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## Adult non-parents can recognize babies from their pain cries

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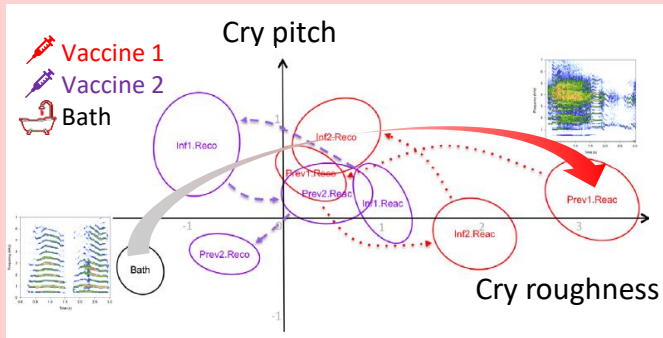
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## Rationale: information in baby's cries

- Acoustic roughness is specific to pain cries



- Parents can distinguish between mild-discomfort and pain cries (Koutseff et al., 2017, *Bioacoustics*)
- Individual recognition from mild-discomfort (bath) cries (Gustafsson et al., 2013, *Nat. Commun.*; Bouchet et al., 2020, *Proc. Biol. Sci.*)

## Is it my baby?

- ✓ Mothers
- ✓ Fathers
- ✓ Non-parents

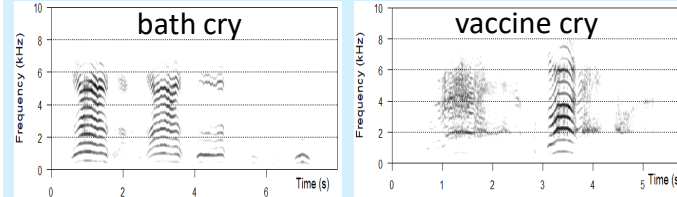


## Is this ability transferred to pain (vaccine) cries?



## Methods

- 22 babies recorded during bath and vaccine



Acoustic similarity index per baby: median of spectrogram correlation bath/vaccine

- Playback experiment:** 42 non-parent adult listeners were assigned to one baby

## Training phase

- J1: 5 bath cries of the "assigned" baby
- J2: 5 other bath cries of the "assigned" baby



## Test phase

- J2: 20 pain cries of the "assigned" baby (4 cries) and 4 unknown babies (4x4cries)



Which one is "my" baby crying from pain?

- Multiple logistic regression

## Results

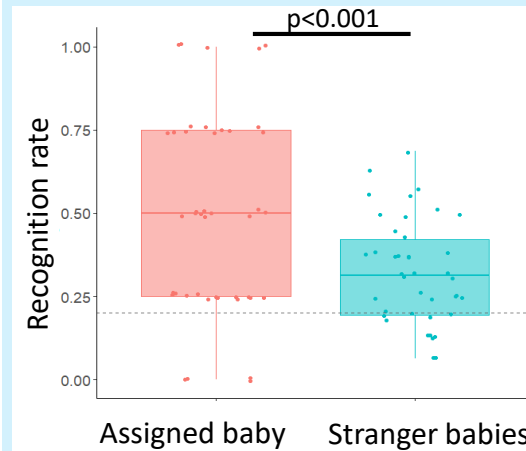


Fig.1. Assigned babies were **successfully identified** more than stranger babies. No effects of listener's sex nor age were found.

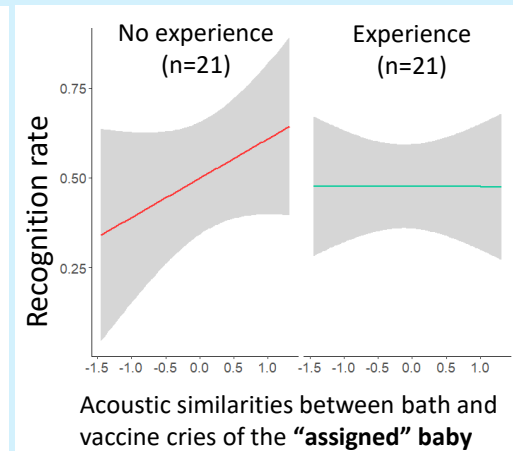


Fig.2. Non-parents with no experience at caring for babies seemed to be more sensitive to acoustic similarities

## Conclusion

After listening few non-painful cries, **adults are able to recognize a specific baby** from its pain cries. Thus, there is an **individual vocal signature** present in the baby's discomfort and pain cries. Human without prior experience are able to learn quickly these important signals suggesting that it requires **cognitive and perceptual abilities common to all adults** rather than specific to mothers or fathers.

These findings will help to **understand how distress is encoded in babies' cries** to better assess their pain in pediatric care services.