Heteronyms in Zhangzhou: Pronunciations and Patterns

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Abstract

Various criteria can be applied to classify Zhangzhou heteronyms into different categories at different layers, which include the distinction of grammatical categories and lexical meanings, the usage of a colloquial style versus a literary one, the usage of a general style versus a specific one, the phonemic correspondence between the literary and colloquial forms, as well as the number of pronunciations that polyphonetic characters have. Additionally, some patterns can also be generalised with respect to the relationship between different pronunciation forms across diphonetic, triphonetic, quadriphonetic, and quintophonetic characters. The results suggest that although heteronyms are abundant in Zhangzhou, they are essentially arranged in a systematic and generalisable way in the mental grammar of native speakers. This not only reflects a dynamic linguistic phenomenon of heteronyms in this Sinitic dialect, but also indicates the heterogeneous nature of human languages. The study has sought to expand our understanding of the arrangement of heteronyms in the Southern Min variety of Zhangzhou, and serve as a model to investigate how heteronyms are constructed in other Sinitic languages/dialects and beyond.

Keywords

Heteronyms, Polyphonetic Characters, Zhangzhou, Pronunciations, Patterns

1. Introduction

Heteronyms, as a linguistic phenomenon, generally refer to those words that are spelt identically but have more than one pronunciation and meaning (Martin et al., 1981; Bergeron, 1990). An example of a common heteronym in English is *tear*, which when pronounced as /ter/, denotes pulling or ripping something apart or to pieces with force; but, when pronounced as /tir/, denotes a drop of

liquid secreted from glands in a person's eye. The related words are also referred to as homographs in the literature (Rothwell, 2007; Cramer, 1970; Huang, 2019). As well as this, there exists another type of words, referred to as polyphones, which have more than one pronunciation, but their meanings are associated (Martin et al., 1981; Huang, 2019). This can be illustrated by the word *the*, which can be pronounced as either /ðə/ or /ði/, depending on whether its following segment is a consonant or a vowel, and each of these pronunciations has the same meaning.

In the system of Sinitic languages, the vast majority of morphemes are monosyllabic and capable of being represented by a single character (known as Hanzi 汉字) in the written system, though disyllabic or multisyllabic morphemes are also found, for example, pi35.pa22 ("枇杷 loquat") and pu35.tao22 ("葡萄 grape"). Characters and syllables of sound are thus regarded as having a one-to-one correspondence, and the documentation of Sinitic languages/dialects is conventionally written in terms of characters rather than in IPA symbols. Additionally, being constrained by the limited number of characters, heteronyms that at a broader sense include homographs and polyphones are abundant in Sinitic languages. For example, Liu & Louise (2009) observed that 73% of 774 unique heteronyms come from those commonly-used characters. Sung (1973) described two phonological systems as literary and colloquial in the Amoy Chinese dialect. Huang (2019) constructed an inventory of about 900 characters in the Southern Min variety of Zhangzhou, consisting of 793 diphonetic characters, 89 triphonetic characters, 14 quadriphonetic characters, and 4 quintophonetic characters.

This study provides an overview of how the heteronym system is constructed, in particular how different pronunciation forms are related, in a Sinitic dialect of Zhangzhou, which is a prefecture-level city situated in southern Fujian province in South-eastern Mainland China with a total registered population of about 5.1 million. The colloquial language spoken by the majority of native Zhangzhou speakers is Southern Min, also known as Hokkien, which is mutually intelligible with other Southern Min varieties in Fujian and Taiwan, but is completely unintelligible with other Sinitic dialects (e.g., Mandarin, Hakka, Wu, and Cantonese). Heteronyms are particularly abundant in this dialect. For example, as illustrated in Table 1, its numerical system from one to ten, except the number seven, appears to have two different pronunciations, with one occurring in the literary context and another in the colloquial context.

This study, which is built on the corpus of heteronyms presented in Huang's (2019) study, is intended to show how heteronyms are arranged with respect to

Table 1. Different pronunciations of the numerical system in Zhangzhou.

Style	一 "one"	二 "two"	三 "three"	四 "four"	五 "five"	六 "six"	七 "seven"	八 "eight"	九 "nine"	十 "ten"
Colloquial	tsit221	dɔ̃33	sɛ̃35	si41	ɡɔ33	dɐk221	tsʰit41	pe41	kɐw51	tsɐp221
Literary	ʔik41	zi33	sɐm35	su41	ɡɔ̃51	dʒɔk221	tsʰit41	pɐt41	kju51	sip221

different criteria and how different pronunciations are related across polyphonetic characters in Zhangzhou. It is hoped to shape our understanding of the nature of heteronyms in this dialect and also shed light on the investigation of heteronyms in other Sinitic languages/dialects and beyond.

The heteronyms discussed in this study incorporate two types including 1) heteronyms at a narrow sense, involving those homographs that share identical characters but differ in both pronunciations and meanings; and 2) heterophones, involving those heteronyms that have different pronunciations but share the same characters and meanings. The transcriptions of both segments and suprasegments are kept consistent with those formulated in Huang's (2018, 2019) studies. Segments were transcribed using IPA 2005 symbols. The tonal pitch was described using Chao's (1930) notational system with 1 representing the lowest level and 5 the highest of an individuals' pitch range. When required, the number 6 was applied to denote the tone having an extra-high pitch level in the non-utterance final context.

This paper is arranged as follows. It will first describe how the Zhangzhou heteronyms can be classified into different categories in terms of various criteria. Next, it will discuss how various forms of pronunciations are related across diphonetic characters, triphonetic characters, quintphonetic characters, and quadriphonetic characters. Finally, it will also provide a conclusion with respect to the descriptions in this study.

2. Classification of Heteronyms

The heteronyms of Zhangzhou can be classified into different categories in terms of various criteria. To be more specific, they can be classified on the basis of the linguistic function of different pronunciations. As well as this, they can be classified into seven different patterns with respect to the correspondence pattern of syllable onset, final and tone between different pronunciations. The term final specifically refers to the syllable components that exclude onset in traditional Chinese phonology (e.g., Zhang & Yang, 2009; Huang, 2019). An additional aspect is that the heteronyms can also be categorised into diphonetic, triphonetic, quintphonetic, and quadriphonetic groups in terms of the number of pronunciations that the related characters have. This section, thus, mainly discusses how the Zhangzhou heteronyms can be arranged, in a broad sense, with respect to different grouping criteria.

The pronunciation differences of the heteronyms in Zhangzhou is mainly to fulfill a particular linguistic function, involving the distinguishment of parts of speech, lexical meanings, as well as different usage styles, such as a colloquial versus a literary usage, and a general versus a special usage. As illustrated in (1) below, the change of pronunciations gives rise to the change in the grammatical category of related characters. For example, the character 种 denotes a verb "to plant" when pronounced as tsiŋ41, but suggests a noun "seed" when articulated as tsiŋ51.

(1) Distinguishing different parts of speech

现	ɦjɐn41	verb	ɦjɐn63.sin35 "to show up 现身"
	ɦjɐn33	adjective	ɦjɐn32.tɐj33 "current era 现代"
种	tsiŋ41	verb	tsiŋ63.ɦwɐ35 "to plant flowers 种花"
	tsiŋ51	noun	tsiŋ35.tsi51 "seed 种子"
钉	tiŋ41	verb	tiŋ41.də.kʰi "to nail down 钉下去"
	tiŋ35	noun	tʰi63.tiŋ35 "piton 铁钉"
难	dɐn22	adjective	tsin32.dɐn22 "very difficult 真难"
	dɐn33	noun	tsɐj33.dɐn33 "disaster 灾难"

The different pronunciations of Zhangzhou heteronyms can be used to signify different usage registers of colloquial and literary. Following the traditional Chinese linguistics (e.g., Sung, 1974; Ma, 1994), the colloquial register refers to an informal spoken form used in daily conversations of all classes, while the literary register refers to a formal linguistic form that is mainly used to read the written language; but also used in local news broadcasting, in the citations of literature in lectures, sermons and operas, as well as in addressing people by name. For example, as shown in (2) below, the character 飞 "to fly" is articulated as ɦwi35 when it is used in a formal context of airplane, but as pwe35 when it is used in an informal conversation. There appears an obvious distinction between the colloquial and literary forms.

(2) Colloquial vs. literary reading

飞	ɦwi35	literary	ɦwi33.ki35 "airplane; plane 飞机"
	pwe35	colloquial	kʰi35.pwe35 "take off 起飞"
白	pik221	literary	ɓiŋ33.pik221 "clear; obvious 明白"
	pɛ22	colloquial	pɛ32.sik41 "white colour 白色"
争	tsiŋ35	literary	kiŋ32.tsiŋ35 "compete; contend 竞争"
	tsɛ̃35	colloquial	sjɵ33.tsɛ̃35 "mutually compete 相争"
力	dik221	literary	dik32.djɐŋ33 "physical strength 力量"
	dɐt221	colloquial	tsʰut65.dɐt221 "put forth one's strength 出力"

The difference in pronunciation of those heteronyms, known as homographs, is mainly applied to denote different lexical meanings. For example, as illustrated in (3) below, when pronounced as pɛ22, the character 爬 bears the meaning of "to crawl", whereas the pronunciation of pɛ41 is mapped into the meaning of "to climb". It is obvious that the two meanings are not the same.

(3) Distinguish different meanings

爬	pɛ22 "to crawl"	ʔɵ32.pɛ22 "learn crawling 学爬"
	pɛ41 "to climb"	pɛ63.swɛ̃35 "climb mountains 爬山"
表	pjɐw51 "surface"	pjɐw35.ɓin33 "surface 表面"
	pjɵ51 "watch; form"	pjɵ35.kɛ41 "chart; form 表格"
省	siŋ51 "to reflect"	ɦɔŋ35.siŋ41 "reflect on oneself 反省"
	sɛ̃51 "province"	sɛ̃63.ɦun33 "province 省份"
被	pi33 "passive"	pi32.tɔŋ33 "passive 被动"
	pʰwe33 "quilt"	ɓĩ33.pʰwe33 "cotton quilt 棉被"

Some pronunciation differences can distinguish whether the corresponding

heteronyms are used at a general or a special occasion. A good example of this is the diphonetic character 妹, as shown in (4). When pronounced as ɓɐ̃j35, it denotes an address to any young girl in the Southern Min culture. Alternatively, when pronounced as ɓɐ̃j33, it specifies an address to the young girl who has a blood relationship with the addressee. As well as this, the character 衣 is used to express "a coat" when in the form of ʔi35, but to signify "a placenta" when it is combined with the character 胎 (tʰɐj33 "fetus") and articulated as ʔwi35.

(4) General vs. special usage

姨	ʔi35	general	ʔɐ33.ʔi35 "aunt; an address to a women 阿姨"
	ʔi22	specific	ʔi35.ʔɐ "address to wife's sister 姨子"
妹	ɓɐ̃j35	general	ʔɐ33.ɓɐ̃j35 "an address to young girls 阿妹"
	ɓɐ̃j33	specific	sjɵ35.ɓɐ̃j33 "younger sisters (blood-related) 小妹"
板	pɐn51	general	ʔɔ33.pɐn51 "board 木板"
	pɐn35	specific	se35.sɐ̃35.ʔɐ.pɐn35 "washing board 洗衣板"
衣	ʔi35	general	twɐ32.ʔi35 "overcoat 大衣"
	ʔwi35	specific	tʰɐj33.ʔwi35 "placenta 胎衣"

The heteronyms that have literary and colloquial pronunciations can be classified into seven groups in terms of the correspondence between the two different forms in terms of syllable onset, final and tone, which is summarised in (5). As illustrated in (5a), the two pronunciations tsʰu51 and tsʰu41 for the character 处 share identical syllable onset and final but differ in tone. The pronunciations siŋ35 and sjɐ̃35 for the character 声 in (5b) differ mainly in final. As well as this, the character 一 in (5g) has two pronunciations ʔit41 and tsit22 that differ in syllable onset and tone while have the same final.

(5) Correspondence of syllable onset, final and tone between literary and colloquial forms.

(5a) Same onset and final but different tones

处	tsʰu51	tsʰu35.ɗi51 "handle 处理"
	tsʰu41	tsʰu63.tjɔ51 "section chief 处长"
背	pwe33	ʔwi33.pwe33 "violate; go against 违背"
	pwe41	pwe63.kiŋ51 "background 背景"
种	tsiŋ41	tsiŋ63.ħwɐ35 "to plant flowers 种花"
	tsiŋ51	tsiŋ35.tsi51 "seed 种子"
现	ħjɐn41	ħjɐn63.sin35 "to show up 现身"
	ħjɐn33	ħjɐn32.tɐj33 "current era; modern times 现代"

(5b) Same onset and tone but different finals

敢	kɐm51	ʔjɔŋ35.kɐm51 "brave; courageous 勇敢"
	kɐ̃51	ʔm32.kɐ̃51 "dare not 不敢"
木	ɓɔk221	ɓɔk32.pɐn51 "plank; board 木板"
	ɓɐk221	ɓɐk32.tsʰjɔ33 "carpenter 木匠"
声	siŋ35	siŋ33.ɓiŋ22 "state; declare 声明"
	sjɐ̃35	sjɐ̃33.ʔim35 "voice 声音"
年	djɐn22	sjɐw63.djɐn22 "early youth 少年"
	ɗĩ22	sin33.ɗĩ22 "new year 新年"

(5c) Same onset but different tones and finals

监 kɐm41 kɐm63.tɔk41 "supervise 监督"

kẽ35 kẽ33.ɗɵ22 "prison; jail 监牢"

斗 tɔ41 tɔ63.tsiŋ35 "fight; combat 斗争"

tɐw51 pɐk65.tɐw51 "Beidou (place) 北斗"

月 ɠwɐt221 ɓiŋ33.ɠwɐt221 "moon 明月"

ɠwe22 ɠwe32.djɐŋ33 "moon 月亮"

有 ʔju51 sɔ35.ʔju51 "own; possess 所有"

ʔu33 ʔu32.tswi51 "have water 有水"

(5d) Same tone but different onsets and finals

厚 ħɔ33 tsjɔŋ33.ħɔ33 "sincere and kind 忠厚"

kɐw33 kɐw32.ɗe51 "lavish gifts 厚礼"

放 ħɔŋ41 kɐj35.ħɔŋ41 "liberate; emancipate 解放"

pɐŋ41 pɐŋ32.sim35 "be at ease 放心"

向 ħjɐŋ41 ħɔŋ33.ħjɐŋ41 "direction; orientation 方向"

ʔŋ41 ʔŋ63.ɗɐm22 "face south 向南"

寒 ħɐn22 tɐj32.ħɐn22 "great cold (24th solar term) 大寒"

kwẽ22 kwẽ33.tʰĩ35 "winter 寒天"

(5e) Different onsets, finals, and tones

学 ħɐk221 ħɐk65.sip221 "study; learn 学习"

ʔɵ22 ʔɵ32.tŋ22 "school 学堂"

多 tɵ35 tɵ33.sjɐw51 "more or less 多少"

tse33 tsin32.tse33 "too many; too much 真多"

叶 ʔjɐp221 sẽ63.ʔjɐp221 "Ye (surname) 姓叶"

ħjɵ22 tsʰju32.ħjɵ35.ʔɐ "leaf 树叶"

远 ʔwɐn51 ʔwɐn35.ħiŋ22 "go on a long journey 远行"

ħwĩ33 ħwĩ32.ɗɔ33 "long journey 远路"

(5f) Same final and tone but different onsets

谢 sjɐ33 kɐm35.sjɐ33 "be grateful 感谢"

tsjɐ33 sẽ63.tsjɐ33 "Xie (surname) 姓谢"

支 tsi35 tsi33.tsʰi22 "support 支持"

ki35 tsit32.ki33.pit41 "one pen 一支笔"

斧 ħu51 ħu35.tsjẽ41 "make corrections 斧正"

pʰu51 pʰu35.tʰɐw22 "axe 斧头"

胡 ħɔ22 ħɔ33.swɐt41 "non-sense talk 胡说"

ʔɔ22 sẽ63.ʔɔ22 "Hu (surname) 姓胡"

(5g) Same final but different onsets and tones

一 ʔit41 tsɐp32.ʔit41 "eleven 十一"

tsit221 tsit32.pɛ41 "hundred 一百"

耳 zi51 ɓɔk32.zi51 "fungus 木耳"

ħi33 ħi32.kʰɐŋ35 "ear 耳孔 (耳朵)"

危 ħwi35 ħwi33.ħjɐm51 "dangerous 危险"

ʔwi22 ʔwi33.ki35 "crisis 危机"

率   sut41   tʰɐn35.sut41 "frank; straightforward 坦率"

       ɗut221   ɦɐw32.ɗut221 "efficiency 效率"

The heteronym inventory in this dialect can also be classified into four different categories in terms of the number of pronunciations, which include diphonetic, triphonetic, quadriphonetic, and quintphonetic; but the overwhelming majority are diphonetic (Huang, 2019). More specifically, as illustrated in (6) below, the character 下 in (6a) has two different pronunciations ɦɛ33 and ʔɛ33. The character 西 in (6b) has three pronunciations se35, sɐj35 and si35. Four different pronunciations are discovered for the character 成 in (6c), which are siŋ22, tsjɛ̃22, tsʰjɛ̃22 and sjɛ̃22; and there are four ways to pronounce the character 平 in (6d), which are piŋ22, pʰiŋ22, pɛ̃22, pʰɛ̃35 and pʰɛ̃22.

(6) Heteronym classification in terms of the number of pronunciations

(6a) Diphonetic characters

下   ɦɛ33   ɦɛ32.ɗiŋ33 "give orders 下令"

       ʔɛ33   ʔɛ32.te51 "underneath 下底 (下面)"

被   pi33   pi32.tɔŋ33 "passive 被动"

       pʰwe33   ɓĩ33.pʰwe33 "cotton quilt 棉被"

人   zin22   zin33.ɓin22 "the people 人民"

       ɗɐŋ22   ɦθ35.ɗɐŋ22 "nice people 好人"

雨   ʔi51   ɓɔk32.ʔi51 "torrential rain 暴雨"

       ɦɔ33   ɗθ32.ɦɔ33 "to rain 落雨"

(6b) Triphonetic characters

知   ti35   ti33.tsjɔk41 "be content with one's lot 知足"

       tsɐj35   tsɐj33.ʔjɛ̃51 "know 知影 (知道)"

       ti41   ti63.sik41 "knowledge 知识"

西   se35   se33.ɦɔŋ35 "the west 西方"

       sɐj35   sɐj33.ɓwĩ22 "west gate 西门"

       si35   si33.kwɐ35 "western melon (watermelon) 西瓜"

代   tɐj33   tɐj32.ɓjɐw51 "delegate; representative 代表"

       te33   ʔɛ32.te33 "descendent 下代"

       tɐj41   kɐw33.tɐj41 "leave words 交代"

生   siŋ35   siŋ33.ɓut221 "living things 生物"

       sɛ̃35   sɛ̃33.zit221 "birthday 生日"

       tsʰɛ̃35   tsʰɛ̃33.ɓi51 "raw rice 生米"

(6c) Quadriphonetic characters

中   tjɔŋ35   tjɔŋ33.sim35 "centre; centrum 中心"

       tɐŋ35   tsʰɐn33.tɐŋ33.ʔŋ35 "Tianzhongyang (place) 田中央"

       tjɔŋ41   kʰθ35.tjɔŋ41 "pass an (entrance) exam 考中"

       tiŋ41   tiŋ63.ʔi41 "be to one's liking 中意"

空   kʰɔŋ35   kʰɔŋ33.kun35 "air force 空军"

       kʰɐŋ35   kʰɐŋ33.tsʰju51 "empty-handed 空手"

       kʰɔŋ41   tsit32.pɛ63.kʰɔŋ63.zi33 "102 一百零二"

       kʰɐŋ41   kʰɐŋ63.te33 "vacant lot 空地"

成   siŋ22   siŋ33.kɛ35 "form a family 成家"

	tsjẽ22	tsjẽ33.dɛŋ22 "adult 成人"
	tsʰjẽ22	tsʰjẽ33.twẽ33 "bring up 成大"
	sjẽ22	tsit32.sjẽ22 "ten percent 一成"

(6d) Quintphonetic characters

平	piŋ22	piŋ33.tiŋ51 "equality 平等"
	pʰiŋ22	piŋ33.tsiŋ33 "quiet; tranquil 平静"
	pẽ22	pẽ33.te33 "flat ground 平地"
	pʰẽ35	pun33.pʰẽ35 "distribute equally 分平"
	pʰẽ22	pʰẽ33.pun51 "(revenue) equalises cost 平本"
落	dɐk41	dɐk65.kɛ41 "reduce price 落价"
	dɔk221	dɔk32.sit221 "put into effect 落实"
	dɵ22	dɵ32.ħɔ33 "to rain 落雨"
	dɐw41	dɐw63.tʰɐw33.tsɛn35 "hairs losing; alopecia 落头发"
	dɐw22	kɐ33.dɐw22 "fall away 落掉"
长	tjɐŋ22	tjɐŋ33.sju33 "long life; longevity 长寿"
	tjɐŋ51	tjɐŋ35.pwe41 "elder member of a family 长辈"
	tŋ22	tŋ33.te51 "long and short 长短"
	tjɔ̃51	kɛ33.tjɔ̃51 "the head of a family 家长"
	tjɵ22	tjɵ33.tʰwɐ41 "Changtai (place) 长泰"

3. Patterns of Polyphonetic Characters

As discussed in the previous section, the heteronyms in Zhangzhou present dynamic and diverse characteristics, reflecting the heterogeneous nature of human languages. This section discusses how different pronunciation forms are related and what patterns can be generalized across various polyphonetic characters, including diphonetic, triphontic, quadriphonetic and quintphonetic that can be observed in the data.

4. Diphonetic Characters

The two pronunciations of diphonetic characters that have differences in syllable onset and/or syllable final can be classified into two groups with one occurring in the literary context and another in the colloquial setting, regardless of whether their corresponding meanings are associated or not. It thus may raise some curiosity with respect to how the two pronunciation forms are related to each other. An careful examination of Zhangzhou contemporary speech reveals a considerable number of patterns that can be generalised to reflect the relationship between the literary and colloquial readings. Huang (2019) summarised the correspondence patterns between the literary and colloquial onsets and finals, as shown in Table 2 and Table 3, respectively. Each pattern is empirically tested by at least two diphonetic tokens.

To illustrate, as presented in (7), a literary onset /ħ/ in (7a) has five colloquial counterparts, including /k/, /kʰ/, /p/, /pʰ/, and /ʔ/, and a literary onset /s/ in (7b) is correlated to /ts/ and /tsʰ/ in the colloquial context. These can be demonstrated

Table 2. Correspondence patterns of the literary and colloquial onsets of diphonetic characters.

Literary	Colloquial				
ɓ	ʔ				
ɗ	t				
ħ	k	kʰ	p	pʰ	ʔ
k	kʰ				
kʰ	k				
p	pʰ				
pʰ	p				
s	ts	tsʰ			
t	tʰ	ts			
tʰ	t	k			
ts	k	t	tsʰ		
tsʰ	kʰ	s	t	tʰ	ts
z	ɗ	ħ	ʔ	ts	tsʰ

Table 3. Correspondence patterns between the literary and colloquial finals among diphonetic characters.

Literary	Colloquial							
ɐ	ɛ							
ɐj	e	jɐ	wɐ					
ɐ̃j	e							
ɐm	ɐ̃							
ɐn	wɐ̃							
ɐp	ɐ							
ɐt	wɐ							
ɐw	ɐ							
ɔ	ɐw	e						
ɔ̃	ɔ							
ɔk	ɐk	ɔ	ɵ					
ɔŋ	wɐ	ɐŋ	ɔ̃	iŋ	ŋ	wĩ		
e	ɐj	ɛ	i					
ɛ	ɛ̃							
i	ɐj	ɔ	ɔ̃	e	jɐ	wɐ	we	wi
ik	e	ɛ	ɛ̃	i	it	jɐ	jɵ	ɵ
im	jɐm	un						
in	ɐn							
iŋ	ɐn	ɛ̃	in	jɐ̃				

Continued

ip	ɐp				
it	ɐt	i			
jɐ	ɐ	wɐ			
jɐk	jɐ	jø			
jɐm	ĩ	jɐn			
jɐn	ɐn	ĩ	in	jɛ̃	wɛ̃
jɐŋ	jɔ̃	ŋ			
jɐp	ɐ	jɐ	ɐt		
jɐt	ɐt	i			
jɐw	ɐ	ɐw	jø		
jɔk	ɐk	ɔk	ik		
jɔŋ	ɔŋ	iŋ	jɔ̃		
ju	ɐw	jũ	u		
ɵ	ɐw	ɔ	e	ɐw	we
u	ɐj	ɔ	i		
un	in	wĩ			
wɐn	ɐn	ĩ	un	wɛ̃	wĩ
wɐt	wɐ	we			
wi	we	wĩ			

by the following examples in (7a) and (7b). For instance, /ħ/ is related to /k/ for the character 寒 (ħɐn22 vs. kwɛ̃22), to /kʰ/ for the character 呼 (ħɔ35 vs. kʰɔ35), to /p/ for the character 飞 (ħwi35 vs. pwe35), to /pʰ/ for the character 斧 (ħu51 vs. pʰu51), and to /ʔ/ for the character 胡 (ħɔ22 vs. ʔɔ22).

(7) Illustration of onset correspondence pattern of diphonetic characters

(7a) The literary-colloquial correspondence patterns of the /ħ/onset

/ħ/-/k/

寒   ħɐn22   tɐj32.ħɐn22 "great cold (24th solar term) 大寒"
     kwɛ̃22   kwɛ̃33.tʰĩ35 "winter 寒天 (冬天)"

汗   ħɐn41   ħɐn63.ɓɛ51 "distinctions won in battle 汗马"
     kwɛ̃33   ɗɐw33.kwɛ̃33 "sweat 流汗"

厚   ħɔ33   tjɔŋ33.ħɔ33 "sincere and kind 忠厚"
     kɐw33   kɐw32.ɗe51 "lavish gifts 厚礼"

/ħ/-/kʰ/

呼   ħɔ35   ħɔ33.kʰip41 "breathe; respire 呼吸"
     kʰɔ35   kʰɔ33.ke35.ʔɐ51 "call chicken 呼鸡"

环   ħwɐn22   ħwɐn33.kju22 "around the world 环球"
     kʰwɐn22   kʰwɐn33.sjɛ̃22 "around the city 环城"

许   ħi51   ʔin35.ħi51 "permit; allow 允许"
     kʰɔ51   sɛ̃63.kʰɔ51 "Xu (surname) 姓许"

/ħ/-/p/

腹	ħɔk41	ħɔk65.pɔ33 "abdomen 腹部"
	pɐk41	pɐk65.tɔ51 "tripe 腹肚"
放	ħɔŋ41	kɐj35.ħɔŋ41 "liberate; emancipate 解放"
	pɐŋ41	pɐŋ32.sim35 "be at ease 放心"
飞	ħwi35	ħwi33.ki35 "airplane; plane 飞机"
	pwe35	kʰi35.pwe35 "take off 起飞"

/ħ/-/pʰ/

斧	ħu51	ħu35.tsjɐ̃41 "make corrections 斧正"
	pʰu51	pʰu35.tʰɐw22 "axe 斧头"
蜂	ħɔŋ35	ħɔŋ33.ʔjɔŋ35 "swarm forward 蜂拥"
	pʰɐŋ35	pʰɐŋ33.sju33 "honeycomb 蜂巢"
芳	ħɔŋ35	sjθ35.ħɔŋ35 "Xiaofang (name) 小芳"
	pʰɐŋ35	pʰɐŋ33.tswi51 "perfume 香水"

/ħ/-/ʔ/

胡	ħɔ22	ħɔ33.swɐt41 "nonsense 胡说"
	ʔɔ22	sɛ̃63.ʔɔ22 "Hu (surname) 姓胡"
黄	ħɔŋ22	ħɔŋ33.ħun35 "dusk 黄昏"
	ʔwĩ22	ʔwĩ33.sik41 "yellow colour 黄色"
学	ħɐk221	ħɐk32.sip221 "study; learn 学习"
	ʔθ22	ʔθ32.tŋ22 "school 学堂"

(7b) The literary-colloquial correspondence patterns of the /s/ onset

/s/-/ts/

谢	sjɐ33	kɐm35.sjɐ33 "be grateful 感谢"
	tsjɐ33	sɛ̃63.tsjɐ33 "Xie (surname) 姓谢"
十	sip221	sip32.tswɐn22 "utterly; perfect 十全"
	tsɐp221	tsɐp32.pe41 "eighteen 十八"
少	sjɐw41	sjɐw63.djɐn22 "juvenile 少年"
	tsjθ51	tse32.tsjθ51 "more or less 多少"

/s/-/tsʰ/

深	sim35	sim33.ɓiŋ22 tɐj32.ɟi33 "righteous 深明大义"
	tsʰim35	tsʰim35.swɛ̃35 "remote mountains 深山"
新	sin35	sin33.ɟĩ22 "new year 新年"
	tsʰjɐ̃35	ħwi33.sjɐŋ33.tsʰjɐ̃35 "very new 非常新"
醒	siŋ51	siŋ35.tsju51 "sober up 醒酒"
	tsʰɛ̃51	tsʰiŋ33.tsʰɛ̃51 "clear-headed 清醒"

As well as this, the relationships between literary and colloquial finals also form some generalisable patterns as summarised in Table 3 and illustrated in (8). A good example of this is the final /ɐj/ in (8a), when used in the colloquial setting, it is either correlated to /e/ as for the character 改 (kɐj51 vs. ke51) or to /wɐ/ as for the character 带 (tɐj41 vs. twɐ41). Similarly, the /iŋ/ final in (8b) has three different colloquial counterparts that include /ɛ̃/ for the character 省 (siŋ51 vs. sɛ̃51), /jɐ̃/ for the character 名 (ɓiŋ22 vs. ɓjɐ̃22), and /ɐn/ for the character 肯 (kʰiŋ51 vs. kʰɐn51). The final /ɐn/ in (8c) largely corresponds to /wɛ̃/

as for the character 安 (ʔɐn35 vs. ʔwɐ̃35), whereas the final /ɐm/ in (8d) is related to /ɛ̃/ when it is used in the colloquial conversation for the character 敢 (kɐm51 vs. kɛ̃51). Thus, although substantial differences exist in the literary and colloquial readings for the diphonetic characters, patterns can be generalised to reflect their relationship. More examples in this aspect can be referred to in Huang's (2019) study.

(8) Illustration of onset correspondence pattern of diphonetic characters

(8a) The literary-colloquial correspondence patterns of the /ɐj/final

/ɐj/-/e/

改	kɐj51	kɐj35.tsiŋ41 "correct; amend 改正"
	ke51	sju33.ke51 "revise 修改"
灾	tsɐj35	tsɐj33.ɖɐn33 "disaster 灾难"
	tse35	tjɵ32.tse35 "get oneself in trouble 着灾"
戒	kɐj41	kɐj63.ʤɐm22 "impose a curfew 戒严"
	ke51	ke35.tsju51 "abstinence 戒酒"

/ɐj/-/wɐ/

带	tɐj41	ħɐj35.tɐj41 "kelp; sea tangle 海带"
	twɐ41	twɐ63.ɖjɐ̃51 "guide; lead 带领"
芥	kɐj41	kɐj63.ɖwɐ22 "mustard 芥辣 (芥末)"
	kwɐ41	kwɐ63.tsʰɐj41 "mustard leaf 芥菜"
大	tɐj33	tɐj32.zin22 "ambassador 大人"
	twɐ33	twɐ32.ʔɵ22 "university 大学"

(8b) The literary-colloquial correspondence patterns of the /iŋ/final

/iŋ/-/ɛ̃/

省	siŋ51	ħɔŋ35.siŋ51 "reflect on oneself 反省"
	sɛ̃51	sɛ̃35.ħun33 "province 省份"
争	tsiŋ35	kiŋ32.tsiŋ35 "compete; contend 竞争"
	tsɛ̃35	sjɵ33.tsɛ̃35 "mutually compete 相争"
青	tsʰiŋ35	tsʰiŋ33.sjɔŋ22 "Qingsong (people) 青松"
	tsʰɛ̃35	tsʰɛ̃33.sik41 "green colour 青色"

/iŋ/-/jɐ̃/

名	ɓiŋ22	ɓiŋ33.ɓɔŋ33 "fame and prestige 名望"
	ɓjɐ̃22	sɛ̃63.ɓjɐ̃22 "full name 姓名"
命	ɓiŋ33	ɓiŋ32.ɖìŋ33 "order; command 命令"
	ɓjɐ̃33	sɛ̃63.ɓjɐ̃33 "life 性命"
声	siŋ35	siŋ33.ɓiŋ22 "state; declare 声明"
	sjɐ̃35	sjɐ̃33.ʔim35 "voice 声音"

/iŋ/-/ɐn/

零	ɖìŋ22	ɖìŋ33.ħun35 "no marks 零分"
	ɖɐn22	ɖɐn33.sɐn35 "sporadic; piecemeal 零星"
肯	kʰiŋ51	kʰiŋ35.tiŋ33 "affirmative 肯定"
	kʰɐn51	ʔm32.kʰɐn51 "refuse to 不肯"
等	tiŋ51	tiŋ35.kip41 "grade; rank 等级"
	tɐn51	tɐn35.tʰɐj33 "wait 等待"

(8c) The literary-colloquial correspondence patterns of the /ɐn/ final

/ɐn/-/wɛ̃/

满	ɓɐn51	ɓɐn35.tsʰiŋ35 "Qing dynasty 满清"
	ɓwɛ̃51	ɓi35.ɓwɛ̃51 "perfectly satisfactory 美满"
安	ʔɐn35	ʔɐn33.tswɐn22 "secure; safety 安全"
	ʔwɛ̃35	tɐŋ33.ʔwɛ̃35 "Tong'an (place) 同安"
寒	ɦɐn22	tɐj32.ɦɐn22 "extremely cold 大寒"
	kwɛ̃22	kwɛ̃33.tʰi35 "winter 寒天 (冬天)"

(8d) The literary-colloquial correspondence patterns of the /ɐm/ final

/ɐm/-/ɛ̃/

蓝	ɗɐm22	ɗɐm33.sik41 "blue colour 蓝色"
	ɗɛ̃22	sɛ̃63.ɗɛ̃22 "Lan (surname) 姓蓝"
敢	kɐm51	ʔjɔŋ35.kɐm51 "brave; courageous 勇敢"
	kɛ̃51	ʔm32.kɛ̃51 "dare not 不敢"
监	kɐm41	kɐm63.tɔk41 "supervise 监督"
	kɛ̃35	kɛ̃33.ɗɵ22 "prison; jail 监牢"

5. Triphonetic Characters

The characters that have three different pronunciations can be classified into three groups, including 1) those that have two literary pronunciations and one colloquial pronunciation; 2) those that have two colloquial pronunciations and one literary form; and 3) those that differ only in tone. For example, as illustrated below, the character 订 in (9a) is produced as either tiŋ33 or tiŋ41 in the literary context but as tjɛ̃33 in the colloquial setting. The character 正 in (9b), on the other hand, has one pronunciation tsiŋ41 in the literary context, but has two pronunciations of tsjɛ̃41 and tsjɛ̃35 in the colloquial situation. Conversely, the three pronunciations ʔwi33, ʔwi41, and ʔwi22 for the character 为 in (9c) differ only in the variation of tonal pitch.

(9) Illustration of pronunciation correspondence pattern of triphonetic characters

(9a) Triphonetic characters with two differences in the literary context

丧	sɔŋ35	literary	sɔŋ33.su33 "funeral arrangements 丧事"
	sɔŋ41	literary	sɔŋ63.sit41 "be deprived of 丧失"
	sŋ35	colloquial	sɐŋ63.sŋ35 "attend a funeral 送丧"
订	tiŋ33	literary	tiŋ32.ɦun35 "be engaged to 订婚"
	tiŋ41	literary	tiŋ63.tsʰɛ63.ki35 "stapler 订书机"
	tjɛ̃33	colloquial	ʔi32.tjɛ̃33 "predetermine 预定"
代	tɐj33	literary	tɐj32.pjɐw51 "delegate; representative 代表"
	tɐj41	literary	kɐw33.tɐj41 "explain, instruct 交代"
	te33	colloquial	ʔɛ32.te33 "descendent 下代"
更	kiŋ35	literary	kiŋ33.su33 "experience things 更事"
	kiŋ41	literary	kiŋ63.kɛ35 "still further 更加"
	kɛ̃35	colloquial	sɛ̃33.kɛ̃35 "midnight 三更"

(9b) Triphonetic characters with two differences in the colloquial context

方	ħɔŋ35	literary	ħɔŋ33.ħwɐt41 "method; means 方法"
	pwĩ35	colloquial	sɛ̃63.pwĩ35 "Fang (surname) 姓方"
	ħŋ35	colloquial	ʔjɵ32.ħŋ35 "prescription 药方"
正	tsiŋ41	literary	tsiŋ63.kʰɐk41 "correct 正确"
	tsjɐ̃41	colloquial	tsjɐ̃63.kɐŋ51 "orthodox 正港"
	tsjɐ̃35	colloquial	sin33.tsjɐ̃35 "lunar new year 新正（新年）"
生	siŋ35	literary	siŋ33.ɓut221 "living things 生物"
	sɛ̃35	colloquial	sɛ̃33.zit221 "birthday 生日"
	tsʰɛ̃35	colloquial	tsʰɛ̃33.ɓi51 "raw rice 生米"
面	ɓjɐn33	literary	ɓjɐn32.ħjɐŋ41 "turn one's face to 面向"
	ɓin33	colloquial	ɓin32.pɔ41 "face towel 面布"
	ɓĩ33	colloquial	ɓĩ32.swɐ̃41 "needle thread 面线"

(9c) Triphonetic characters with three differences in tone

为	ʔwi33 "for the sake of"	ʔwi32.ħɵ22 "why 为何"
	ʔwi41 "because"	ʔin33.ʔwi41 "because 因为"
	ʔwi22 "act"	ħiŋ33.ʔwi22 "action; behaviour 行为"
遐	ħjɐ51 "those"	ħjɐ51.ʔe "those (things) 遐的"
	ħjɐ35 "there"	kʰi63.ħjɐ35 "go there 去遐（去哪儿）"
	ħjɐ41 "so; in that way"	ħjɐ63.tse33 "that much 遐多"

6. Quadriphonetic Characters

Quadriphonetic characters that have four different pronunciations can be classified into three categories, including 1) those that have two pronunciation differences in both literary and colloquial contexts; 2) those that have three pronunciation differences in the colloquial context but only one pronunciation in the literary context, and 3) those that have pronunciation differences only in the tonal pitch. This can be illustrated by the following examples. For instance, the character 中 in (10a) has two literary pronunciations tjɔŋ35 and tjɔŋ41; as well as two pronunciations tjɔŋ41 and tiŋ41 that occur in the colloquial context. The character 成 in (10b) has three colloquial readings tsjɐ̃22, tsʰjɐ̃22, and sjɐ̃22 as well as one reading siŋ22 used in a formal literary setting. Additionally, the four pronunciations ħĩ35, ħŋ35, ħŋ41, and ħŋ51 for the character 哼 in (10c) only differ obviously in tone.

(10) Illustration of pronunciation correspondence pattern of triphonetic characters

(10a) Quadriphonetic characters with two differences in literary and colloquial contexts

中	tjɔŋ35	literary	tjɔŋ33.sim35 "centre; centrum 中心"
	tjɔŋ41	literary	kʰɵ35.tjɔŋ41 "pass an (entrance) exam 考中"
	tɐŋ35	colloquial	tsʰɐn33.tɐŋ33.ʔŋ35 "Tianzhongyang 田中央"
	tiŋ41	colloquial	tiŋ63.ʔi41 "be to one's liking 中意"

(10b) Quadriphonetic characters with two differences in literary and colloqui-

al contexts

中	tjɔŋ35	literary	tjɔŋ33.sim35 "centre; centrum 中心"
	tjɔŋ41	literary	kʰɵ35.tjɔŋ41 "pass an (entrance) exam 考中"
	tɐŋ35	colloquial	tsʰɐn33.tɐŋ33.ʔŋ35 "Tianzhongyang 田中央"
	tiŋ41	colloquial	tiŋ63.ʔi41 "be to one's liking 中意"
合	ħɐp41	literary	ħɐp41.ɗwe "shut up; close 合起来"
	ħɐp221	literary	ħɐp32.tsɔk41 "collaborate 合作"
	kɐ41	colloquial	kɐ63.ʔi41 "suit one's intension 合意"
	ʔɐ22	colloquial	ʔɐ32.su35 "fit body 合身"
空	kʰɔŋ35	literary	kʰɔŋ33.kun35 "air force 空军"
	kʰɔŋ41	literary	tsit32.pɛ63.kʰɔŋ63.ʔit41 "101 一百空一"
	kʰɐŋ35	colloquial	kʰɐŋ33.tsʰju51 "empty-handed 空手"
	kʰɐŋ41	colloquial	kʰɐŋ63.te33 "vacant lot 空地"
密	ɓɐt221	literary	ɓɐt32.ɓɐt221 "dense 密密"
	ɓit221	literary	ɓit32.ħɔŋ35 "seal; seal up 密封"
	ɓɐ33	colloquial	ɓɵ33.ɓɐ33 "not closed 无密（门没关紧）"
	ɓɛ22	colloquial	ɓɛ32.ɓɛ22 "dense; numerous 密密"

(10c) Quadriphonetic characters with three differences in the colloquial context

成	siŋ22	literary	siŋ33.kɛ35 "form a family 成家"
	tsjɐ̃22	colloquial	tsjɐ̃33.ɗɐŋ22 "adult 成人"
	tsʰjɐ̃22	colloquial	tsʰjɐ̃33.twɐ̃33 "bring up 成大"
	sjɐ̃22	colloquial	tsit32.sjɐ̃22 "ten percent 一成"
脏	tsɔŋ33	literary	ɗɐj32.tsɔŋ33 "internal organs 内脏"
	tsɐŋ35	colloquial	tsɐŋ33.tswi51 "foul water 脏水"
	tsɐŋ41	colloquial	tsɐŋ63.tsɐŋ41 "dirty 脏脏"
	tsŋ33	colloquial	sjɵ35.tsŋ33 "small intestine 小脏（小肠）"

(10d) Quadriphonetic characters with differences in tone

哼	ħĩ35 "moan"	
	ħŋ35 "moan; groan; particle showing a question"	
	ħŋ41 "yes; particle showing consent"	
	ħŋ51 "particle showing anger"	

7. Quintophonetic Characters

Four characters are found to have five different pronunciations with three forms used in the colloquial context and two forms in the literary setting. To illustrate, the character 平 in (11) has two literary pronunciations piŋ22 and pʰiŋ22; as well as three colloquial pronunciations pɐ̃22, pʰɐ̃35, and pʰɐ̃22. The meanings change considerably among different morphemes. For example, for the character 长, three different meanings can be derived. There are two pronunciations that are assigned with the meaning of "long", in both the literary and the colloquial contexts; and two pronunciations with the meaning of "head; elder". Another sound form is used for the specific geographical name of "Changtai".

(11) Illustration of pronunciation correspondence pattern of quinphonetic characters

平	piŋ22	literary	piŋ33.tiŋ51 "equality 平等"
	pʰiŋ22	literary	pʰiŋ33.tsiŋ33 "quiet; tranquil 平静"
	pɛ̃22	colloquial	pɛ̃33.te33 "flat ground 平地"
	pʰɛ̃35	colloquial	pun33.pʰɛ̃35 "distribute equally 分平"
	pʰɛ̃22	colloquial	pʰɛ̃33.pun51 "revenue equals cost 平本"
落	dek41	literary	dek65.kɛ41 "reduce price 落价"
	dɔk221	literary	dɔk32.sit221 "put into effect 落实"
	dɵ22	colloquial	dɵ32.ɦɔ33 "to rain 落雨"
	dɐw41	colloquial	dɐw63.tʰɐw33.tsɐn35 "hair loss 落头发"
	dɐw22	colloquial	kɛ33.dɐw22 "fall away 落掉"
相	sjɐŋ35	literary	ɦɔ32.sjɐŋ35 "mutually; each other 互相"
	sjɐŋ41	literary	tsɐj35.sjɐŋ41 "prime minister 宰相"
	sjɵ35	colloquial	sjɵ33.tsjɐw63.kɔ41 "look after mutually 相照顾"
	sjɔ̃35	colloquial	sjɔ̃33.si35 "mutually lovesick 相思"
	sjɔ̃41	colloquial	sɛ̃33.sjɔ̃41 "the twelve animals 生相"
长	tjɐŋ22	literary	tjɐŋ33.sju33 "long life; longevity 长寿"
	tjɐŋ51	literary	tjɐŋ35.pwe41 "elder member of a family 长辈"
	tŋ22	colloquial	tŋ33.te51 "long and short 长短"
	tjɔ̃51	colloquial	kɛ33.tjɔ̃51 "the head of a family 家长"
	tjɔ̃22	colloquial	tjɵ33.tʰwɐ41 "Changtai (place) 长泰"

8. Conclusion

This study provides an illustration of how the heteronym system is constructed and how different pronunciation forms are related in the Southern Min variety of Zhangzhou. The descriptions show that the Zhangzhou heteronyms can be classified into different categories at different layers in accordance to various criteria including the distinction of grammatical categories and lexical meanings; the usage of a colloquial or literary style; the usage of a general or specific style, the correspondence between the literary and colloquial forms in terms of syllable onset, final and tone, as well as the number of pronunciations that polyphonetic characters have.

Additionally, some patterns can also be found with respect to the relationship between different pronunciation forms across diphonetic, triphonetic, quadriphonetic, and quintophonetic characters. The results suggest that although the heteronyms are substantially abundant in Zhangzhou, they are essentially arranged in a systematic and generalisable way. This not only reflects a dynamic linguistic phenomenon in this Sinitic dialect, but also indicates the heterogeneous nature of human languages. This study expands our understanding of the arrangement of heteronyms in the Southern Min variety of Zhangzhou, and also serves as a model to investigate how heteronyms are constructed and categorised in other Sinitic languages/dialects and beyond. It also sheds light on future stu-

dies with respect to how language and culture are interacted in this Southern Min variety.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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