

Question and Statement Intonation in Fijian

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1 Introduction

This paper reports on the different question intonations in Fijian and focuses on comparing the intonation of Wh-questions, yes-no questions, and statements. Fijian is an Austronesian language spoken mainly on the island of Fiji in the south Pacific region ("Fijian", 2019). Intonation can be described as a post-lexical variation in pitch while speaking but can be used to convey different meanings or different grammatical information. In Fijian, intonation is used to differentiate statements from questions as there is no syntactic difference between the two at word level.

2 Previous Studies on Intonation

Intonation in Fijian is described in Milner (1972) as important for differentiating statements from questions as the order of words does not change as it does in many other languages. Falling tone is used for statements, requests, orders, and questions where the answer is neither 'yes' nor 'no' (148). Therefore, questions with a specific interrogative word, such as WH-question words, end with falling tone. In this falling tone category, the pitch begins to fall from a mid-high tone to a low tone at the penultimate syllable and the pitch of the ultimate syllable either levels to this tone or falls even further (148).

Meanwhile, yes-no questions have a rising intonation at the end of the sentence. According to Milner, the antepenultimate syllable is raised above preceding syllables and following syllables and is the highest pitch of the question. While the ultimate syllable is raised again, it does not raise to higher than the antepenultimate syllable (149). When there are only three syllables, the first syllable has the highest pitch of the phrase while the ultimate syllable has the second highest pitch, thus retaining the previously mentioned pattern.

On the other hand, in Dixon's *A Grammar of Boumaa Fijian* (1988), intonation is described as having three basic patterns. The first being similar to Milner's, a statement, an order, or a question with an interrogative word such as *cei* 'who', *cava* 'what', or *vei* 'where' will have a falling pitch at the end of the sentence. If the final syllable of a clause is a stressed syllable, i.e. a long vowel or diphthong, then the pitch will steadily fall over the entire syllable. However, if the stress pattern of the last word is strong to weak, then the pitch will begin to fall on the stressed syllable and continue to fall over the weak syllable (18).

The second intonation pattern pertains to what Dixon calls "polar questions" or questions that can be answered with a 'yes' or 'no' equivalent(18). These questions are only marked by intonation as the syntactic structure is the same as the same clause when a statement. According to Dixon (1988), the syllable before the last stressed syllable of the question will have a sharp rise in pitch and fall again over the last syllable or syllables in the clause (19).

The last intonation pattern shows a slight rise over two moras at the end of a non-final clause. There may also be a slight pause or pitch discontinuity (19). As this paper focuses on the first and second intonation patterns described by Dixon, this intonation pattern will not be discussed further.

3 Methods

All the data were collected by recordings of FIJ001, which consists of utterings produced by a speaker pronouncing a list of sentences containing statements, yes-no questions, and wh-questions. The speaker is in his early forties from Korovou, Fiji and uses a dialect of Fijian called Tailevu ni Siga¹ as his main language in everyday life though the main medium of instruction in school was English. The speaker does not have any illnesses or problems that would have an impact on his speech.

¹ This directly translates to 'North of Tailevu' as the dialect is used in the north of the province of Tailevu in Fiji

The data were then analyzed through version 6.0.43 of Praat by taking the average F0 of the entire sentence, average F0 of the last three syllables, and the average F0 of each of the last three syllables manually annotated. The average pitch of the final three syllables was calculated to compare to previous studies. Statements were also recorded to compare and contrast with question intonation.

4 Acoustic Analysis

4.1 Data Below are example sentences of yes-no questions, statements, and wh-questions. The examples consists of, from left to right, Reference Tag with Reference Number, Fijian sentence in Fijian orthography, and Meaning in English. The examples are elicited by FIJ001.

Table 1: List of sentences recorded by FIJ001

| ID | Fijian | English |
|-------------------|--|-------------------------------------|
| (1) c_parkQ | E ra lako tiko i rara na gone? | Are the children going to the park? |
| (2) c_parkS | E ra lako tiko i rara na gone. | The children are going to the park. |
| (3) eat_fishQ | Iko kana ika tiko? | Are you eating fish? |
| (4) eat_fishS | Iko kana ika tiko. | You are eating fish. |
| (5) like_singQ | Iko vinakata mo laga sere? | Do you like to sing? |
| (6) like_singS | Au dau vinakata na laga sere. | I like to sing |
| (7) she_hwQ | O koya caka homework tiko. | She is doing homework. |
| (8) she_hwS | O koya cakava tiko na nona homework? | Is she doing homework? |
| (9) sing_showerQ | Iko vinakata mo laga sere i valenisili? | Do you like to sing in the shower? |
| (10) sing_showerS | Au dau vinakata me u laga sere i valenisili. | I like to sing in the shower. |
| (11) what_doingQ | Na cava e cakava tiko o koya? | What is she doing? |
| (12) what_eatingQ | Na cava o iko kania tiko? | What are you eating? |
| (13) who_parkQ | O cei e lako i rara? | Who is going to the park? |

Sentences (1) - (10) uses minimal pairs and close to minimal pairs to show minimal changes to the syntactic structure so that there is a focus on intonation rather than sentence structure as in Fijian intonation is used to differentiate yes-no questions from statements rather than syntax. Meanwhile (11) - (13) are wh-questions so to compare the intonation to yes-no-questions.

4.2 F0 Analysis The following table comprises of, from left to right, Reference Tag, the average F0 of the entire sentence, the F0 of the antepenultimate syllable, the F0 of the penultimate syllable, and the F0 of the ultimate syllable. For a visual of how the files were annotated, refer to Figures 1-3. The values below are all measured in Hertz.

Table 2: Individual results of each sentence

| ID | Mean F0 | Antepenult F0 | Penult F0 | Ult F0 |
|-------------------|---------|---------------|-----------|--------|
| (1) c_parkQ | 135.90 | 120.29 | 116.96 | 169.17 |
| (2) c_parkS | 127.91 | 122.15 | 111.97 | 100.96 |
| (3) eat_fishQ | 171.40 | 139.66 | 151.36 | 224.98 |
| (4) eat_fishS | 133.03 | 135.45 | 122.40 | 96.66 |
| (5) like_singQ | 133.34 | 112.06 | 127.12 | 175.20 |
| (6) like_singS | 122.59 | 121.61 | 109.85 | 105.66 |
| (7) she_hwQ | 147.76 | 127.11 | 118.50 | 167.11 |
| (8) she_hwS | 143.46 | 136.32 | 136.97 | 107.93 |
| (9) sing_showerQ | 128.43 | 111.61 | 116.29 | 180.51 |
| (10) sing_showerS | 112.82 | 104.00 | 105.31 | 112.32 |
| (11) what_doingQ | 144.38 | 120.57 | 126.62 | 109.09 |
| (12) what_eatingQ | 155.23 | 159.74 | 153.12 | 97.38 |
| (13) who_parkQ | 124.38 | 119.78 | 114.52 | 110.31 |

Overall, the yes-no questions mostly showed a consistent rising intonation as the average F0 of the antepenultimate syllable is always lower than the ultimate syllable of the same question. However, in (1) and (7) there is a fall in average pitch at the penultimate syllable. This may be what Milner (1972) and Dixon (1988) describe as the falling pitch just before the final syllable. However a contrast between previous studies of Milner (1972) and Dixon (1988) and the findings in Table 2 prevails when looking at the final syllable and yes-no questions as the antepenultimate syllable is not the syllable with the highest pitch.

The rise pitch can also be seen visually below in Figure 1. In Figure 1, the syllables are labeled on the top tier with 1 as the ultimate syllable, 2 as the penultimate syllable, and 3 as the antepenultimate syllable. At 3, the pitch actually consistently decreases until 2 where the pitch begins to rise again. At 1, the pitch sharply rises, indicating a yes-no question.

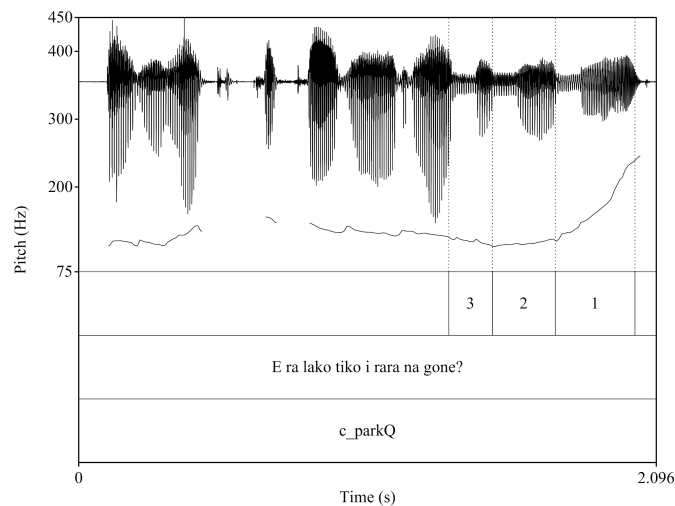


Figure 1: C_ParkQ

On the other hand, statements and questions that are not answered with a yes-no equivalent match descriptions in Milner (1972) and Dixon (1988) as the antepenultimate syllable has the highest F0 of the last three syllables of the sentence and the F0 continues to decrease until the end of the sentence. Exceptions to this are (8), (10), and (11) in which (8) has approximately the same average F0 for both the antepenultimate and the penultimate syllable and then falls after over the ultimate syllable and (10) has a slightly higher average F0 over the penultimate syllable

than the antepenultimate syllable. Not only that, but (10) also has a slightly rising intonation as the average for the final three syllables actually rises consistently. This is the opposite of what is claimed in Milner (1972) and Dixon (1988) in which a continuous falling tone should occur over the final three syllables and also contrasts to the rest of the findings which match Milner and Dixons descriptions. Meanwhile, (11) rises after the antepenultimate syllable as the penultimate syllable has a higher average F0 than the preceding syllable and then the pitch proceeds to fall until the end. However, as seen visually in Figure 3, there may be a problem with the recording as it suddenly spikes to a higher pitch in between syllables. Instead, by following the overall trend of the pitch, there seems to be a falling pitch.

This falling pitch can be seen in Figure 2 and Figure 3 where 3 is the antepenultimate syllable, 2 is the penultimate syllable, and 1 is the ultimate syllable. In Figure 2, the pitch contour shows a consistent fall in pitch from before 3 as it reaches the end of the sentence.

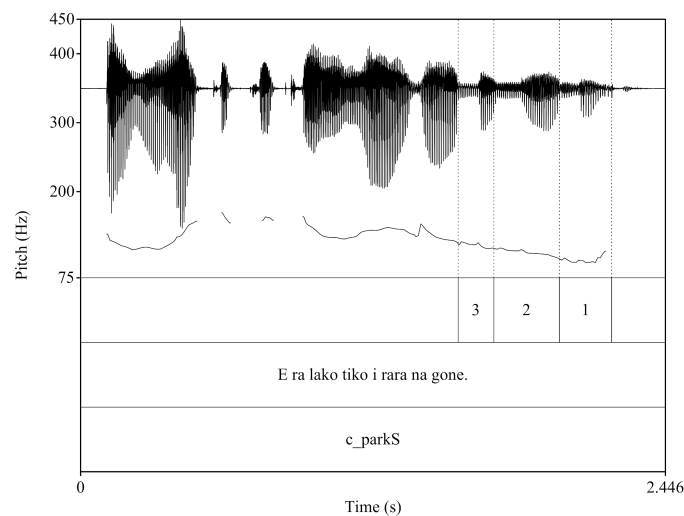


Figure 2: c_parkS

Again, in Figure 3, there is an overall steady or falling pitch over the final three syllables. What is more interesting to note within questions that are not yes-no is that, while they have a similar pitch contour to statements, without fail, there will be a rise in pitch at the interrogative word and then falls once again to around the same pitch level as before the interrogative word.

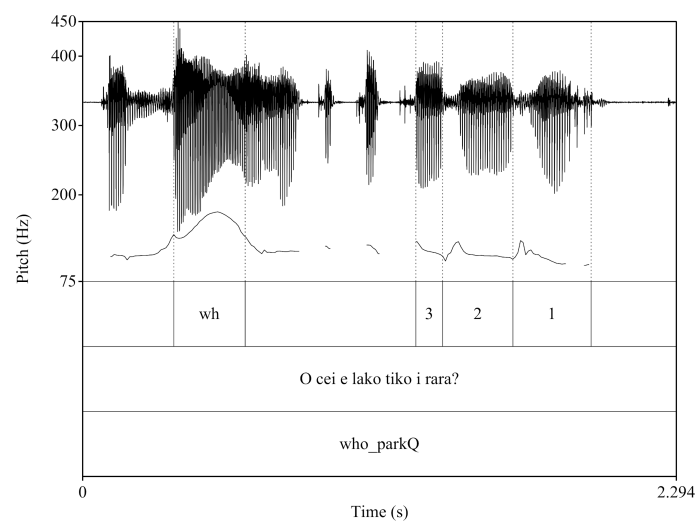


Figure 3: who_parkQ

Table 3 consists of, from left to right, the average F0 of the entire sentence, the average F0 of the antepenultimate syllable, the average F0 of the penultimate syllable, and the average F0 of the final syllable with

values in Hertz. On the vertical axis, top to bottom, the table compares the results of statements, yes-no questions, and other questions meaning non-yes-no questions.

Table 3: Average results of data by sentence type

| | Mean F0 | Antepenult F0 | Penult F0 | Ult F0 |
|------------|---------|---------------|-----------|--------|
| Avg of S | 127.96 | 123.91 | 117.30 | 104.71 |
| Avg of YNQ | 143.37 | 122.15 | 126.05 | 183.39 |
| Avg of OQ | 141.33 | 133.36 | 131.42 | 105.59 |

On average, the pitch of the antepenultimate syllable of both statements and non yes-no questions was the highest of the final three syllables and the ultimate syllable having the lowest pitch of the three. However, it is difficult to say that there is a significant difference between the antepenultimate syllable and penultimate syllable as the average F0 is different only by a couple of Hertz. In this case it may be better to assume that in non yes-no questions, the pitch falls over the final syllable rather than over all three syllables. Meanwhile, the opposite can be said about yes-no questions. While the overall average F0 of the antepenultimate syllable is lower than the overall average F0 of the penultimate syllable, the difference is only by a couple of Hertz. In this case, the difference may be insignificant. Thus, similarly to the falling pitch of the non yes-no questions, it may be better to assume that the rising tone in yes-no questions rises sharply over the last syllable rather than the last three syllables. This is supported by the fact that the overall mean F0 is greater than the average F0 of the antepenultimate syllable and the average F0 of the penultimate syllable, meaning that the average mean F0 is raised mainly by the last raised pitch.

5 Discussion

From the data acquired by using Praat, the direction of pitch over the last three syllables per type of sentence is clear. While previous studies are correct in that the yes-no questions have a rising intonation at the end of the sentence, both Milner (1972) and Dixon (1988) claimed that the antepenultimate syllable had the highest pitch. This, however, does not seem to be the case as with the results from Table 2 and Table 3, the antepenultimate syllable never has the highest average pitch. Moreover, there is a sharp rise from the penultimate syllable to the ultimate syllable and the highest pitch and sharpest rise in pitch is always over the final syllable.

However, it is unclear as to exactly how much and over which syllables specifically the change in pitch occurs. Moreover, as many of the final syllables contain plosives, it is difficult to find the pitch of those specific syllables and it is plausible that it has skewed the results of the analysis as the pitch contour is not visible for the entire duration of the sentences. Thus while it can be concluded that yes-no questions have a rising intonation and statements and questions where the answer is not a 'yes' or 'no' equivalent have a falling intonation, further experimentation must be done to solidify results.

6 Conclusion

In this paper, the intonation of three types of sentences was analyzed. It was concluded that statements and questions where the answer is not an equivalent of 'yes' or 'no' have a falling intonation at the end of the sentence while yes-no questions have a rising intonation at the end of the sentence without a significant rise in F0 over the antepenultimate syllable. However, further research to solidify this conclusion must be done without plosives in the elicitations to avoid having blanks within the pitch contour as it impacts the results.

7 References

- Dixon, R. (1988). *A grammar of Boumaa Fijian* (pp. 18-19). Chicago, Ill.: University of Chicago Press.
 Fijian. (2019). Retrieved from <https://www.ethnologue.com/18/language/fij/>
 Milner, G. B. (1972). *Fijian grammar*. Suva : Government Press