

Can we hear physical and social space together through prosody?

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https://www.youtube.com/watch?v=nc88_n_nGH0

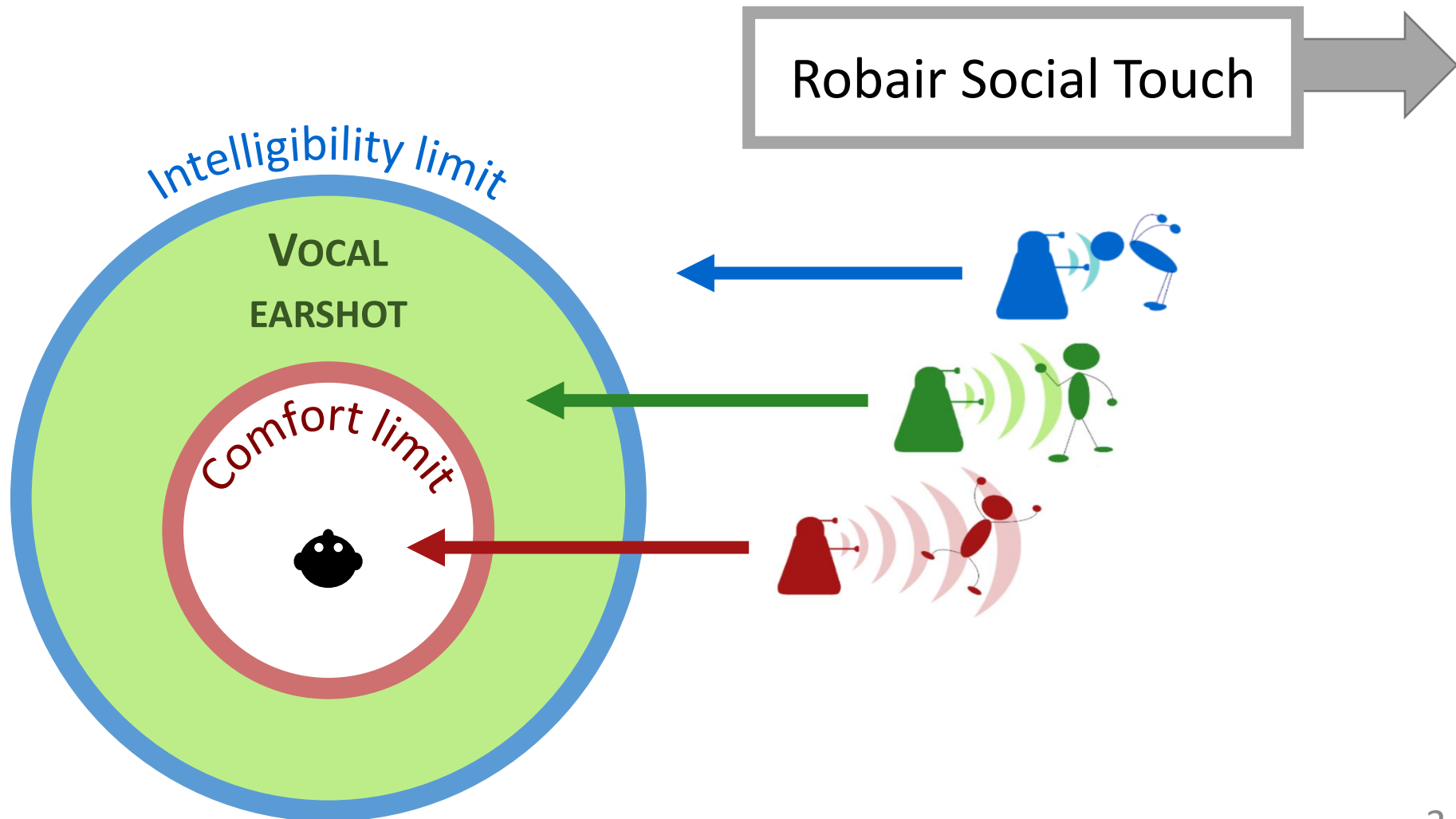


Context: for a social immersion in telepresence robotics

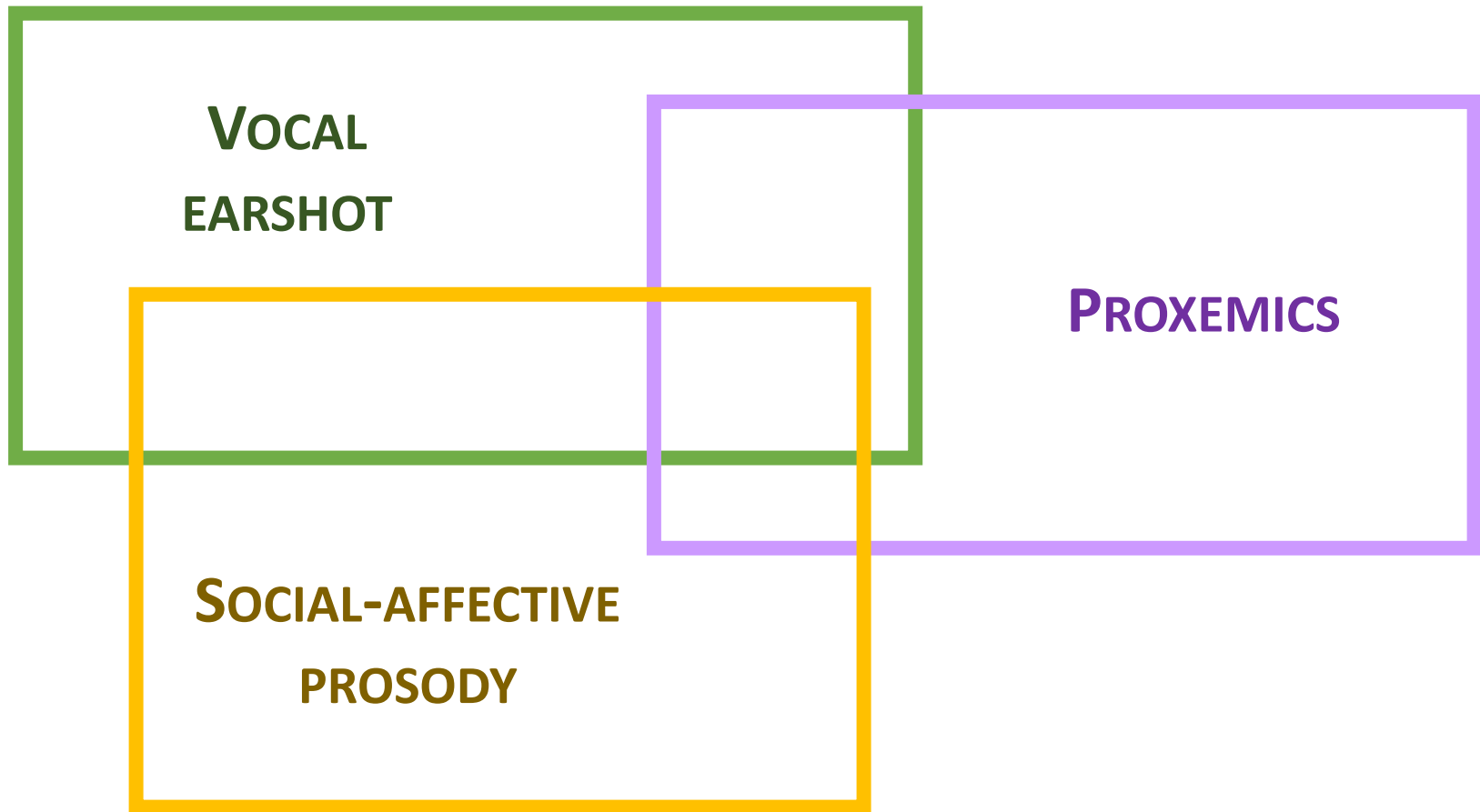
Robair Social Touch



Context: for a social immersion in telepresence robotics



Observation: vocal earshot linked with proxemics and social-affects



Question: Can we hear physical and social space together through prosody?

Ex : Kind voice ~ closer distance ?

Aggressive voice ~ further distance ?

Vocal effort ~ distance perception

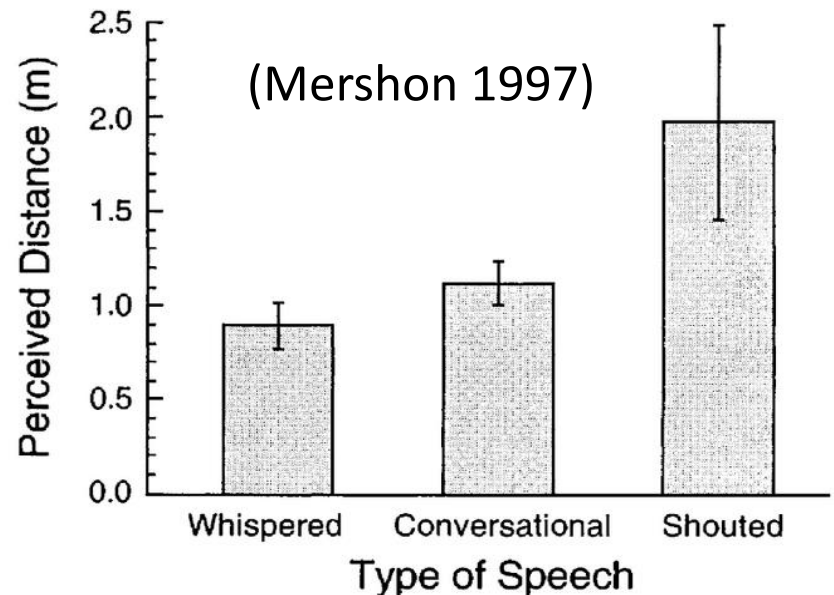
Gardner 1969

Mershon 1997

Brungart & Scott 2001

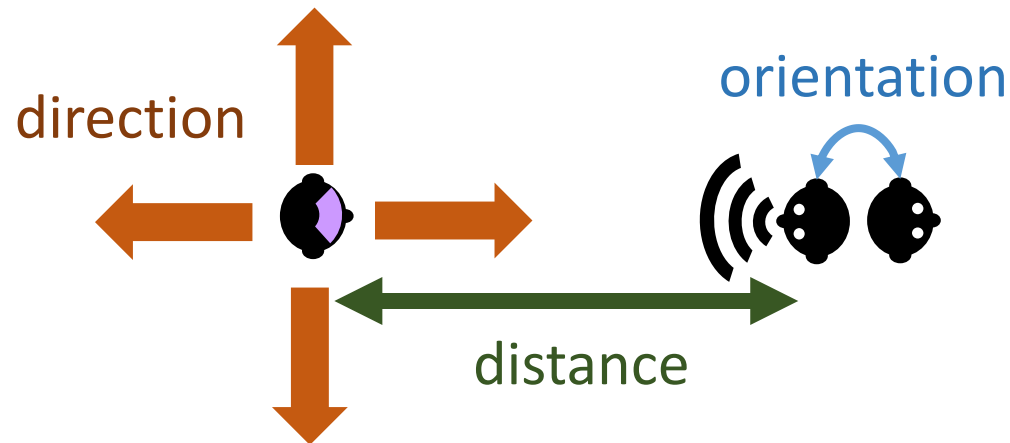
Philbeck & Mershon 2002

Eriksson & Traunmüller 2002



Experimental protocol: Are localization skills affected by prosodic variations?

Perception of 3 position parameters:



While varying 2 production parameters:

- social-affective prosody
- voice intensity

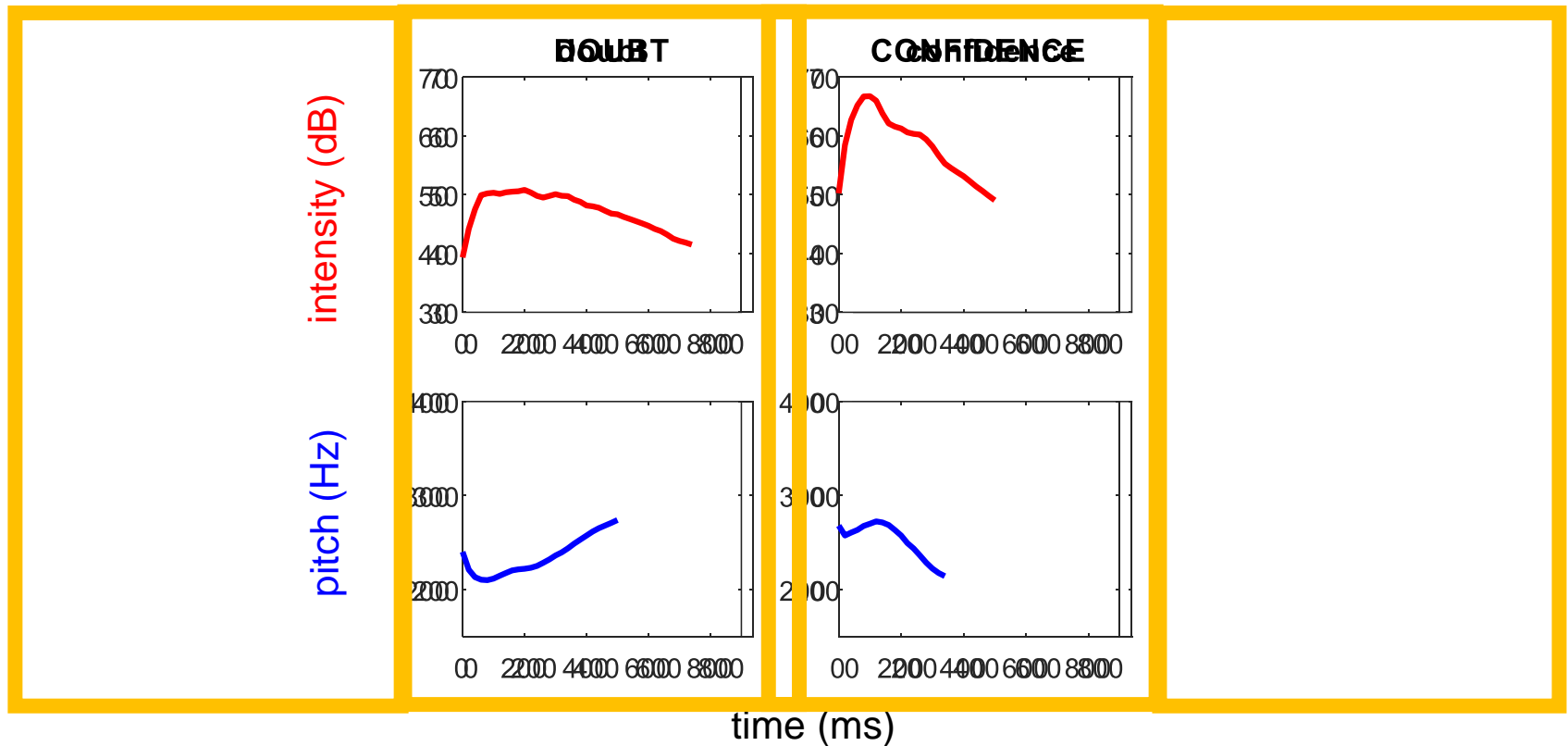
Prosodic patterns

(Aubergé)

gentle voice
⇒ breathy


vs


strong voice
⇒ tense



3 procedures:



Version 1 

Version 2 

Entre les deux mots, la personne qui parle :

n'a pas bougé (1)

s'est rapprochée (2)

s'est éloignée (3)

1) In situ test with pretext task

~ 1h30 for 64 localizations

10 subjects

2) In situ test without pretext task

~ 30 min for 64 localizations

+ voice perception


8 subjects


3) Online test with recorded voice

~ 15 min

3 procedures:



Version 1 

Version 2 

Entre les deux mots, la personne qui parle :

n'a pas bougé (1)


s'est rapprochée (2)


s'est éloignée (3)

- 1) In situ test with pretext task
~ 1h30 for 64 localizations
10 subjects
- 2) **In situ test without pretext task**
~ 30 min for 64 localizations
+ voice perception
8 subjects
- 3) Online test with recorded voice
~ 15 min

3 procedures:



Version 1 

Version 2 

Entre les deux mots, la personne qui parle :

n'a pas bougé (1)

s'est rapprochée (2)

s'est éloignée (3)

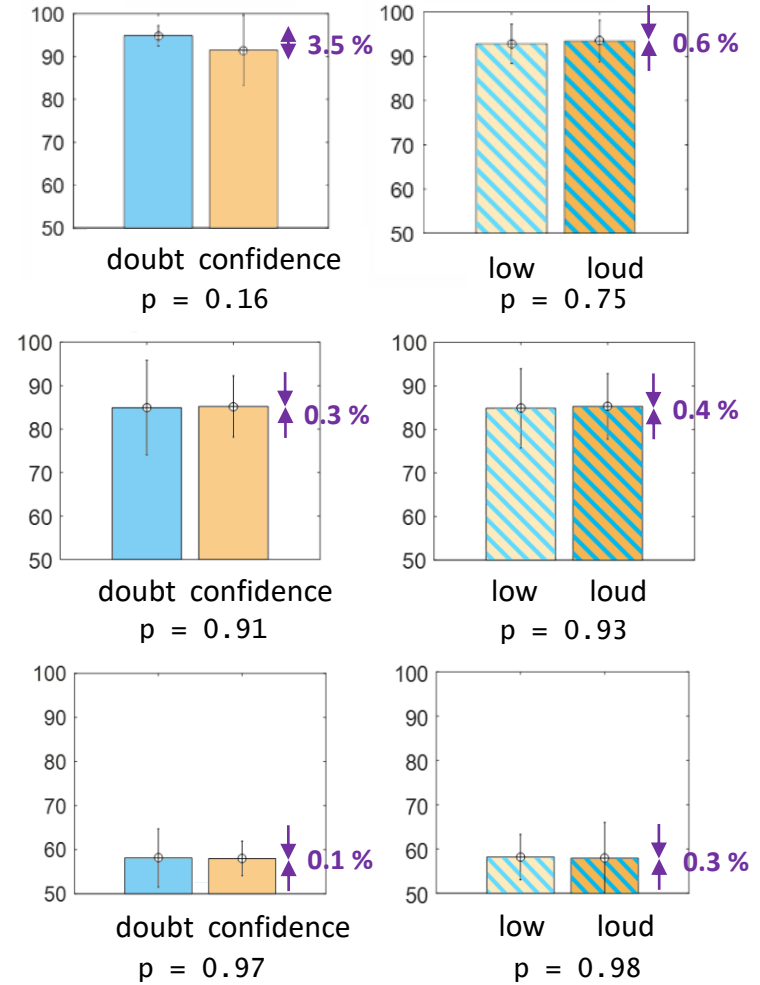
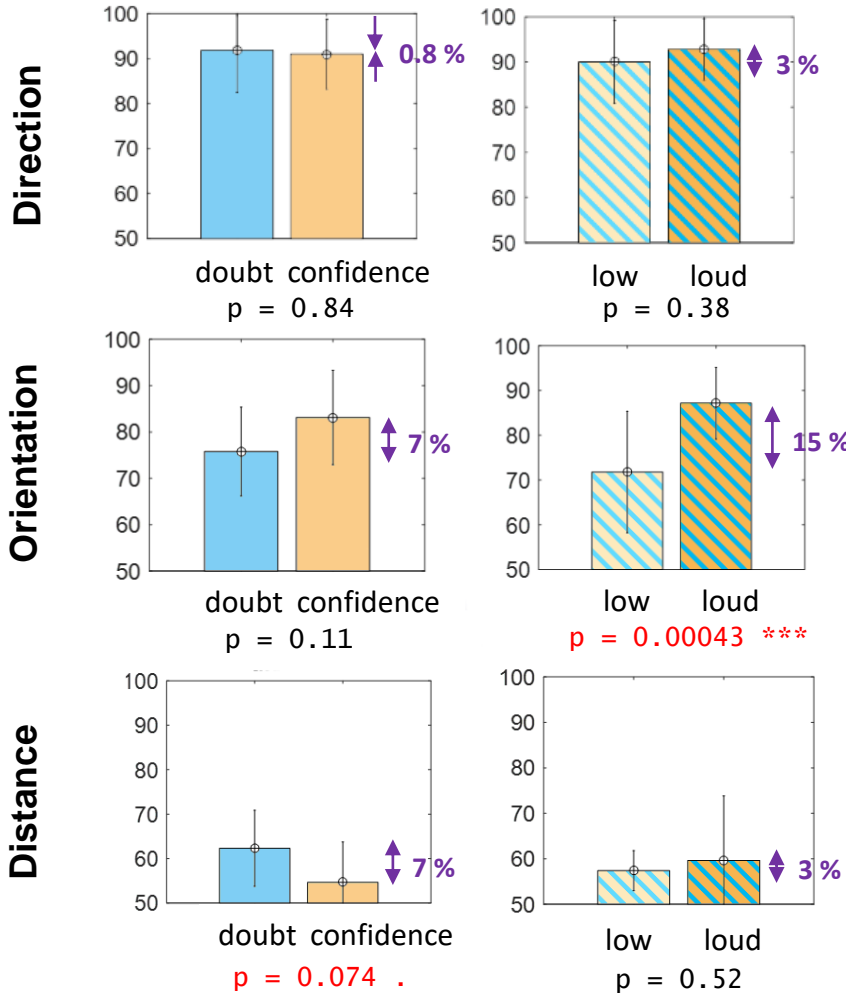
- 1) In situ test with pretext task
~ 1h30 for 64 localizations
10 subjects
- 2) In situ test without pretext task
~ 30 min for 64 localizations
+ voice perception
8 subjects
- 3) **Online test with recorded voice**
~ 15 min

Results

Experiment 1: with pretext task

Experiment 2: without pretext task

Recognition scores (%)



Interpretation

Some tendencies in experiment 1

Nothing in experiment 2

=> Observer's paradox ?

Results of experiment 1

⇒ mostly an effect of **voice intensity** on **orientation**
perception

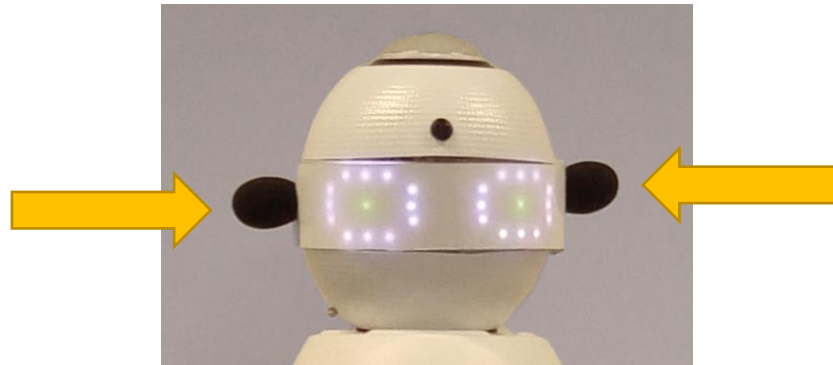
⇒ slight effect of **prosodic patterns** on **distance**
perception

Conclusion & Perspectives

Preliminary results:
prosody has an influence on space perception

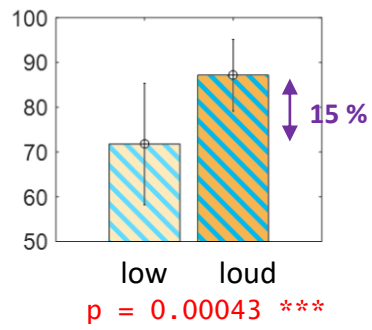
but strong limitations

To be continued...



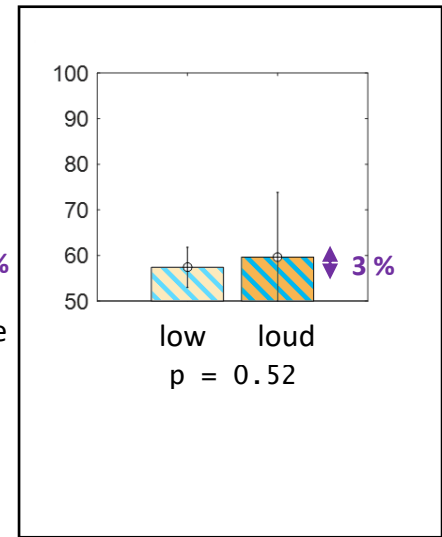
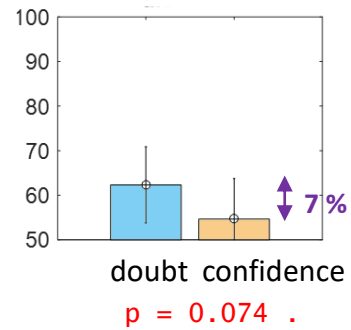


doubt => back



low => back

close <= middle => far

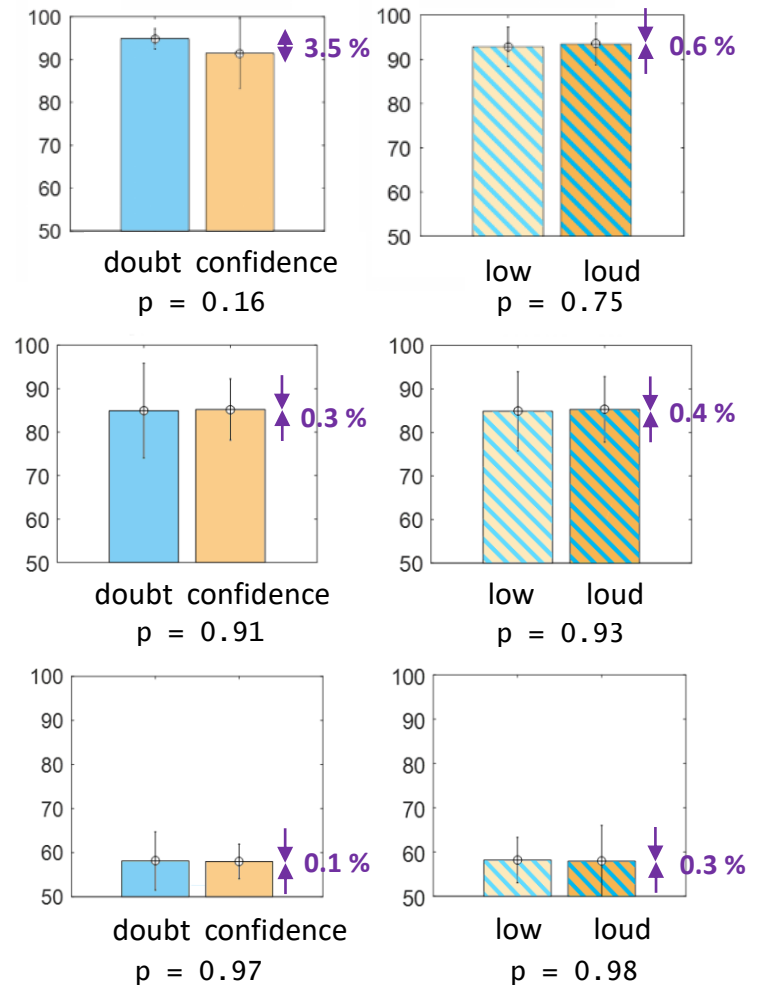
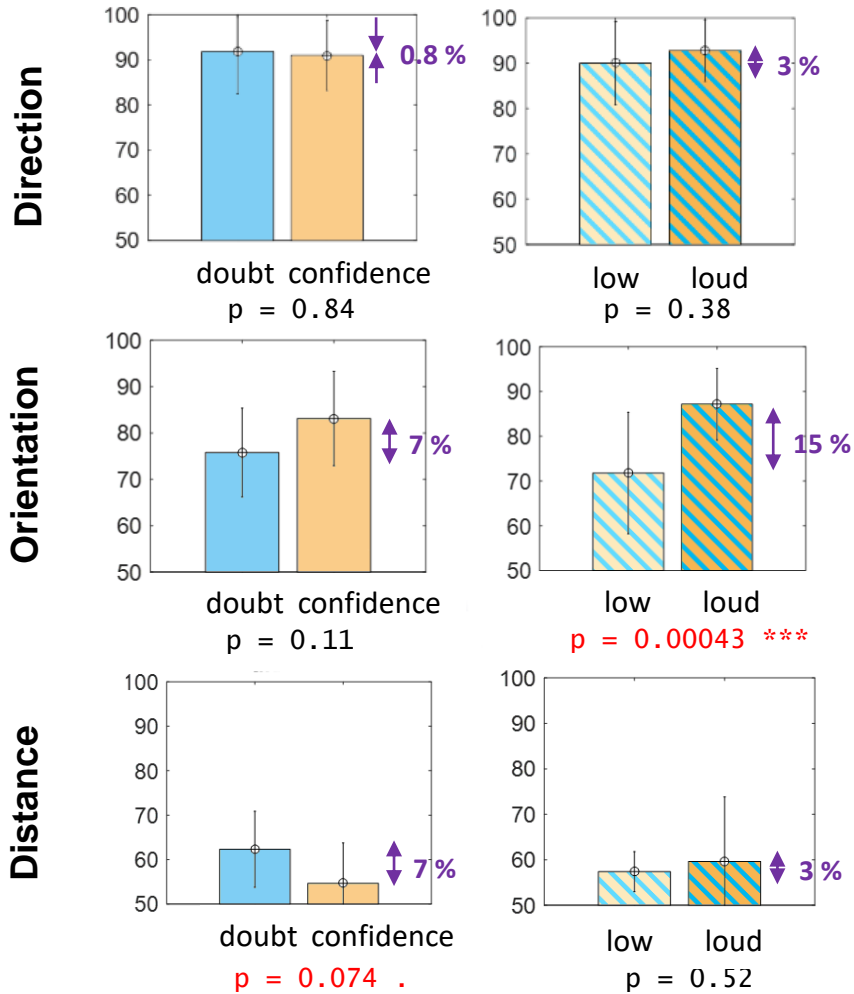


First results

Experiment 1: with pretext task

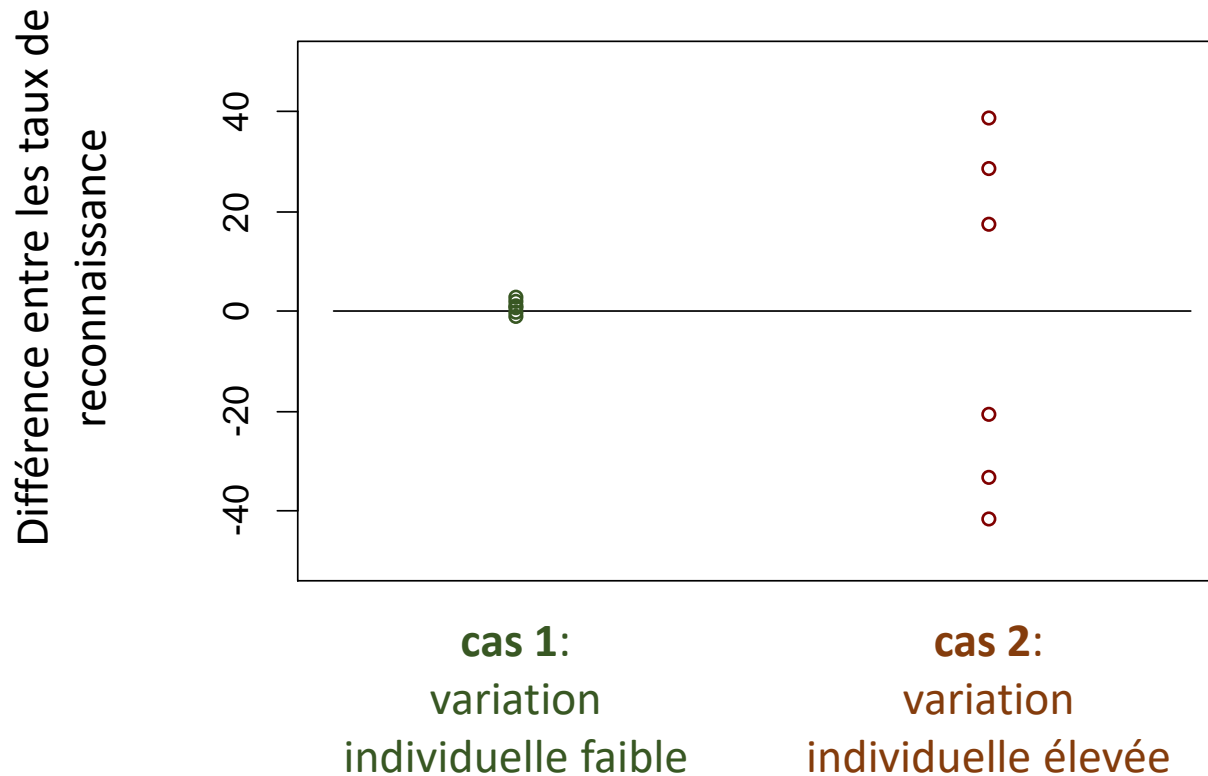
Experiment 2: without pretext task

Recognition rates (%)



Interpretation

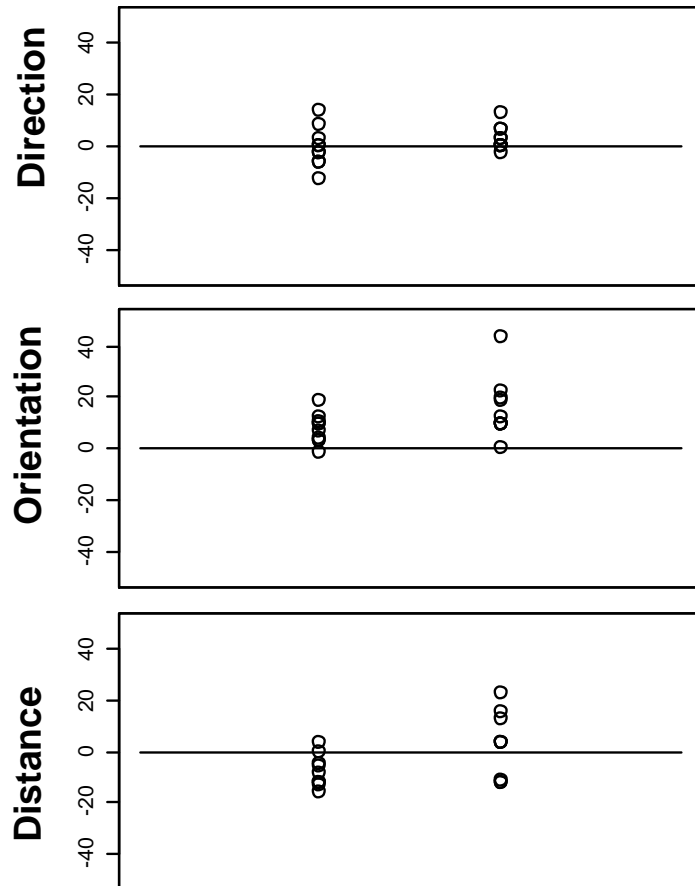
No variations in experiment 2 ?



Interpretation

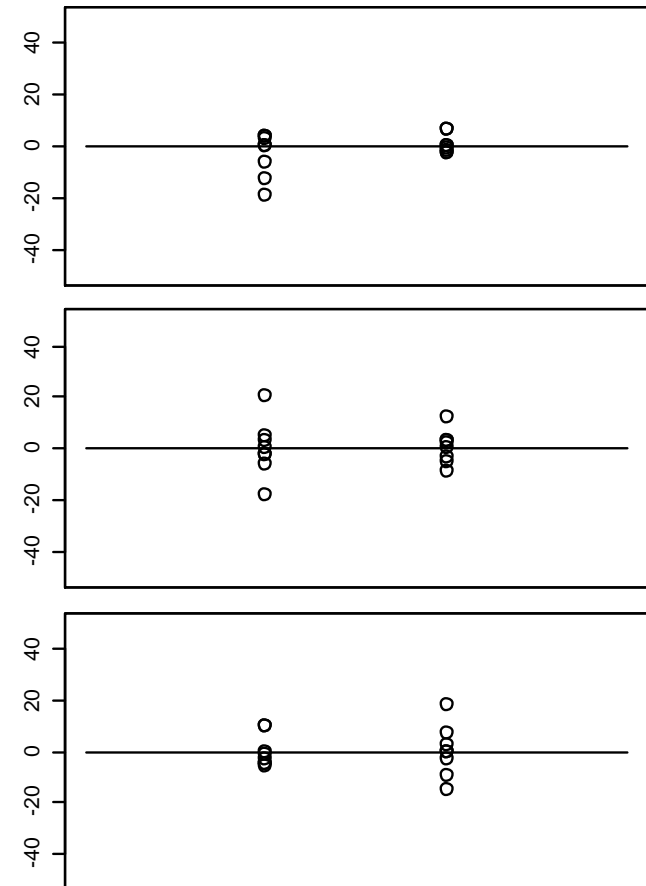
Différence entre les taux (%)

**Expérience 1:
avec tâche prétexte**



Socio-affect **Intensité**
(conf. => doute) (fort => faible)

**Expérience 2:
sans tâche prétexte**



Socio-affect **Intensité**
(conf. => doute) (fort => faible)