This paper investigates how Mandarin Tone 3 changes when speaking rate and tonal context are varied. Data were collected from one female and one male graduate student both native speakers of Mandarin with four lexical tones. The test phrase consisted of three [ma]s in a row which were put in a sentence to provide a natural context. The second [ma] was always Tone 3, preceded and followed by Tone 1, Tone 2, Tone 3 or Tone 4 resulting in 16 different combinations. The subjects were asked to read sentences at two rates: slow and fast. The F0 of each [ma] was measured at the onset and the offset of its vowel. In addition, F0 of the second [ma] was measured at midpoint. The duration of the vowel was also measured. The results from the preliminary study suggest that in general the F0 variations for Tone 3 can be explained in terms of speaking rate and tonal context. The paper supports these observations with an attempt to quantitatively predict the F0 value for Tone 3 from the duration and F0 of preceding and following syllables.