’*), building name (e.g. *tʰjɐw35-ʔɐ51 ‘pillar’*), stationary name (e.g. tsʰjɵ55-ʔɐ51 ‘ruler’), and clothing name (e.g. *kʰɔ55-ʔɐ51 ‘trousers’*) among others. More examples are illustrated in (11). In this construction, the suffix *ʔɐ51* purely functions as a nominal marker that adds zero semantic interpretation to the derived words. By contrast, the lexical bases bear core semantics. In this regard, this suffix *ʔɐ51* behaves similarly to the Mandarin suffix *zi* 子, such as *xie35-zi ‘shoe’*, *yi214-zi ‘chair’*, *ju35-zi ‘orange’*, and *ye51-zi ‘leaf’*.

(11) ʔɐ51 as a nominal marker
after food name
kɐm35-ʔɐ51 ‘orange’
ɗɐj35-ʔɐ51 ‘pear’
swɛ̃j35-ʔɐ51 ‘mango’
ɗwĩ35-ʔɐ51 ‘grapefruit’
after a plant name
tsʰju35-ʔɐ51’tree’
ɦjɵ35-ʔɐ51 ‘leaf’
tsʰiŋ35-ʔɐ51 ‘Banyan tree’
tiŋ35-ʔɐ51 ‘rattan’
after a vehicle name
tsun35-ʔɐ51 ‘boat’
ɗun35-ʔɐ51 ‘tire’
pɐj35-ʔɐ51 ‘bamboo raft’
ɗjɐn35-ʔɐ51 ‘chain of bicycle’
after a utensil name
ʔwe35-ʔɐ51 ‘pan’
tsʰjɐ35-ʔɐ51 ‘ladle’
pwɛ̃35-ʔɐ51 ‘plate’
ɓin55-ʔɐ51 ‘bush’
after a building name
tsʰu55-ʔɐ51 ‘house’
tʰjɐw35-ʔɐ51 ‘pillar’
ʔi55-ʔɐ51 ‘chair’
tɵ55-ʔɐ51 ‘desk’

after a stationary name
tsʰɐt55-ʔɐ51 ‘eraser’
tsʰjɵ55-ʔɐ51 ‘ruler’
pʰɔ35-ʔɐ51 ‘exercise book’
ʔɐ35-ʔɐ51 ‘box’
after clothing name
sɛ̆35-ʔɐ51 ‘cloth’
kʰɔ55-ʔɐ51 ‘trousers’
ɓwe35-ʔɐ51 ‘sock’
ʔe35-ʔɐ51 ‘shoe’

3.9.2 Attached to verbs

The suffix *ʔɐ51* can be attached to verbs to derive new lexemes for a nominal category. Semantically, its suffixing can specify a tool, utensil, or equipment that is used to accomplish a particular action or activity as denoted in its corresponding verbal base. For example, in the word *tʰwi35-ʔɐ51*, the lexical base *tʰwi22* is a verb that means *‘to hammer’*; with this suffix, the whole word is used to refer to a hammer. Likewise, the word *tsʰjɐm55-ʔɐ51* that means *‘fork’* is derived by attaching *ʔɐ51* to the verbal base *tsʰjɐm51* that means ‘*to spear’*. As can be seen, this suffixing can change both the semantics and grammatical category of related items. Thus, it can be regarded as a deverbal normalizer in this morphological context. More examples can be seen in (12).

(12) Suffix ʔɐ51 after verbs
ɠɛ̃55-ʔɐ51 ‘to clamp-ʔɐ51: pliers’
tʰwi35-ʔɐ51 ‘to hammer-ʔɐ51: hammer’
ɦɐp55-ʔɐ51 ‘to clip-ʔɐ51: clip; tongs’
tsʰjɐm55-ʔɐ51 ‘to spear-ʔɐ5: fork’
ki63-ʔɐ51 ‘to saw-ʔɐ51: saw; hacksaw’

3.9.3 Attached to adjectives

The suffix *ʔɐ51* can be attached to adjective bases to derive new lexemes of a nominal category. Semantically, the derived words are used to refer to individual people who possess a specific characteristic as encoded in their corresponding bases. For example, the word *ɠɔŋ35-ʔɐ51* refers to a ‘*fool person’*, which is derived by suffixing the *ʔɐ51* to an adjective base *ɠɔŋ33* that means *‘fool’*. This suffix can thus be viewed as a de-adjective normalizer. As such, the suffixing can also change both the semantics and the word class of the items being considered. More examples can be seen in (13).

(13) Suffix ʔɐ51 after adjectives
pwi35-ʔɐ51 ‘fat-ʔɐ51: fat person’
ɠɔŋ35-ʔɐ51 ‘fool-ʔɐ51: fool person’
sin35-ʔɐ51 ‘new-ʔɐ51: new person’
ɗɐw55-ʔɐ51 ‘experienced-ʔɐ51: experienced person’

3.9.4 Attached to noun phrases

The suffix *ʔɐ51* can be attached to noun phrases to derive new lexemes of a nominal category. The derived words are used to specify individuals who are either physically impaired or have a particular physical

appearance as encoded in their corresponding noun phrases. For example, in the word *ɗɵ63.kʰɐ35-ʔɐ51*, the base *ɗɵ63.kʰɐ35* is a noun phrase meaning *'tall leg'*, whereas the derived word with the suffix *ʔɐ51* is used to refer to a person who is tall. The derived words are dominantly used in the colloquial context. Thus, morpho-syntactically, this suffix also serves as a pure nominal marker, with a semantic function similar to that of an adjective-ʔɐ51 pattern. More examples are provided in (14). What needs further attention is that the lexical bases can be arguably used as lexicalized words of an adjective category. For example, the item *sɐn35.kɐw22* can be used as a noun phrase to refer to *'a skinny monkey'*, but also can be used as an adjective to describe someone who is *'skinny'*. In other words, over the evolution, the noun phrases have been lexicalized though they possess an internal adjective-noun structure.

(14) after noun phrases
pɐj35.kʰɐ35-ʔɐ51 'lame-leg-ʔɐ51: lame person'
ɗɵ63.kʰɐ35-ʔɐ51 'tall-leg-ʔɐ51: tall person'
sɐn35.kɐw35-ʔɐ51 'skinny-monkey-ʔɐ51: skinny person'
ɓɔ̃33.sin35-ʔɐ51 'crazy man-ʔɐ51: insane person'

3.9.5 Attached to verbal phrases

The suffix *ʔɐ51* can occur after certain verbal phrases to derive new lexical items that possess a nominal category. Semantically, its derived words are used to refer to individual persons who hold an occupation as denoted in its corresponding verbal bases. For example, in the word *tsɵ63.ɦi55-ʔɐ51,* the lexical base *tsɵ63.ɦi41* is a verbal phrase that means *'to perform an opera'*, but the derived word with the suffix *ʔɐ51* refers to an actor who performs a local opera. Likewise, in the word *ɓe32.ɦi35-ʔɐ51*, the base *ɓe32.ɦi22* is a verbal phrase that means *'to sell fish'*, but after the suffixation, the word is used to refer to a person who sells fish. As shown, this construction can not only change the part of speech but also alter the semantics of related items. What needs further attention is that the derived words in this format are predominantly used in colloquial contexts, especially in the old society of Southern Min culture. It also conveys some sort of unrespectful and informal meaning. More examples can be seen in (15).

(15) Suffix ʔɐ51 after verbal phrases
tsɵ63.ɦi55-ʔɐ51 'to perform opera-ʔɐ51: local opera actor; performer'
pʰɐ63.tʰi55-ʔɐ51 'to forge iron-ʔɐ51: blacksmith, ironsmith'
tʰɐj33.ti35-ʔɐ51 'to kill pig-ʔɐ51: pork butcher'
ɓe32.ɦi35-ʔɐ51 'to sell fish-ʔɐ51: fish seller'
pɔ35.ʔe35-ʔɐ51 'to repair shoe-ʔɐ51: cobbler'
tʰi63.tʰɐw35-ʔɐ51 'to shave head-ʔɐ51: barber'

3.9.6 Attached to adjective phrases

The suffix *ʔɐ51* can be attached to adjective phrases to convert their syntactic category into adverbial phrases that express a semantic sense of lightness and slowness. In other words, the suffix *ʔɐ51* functions as an adverbializer in this morpho-syntactic context, which is similar to the suffix *-ly* in English and *-de* 地in Mandarin. The bases that can undergo suffixation with *ʔɐ51* are required to be duplicated forms of the related adjective morphemes under consideration. For example, in the expression *ɓɐn32.ɓɐn35-ʔɐ51 'very slowly'*, the base *ɓɐn33* is an adjective that means *'slow';* but only its duplicated form *ɓɐn32.ɓɐn33* can be suffixed to form an adverbial phrase to modify certain action that is conducted very slowly, such as *ɓɐn32.ɓɐn35-ʔɐ51-kjɛ̃22 'to walk slowly'.* More examples are provided in (16).

(16) Suffix ʔɐ51 after adjective phrases
ɓɐn32.ɓɐn35-ʔɐ51 ‘slow.slow-ʔɐ51: very slowly’
kʰiŋ33.kʰiŋ35-ʔɐ51 ‘light.light-ʔɐ51: very lightly’
ʔwen35.ʔwen55-ʔɐ51 ‘steady.steady-ʔɐ51: very steadily’
ɓwi33.ɓwi35-ʔɐ51 ‘slight-slight-ʔɐ51: very slightly’

3.9.7 Attached to classifiers

The suffix *ʔɐ51* can be attached to classifiers of both single and reduplicated forms to create patterns of the numeral-classifier-*ʔɐ51* and numeral-classifier-classifier-*ʔɐ51*. Semantically, these patterns convey a decreasing effect that emphasizes a decreasing quantity of the entity being counted, while the reduplicated pattern delivers an extra sense of the decreasing effect, for example, *tsit32.tjɐm55-ʔɐ51 ‘a tiny dot of’*; *tsit32.si33.si35-ʔɐ51 ‘a tiny teaspoon of*. As such, the derived patterns can further modify nouns to form classifier phrases, for example, *tsit32.tjɐm55-ʔɐ51*-ʔju22 *‘a tiny dot of oil’*; *tsit32.si33.si35-ʔɐ51*-ʔjɐm22 *‘a tiny teaspoon of salt’*. More examples can be seen in (17).

(17) Suffix ʔɐ51 after classifiers
Classifier base
Single forms
tsit32.tjɐm55-ʔɐ51 ‘one dot-ʔɐ51: a tiny dot of’
tsit32.ti55-ʔɐ51 ‘one drop-ʔɐ51: a tiny drop of’
tsit32.si35-ʔɐ51 ‘one teaspoon-ʔɐ51: a tiny spoon of’
Reduplicated forms
tsit32.tjɐm35.tjɐm55-ʔɐ51 ‘one.dot.dot-ʔɐ51: just a little tiny dot of’
tsit32.ti63.ti55-ʔɐ51 ‘one drop.drop-ʔɐ51: just a tiny drop of’
tsit32.si33.si35-ʔɐ51 ‘one teaspoon.teaspoon-ʔɐ51: just a tiny teaspoon of’

3.10 *ʔe*

The suffix *ʔe* is also very productive in the word formation of Zhangzhou Southern Min. It has no lexical meaning on its own, but can perform several linguistic functions including possession maker, normalizer, and diminutive marker. In addition, this suffix appears to be toneless at the underlying level but can receive pitch properties from preceding tonal bases and present several different pitch forms at the surface level. (a) The suffix *ʔe* can evoke an inflectional process to deliver grammatical information of possession. The lexical bases that can be suffixed incorporate pronouns, proper nouns, place nouns, and corporation nouns. For example, the word *ɠwɐ51* indicates the first person *‘i’* in isolation; with the suffix *ʔe*, the derived word *ɠwɐ35-ʔe22* stands for *‘mine’*. Similarly, the word *ʔɐ33-ɦjɛ̃35* means *‘elder brother’*; with the suffix, the derived word *ʔɐ33-ɦjɛ̃35-ʔe22* is given possessive information and becomes *‘elder brother’s*’. In this construction, this suffix *ʔe* appears in a low-level pitch, which can be noted as [22], whichever the pitch contours of its preceding bases. Given this morpho-syntactic function, this suffix *ʔe* can be considered an inflectional suffix. More examples can be seen in (18). In this case, the suffix *ʔe* functions very similarly to the suffix *-de* 的 in Mandarin that can mark a possession, but this suffix appears to be more functional, because it can also serve as a norminalizer and diminutive marker.

(18) Suffix ʔe as a possession marker
Pronouns
ɠwɐ35-ʔe22 ‘1sg. -ʔe22: mine’
ɗi35-ʔe22 ‘2sg. -ʔe22: yours’

ʔi33-ʔe22 ‘3sg. -ʔe22: his/hers’
ɠun35-ʔe22 ‘1pl. -ʔe22: ours’
ɗĩn35-ʔe22 ‘2pl. -ʔe22: yours’
ʔin33-ʔe22 ‘3pl. -ʔe22: theirs’
tsjɐ35-ʔe22 ‘here-ʔe22: here’s’
ɦjɐ35-ʔe22 ‘here-ʔe22: there’s’
pɐt32.ɗɐŋ22-ʔe22 ‘other.person-ʔe22: others’
Personal nouns
ʔɐ33-kun22-ʔe22 ‘ʔɐ33-Qun-ʔe22: Aqun (name)’s’
kʰɐj33.ɠwɐn22-ʔe22 ‘Kaiyuan-ʔe22: Kaiyuan (name)’s’
ʔɐ33-ɦjɛ̃35-ʔe22 ‘ʔɐ33-elder brother-ʔe22: elder brother’s’
Place nouns
tsjɐŋ33.tsju35-ʔe22 ‘Zhangzhou-ʔe22: Zhangzhou’s’
pɐk65.kjɛ̃35-ʔe22 ‘Beijing-ʔe22: Beijing’s’
ʔɐw63.tsju35-ʔe22 ‘Australia-ʔe22 ‘Australia’s’
Corporation nouns
tsiŋ63.ɦu51-ʔe22 ‘government-ʔe22: government’s’
kɔŋ33.si35-ʔe22 ‘company-ʔe22: company’s’
ʔɵ32.tŋ22-ʔe22 ‘school-ʔe22: school’s’

(b) This suffix *ʔe* can be attached to adjective bases to derive new lexemes of a nominal category. In other words, this suffix serves as a normalizer in this construction. Semantically, the derived new lexemes refer to related entities possessing a characteristic decoded in their corresponding adjective bases, which can cover a range of semantic domains, including colour, shape, size, texture, and shape, among others, as illustrated in (19). For example, the words *tŋ22-ʔe33 ‘the long one’* and *te51-ʔe31 ‘the short one’* are derived by suffixing *ʔe* to adjective bases *tŋ22 ‘long’* and *te51 ‘short’*, respectively. In this linguistic setting, this suffix, although toneless at the underlying level, is observed to have several pitch variants, including high-level [55], mid-level [33], and mid-falling [31], which are conditioned by the pitch contours of its preceding bases. It is realized as a mid-level [33] when the base has a non-high-level pitch, such as *ku33-ʔe33 ‘the old one’* and *ʔĩ22-ʔe33 ‘the round one’*. It changes the pitch to a high level [55] when the base has a high-level pitch, such as *sin55-ʔe55 ‘the new one’*, and *tĩ55-ʔe55 ‘the sweet one’*. The pitch can be further changed to be a mid-falling [31] contour when the base is falling-pitched, such as *pĩ51-ʔe31 ‘the flat one’* and *tsjɛ̃51-ʔe31 ‘the plain one’*. As indicated, in this morpho-syntactic context, this suffix *ʔe* can affect the internal structure of this language in several different ways.

(19) Suffix ʔe as a normalizer
Size
tŋ22-ʔe33 ‘long-ʔe33: the long one’
te51-ʔe31 ‘short-ʔe31: the short one’
Texture
sin55-ʔe55 ‘new-ʔe33: the new one’
ku33-ʔe33 ‘old-ʔe33: the old one’
Colour
ʔwĩ22-ʔe33 ‘yellow-ʔe33: the yellow one’
ʔɐŋ22-ʔe33 ‘red-ʔe33: the red one’
Shape
ʔĩ22-ʔe33 ‘round-ʔe33: the round one’
pĩ51-ʔe31 ‘flat-ʔe31: the flat one’
Flavour
kjɐm22-ʔe33 ‘savory-ʔe33: the savoury one’
tĩ55-ʔe55 ‘sweet-ʔe55: the sweet one’
tsjɛ̃51-ʔe31 ‘plain-ʔe31: the plain one’

(c) This suffix *ʔe* can also serve as a diminutive marker when it is attached to person names to express affection and closeness. This address is predominantly used by family members. However, there is a strict restriction on which element of the bases can be suffixed because it can only suffix the last syllable of the first name of the person being addressed. For example, given a person is called *tɐn33 ʤe32.kun22* in which *tɐn22* is her family name, and *ʤe32.kun22* is the first name, it is grammatically well-formed and colloquially adoptable to call her as *kun22-ʔe33* that conveys a semantics of closeness and affection. In this construction, the suffix has two different tonal realizations. It shows a mid-level contour [33] after a level-pitched base, but is realized as a mid-fall contour [31] when its base has a non-level pitch contour. In other words, its tonal realization is sensitive to the pitch contours of the preceding bases.

(20) Suffix ʔe as a diminutive marker
tɐn33 ʤe32.kun22 'Yiqun Chen' → kun22-ʔe33 'Qun (name)'
ʔwĩ33 ʤe32.swɐn35 'Yishan Huang' → swɐn35-ʔe31 'Shan (name)'
ʔwĩ33 ʤe32.ʔjɔŋ51 'Yiyong Huang' → ʔjɔŋ51-ʔe31 'Yong (name)'
ʔwĩ33 kʰɐj33.ʤwɐn22 'Kaiyuan Huang → ʤwɐn22-ʔe33 'Yuan (name)'

3.11 *tsi51*

The suffix *tsi51* has no lexical meaning on its own and cannot be used independently in conversations. It can only suffix certain nominal bases and form nominal words that refer to certain nut food or food of a nut-shape, such as *kwɐ33-tsi51 'melon seed'* and *ʤɐt32-tsi51 'chestnut-tsi51: chestnut'*. The suffix *tsi51* can be seen as a cognate of the Mandarin suffix zi214子when it is used to construct words related to food, such as *gua35.zi 'watermelon seed'*, *ye55.zi214 'coconut'*. This suffix can be arguably viewed as the lexical morpheme *tsi51* 籽 that means *'seed'* and can be used independently; however, it appears more appropriate to treat them as two different morphemes. For example, the words *ʔjɐ33-tsi51 'coconut-tsi51: coconut'* and *kwe35-tsi51 'fruit-tsi51: fruit'* have little relation to *'seed'*. In addition, the process of suffixing does not evoke a categorical change in terms of part of speech; this suffix can be considered a pure norminal marker from a morpho-syntactic perspective. More examples of this suffixing are provided in (21).

(21) Suffix tsi51 as a nominal marker
kwɐ33-tsi51 'melon-tsi51: melon seed'
ʤɐt32-tsi51 'chestnut-tsi51: chestnut'
ʔjɐ33-tsi51 'coconut-tsi51: coconut'
kwe35-tsi51 'fruit-tsi51: fruit'
tsiŋ35-tsi51 'seed-tsi51: seed'

3.12 *ɦwɐ41*

The morpheme *ɦwɐ41* 化 means *'melt'* in isolation, but it is more often used as a suffix to transfer related words into verbs and deliver the semantics of *'transforming certain status into'*. Its function is equivalent to that of the English suffix *-ize* or *-ify*. The lexical bases that can be suffixed by *ɦwɐ41* are dominantly adjectives, but a few nominal bases can also be found in the empirical data. For example, in the word *ɓi35-ɦwɐ41,* the base *ɓi51 is an adjective* meaning *'beautiful'*; after the suffixation, the derived word means *'to beautify'*. In the word *tjɐn32.tsu35-ɦwɐ41*, the base *tjɐn32.tsu51* is a noun that means *'electron'*; with this suffix *ɦwɐ41*, the derived word becomes a verb that means *'to electronize'*. As seen, the suffixing can cause a categorical change from non-verbal to verbal. This suffix *ɦwɐ41*化 can thus be seen as a verbalizer. More examples can be seen in (22). What needs further attention is that the derived words are exclusively borrowed from Mandarin to express an event that mostly occurs in modern society. Also, the derived words are dominantly used as verbs in

unmarked settings, but in special settings, they can be used as nouns. It is beyond the scope of this study to discuss in which context and in what way they can have other grammatical categories.

(22) Suffix ɦwɐ41 化 as a verbaliser
Adjective base
ɗĩk32-ɦwɐ41 'green-ɦwɐ41: to make green'
ɗɐw32-ɦwɐ41 'old-ɦwɐ41: to degenerate'
ɓi35-ɦwɐ41 'beautiful-ɦwɐ41: to beautify'
Nominal base
ɦjɐn32.tɐj32-ɦwɐ41 'modern time-ɦwɐ41: to modernize'
tjɐn32.tsu35-ɦwɐ41 'electron-ɦwɐ41: to electronize'
tɐj32.tsjɔŋ63-ɦwɐ41 'the public people-ɦwɐ41: to popularize'

3.13 *ɓə51*

The morpheme *ɓə51* 母which means *'mother'* in isolation is productively adopted as an inflectional suffix to convey grammatical information about gender and superiority in size. (a) This Sinitic language uses the suffix *ɓə51* to mark the gender of female animals, particularly domestic livestock. For example, the lexical word *ti35* means *'pig'* in isolation; with this suffix, the generated item *ti33-ɓə51* refers to '*sow*'. Similar examples can be seen in *ke33-ɓə51 'hen'*, *kɐw35-ɓə51 'bitch'*, and *ʔjɔ̃33-ɓə51 'ewe'*, as illustrated in (23). In contrast, for the male animals, three different morphemes {*kə35, kɐk41, kɐŋ35}* can be found which are conditioned by the type of animals being considered. The morpheme *kə35* which means *'brother'* in isolation is only used to refer to male pigs as in *ti33-kə35 'boar'*. The morpheme *kɐk41* which means *'horn'* is used to specify some male domestic livestock, as in *ke33-kɐk41 'rooster'* and *ʔɐ63-kɐk41 'drake'*. The morpheme *kɐŋ35* which means *'male'* is used to refer to other male animals, for instance, *ɗjɛ̃w33-kɐŋ35 'male cat'*. More examples are provided in (24).

(23) Suffix *ɓə51* to mark female animals
ti33-ɓə51 'pig-ɓə51: sow'
ke33-ɓə51 'chicken-ɓə51: hen'
ɗjɛ̃w35-ɓə51 'cat-ɓə51: female cat'
kɐw35-ɓə51 'dog-ɓə51: bitch'
ɓɛ35-ɓə51 'horse-ɓə51: mare'
ʔjɔ̃33-ɓə51 'sheep-ɓə51: ewe'
ɠu33-ɓə51 'cattle-ɓə51: cow'

(24) Morphemes to mark male animals
kə35 variant
ti33-kə35 'pig-kə35: boar'
kɐk41 variant
ke33-kɐk41 'chicken-kɐk41: rooster'
ʔɐ63-kɐk41 'duck-kɐk41: drake'
kɐŋ35 variant
ɗjɛ̃w33-kɐŋ35 'cat-kɐŋ35: male cat'
kɐw35-kɐŋ35 'dog-kɐŋ35: male dog'
ɓɛ35-kɐŋ35 'horse-ɓə51: male horse'
ʔjɔ̃33-kɐŋ35 'sheep-ɓə51: ram'

As seen, the suffix *ɓə51* can consistently mark the gender of female across different animals, but the method to indicate the male gender can be considered to be lexical, rather than inflectional. In addition, the marking for female animals appears to be compulsory in this language. For example, the lexical item *ti35*

means *'pig'* in isolation, but it is seldom used by itself in colloquial conversations. Instead, native people in Zhangzhou use *ti35.ʔɐ51* to refer to pigs that cover both male and female gender, but use *ti33-ɓɵ51* to refer to sow that has a female gender; on the contrary, the male pig is expressed as *ti33.kɵ35*. Likewise, the local community uses *kɐw55.ʔɐ51* to refer to dogs of both male and female gender, but uses *kɐw35.ɓɵ51* to indicate a female dog *'bitch'*, and *kɐw35.kɐŋ35* to a male dog. As such, the suffix *ɓɵ51* consistently marks the female gender among animals and forms a regular pattern that can be generalized.

(b) This suffix *ɓɵ51* can also be used *to* indicate superiority but only in size. Lexical bases that can be suffixed are restricted to countable nouns. For example, in the word *tsun33-ɓɵ51*, the base t*sun22* in isolation means *'boat'*; with this suffix *ɓɵ51*, the derived word is used to refer to *'the biggest boat'* that is being counted. Similarly, the lexical base *ʔĩ22* is used to refer to ball-shape food, like rice ball; with the suffix *ɓɵ51,* the derived word *ʔĩ33-ɓɵ51* is used to the biggest rice ball, one kind of traditional food that Southern Min people eat over some traditional festivals, like festival of Winter solstice. As can be seen, with this suffix, the related items have been given additional grammatical information of superiority. More examples can be found in (25).

(25) Suffix *ɓɵ51* to mark superiority in size
kjɔ̃33-ɓɵ51 'ginger-ɓɵ51: the biggest (oldest) ginger'
kun33.tʰɐw33-ɓɵ51 'fist-ɓɵ51: thumb (the biggest finger)'
tsun33-ɓɵ51 'boat-ɓɵ51: the biggest boat'
ʔĩ33-ɓɵ51 'rice ball-ɓɵ51: the biggest rice ball'

3.14 *n*

The suffix -*n* has no lexical meaning on its own and is toneless at the underling level, but it is adopted by native Zhangzhou speakers to mark plurality to pronouns. For example, the lexical base *ɠwɐ51* is a pronoun that refers to *'I'*, the first person in a singular form; with the suffix-*n*, the derived item *ɠwɐ-n51* is used to refer to *'we'*, the first person in a plural form. Likewise, the base *ʔi35* is a pronoun that refers to the third person in a singular form, regardless of the gender, but with the suffix -n, the derived word *ʔi-n35* is used to refer to *'they'*. Examples can also be seen in (26). As indicated, after suffixation, the items that are generated with the suffix -*n* are all given additional grammatical information of plurality. Thus, the suffix -n can be treated as an inflectional marker for plurality.

(26) Suffix *n* to mark plurality

ɠwɐ51 'I; 1st s.g.'	ɠwɐ-n51 'we; 1st pl.'
ɗi51 'You; 2nd s.g.'	ɗi-n51 'you; 2nd pl.'
ʔi35 'he/she; 3rd s.g.'	ʔi-n35 'they; 3rd pl.'

Another special point is that, over the suffixation, this suffix -n is incorporated into its corresponding base and becomes its coda, while the tonal pitch of the base is extended to the entire derived word, including the suffix. For example, the word *ɗĩ51* that means the second person in a singular form has a high falling [51] pitch in isolation; after the suffixation, the derived word *ɗĩ-n51* becomes a monosyllabic morpheme that is high-falling-pitched. This phenomenon is understandable from both articulatory and phonological perspectives. Because the lexical bases that can be suffixed are exclusively monosyllabic without any coda, for the sake of an economic principle, it is articulatorily easy to pronounce the suffix -n as the coda of its preceding syllables and is also phonologically elegant to incorporate the suffix-n as part of its preceding monosyllabic morphemes and receive its tonal pitch.

4 Main characteristics of Zhangzhou suffixing morphology

As described above, the suffixation process constitutes an important morphological device in the word formation of the Zhangzhou Southern Min. Some suffixes like *ʔɐ51* and *ʔe* are highly productive to perform multiple

linguistic functions, comprising normalizer, diminutive marker, adverbializer, gender marker, and/or possession marker among others. Some suffixes like ʔe, ɓɵ51, and *n* can convey certain grammatical information such as possession, gender, and plurality. The lexical bases that can undergo suffixation are cross-categorical, ranging from nouns, verbs, adjectives, classifiers, noun phrases, verb phrases to adjective phrases. Special tone sandhi processes can also be observed over the suffixation. Suffixing can not only expand the local vocabulary but can also affect its language structures in several different ways. Table 5 summarizes the linguistic behaviours of individual suffixes introduced in this study, while this section discusses the main characteristics of Zhangzhou suffixing from semantic, morpho-syntactic, and phonetic–phonological perspectives. It is hopped to develop an overall picture of how the suffixing is encoded in this Sinitic language.

Table 5: Summary of Zhangzhou suffixing system

Suffix	Base	Derived word		
		Category	Semantics	Pragmatics
tʰɐw22	noun	noun	culmination, crystallization of essentials	colloquial
ɦwɐt41	verb	noun	solution and strategy	literary
ɦɐt221	noun verb adjective	noun	subject and discipline	literary
sɐj35	noun adjective	noun	people with a practical occupation in the old society	colloquial
su35	noun verb adjective	noun	people with a distinguished occupation mostly in the modern society	literary
su33	noun verb adjective	noun	person with a professional qualification	literary
kɛ33	noun verb adjective	noun	person of professional knowledge or skill in a particular area	literary
ɠwɐn22	noun verbal	noun	people in a certain field of work member of a party or organization	literary
ʔɐ51	noun	noun	diminutive (closeness; affection, smallness)	colloquial
		noun	pure nominal marker	
	verb	noun	tool and equipment	
	adjective	noun	people of particular characteristics	
	noun phrase	noun	physically disadvantaged people	
	verbal phrase	noun	individual person with a practical occupation	
	adjective phrase	adverbial phrase	sense of lightness and slowness	
	classifier	classifier phrase	sense of small quantity/decreasing effect	
ʔe	pronoun	pronoun	possession marker; inflectional suffixation	colloquial
	noun	noun		
	adjective	noun	entity of particular characteristics	colloquial
	person noun	noun	diminutive (closeness; affection)	colloquial
tsi51	noun	noun	nut food or food of a nut-like shape	colloquial
ɦwɐ41	noun adjective	verb	transforming certain status into	literary
ɓɵ51	noun	noun	mark female gender for animals	colloquial
	noun	noun	mark superiority in size	
n	pronoun	pronoun	mark plurality	colloquial

4.1 Semantic characteristics

The suffixing process in Zhangzhou is extraordinarily productive to modify existing meanings of the bases and create new lexemes across various semantic domains. The suffixes can contribute to a range of semantic information to the derivation including (a) method and discipline, such as the suffixes *ɦwɐt41*, *ɦɐt221*, and *tʰɐw22*; (c) smallness, closeness, and affection, such as the suffixes *ʔɐ51* and *ʔe*; (d) tool and equipment, such as the suffix *ʔɐ51*; (e) to enforce an action, equivalent to *-ize* or *-ify*, such as the suffix *ɦwɐ41*; (f) a particular type of food, such as the suffix *tsi51* for the nut-shape food; (g) persons of a specific occupation, skill or expertise, such as suffixes *sɐj33*, *su35*, *su33*, *kɛ35*, *ɠwɐn22*, and *ʔɐ51*. Some suffixes are highly polysemantic. For example, the suffix *ʔɐ51* can express a wide range of semantic meanings, including smallness and closeness, tools and equipment, persons with a particular characteristic or physical appearance, persons of a specific occupation, sense of lightlessness and slowness, and small quantification. Similarly, the suffix *ʔe* is multifunctional in encoding diminution, closeness, affection, an entity with a particular characteristic, and possession.

Additionally, some suffixes can refer to a similar semantic category in a broad sense; however, the specific information they convey can be saliently different in terms of the semantic–morphological–pragmatic contexts in which they occur. For example, six suffixes can be attached to encode individual persons of a particular sociocultural background, such as occupation, expertise, and physical trait, but the persons that they can refer to are different. The suffix *su35* refers to people with a distinguished occupation, mostly in modern society, such as a teacher or supervisor. The suffix *sɐj35* specifies people who engage in a practical occupation close to daily life in old society, such as a house builder. The suffix *su33* addresses individuals with a professional qualification in a formal way, such as a nurse. The suffix *kɛ35* is attached to refer to persons who possess professional knowledge or skill in a particular area, such as a scientist. The suffix *ɠwɐn22* refers to persons with a particular occupation or members of a specific team or organization, such as an actor or party member. The suffix *ʔɐ51* can be used to refer to individual persons in various senses depending on the type of bases that it is attached, including close family members (nominal bases), people of particular characteristics (adjective bases), physically disadvantaged people (noun phrase bases), and people with a specific practical occupation (verbal bases). Likewise, the suffix *ʔe* can also be used to refer to individuals who are closely related to show affection.

4.2 Morpho-syntactic characteristics

Morpho-syntactically, suffixation performs multiple functions in this language. As summarized in Table 5, these include (a) nominalizer, such as suffixes *ʔɐ51*, *ʔe*, *ɦwɐt41*, *ɦɐt221*, *su35*, *su33*, *kɛ35*, *and ɠwɐn22*, can derive new lexemes of a nominal category which are different from their corresponding bases of a non-nominal part of speech. (b) Nominal marker, such as the suffixes *tʰɐw22*, *sɐj35*, *su35*, *ʔɐ51*, *ʔe*, and *tsi51*, does not evoke a categorical change because the derived words maintain the nominal category as their related lexical bases. (c) Adverbializer, such as the suffix *ʔɐ51*, can change the word class of related items to be an adverbial; and (d) verbalizer, such as the suffix *ɦwɐ41*, can derive verbal words from non-verbal bases. Suffixation can induce a categorical change in terms of word class, rendering the derived words categorically entirely different from their corresponding bases. However, the function of the nominalizer is shown to be more prominent than that of the others.

The lexical bases that can undergo derivational suffixation to generate new lexemes are cross-categorical, ranging from nouns, verbs, adjectives, classifiers, noun phrases, verb phrases, to adjective phrases. For example, the suffix *ʔɐ51* appears to be the most productive because it can be attached to bases of seven different categories, thereby inducing a range of changes in terms of the morpho-syntactic category, while alternating the semantic meanings of related items. Suffixation can be classified into two types based on whether a categorical alternation occurs during the process. One is category-changing suffixation, in which the derived lexemes have a different morphosyntactic category from their related bases; the other is category-unchanging suffixation, in which the derived lexemes maintain the category of their bases. This is summarized in (25).

(25) Category of derived words/phrases
Category-changing suffixation
(1) verb to noun: ħwɐt41, ħɐt221, su35, su33, kɛ35, ɠwɐn22, ʔɐ51
(2) adjective to noun: sɐj35, su33, ʔɐ51, ʔe
(3) verb phrase to noun phrase: ʔɐ51
(4) adjective phrase to adverbial phrase: ʔɐ51
(5) adjective to the verb: ħwɐ41
(6) noun to the verb: ħwɐ41
Category-unchanging suffixation
(1) noun to noun: *tʰɐw22,* ħɐt221, sɐj35, kɛ35, ɠwɐn22, ʔɐ5, ʔe
(2) noun phrase to noun phrase: ʔɐ51

As can be seen, except for the derivation from noun (noun phrase) to noun (noun phrase), the majority of suffixation can evoke categorical change, resulting in six processes that can be generalized. These categorical alternation processes include verb-to-noun, adjective-to-noun, verb phrase-to-noun phrase, adjective phrase-to-noun phrase, adjective phrase-to-adverbial phrase, adjective-to-verb, and noun-to-verb. Normalization appears to be dominant because three out of six processes involve changing from a non-nominal category to a nominal category. Additionally, verbal and adjective bases are most likely to undergo categorical alternations.

In addition to the derivational suffixation, some suffixes can evoke inflectional processes to deliver certain grammatical information. For example, the suffix *ʔe* is extensively used to mark possession for both pronouns and proper nouns that include personal nouns, place nouns, and corporation nouns. The suffix *ɓə51* can be used to mark the female gender of animals and also mark superiority in size. For those male animals, their gender tends to be marked in a lexical way, because three morphemes *kə35, kɐk41*, and *kɐŋ35* can be found to express animals of different types. In addition, the suffix *-n* is adopted to mark plurality for pronouns in this language.

4.3 Phonetic–phonological characteristics

The suffixation process can also affect the phonetic and phonological properties of this language, showing close linguistic interfaces between phonetics, phonology, semantics, and morpho-syntax. This is mainly reflected in the fact that both lexical bases and certain suffixes can change their tonal realizations over the course of word formation. Specifically, the suffix *ʔɐ51* can evoke a special tone sandhi on its lexical bases, rendering them to have different tonal realizations from the ones when they occur in citation and in the setting of general morpho-syntactic phrases. The results are summarized in Table 6. As shown, the tonal pitches of the bases are changed to either a rising contour or a high level depending on their contour shape in the citation. The bases with a falling contour in the citation, regardless of whether it is high or mid-high falling, are found to have a high-level [55] pitch contour before this suffix. On the contrary, the bases with a

Table 6: Phonetic variation of the tonal realizations of bases

Base	Citation	General Sandhi	Before ʔɐ51	Example
Tone 1	[35]	[33]	[35]	ti35-ʔɐ51 ‘pig’
Tone 2	[22]	[33]	[35]	ħi35-ʔɐ51 ‘fish’
Tone 3	[51]	[35]	[55]	kɐw55-ʔɐ51 ‘dog’
Tone 4	[41]	[63]	[55]	kin55-ʔɐ51 ‘kid; child’
Tone 5	[33]	[32]	[35]	ɠɔŋ35-ʔɐ51 ‘fool person’
Tone 6	[41]	[65]	[55]	tik55-ʔɐ51 ‘bamboo’
Tone 7	[221]	[32]	[35]	ɠjɔk35-ʔɐ51 ‘jade’
Tone 8	[22]	[32]	[35]	tsi35-ʔɐ51 ‘tongue’

non-falling pitch contour in the citation, regardless of whether its contour shape is level or rising, have a rising pitch [35] contour in this suffixing environment. Such a special tonal alternation can thus be considered to be purely morphologically conditioned.

An additional special tonal alternation can also be found in the suffix *ʔe*. It is observed to be toneless at the underlying level, but can have several different phonetic variants at the surface that are conditioned by semantic, phonological, and morph-syntactic factors. The results are summarized in Table 7. When serving as a possession marker, it is found to bear a low-level [22] pitch, regardless of the pitch contour shapes of its preceding lexical bases. When functioning as a nominalizer, it is found to bear a mid-level [33] contour if its lexical bases have a non-high-level pitch but it changes to bear a high level [55] if the bases have a high-level contour; however, its pitch contour is changed to a mid-fall contour [31] when it occurs somewhere. Additionally, when serving as a diminutive marker to express closeness and affection, its pitch is found to be mid-level [33] when the bases have a non-level pitch contour, but is changed to a mid-falling contour [31] when the bases are level-pitched. As seen, the phonetics of this suffix are highly dynamic and diverse, reflecting multiple interfaces among linguistic levels.

In addition, the suffix *-n*, which functions as a plural marker for pronouns, can also induce special speech phenomena in this language. This suffix is meaningless and toneless at the underlying level; however, over suffixation, it becomes a syllable coda of the generated items, while the tonal pitch of its lexical bases is extended to the whole construction. This is understandable from both the articulatory and phonological perspectives. The lexical bases that can undergo suffixation with *-n* are exclusively open syllables without any coda on their own. It is articulatorily easy and phonologically elegant to incorporate the sound of this suffix into that of lexical items.

5 Occurrence constraints

While the suffixing process can substantially affect the internal structures of this language from diverse perspectives, the occurrences of individual suffixes, lexical bases, and derived items are subject to severe constraints from multifarious factors, including semantics, word class, phonology, syntax, and pragmatics. This section summarizes how the suffixing process is constrained to generating lexemes that are grammatically well-formed and colloquially attestable.

5.1 Semantic constraint

Suffixing is strictly restricted to certain semantic domains in Zhangzhou. For example, the suffix *ʔɐ51* can only be attached to kinship terms that denote a younger generation or younger members of the same generation to

Table 7: Phonetic variation of the pitch realization of the suffix *ʔe*

Suffix	Function	Variant	Base	Example
/ʔe/	possession	[22]	whichever pitch	ɗi35-ʔe22 ‘yours’
				tsiŋ63.ɦu51-ʔe22 ‘government-ʔe22: government’s’
				ʔin33-ʔe22 ‘3pl. -ʔe22: theirs’
	normaliser	[55]	high-level	tĩ55-ʔe55 ‘the sweet one’
		[33]	non-high level	twɐ33-ʔe33 ‘the big one’
		[31]	falling pitch	te51-ʔe31 ‘the short one’
	diminutive	[31]	non-level	swɐn35-ʔe31 ‘Shan (name)’
		[33]	level pitch	kun22-ʔe33 ‘Qun (name)’

express affection and closeness. Similarly, this suffix *ʔɐ51* can occur after noun phrases to refer to individual people but only those who are physically impaired or have a disadvantaged appearance. Similarly, several suffixes, like *sɐj35, su35, su33, kɛ35, ʄwɐn22, ʔe*, and *ʔɐ51*, can all derive new lexemes to refer to individual persons, but they differ considerably in terms of occupation, qualification, and professional expertise among other social–cultural characteristics. For example, the suffix *sɐj35* is used for those people with a practical occupation in the colloquial life while the suffix *kɛ35* is for those people with a distinguished occupation and a qualification in the formal setting.

5.2 Word class constraint

Restrictions can be seen in the type of lexical bases that can be suffixed to derive grammatically well-formed words. For example, the suffix *ɦwɐt41* occurs exclusively on verbal bases, whereas the suffix *tʰɐw22* prefers nominal bases. In addition, as shown in Table 5, the lexical bases of verbal and nominal categories are more likely to undergo derivational suffixation, followed by the bases of an adjective category. Apart from these, constraints can also be observed in the subcategorization of word classes. For example, compared to intransitive verbs, the bases of transitive verbs are more active than that of intransitive verbs in suffixation in this language.

5.3 Syntactic constraint

Phrases can also undergo suffixation in this language, but there are restrictions on what types of phrases can be suffixed and what suffixes can be attached to for a grammatically well-formed derivation. It seems that only the suffix *ʔɐ51* can be attached to syntactic phrases. Likewise, it seems that only nominal, verbal, adjective, and number-classifier phrases can be derived with this suffix. For the adjective category, the phrases have to be in duplicated form to express lightness and smallness, such as the adverbial phrase *ɓɐn32.ɓɐn35-ʔɐ51* is derived by suffixing *ʔɐ51* to the reduplicated adjective phrase *ɓɐn32.ɓɐn33* to indicate an action that is conducted slowly. In the meanwhile, when the suffix *-ʔɐ51* is used to denote a person of a certain profession, its corresponding bases are required to be either noun phrases (e.g. *dɵ63.kʰɐ35-ʔɐ51 'tall-leg-ʔɐ51: tall person'*) or verb phrases (e.g. *tʰɐj33.ti35-ʔɐ51 'pork butcher'*).

5.4 Phonological constraint

There are restrictions on which elements of lexical bases can undergo suffixation. This dominantly occurs on suffixing *ʔɐ51* and *ʔe* as diminutive markers to personal names. They cannot suffix the full name, family name, or first name given that the latter has *more* than one syllable. Instead, they can only occur after the last syllable of the first name, denoting the semantics of affection and closeness. For example, given a person is called *ɦwĩ33 ʄe32.ʔjɔŋ51*, in which *ɦwĩ22* is his family name, while *ʄe32.ʔjɔŋ51* is his first name, it is only grammatically well-formed and colloquially adoptable to address him as either *ʔjɔŋ51-ʔe31* or *ʔjɔŋ55-ʔɐ51* to show closeness. In contrast, it is ill-formed to call him **ɦwĩ33-ʔe22*, **ɦwĩ35-ʔɐ51*, **ʄe32.ʔjɔŋ51-ʔe31*, and **ʄe32.ʔjɔŋ55-ʔɐ51*, because the suffix is attached to either the family name or the first name, which is prohibited within the social–cultural backwound of the Southern Min community.

5.5 Pragmatic constraint

The occurrence of certain suffixes can also be constrained by pragmatic factors. In Zhangzhou Southern Min, there are colloquial and literary contexts in which suffixes and their derived words can occur in

conversations. In general, those suffixes that have direct cognates in Mandarin are exclusively used in formal and literary settings, such as *ɦwɐt41*, *ɦɐt221*, *su35*, *su33*, *kɛ35*, *ʤwɐn22*, and *ɦwɐ41*. This is because their related derived words are mostly borrowed from Mandarin through the education channel, and are used to refer to the things/events that occur in modern society. In contrast, those suffixes that are created by the local speech community, such as the suffixes *ʔɐ51* and *ʔe*, are dominantly used in colloquial contexts, so are their derived words/phrases. This is because the things/events they refer to are closely related to the daily lives of the local speech community. One interesting example can be found in the Chinese character 师 which means *'master; teacher'* but has two forms to be used in two different contexts. It is pronounced as *sɐj35* by local people when it is attached in a colloquial setting, but it is pronounced as *su35* when it is used in a formal context.

6 Discussion

This study conducted a sophisticated investigation into the suffixing system in Zhangzhou Southern Min, an under-described Sinitic language spoken in southern China. Fourteen suffixes have been described in detail from a multidimensional perspective. As can be seen, suffixation has constituted an important morphological device in the word formation of this language. It can not only be derivational to generate new lexemes and expand local vocabulary but also be inflectional in conveying grammatical information about possession, superiority, and plurality. Morpho-syntactically, this suffixing process can occur on lexical bases of a variety of categories and substantially alter their parts of speech. In the meanwhile, the suffixes can perform a range of functions over the process, which include normalizer, diminutive marker, adverbializer, gender marker, possession marker, and plurality marker among others. Phonetically–phonologically, the suffixing process not only can induce special tone sandhi processes on the bases when they occur in a specific suffixing environment (before suffix *ʔɐ51* in particular) but also can lead toneless suffix (*ʔe* in particular) to receive various tonal pitch variants at the surface level. While suffixing is productive in contributing diverse functions to the grammatical system of this language, the occurrences of individual suffixes, bases, and derived items are subject to severe constraints from multiple linguistic factors, including semantics, word class, syntax, phonology, and pragmatics. As such, suffixation is not just a single morphological event in this language but rather involves systematic, dynamic, and complex interfaces between different linguistic levels.

This comprehensive description fills the research gap that substantially broadens and deepens our knowledge of suffixation in Zhangzhou Southern Min. This study also supersedes our conventional impression of Sinitic languages because they can also employ suffixation as an important morphological device in an active and diverse way, which can significantly affect their semantic–morpho-syntactic–phonetic–phonological–and–pragmatic structures. The rich suffixing phenomenon can thus raise an intriguing theoretical discussion as to how Sinitic languages should be better defined from a modern linguistic perspective because it appears questionable to classify them as being isolating as conventionally assumed. In the meantime, it should also be noted that the conversional classification of languages into either isolating or synthetic is posited based on descriptive labels in the early nineteenth century. From the contemporary typological perspective, a sharp discrimination of languages into different categories appears to be problematic and does not reflect language reality, because the boundary between different linguistic categories turns out to be fussy rather than clear-cut. For example, in phonology, classifying speech sounds into either consonants or vowels, depending on whether an oral constriction is constructed over articulation, is problematic because there exist glide sounds that possess a dual feature of being consonants and vowels (e.g. Maddieson and Emmorey 1985, Maddieson 2013, Padgett 2008, Nevins and Chitoran 2008, Huang 2021). Likewise, in morphology, classifying languages into isolating, agglutinating, fusional, and polysynthetic categories is also essentially fuzzy. This is because in those so-called isolating languages, such as Mandarin, Zhangzhou Southern Min, and Vietnamese, derivational affixation has constituted an important part of their grammar, and inflectional affixation can also be identified to convey grammatical information. One key point of this study is to highlight the fact that languages behave in a way that is much more complicated than expected. It is of crucial significance to advance our understanding

of how human beings construct the complexity of languages in their mental grammar and decode the complexity in their practical conversations. Thus, it appears to be more critically important in modern linguistic studies to uncover the diversity and dynamic properties of languages worldwide while generalizing cross-linguistic tendencies and discovering salient language-specific features. For example, this research on Zhangzhou suffixation is expected to make a significant contribution to the typology of suffixation and linguistic interfaces in the world's natural languages.

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