

An Experimental Analysis on Degree Adverb “Hen” of Yuanjiang Dialect Xiang Chinese

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Abstract: This paper examines the phonetic properties of the degree adverb “hen” in Yuanjiang dialect (YJD hereafter) with empirical data from local people. Three sets of parameters, i.e. fundamental frequency (F0), duration and tone value (T-value), were analyzed. The degree adverb “hen” in YJD can be used as not only an adverbial but also a complement, and the sound of “hen” varies with syntactic functions and semantics. The results show that “hen” as an adverbial can be read as both “[xei⁴⁵]” which means “very” and “[xei²¹]” which implies nearly no practical meaning, and that “hen” being a complement is uttered as “[xei⁴¹]”, indicating the meaning of “very” but carrying higher degree and stronger intonation than “[xei⁴⁵]”. According to phonetic experiments, the sound change of “hen” in YJD lies in the change of tone value without transforming the initial consonant and vowel. Such phonetic phenomenon of “hen” in YJD is neither literal and colloquial readings nor tone sandhi, but a polyphonic phenomenon caused by internal inflexion.

1. Introduction

Yuanjiang County, located in the northeast of Hunan Province, belong to Yiyang city. There are three main dialects in the county: YJD, Chishan dialect and Nanda dialect. This paper will focus on YJD. The adverbs of degree in YJD can be divided into two categories: one is “hen (very)” class of degree adverbs; the other is the “ji (extremely)” class of degree adverbs.^[1] In terms of syntactic function, the degree adverbs of “hen (very)” class in YJD are usually used as an adverb, while the degree adverbs of “ji (extremely)” class are often used as a complement. From the semantic point of view, “hen (very)” class degree adverbs are roughly equivalent to “hen (very)” in Mandarin, and “ji (extremely)” class degree adverbs mostly represent unlucky things, negative verbs or verbal nouns. This paper will mainly discuss the usage and pronunciation of the degree adverb “hen” in YJD specifically, and then conduct an experimental analysis of its tones with the aid of Praat.

2. The Usage of “hen” in Yuanjiang Dialect

In YJD, the adverb of degree “hen” is not only written but also spoken. From a semantic standpoint, “hen” itself is a neutral word, but the pattern “[xei]+X” as a whole can directly express the speaker’s either positive or negative emotions. From the perspective of syntactic function, “hen” can be used as both an adverb and a complement. As an adverbial, “hen” can modify adjectives, verbal words, and locational words, and it can also be used with negative adverbs “[pu]” or “[mau]”, both expressing the meaning of

“no” or “not”. When used as a complement, it is mainly used in the “X+[tə]+[xei]” format.

2.1 As a degree complement

Just as “hen” in Mandarin Chinese, “hen” as a complement in YJD is mainly used in the format of “X+[tə]+[xei]”, in which X could be adjectives, verbs, and some phrases.^[2] For example:

- (1) [xau tə xei] (as good as gold)
- (2) [kuai tə xei] (very beautiful)
- (3) [p’a tə xei] (be very scared)
- (4) [kau ein tə xei] (enjoyed a lot)
- (5) [iəu min tɛ’i tə xei] (have a great reputation)
- (6) [iəu i nɿ tə xei] (make a lot of sense)

As shown above, [xau] (good) and [kuai] (beautiful) in example (1) and (2) are adjectives; [p’a] (scare) and [kau ein] (enjoy) in example (3) and (4) are verbs; [iəu mintɛ’i] (have a reputation) and [iəu nɿ] (make sense) in example (5) and (6) are verb-object phrases. In spite of the same meaning of both patterns: “[xei]+X” and “X+[tə]+[xei]”, the pattern “X+[tə]+[xei]” gets much stronger intonation to express higher degree. For example, the degree of [mō tə xei] (have hands full) is higher than [xei mō] (very busy).

2.2 As a degree adverb

In YJD, the degree adverb “hen” can modify both monosyllabic and disyllabic adjectives. For example:

- (7) [xei in] (very overcooked and mushy)
- (8) [xei mei] (very depressed and low-spirit)
- (9) [xei ei tɛi] (very careful)
- (10) [xei k’a p’i] (very stingy)

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As noticed, [in] (mushy) and [mei] (depressed) in example (7) and (8) are monosyllabic adjectives; and [ɕi tɕi] (careful) and [k'a p'i] (stingy) in example (9) and (10) are disyllabic adjectives. As indicated by example (7) (8) (9) and (10), “hen” works as adverbial, modifying either monosyllabic or disyllabic adjectives to form the pattern of “[xei]+X”.

The degree verb “hen” of YJD can also modify not only mental verbs and a few volitive verbs but also verb-object phrases. For instance,

- (11) [xei ɲai] (love very much)
- (12) [xei uei] (be very good at)
- (13) [xei pa tɕia] (care for the family very much)
- (14) [xei iau mie tɕi] (have great honour)

In example (11), [ɲai] (love) is a verb relating to mental activities; in example (12) [uei] (be able to) is a volitive verb. In example (13) and (14), [pa tɕia] (care for the family) and [iau mie tɕi] (have the honour) are verb-object phrases. As shown in example (11) (12) (13) (14), “hen” works as adverbial to modify verbal words.

The degree adverb “hen” in YJD could modify both simple and synthetic locational words too. For example,

- (15) [xei liẽ] (very front)
- (16) [xei au] (very back)
- (17) [xei tau liẽ] (very front)
- (18) [xei au pei] (very back)

As shown above, “hen” as adverbial works to modify both simple locational words like “[liẽ] (front)” or “[au] (back)” and compound locational words like “[liẽ tau] (the front)” or “[au pei] (the back)” to form expressions [xei liẽ] and [xei liẽ tau], [xei au] and [xei aupei] to express the front location or back location respectively. What should be noticed is that the simple locational words in YJD should appear together with degree adverbs; however, compound locational words could be used alone without degree adverbs. In other words, in YJD, we couldn't say “[xati ueitsɿ pai tɕi liẽ]”, but we can say “[xati ueitsɿ pai tɕi tau liẽ] (His seat is arranged at the front.)”.

In YJD, “hen” could be used with negative adverb “[pu]” or “[mau]”, including mainly four patterns: “[pu]/[mau]+[xei]+X”, “[xei]+[pu]+X”, “[xei]+V+[pu]+C” and “[xei]+V+[pu]+C+O”. For instance,

- (19) [pu xei tɕ'yn] (not very stupid)
- (20) [pu xei ɲai] (do not love very much)
- (21) [mau xei fa xẽ] (do not work very hard)
- (22) [mau xei kɔ̃ tɕin] (be very particular about)
- (23) [xei pu xɔ̃ sɿ] (ill at ease)
- (24) [xei pu tən uei] (very insensitive)
- (25) [xei k'ã pu kuã] (disapprove very much)
- (26) [xei k'au pu tɕy] (very unreliable)
- (27) [xei kɔ̃ pu tɕ'i ua] (to talk in vain)
- (28) [xei lən pu tɕy tɕ'i] (easily lose one's composure)

In the pattern of “[pu]+[xei]+X”, X could be adjectives or verbs, as example (19) and (20); in the pattern of “[mau]+[xei]+X”, X could be predicate-object verbs as example (21) and (22). And in the pattern of “[xei]+[pu]+X”, X could be mental or volitive verbs as example (23) and (24). In comparison, the pattern of “[xei]+[pu]+X” embodies higher degree than the pattern of “[pu]/[mau]+[xei]+X”. To be specific, the degree of

[xei pu xɔ̃ sɿ] (ill at ease) is higher than [pu xei xɔ̃ sɿ] (do not fell at ease).

As shown in example (25) (26) (27) and (28), both patterns of “[xei]+V+[pu]+C” and “[xei]+V+[pu]+C+O” ought to transform “[pu]” into “[tɕ]” to express relatively positive meaning, namely [xei k'au pu tɕy] into [xei k'au tɕ tɕy], and [xei lən pu tɕy tɕ'i] into [xei lən tɕ tɕy tɕ'i]. However, such corresponding is not absolutely balanced. For instance, in YJD, there is no saying of [xei mɔ̃ tɕ in], generally speaking, to express higher degree of “very busy”, we say [mɔ̃ tɕ xei] (have hands full).

3.The Pronunciation of “Hen” in YJD

In YJD, the degree adverb “hen” which has three pronunciations: [xei⁴¹], [xei²¹], [xei⁴⁵]^[3-4] could functions as an adverbial or a complement. Moreover, the pronunciation of “hen” changes with different grammatical functions and semantic meanings. As an adverb, “hen” could be pronounced with two different tones: one is “[xei²¹]” which represents no significance; the other is “[xei⁴⁵]” which means “very”. As a complement, “hen” pronounced as “[xei⁴¹]”, whose intonation is stronger than as adverbial.

3.1 Hen [xei⁴¹]

In YJD, “hen” could work as a complement, which in this case is similar to Chinese Mandarin grammatically. When pronounced as [xei⁴¹], “hen” is often used in the pattern of “X+[tɕ]+[xei]”. Despite the same meaning of the pattern of “[xei]+X”, “X+[tɕ]+[xei]” represents higher degree. For example,

- (29) [tɕi tɕ xei] (in a rush)
- (30) [mɔ̃ tɕ xei] (have hands full)
- (31) [sai tɕ xei] (very sunburned)

From examples (29), (30) and (31), it is obvious that the degree expressed by “[mɔ̃ tɕ xei]”, “[tɕi tɕ xei]” and “[sai tɕ xei]” is higher than “[xei mɔ̃]”, “[xei tɕi]” and “[xei sai]” respectively. What's more, the intonation of “hen [xei⁴¹]” is increased by stressing the degree of core words like “[mɔ̃]”, “[tɕi]” and “[sai]”.

3.2 Hen [xei²¹]

When “hen” is pronounced as [xei²¹] in YJD, it embodies little degree meaning with stronger adverbial function. Here, “hen” shouldn't be stressed. In this case, “hen [xei²¹]” is similar to the usage of “hen” which indicates “no practical significance”^[5] in Chinese Mandarin. Consider the following two examples:

- (32) [xa ko tsa lən xei lau sɿ] (He/She is very honest.)

(33) [tɕin tsau tso tɕi kau tɕy iəu xei to tɕ'ai] (There are many dishes on the table today.)

As shown in example (32), the expression of “[xei lausi]” in YJD is not to emphasize the degree of “[lau sɿ] (honest)” but to affirm the fact of being honest”. In other words, “hen [xei²¹]” here does not mean “very”, but just play an adverbial role. Therefore, the expression of “[xei lau sɿ] (honest)” in certain context expresses the same meaning of “[lau sɿ] (honest)” in YJD. Just as example

(32), “[xei]” in example (33) modifying the adjective “[to] (many)” only serves to reinforce the intonation. Accordingly, the degree of “[xei to] (many)” is equivalent to “[to] (many)”. In short, when “hen” is pronounced as [xei²¹] in YJD, it mostly plays a adverbial role instead of strengthening the degree of following adjectives, so “hen [xei²¹]” as an adverb in YJD functions grammatically but not semantically.

3.3 Hen [xei⁴⁵]

In YJD, while “hen” is pronounced as [xei⁴⁵], it means “very”. Being an adverb, [xei⁴⁵] may be used not only to modify mental verbs, verb-object phrases, adjectives and nouns of locality but also with negative adverbs “[pu]” or “[mau]”. Take the following five sentences as examples:

- (34) [xei ɕiɔ̃] (miss very much)
- (35) [xei iəu liē] (very wealthy)
- (36) [xei ŋi] (very hot)
- (37) [xei tau liē] (very front)
- (38) [xei pu x̌ɔ̃ si] (ill at ease)

As indicated by the above five examples, “hen” as adverbial is used to intensify the degree of the following words such as mental verbs like “[ɕiɔ̃] (miss)” in example (34), verb-object phrases like “[iəu liē]” (be of wealth) in example (35), adjectives like “[ŋi] (hot)” in example (36), nouns of locality like “[tau liē] (the front)” in example (37) and negative adverbs like “[pu] (not)” in example (38). The pronunciation and usages of “hen [xei⁴⁵]” appears most frequently in YJD.

To sum up, in YJD, the pronunciation of “hen” varies with syntactic functions. As a complement, it is pronounced as [xei⁴¹]. As an adverb, there are two pronunciations: [xei²¹] and [xei⁴⁵]. It is noteworthy that the degree adverb “hen” as an adverbial in YJD may imply differently when it pronounces as [xei²¹] or [xei⁴⁵]. Take the expression of “[xei lau si]” into account again: when “hen” is pronounced as [xei²¹], just as what we have discussed above, the meaning of “[xei lau si]” is similar to “[lau si]” without the change of degree, which implies the meaning of “honest”; while “[xei lau si]” may mean “very honest” when “hen” is pronounced as [xei⁴⁵], hence the

much higher degree of “[xei lau si]” than “[lau si]”.

4.An Experimental Analysis of “Hen” in YJD

The dialect investigated in this paper is YJD in Hunan province, China. The data are mainly from field investigation and the author’s daily accumulation. In YJD, the degree adverb “hen” has three pronunciations, namely [xei⁴¹], [xei²¹] and [xei⁴⁵]. The difference among the three pronunciations lies in the change of tone value. In Chinese dialects, tone is an inherent level of sound that can distinguish meaning. Tone is mainly determined by pitch.^[6] Pitch is correlated to the fundamental frequency (F0) which determines the pitch of a syllable.^[7]

This paper aims to conduct phonetic experiments on the degree adverb “hen” in YJD by using Praat, and then thoroughly analyze the duration and pitch of “hen” in different contexts, so as to obtain the tone value of “hen” according to the T-value calculation formula by Shi Feng^[8] and the five level tone mark proposed by Zhao Yuanren^[9]. The T-value is calculated as follows:

$$T=[(\lg X-\lg \min) / \lg \max -\lg \min] \times 5 \quad (1)$$

where max refers to the maximum F0, min refers to the minimum F0, X refers to the fundamental frequency value of the measuring point in the pitch curve, and T refers to the value between 1-5. There is also a certain correspondence between the T-value and the five-level tone value, that is, the T-value between 0-1 can be regarded as the 1st level, the T-value between 1-2 can be regarded as the 2nd level, the T-value between 2-3 can be regarded as the 3^d level, the T-value between 3-4 can be regarded as the 4th levels, and the T-value between 4-5 can be regarded as the 5th level.

4.1 The Citation Tones in YJD

In YJD, there are 5 tones: Yinping 34, Yangping 13, Shangsheng 41, Qusheng 21, Rusheng 45.^[10] Firstly, Praat was used to record the five tones of YJD, and each tone was pronounced ten times with different characters, as shown in the following Table 1:

Table 1 The citation tones in YJD

Citation Tones	Tones Types				
	Yiping 34	Yangping 13	Shangsheng 41	Qusheng 21	Rusheng 45
1	tɛy (pig)	tɛy (divide)	tɛy (host)	tɛy (live)	tɛy (orange)
2	pi (compel)	pi (skin)	pi (compare)	pi (quilt)	pi (pen)
3	tɛin (gold)	tɛin (musical instrument)	tɛin (well)	tɛin (near)	tɛin (energy)
4	iəu (excellent)	iəu (oil)	iəu (have)	iəu (again)	iəu (pomelo)
5	ti (low)	ti (title)	ti (bottom)	ti (ground)	ti (lose)
6	i (clothes)	i (move)	i (chair)	i (easy)	i (benefit)
7	mən (mosquito)	mən (door)	mən (fierce)	mən (dream)	mən (stuffy)
8	tɛi (chicken)	tɛi (drunk)	tɛi (squeeze)	tɛi (stand)	tɛi (rush)
9	pau (bag)	pau (float)	pau (be full)	pau (hug)	pau (newspaper)
10	pin (ice)	pin (bottle)	pin (cookie)	pin (illness)	pin (funeral)

Then, the Praat is used to observe the pitch curve for each pronunciation, and five data are evenly selected for each tone from the pitch curve after the head is removed and the tail is pinched. At last, all of

the data are logged into an Excel spreadsheet. Thus, the maximum F0 and minimum F0 are determined, as shown in the following Table 2. By analyzing Table 2,

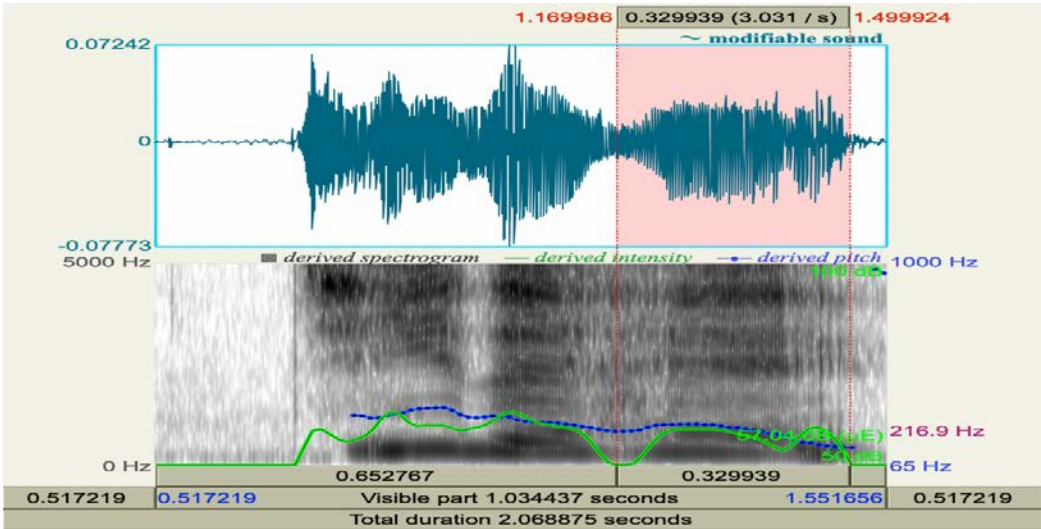
it is found that the maximum F_0 is 475Hz, and the minimum F_0 is 101 Hz.

Table 2 The maximum and minimum F_0 in YJD

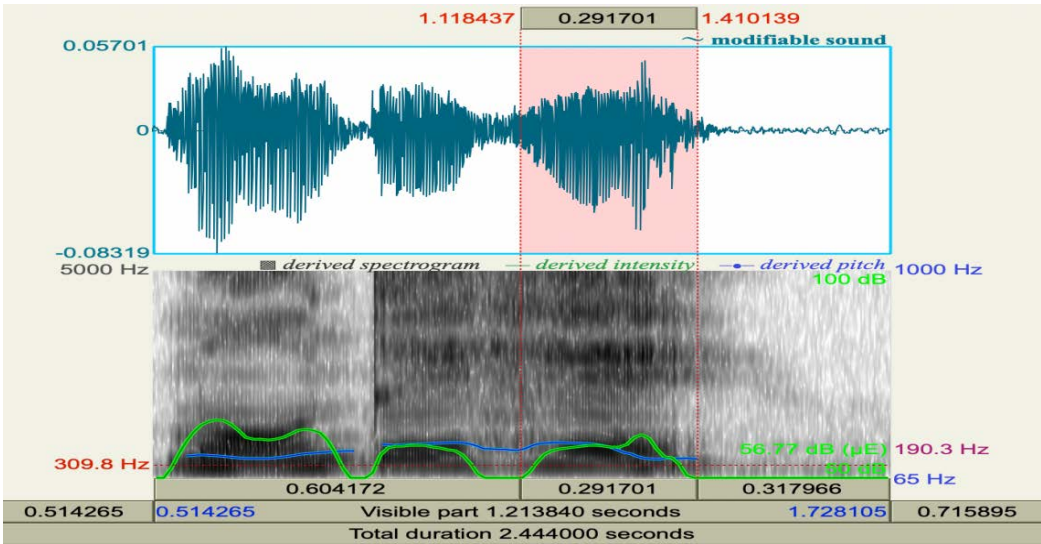
Tone types	Maximum F_0	Minimum F_0
Yinping	309.6	174.8
Yangping	214.6	141.6
Shangsheng	271.3	126.4
Qusheng	251	101
Rusheng	475	186.9

4.2 The Duration and Spectrogram of “Hen” and T-values

In YJD, when “hen” is pronounced as [xei⁴¹] as a complement, it mainly applies in the pattern of “X+[tə]+[xei]”, take “[tɛi tə xei] (in a rush)” and “[mɔ̃ tə xei]” (have one’s hands full) as examples. The following Picture 1 and Picture 2 show the duration and spectrogram of “[tɛi tə xei]” and “[mɔ̃ tə xei]” separately.



Picture 1 The duration and spectrogram of “[tɛi tə xei]”



Picture 2 The duration and spectrogram of “[mɔ̃ tə xei]”

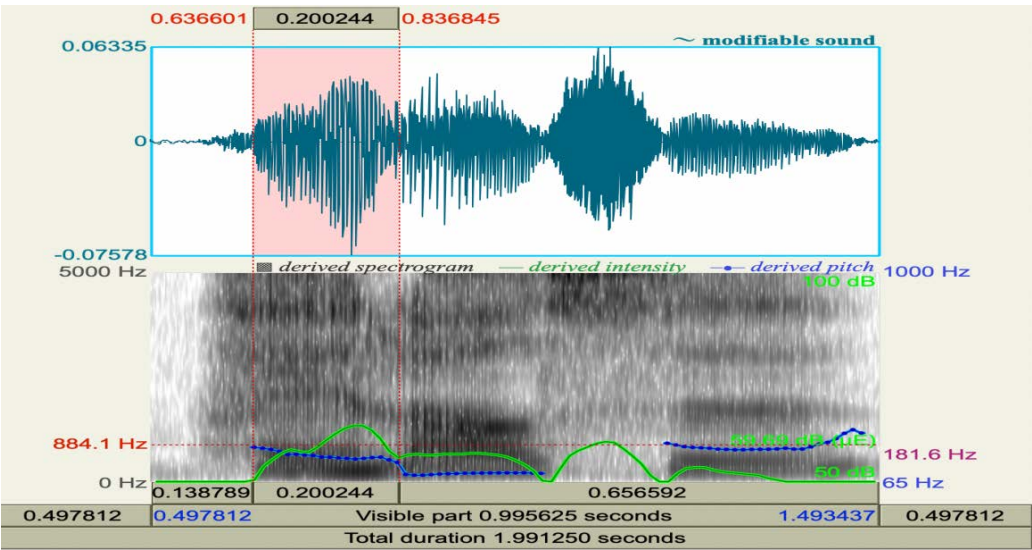
From the above Picture 1 and Picture 2, we can see the duration of “hen” of “[tɛi tə xei]” is approximately 0.33 seconds, and the duration of “hen” of “[mɔ̃ tə xei]” is 0.29 seconds. The following Table 3 shows the F_0 and duration of five sample points of “[xei⁴¹]”.

Table 3 The F_0 and duration of “hen [xei⁴¹]”

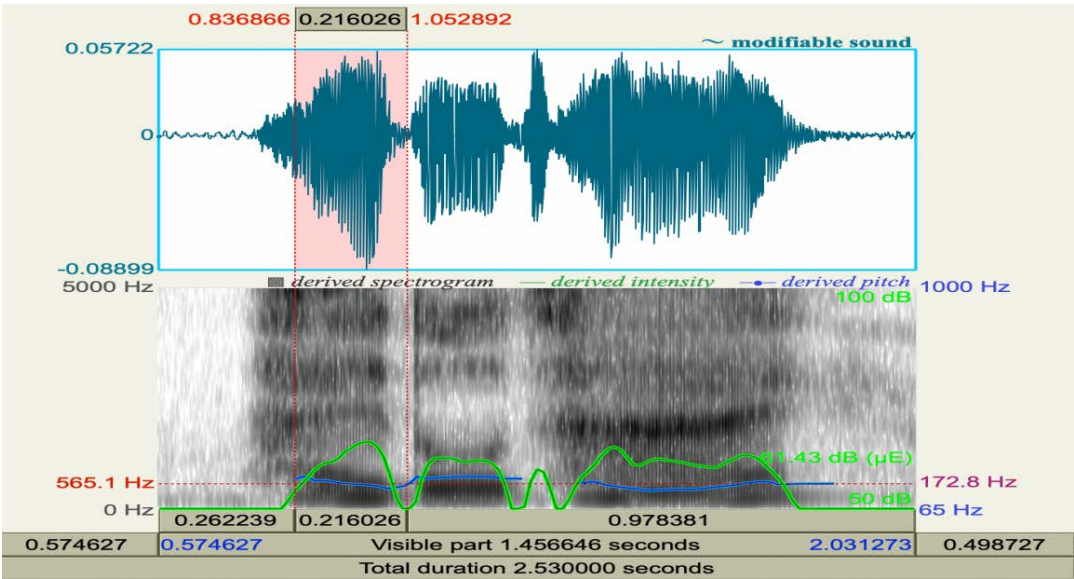
Examples	Sample 1/Hz	Sample 2/Hz	Sample 3/Hz	Sample 4/Hz	Sample 5/Hz	Duration/s
[tɛi tə xei] (in a rush)	241.2	255.4	231.5	174.7	150	0.329939
[mɔ̃ tə xei] (have hands full)	201.4	224.2	213.9	213.7	164.1	0.291701

In YJD, when “hen” is pronounced as [xei²¹], it plays an adverbial role, but does not mean much practical meaning. At this time, “hen” would not be stressed. The following Picture 3 and Picture 4 show the duration and spectrogram of [xei lau si] (honest) and

[xei to ts'ai] (many dishes) respectively. According to Picture 3 and Picture 4, both duration of “hen” are about 0.2 seconds. The following Table 4 shows the F₀ and duration of five samples of “[xei²¹]”.



Picture 3 The duration and spectrogram of “[xei lau si]”



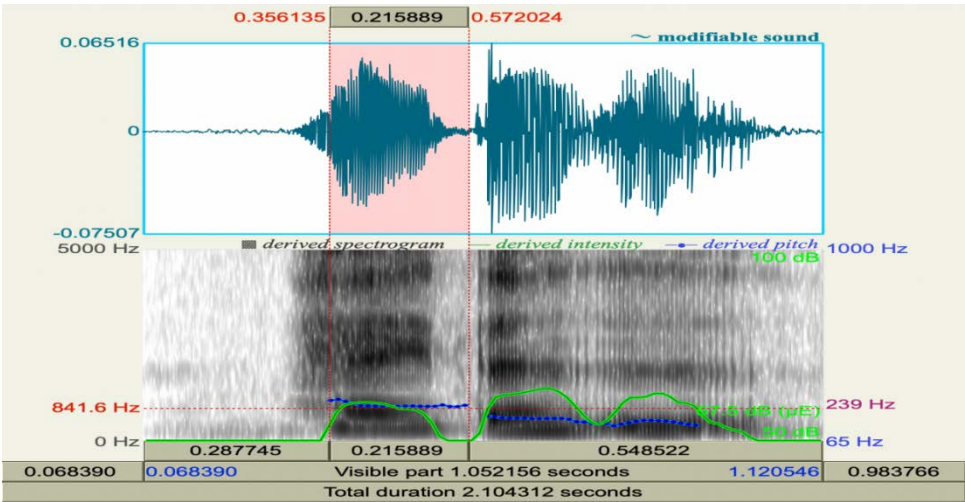
Picture 4 The duration and spectrogram of “[xei to ts'ai]”

Table 4 The F₀ and duration of “hen [xei²¹]”

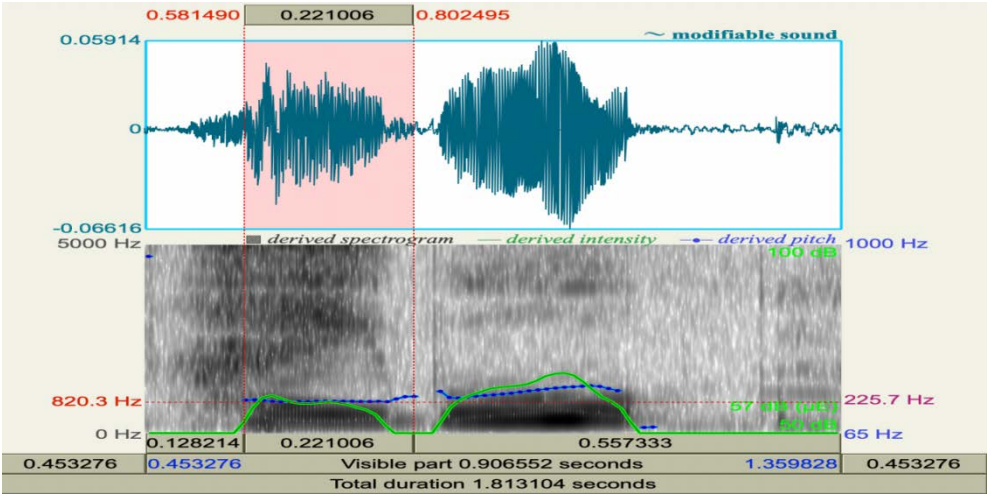
Examples	Sample 1/Hz	Sample 2/Hz	Sample 3/Hz	Sample 4/Hz	Sample 5/Hz	Duration/s
[xei to ts'ai] (many dishes)	202.1	183.7	169.2	163	158	0.216026
[xei lau si] (honest)	201.5	169.7	166.4	162	153.6	0.200244

In YJD, “hen” as an adverbial would be read as [xei⁴⁵] with highest frequency, which indicates the meaning of “very”. The following Picture 5 and Picture 6 show the duration and spectrogram of “[xei tən zɿ] (very sensible)” and “[xei po] (very white)”

respectively. From Pictures 5 and Picture 6, both duration of “hen” is 0.2 seconds. And the following Table 5 shows the F₀ and duration of [xei⁴⁵] of five samples.



Picture 5 The duration and spectrogram of “[xei tən zi]”



Picture 6 The duration and spectrogram of “[xei po]”

Table 5 The F₀ and duration of “hen [xei⁴⁵]”

Examples	Sample 1/Hz	Sample 2/Hz	Sample 3/Hz	Sample 4/Hz	Sample 5/Hz	Duration/s
[xei tən zi] (very sensitive)	267.1	235.1	232.2	232.5	231.5	0.215889
[xei po] (very white)	264.8	241.4	247	245.8	242.4	0.221006

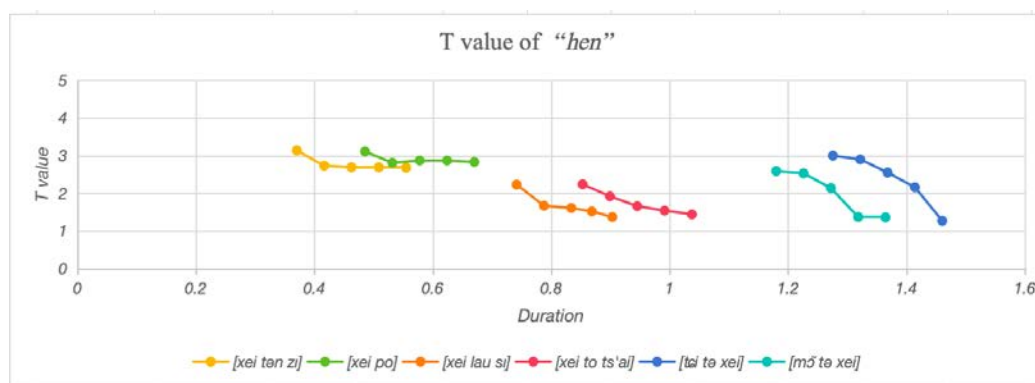
4.3 Experimental Results

Based on the above experimental data, it can be determined that maximum F₀ is 475 Hz, and the

minimum F₀ is 101 Hz, so that the T value of “hen” can be calculated according to the T-value calculation formula, as shown in Table 6:

Table 6 The T-value of “hen”

Examples	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Duration/s
[tei tə xei]	2.8	3	2.68	1.78	1.27	0.33
[mō tə xei]	2.2	2.6	2.4	2.4	1.6	0.29
[xei lau si]	2.23	1.67	1.61	1.52	1.35	0.2
[xei to ts'ai]	2.24	1.92	1.66	1.54	1.54	0.2
[xei tən zi]	3.14	2.73	2.69	2.69	2.68	0.216
[xei po]	3.11	2.81	2.87	2.87	2.83	0.221



Picture 7 The tone curve of “hen”

According to the above Picture 7, “hen” in YJD has three tones: shangsheng 41, qusheng 21 and rusheng 45, among which the shangsheng is falling, the starting point slightly higher than 3, the end close to 1, recorded as 41; the starting point of qusheng is a bit higher than 2, and the end point is close to 1, denoted as 21; The starting point of rusheng is slightly higher than 3, and the end is higher than 2 and close to 3, almost flat, recorded as 43, a bit different from tone value of 45, which need further study and explanation.

5. Conclusions

Through the collection of data and the analysis of phonetic experiments, this paper finds that degree adverb the pronunciation of “hen” in YJD changes in different contexts. The three pronunciations of “hen” in YJD could cause the variations in meaning and syntactic function. It is well-known that literal and colloquial readings which is a particular phonetic phenomenon of Chinese characters would not lead to the changing of semantics and syntactic functions.^[11] Therefore, the sound change of “hen” in YJD seems not to be the phenomenon of literal and colloquial readings. What’s more, the tone change of “hen” in YJD is not the result of tone sandhi which can be triggered by adjacent tones like pre-syllable or post-syllable.^[12] This paper holds that the degree adverb “hen” in YJD is a polyphonic character, which is a grammatical phenomenon of internal inflection. From the perspective of Chinese dialects, internal inflection is formed by taking advantage of the change of tone and duration to express some specific grammatical meanings^[13], which could be applied to explain the case of degree adverb “hen” in YJD appropriately.

These findings are valuable for further understanding of the grammatical features and phonetic variation of YJD in Hunan Province. Further researches should focus on the usage and rule of pronunciations of “hen”, and compare YJD with other dialects to further reveal the differences and similarities between dialects.

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References

1. Xu, H. (2001) Yiyang fanyan yufa yanjiu (Grammatic Studies of Yiyang Dialect). Hunan Education Press, Changsha.
2. Xu, W.L. (2022) Chengdu buyu “hen” de lishi fazhan ji kua yuyan kaocha (The Diachronic Development and Cross-linguistical Investigation of “Hen” as Degree Complement). Journal of Zaozhuan University, 39(01):41-49.
3. Zeng, W. (2010) Hunan yiyang fanfyan de ji ge chengdu fuci (Severel Degree Adverbs of Yiyang Dialect in Hunan Province). Modern Chinese, 11:80-82.
4. Cui, Z. H. (1998) Yiyang fanyan yanjiu (The Study on Yiyang Dialect). Hunan Education Press, Changsha.
5. Tang, C.Y. (2019) The Rise of Degree Adverb “Hen” and the Decline of Degree Adverb “Shen” in Modern Chinese. Journal of School of Chinese Language and Culture Nanjing Normal University, 95(03):174-182.
6. Shi, M. H., Chen, Y. Y. (2022) Qingzhuo tongdiao in Shuangfeng Xiang Chinese: Evidence from phonetic experiments. Studies of the Chinese Language, 411(06):721-735+767-768.
7. Yip, M. (2002) Tone. Cambridge University Press, Cambridge.
8. Shi, F., Xia, Q. S. (2022) The Principles of Sentence Focus in Mandarin Chinese. Linguistic Science, 21(06):580-594..
9. Chao, Y. R. (1930) A System of Tone Letters. Le Maître Phonétique, 45: 24-7.
10. Zhang, F. (2015) An OT Analysis of the Yiyang Tone Sandhi. Jinan University, Guangzhou.

11. Xu, R.Y. (2022) The Literal and Colloquial Readings of Finals in Zhuquan Tuhua Dialect in Jiahe County, Hunan Province. *Dialect*, 44(04):422-429.
12. Zhang, Q., Ma, Q.W. (2023) The Prosodic Domain of Tone Sandhi in Yantai Dialect. *Linguistic Science*, 22(01):44-55.
13. Foadi, R. A. , Zarytovskaya, V. (2019). To the Question of Internal Inflection of the Roots in Arabic and Russian (inflected analysis of the root structure).DOI:10.18500/1817-7115-2019-19-3-268-275.