- If you haven't heard of Singlish, it's what we used to call Colloquial Singaporean English,
    - but I'm going to call it Singlish, because that's what the speakers call it.
- Two caveats.
- Firstly, I'm afraid I'm only talking about one ethnic group today, the Chinese,
    - but I hope this work will be extended to other ethnicities in future.
- Secondly, I think I designed this study all wrong. You will see why.
- We have a lot of pragmatic particles.
    - They're lexical items that attach to sentences without changing their truth value,
    - but they indicate something about the speaker's attitudes/context/discourse.
- And I am afraid I'm afraid I'm only interested in their phonology.
    - That has implications for pragmatics,
    - but I'm not reporting new work on pragmatics.
- These particles are very common in Singapore.
    - Here's an example from the literature in (1a):

(1)   **Singlish pragmatic particles**
    a. My parents very old fashion *ah*^{21}? Then your parents *leh*^{55}? (Lim 2007)
       'Are you saying that my parents are old-fashioned? Then what about your parents?'
    b. 14 different tones for *lah* (Loke & Low 1988) or just intonation (Tongue 1974; Gupta 1992)?

- Notice that the particles here are transcribed with Chao tone letters. This is because
    - linguists noticed very early on that particles can have different pronunciations.
    - So the question was: is it tone or intonation?
- And we went through decades with no consensus.
    - One study catalogued 14 different tones for the particle *lah*,
    - other people just said: it's just intonation. We won't try to explain.
- Recently, we've had more native speakers studying Singlish,
    - and these linguists have started to transcribe particles with Chinese tones.

- In (2) you can see the canonical particles, with the lexical tones reported in the literature.
- You don't need to know what they mean, but I'll go through them briefly.

(2)   **Pragmatic particles analysed with lexical tone (Kwan-Terry 1992; Wong 2004; Lim 2007)**

|	High (55)	Mid (33)	Low (21)	Falling (51)	Rising (24)
lah	✓	✓	✓	✓	✓
leh	✓				
lor		✓			
mah		✓			
meh	✓				
ah			✓		✓
what			✓		
hor					✓

- Lah has been described as assertive or softening, intimate or distancing. So I just don't know. It can't go on questions. But the others are more specific.
- Cannot leh^{55}: softening.
- Cannot lor^{33}: obvious.
- Cannot mah^{33}: explanation.
- Cannot meh^{55}? sceptical question
- Cannot ah? neutral question
  - Cannot ah! checking to see if you're paying attention
- Cannot what: contradiction
- Cannot hor: checking for agreement.
- Most of these particles are sentence-final, and you can't use out of the blue.
  - The exceptions are the attention-checking and agreement-checking particles, rising ah and hor.

- And you don't need to know any of that. What we are interested in is that:
  - Lah is the only one that has been reported with all five Hokkien tones.
  - All of the others have only been reported with one tone, except *ah*, where the two tones mean something very different.
  - That's what you would expect with lexical tone.
- For this study, we are focusing on the ones that have been reported with high or mid tone, so the first five particles.
-
- Five tones may seem like quite a lot for a variety of English.
  - But it's the bare minimum in the tonal substrate languages.
  - The most important is Hokkien Chinese.
  - You can see the tones in (2a), they match up quite well.
- Hokkien does something interesting with particles.
- You may have heard of the infamous Min tone circle.
  - That's the tone sandhi process that makes words show up with different tones

- if they are at the end of a phonological phrase.

- You don't need to know the specifics in (2b), but if you look at (2c),
  - The word for 'walk' is [kia], and it is rising in the first example, [mai kia].
  - And it stays rising if you add a particle, [mai kia la].
- Why is that interesting?
  - Because if you add something that's not a particle, like the word for 'road', [lɔ],
  - then [kia] shows up with a falling tone instead.
- It's like the particle doesn't count as final.
  - This has been analysed as particles refusing to be parsed into a phonological phrase.
  - And we will see that Singlish particles may be doing the same thing.

(3) **Tones in Hokkien Chinese (cf. Teochew, Cantonese)**

    a.

55 or 44	33 or 22	21 or 11	51 or 52	24 or 13
High level	Mid level	Low level	Falling	Rising

    b. The Min tone circle (59-year-old male speaker, 2008)

$$24 \longrightarrow 21 \quad \begin{array}{c} \nearrow \ 51 \ \searrow \\ \\ \searrow \ 33 \ \nearrow \end{array} \quad 55$$
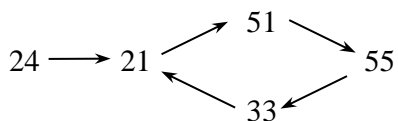
Note: The rules for closed syllables are slightly different and have been excluded from this diagram.

    c. Particles are not parsed

      i. [maj^{51} **kjã^{24}**] don't walk   ii. [ɔ^{33} **kaw^{51}**] black dog

      [maj^{51} **kjã^{24}**] la^{21} don't walk PARTICLE   [ɔ^{33} **kaw^{51}**] la^{11} black dog PARTICLE

      [maj^{51} **kjã^{11}** lɔ^{11}] don't walk road   [**kaw^{55}** mŋ^{24}] dog fur

- These tones have been used to transcribe not only particles, but also words that come from English.
  - You can see an example in (4).

(4) **Intonation at the word level (Wee 2008; Ng 2008, 2009, 2011, 2012, 2019; Siraj 2008)**
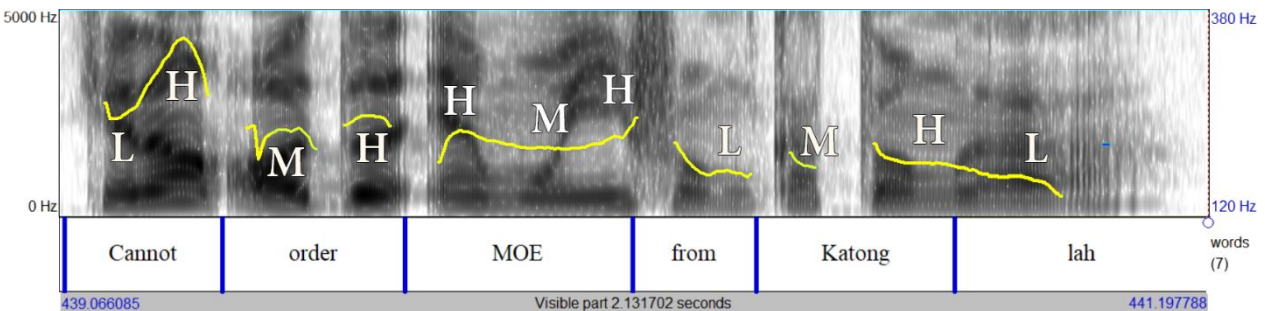
- And this is not lexical tone. This is intonation based on stress and word boundaries.
- The basic pattern
  - is that you take a phonological word and you put high tone on the last syllable.
  - (Yes, this is a word boundary tone. Very unusual.)
- If there are any syllables left over,
  - then you assign mid tone from the first stress onwards.
  - (You could call it a mid pitch accent. Also very unusual.)
  - That mid tone spreads to the right.
- And then you get low tone elsewhere.

- There are a few exceptions.
  - *Don't, damn* and *can* should get high tone according to this algorithm,
  - but actually they get a rising tone.
  - That only happens with a few words.
- There is variation, and I've argued that it's linked to stress and morphological boundaries.
  - For example, function words like the word "it" (5c).
  - In subject position, it's typically low tone, which you would expect if it's unstressed.
  - In object position, it's typically high tone, which looks like it's unstressed.
- Occasionally, you find people saying "like it" or "make it" as a mid high tone sequence, as if it's one word.
  - So that looks like "it" has been destressed and is getting parsed into the closest phonological word.
  - (This also happens with high-frequency compounds.)
- You may ask, how about the Hokkien pattern?
  - Can it stay unparsed and get low tone?
- To be honest, I don't know. To me, it sounds like a Singaporean could say that
  - but I don't think of it as Singlish.
  - This is the problem with studying world Englishes, high and low register.
  - Obviously, this is something that needs looking into.

- What we do know about sentence-final position
  - is that downdrift really compresses the pitch range.
- You can see that in the three pitch tracks in **Error! Reference source not found.**.

(5)   **Tone assignment at the word level**
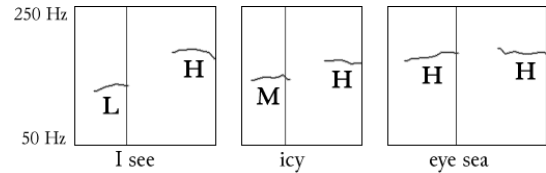   a. Basic pattern (Ng 2009)
      ‣ High tone on last syllable of prosodic word   H   L M H   MMMMH
      ‣ Mid tone from first stress onwards   *name*   *Malaysia*   *minimisation*
      ‣ Low tone elsewhere
   b. Exceptions
      ‣ Rising tone: *don't, damn, can*

c. Variation: prosodic word parsing (Ng 2010)

‣ Cliticisation: *It doesn't like it*

L (M H) (H)(H)

L (M H) (M H)

L (M H) (H) L

- You may also notice that the high tone is not flat. There is a little bit of a fall.
  - In this particular utterance, it could be assimilation to context
  - (because the next tone is low).
- But people have started to argue that there is a low boundary tone here,
  - at the end of an Intonational Phrase,
  - and that's causing the fall.
- And sometimes you can really hear the fall, like "Finish ALREADY!"
  - (Obviously, I think there are focus effects going on here.)
  - And that fall is very similar to what you hear in "Cannot lah"
  - which has been transcribed with falling tone.

- The new studies are proposing that
  - Declarative statements end in a low boundary tone.
  - And interrogatives have a high boundary tone.

(6)   Intonation at the sentence level

a. Sentence position: *normal* in H__L context (Ng 2011)

Initial   Medial   Final
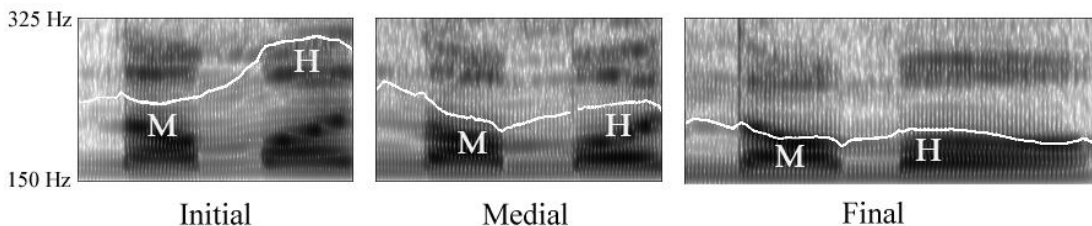
Script: ALI say cannot	order. Normal deliver from Katong one no order Normal deliver from Katong one. No order Normal. Deliver from Katong one no	standard.

b. Boundary tone proposals (Chong 2012; Chow 2016)

‣ Declarative statements: Low boundary tone

‣ Interrogatives (yes/no questions): High boundary tone

- I should say that Chong is looking at Standard Singaporean English, not Singlish,
  - and Chow makes some other claims that I find problematic.
- But the conclusions in example (4) are not controversial.

- It's also the basic pattern in British and American English.
- Statements tend to go down, and questions tend go up.

- Coming back to pragmatic particles: do we need lexical tone?
  - Can we explain the existing 'tones' using what we now know about intonation?
  - What are our predictions?

(7) **Pragmatic particles: Tone or intonation? (cf. Lee & Kim 2016; Chow 2016: 121, 143)**
   a. Intonation: The distribution of possible tones should pattern like toneless words.
      i. Stressed monosyllables: high → falling (551)
      ii. Unstressed monosyllables cliticise: high → falling (551)
      iii. Other possibilities: downstep (high → mid), rising → rising-falling, unparsed (low tone)
   b. Tone: different meanings, or traceable to substrate tonal languages.
      ‣ Cantonese: similar to transcriptions in (2), except for *lah* (and *what*).
      ‣ Hokkien: neutral tone ≈ low (and unparsed).

- Well, we are basically going back to the possibilities in (5c).
- The canonical pragmatic particles are monosyllabic,
  - so we would expect high tone (name, it, sea, eye sea).
- We do see low tone on unstressed monosyllables, but
  - that's only been documented sentence-initially.
  - In sentence-final position, if the word 'it' is destressed,
  - it gets parsed into the previous prosodic word, and gets high tone.
- You remember I said we don't know if we find the Hokkien pattern,
  - where it stays unparsed, which would result in low tone.

- So based on what we currently know,
  - if the particles are behaving exactly like toneless English vocabulary,
  - then we expect get high tone at the word level,
  - interacting with a low boundary tone at the first level,
  - which gives us a 'falling tone'.
- It's also possible that the high and low tone could interact to give us a downstep,
  - which would sound like a mid tone. But that hasn't been documented before.
- Or if it was unparsed, then we would get low tone.
  - And that hasn't been documented in the intonation literature either.

- What if the particles have lexical tone? What would we expect then?
  - I think it would be very similar to the transcriptions in (2).
- You would expect different meanings for each tone.
  - And you might also expect the tones to be similar to the substrate particles.

- Now those are the questions I should have asked.
- You remember I said I designed this study all wrong.
  - I started with the literature on Singlish particles and their lexical tones.
- I should have done the opposite.
  - I should have said, "What do we know about intonation?"
  - How would that make different predictions?
  - Do we need to fill in any gaps before we make predictions about pragmatic particles?

- So mea culpa. That is future work.
- What I actually did is in (8).
  - I didn't test all the possibilities, I only tested the 'lexical tones' reported in the literature.
  - I didn't think of testing for cliticisation, or comparing with that small set of English words that take rising tone.
  - That's what I would have done differently if I had started from the intonation literature.
- The method was informal. We just sat down together and I said, "Can you say this: Try lah."
- The rating system was yes, no, or question mark, and I wrote down their comments.
- If they were not sure, then I gave them context.

(8)   **Elicitations**

    a. Try lah/leh/lor/mah/meh/nine.   (applying for something prestigious / Sudoku suggestion)

    b. Cannot lah/leh/lor/mah/meh/see.   (unexpected website error / child at museum)

    c. Liddat lah/leh/lor/mah/meh/one.   (responding to complaint about library fines)

- For the particles, I checked three different sentences, "Try + particle", "Cannot + particle" and "Liddat" which means "like that".
- I also had English words instead of particles: "try nine", "cannot see", "liddat one".
  - Those are all words that get stressed in Singlish.
  - So obviously, I should have tried words like "it" that can get destressed. Future work.

- And my last caveat is that I included my own judgements.
  - But I don't trust myself, because I don't sound Singaporean to other Singaporeans.
- All of the other consultants were confident about their Singlish. :)
  - But they're all grad students who have spent a long time in the US,
  - and one of them is a linguist who knows a lot about my work.

- So all that was not ideal, but the findings were still interesting. And unexpected.

(9) **Grammaticality judgments (40f, 33m, 26m, 25f)**

	High (55)	Mid (33)	Low (21)	Falling (551)	Rising (24)
lah	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓
leh	✓✓✓✓	✓✓✓✓	?✓✓✓	??✓✓	??✓✓
lor	✓✓✓✓	✓✓✓✓	***?	**✓✓	***?
mah	✓?✓?	✓✓✓?	??✓?	??✓?	??**
meh	✓✓✓✓	**✓✓	**✓*	**✓✓	****
nine/see/one	✓✓ ✓✓	**✓✓	***✓	✓✓✓✓	✓✓✓✓ → only echo Q

Note: All previously reported pronunciations were accepted, except for *mah*.
Two subjects (33m, 25f) mentioned that they didn't hear this particle much.

- The grammaticality judgements are in (9). Let me walk you through it.
- The consultants are 40f is me, the 33-year-old male is Nick Huang, a psycholinguist at the University of Maryland, and the twenty-six-year-old male and twenty-five-year-old female are Ph.D. students here).
  - I'm reporting everyone's judgements separately,
  - that's why there are four judgements in each square of the table.
  - You can see exactly what each of us said about high tone lah or rising tone lor.
- I only put down an asterisk if all three sentences were bad, "try", "cannot", and "liddat".

- Some observations.
- All the pronunciations reported in the literature were accepted, except for *mah*.
  - Two subjects volunteered the information that they don't hear this particle much.
- The previous reports for lah were all five tones
  - and you can see that everybody said yes to those,
- For leh, high tone. Everybody accepts that, and also mid tone.
  - For low and falling and rising *leh*, you will notice it's the younger consultants who accept those.
- For *lor*, mid tone was reported, but everyone is also fine with high tone.
  - It is much worse with the other three tones, but the younger consultants actually accept it with falling tone.
  - And you remember, falling tone was our main prediction if this is intonation and not lexical tone.
- *Mah* is the one that some subjects weren't familiar with, so let's move on to *meh*.
  - High tone was reported, and that's fine.
  - The younger consultants also accept mid tone and falling tone.
- For the English vocabulary, only the younger consultants accept mid tone,
  - and only the youngest consultant accepts low tone.
  - Rising tone was possible, but only if it was interpreted as a question.
  - Rising tone on the particles is not interpreted as a question, so it's definitely different.

- Looking at the big picture, none of the particles are behaving like English words.
  - The distribution pattern is different.
  - Possibly I think this is because I should have asked about words like "it" or "me" instead of "nine", "see", "one".
- But even with English content words, we are discovering something new.
  - We can have a high level tone, we don't have to have a falling tone.
  - So it's as if the phrase-final low boundary tone is optional.
- And the younger consultants said the English words could take mid tone, like particles.
  - This hasn't been documented in the intonation literature.
  - You remember, we said that was a theoretical possibility,
  - the low tone from the phrase boundary might downstep the high tone from word-level intonation.
  - The older consultants can't do it, so it looks like language change.

- Looking at the particles, if you exclude mah,
  - then mid tone patterns with high tone everywhere,
  - except that the older consultants can't do it with *meh*.
- And that actually makes sense, because *meh* is the only question particle here,
  - so we would expect it to occur with question intonation, which is a high boundary tone.
  - You wouldn't get downstep.
- And younger speakers also accept falling tone with *meh,*
  - so maybe their question intonation doesn't require a high boundary tone.

- The other big picture observation is that the last three tones (low, falling and rising) are more restricted than high and mid.
  - Rising tone is the most restricted.
- But again, the younger consultants are accepting more of them.
  - And I should point out that even the oldest speaker in this study (me!)
  - accepts more pronunciations than the literature reports.

- So my main finding is that there seems to be language change.
- What about my original question. Is it tone or intonation?
  - Well, I did the wrong study, so I don't have solid evidence.
- I think if I had compared particles with pronouns, instead of content words,
  - then we would see much closer parallels with *lah* and *leh*.
  - All of them would be able to take the first four tones. Future work.
  - But even with this data, it's really striking that the particles are taking on more and more pronunciations over time.
  - Lexical tone, by definition, is produced consistently, so I think this is suggestive.
  - It looks like the particles are gradually losing tone, and *lah* and *leh* may have gone further than the others.

- And there's one thing I found particularly striking about collecting this data.

- The consultants sometimes repeated the sentence after me before giving their judgment,
  - and they often repeated it with a pronunciation that I would code as a different tone.
  - One consultant even said they couldn't hear the difference between the high and mid pronunciations.
- And of course that's not good. But again, that's not what you expect for lexical tone.
  - All these consultants speak languages that make use of these five tones in some way,
  - it's not like they are tone deaf.
- So if the tones are not important when they're listening to Singlish particles, then that's more like what I would expect for intonation.

(10) **Some observations**

    a. Toneless English words: none of the particles match this pattern of distribution.

      ‣ Try pronouns instead of *nine/see/one*?

      ‣ Final high level tone is grammatical, so phrase-final low boundary tone is optional?

      ‣ Mid tone has been reinterpreted as a downstepped high tone by younger consultants?

    b. Pragmatic particles:

      ‣ Mid tone patterns with high tone except for *meh* (yes-no Q).

      ‣ Low, falling, rising tones are more restricted.

    c. Tone or intonation?

      ‣ Particles seem to be acquiring more pronunciations over time.

      ‣ Consultants often repeated after me with different pronunciation.

Acknowledgments