

Unable or unwilling?

Being under-informative is interpreted differently for native and non-native speakers

Sarah Fairchild
University of Delaware/
Bresslergroup

Ariel Mathis
University of Pennsylvania

Anna Papafragou
University of Pennsylvania

Understanding native vs. non-native speech

- Non-native speech is processed more slowly and rated as less intelligible than native speech (e.g., Munroe & Derwing, 1994).
- Listeners expect non-native speakers to make syntactic errors (Hanulíková et al., 2012; cf. Grey & Van Hell, 2017; Gibson et al., 2017).



Negative bias towards non-native speakers

- Adults judge non-native speakers as being less trustworthy (Lev-Ari & Keysar, 2010) and more vague (Lev-Ari & Keysar, 2012).
- Even young children prefer to learn from, be friends with, and share resources with native over non-native speakers (Kinzler, Dupoux, & Spelke, 2007).

A *positive* bias

- We uncover a systematic difference in the interpretation of what native vs. non-native speakers say
 - in a new domain: pragmatics of non-native speech.
- Unlike some of the evidence above (Lev-Ari & Keysar, 2010, 2012; Kinzler et al., 2007),
 - the difference creates a bias *in favor* of non-native speakers.
- In exploring this case, we connect pragmatic and social inferences about speaker identity in novel ways.

Pragmatic principles in communication

“Some dogs are mammals.”

True but under-informative



Communication is a co-operative activity in which speakers strive to be informative (Grice, 1975).

Failures to offer necessary information are penalized:

- Adults generally disprefer true but under-informative statements (“Some dogs are mammals”; e.g., Noveck, 2001; Papafragou & Musolino, 2003; Bott & Noveck, 2004; Guasti et al., 2005).
- Children avoid learning new information from ‘teachers’ who have a history of being under-informative (Gweon et al., 2014).

Explaining failures of informativeness

“Some dogs are mammals.”

True but under-informative



Speaker is either **unable** or **unwilling** (Grice, 1975; Horn, 1979; Sperber & Wilson, 1986; Geurts, 2011) to convey the required information.

- In most processing studies, under-informativeness is either not motivated (e.g., presented out of context),
- or attributed to a narrow set of factors (speaker inability: Breheny et al., 2013; Bergen & Grodner, 2012; Papafragou et al., 2018; but see Bonnefon et al., 2009).
- Unwillingness largely ignored.
- Depending on its perceived cause, a failure to be informative is likely to affect social cognition and future behavior in different ways: other things being equal, unwillingness can signal a breach of the cooperativeness assumption and lead to communication breakdowns (Grice, 1975).

Inability and unwillingness are treated differently in action understanding



- Nine-month-olds react with more impatience when interacting with an adult who fails to give them a toy if the adult is unwilling – as opposed to unable - to give them the toy (Behne, Carpenter & Tomasello, 2005).
- Chimpanzees produce more frustration behaviors when interacting with an unwilling compared to an unable (but willing) experimenter (Call et al., 2005; cf. also capuchins - Phillips et al., 2009 and Tonkean macaques - Canteloupe & Meunier, 2017).

Under-informativeness and the unable/unwilling distinction

- Proposal: Listeners reason about an under-informative speaker's intentions differently depending on the speaker's native language (cf. also Fairchild & Papafragou, 2018).
 - Non-native speech is expected to be more error prone/ less controlled by speaker intentions (Hanulíková et al., 2012; cf. Grey & Van Hell, 2017; Gibson et al., 2017).
 - **Prediction:** Pragmatic violations such as under-informativeness should be more likely to be attributed to inability (rather than unwillingness) in non-native speakers.

Implications for social cognition

- There are lower social penalties for unable but willing, as opposed to unwilling, social partners (cf. Behne et al., 2005).
- **Prediction:** Pragmatic violations such as under-informativeness should have a lower social penalty for Non-Native speakers than for Native speakers.
- Test case: Social Learning
 - Despite tendency to avoid learning from under-informative individuals (Gweon et al., 2014), listeners should be more willing to learn from an Under-Informative Non-Native speaker (probably unable to say more) than an Under-Informative Native speaker (perhaps unwilling to say more).

The present study

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Experiment 1: Explaining Under-Information (Inability vs. Unwillingness) 

- Does listener perception of under-inform ativeness differ for Native vs. Non-Native speakers?

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Experiments 2 and 3: Implications for Social Learning

- Do the perceived reasons for under-information impact future learning from Native vs. Non-Native speakers?

Experiment 1

(N = 126)



Native Speaker Condition (N=63)

This is **Emma**. **Emma** is a college student at the University of Delaware, majoring in history. She moved to Delaware from **Boston** three years ago and still has a strong **Boston** accent. In her spare time, **Emma** likes to paint and play the piano.


Non-Native Speaker Condition (N=63)

This is **Yuqi**. **Yuqi** is a college student at the University of Delaware, majoring in history. She moved to Delaware from **China** three years ago and still has a strong **Chinese** accent. In her spare time, **Yuqi** likes to paint and play the piano.

Experiment 1

($N = 126$)

Em m a's/Yu qi's friend asks for a snack. Em m a/Yu qi says:



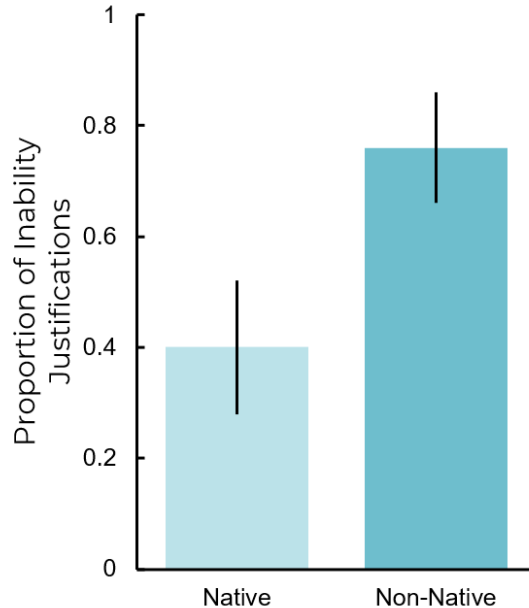
There are bananas and
apples.



Why didn't Em m a/Yu qi say that there are bananas, apples and pears?

Experiment 1

($N = 126$)

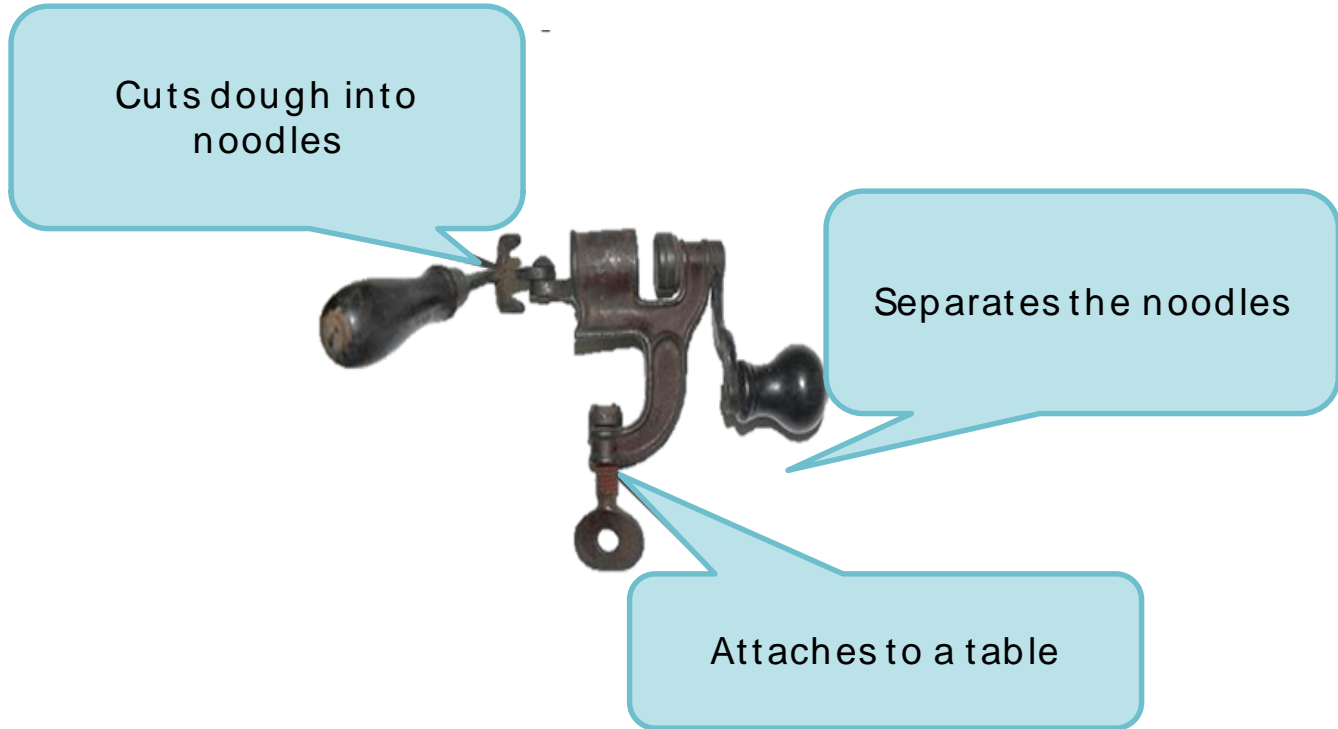


Justification Type	Native	Non-Native	Example
Inability	39.68%	76.20%	
Linguistic difficulty	7.94%	41.27%	She didn't know the word for pears.
Perceptual or cognitive difficulty	31.74%	34.93%	She didn't see the pears.
Unwillingness	60.32%	23.80%	
Deception	26.98%	12.70%	She wanted to keep the pears.
Politeness	19.05%	3.17%	She knew her friend didn't like pears, so she only offered her fruit she liked.
Saving face	6.35%	3.17%	She is embarrassed of her accent.
Other	7.94%	4.76%	It was her choice.

Speaker Type affects Inability Justifications ($p < .0001$)

Experiment 2

(N = 457)



Novel Object: Zeg

Experiment 2

(N = 457)



Native Speaker Condition (N=228)

Emma Smith is the inventor of the Zeg. She likes to create and build new tools, and is a member of an amateur inventor club. **Emma** also likes to hike and play the piano. She is originally from **Boston** but recently moved to Delaware and her neighbors say that she still has a strong **Boston accent**.

Non-Native Speaker Condition (N=229)

Yuqi Chen is the inventor of the Zeg. She likes to create and build new tools, and is a member of an amateur inventor club. **Yuqi** also likes to hike and play the piano. She is originally from **China** but recently moved to Delaware and her neighbors say that she still has a strong **Chinese accent**.

Experiment 2

($N = 457$)

Emma/ Yuqi is sharing her invention, the Zeg, at the amateur inventor club's annual public science fair. This is what Emma/ Yuqi says about the Zeg to people who visit her display:



The Zeg attaches to a table.

Under-informative

OR

The Zeg attaches to a table, cuts dough into noodles, and separates the noodles.

Informative

Experiment 2

($N = 457$)

Learning Choice Ratings

Test Question:

“How likely would you be to visit Emma/ Yuqi’s display at a future science fair?”



Experiment 2

($N = 457$)

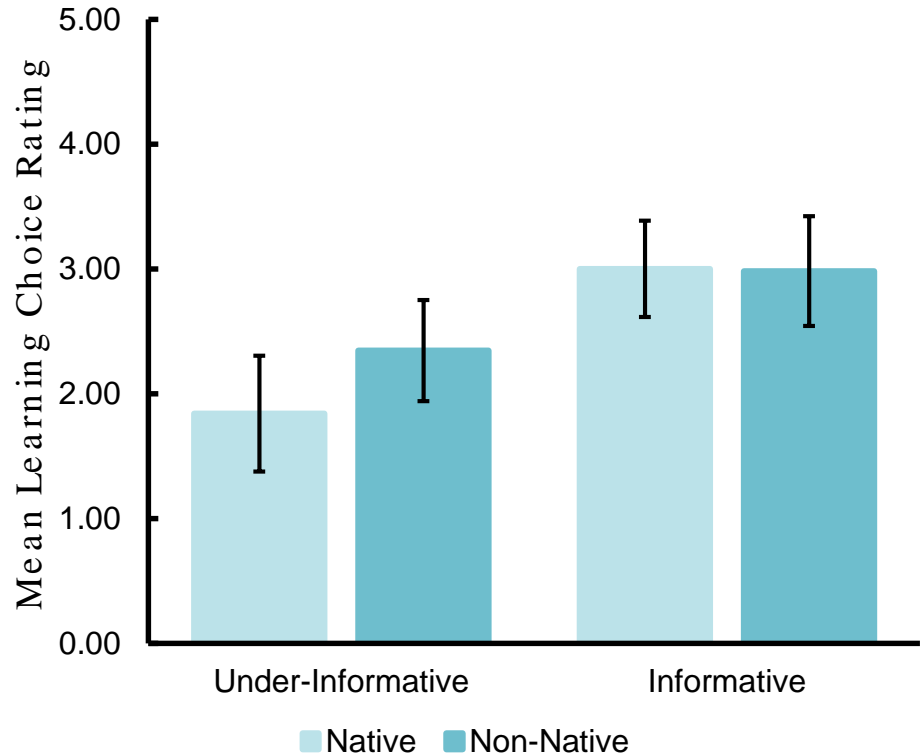
Learning Choice Ratings

Interaction between Speaker Type and Informativeness

($F(1, 453) = 3.96, p = .047$):

Listeners were more willing to learn from an **Under-Informative Non-Native speaker** compared to an **Under-Informative Native speaker** ($p = .040$).

No difference for Informative speakers.



Experiment 3

($N = 400$)

Same design as Experiment 2 but different test question:

Emma/Yuqi is developing a new tool called the Plib.



Test Question:

How would you like to learn about the Plib?



Emma



Sue

Experiment 3

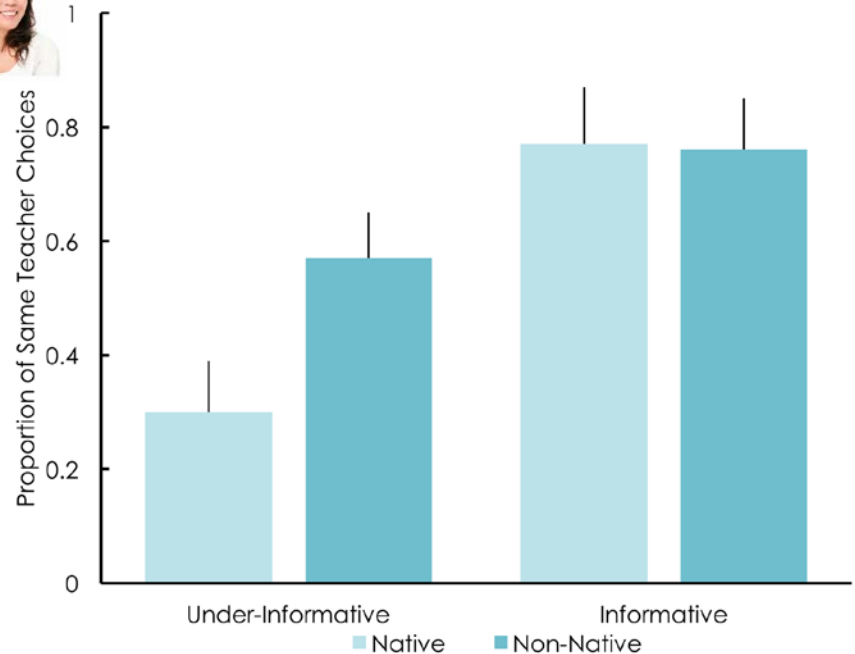
($N = 400$)



Interaction between Speaker Type and Informativeness ($p = .008$):

Under-informative speakers more likely to be given a second chance as teachers if they were non-native speakers ($p = .017$).

No difference for Informative speakers.



Summary



Listeners integrate stable properties of a speaker's identity in pragmatic processing.

- Under-informativeness was more likely to be attributed to inability (as opposed to unwillingness) in non-native as compared to native speakers.



Implications for social learning

- Listeners were more likely to choose to learn (again) from an under-informative non-native speaker than an under-informative native speaker.
- Presumably because listeners were less likely to assume that a non-native speaker was willfully under-informative.

Implications for non-native language processing

- Differences between native and non-native speech processing in the domain of pragmatics.
 - The presence of a foreign accent offers the starting point for inferences about the identity and properties of the speaker.
- Our data go beyond prior research showing negative biases towards non-native speakers (e.g., Lev-Ari & Keysar, 2010, 2012; Kinzler et al., 2007).
 - What begins as a disadvantage (diminished linguistic ability) for non-native speakers can in other contexts be treated as a benefit (cf. also Hanulíková et al., 2012; Gibson et al., 2017; Fairchild & Papafragou, 2018).

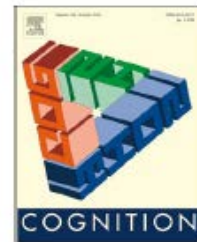
Implications for non-native language processing

- Non-native speech is processed differently from native speech even in the absence of actual accents.
 - Our stimuli were written so non-native accents were imagined, not perceived.
 - These effects can only be due to expectations about non-native speech (Lev-Ari, 2015; Gibson et al., 2017; Fairchild & Papafragou, 2018) and not actual intelligibility costs (Davis et al., 2005).

Implications for pragmatic processing

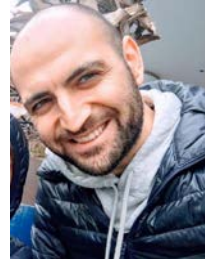
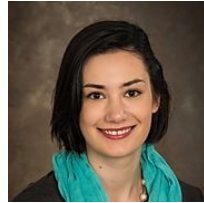
- Our results show that listeners consider both what the speaker is **able** and what the speaker is **willing** to say when they make conversational inferences (e.g., Grice, 1975; Sperber & Wilson, 1995; Geurts, 2011).
 - Argue for studying pragmatic phenomena such as violations of informativeness in context, and not in isolation.
 - Flexibly generalize to a wide range of additional cases (e.g., inability explanations are likely for child native speakers, or in cases of hard-to-name objects).
 - Suggest that linguistic detail can carry information about the speaker that can have further social costs and benefits.
 - Connect pragmatics to social meaning and the interpretation of rational action.

Fairchild, S., Mathis, A., & Papafragou, A. in press, Pragmatics and social meaning: Understanding under-informativeness in native and non-native speakers. *Cognition*.





LANGUAGE & COGNITION LAB



Alyssa Kampa University of Delaware
University of Delaware

Yue Ji

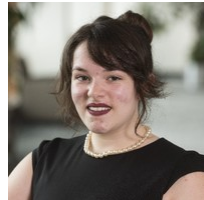
Sarah Fairchild
University of Delaware/
Bresslergroup

Anna Papafragou
University of
Pennsylvania

Ariel Mathis
University of
Pennsylvania

Andrea Beltrama
University of
Pennsylvania

Ugurcan Vurgun
University of
Pennsylvania



Gabrielle Taubenfield
University of Delaware

Myrto Grigoroglou
University of Delaware/
University of Toronto

Dionysia Saratsli
University of Delaware

Katie Richards
University of Delaware

Martin Ip
University of
Pennsylvania

Ebony Goldman
University of
Pennsylvania

Tess Christensen
University of
Pennsylvania



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Thank you!

