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# Do spices have the same odor on the other side of the world? Effect of culture on spice odor perception

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DO SPICES HAVE THE SAME ODOR ON THE OTHER SIDE OF WORLD?  
EFFECT OF CULTURE ON SPICE ODOR PERCEPTION

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Introduction

**Culture** is known to affect people's **olfaction ability** as sensitivity, discrimination, recognition, identification, as well as odor representations. **Familiarity** has been suggested as a factor underlying this effect. France and Thailand are very different in the nature and the type of **spices** they use for cooking. Thai people use a lot of curry powders whereas French do not. So curry is a good stimulus for exploring the influence of familiarity on odor perception.

? Role of familiarity linked to cultural food habits on the individuals' ability to identify (**verbal task**) or recognize (**perceptual task**) spice odors presented **alone** or **in mixtures**?

Hypotheses:

1. Familiarity with spices would influence more the verbal than the perceptual process.
2. This effect is modulated by participant country of origin.

General procedure

Assessors

- > 240 participants
- > 50% Thai / 50% French

Products

- > 6 spices: alone or in mixtures
- 6 single spices
- 3 binary mixtures
- 4 ternary mixtures

Method

- > 2 different tasks:
  - **Identification** task (verbal task)
  - **Perceptual** task (immediate recognition task)
- > Signal detection theory:
  - Hit, False Alarm, Correct Rejection, Miss
  - Correct Score (Hits + CR)

More familiar to French (FR)



More familiar to Thai (TH)

Results

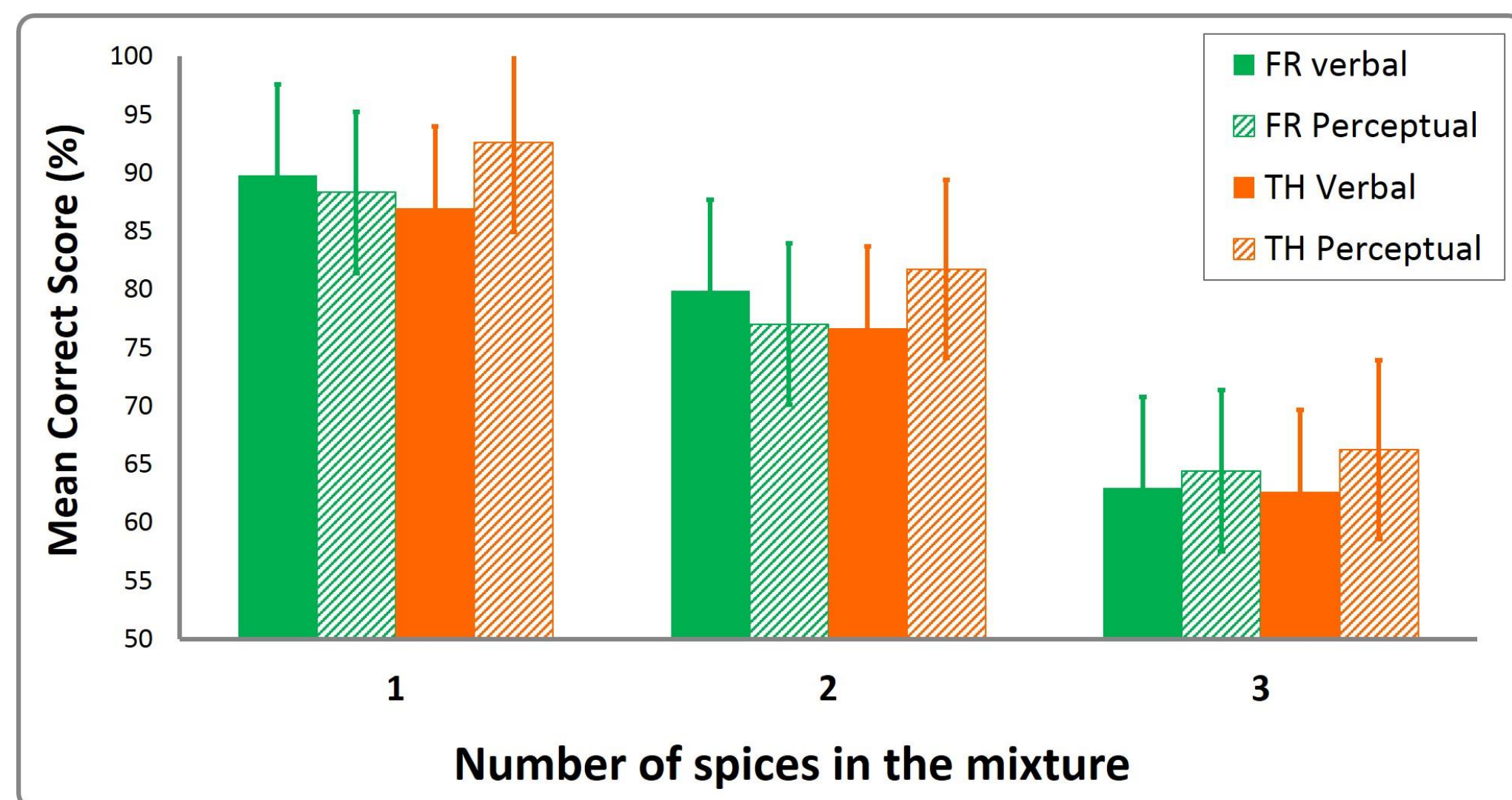


Fig. 1. Mean Correct Score for each country (France/Thailand) and each type of task (perceptual/verbal) presented for single spices, binary and ternary mixtures.

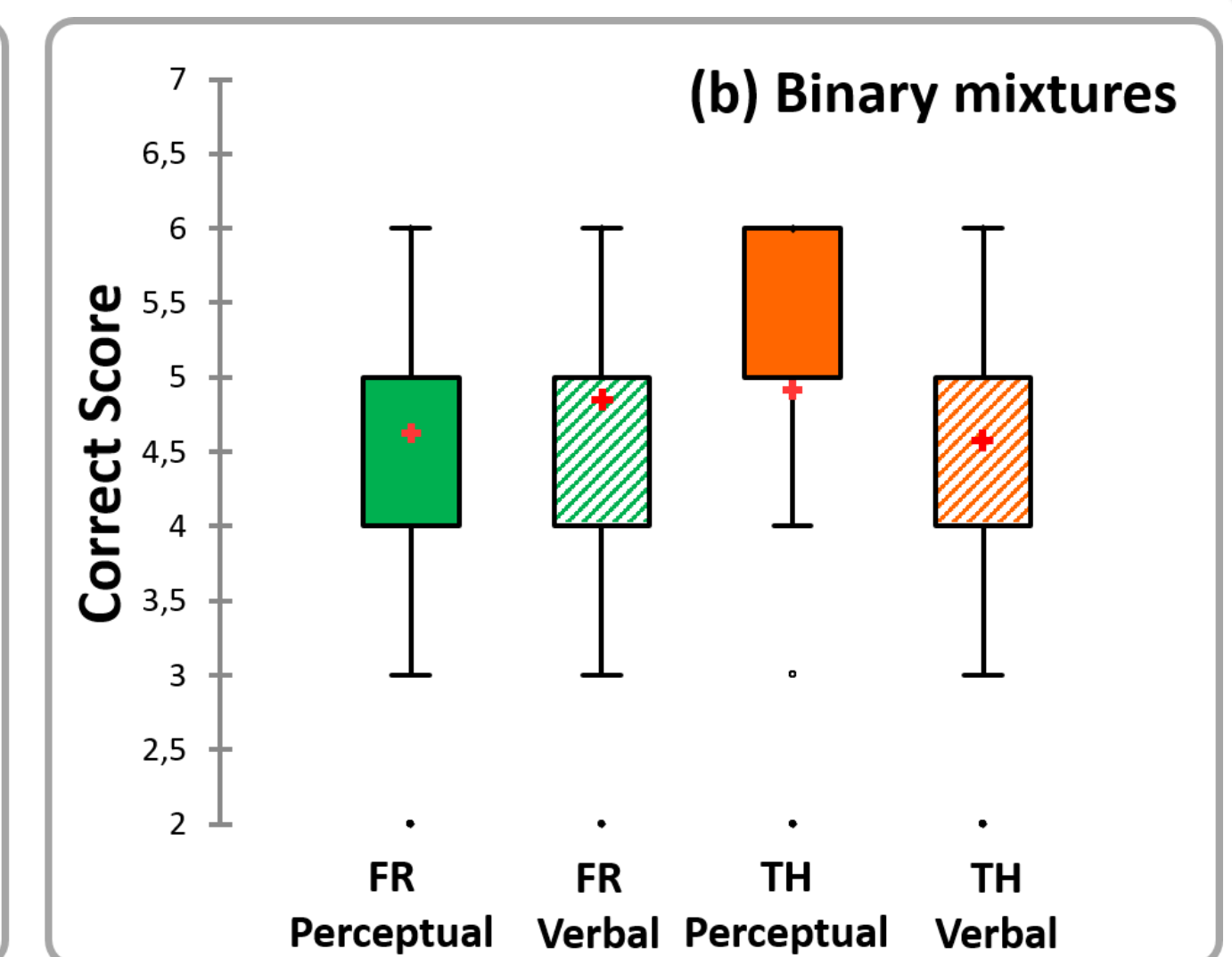
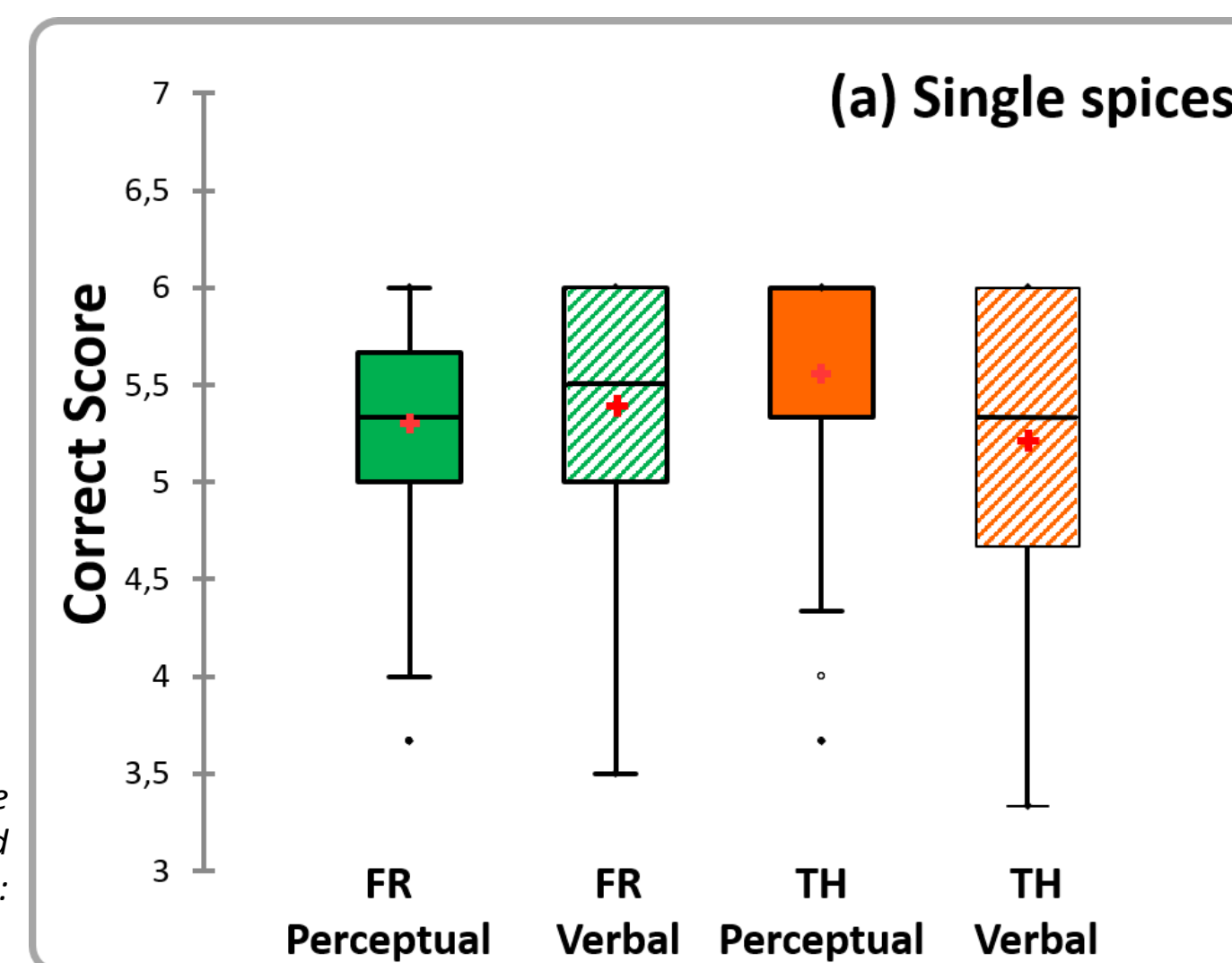


Fig. 2. Box plots of correct score distributions calculated for French (FR) and Thai (TH) participants for the tasks for: (a) Single spices and (b) Binary mixtures.

- > **Globally**, whatever the country:
  - Results of both immediate recognition and identification tasks **decrease** with the number of spices in the mixture (in agreement with the literature)
  - Very low results for the ternary mixtures

- > For **TH**: **Perceptual** > **Verbal** for single spices & binary mixtures
  - Recognized the spices but did not know their names
  - Could be explained by demographic characteristics
- > For **FR**: **no difference**

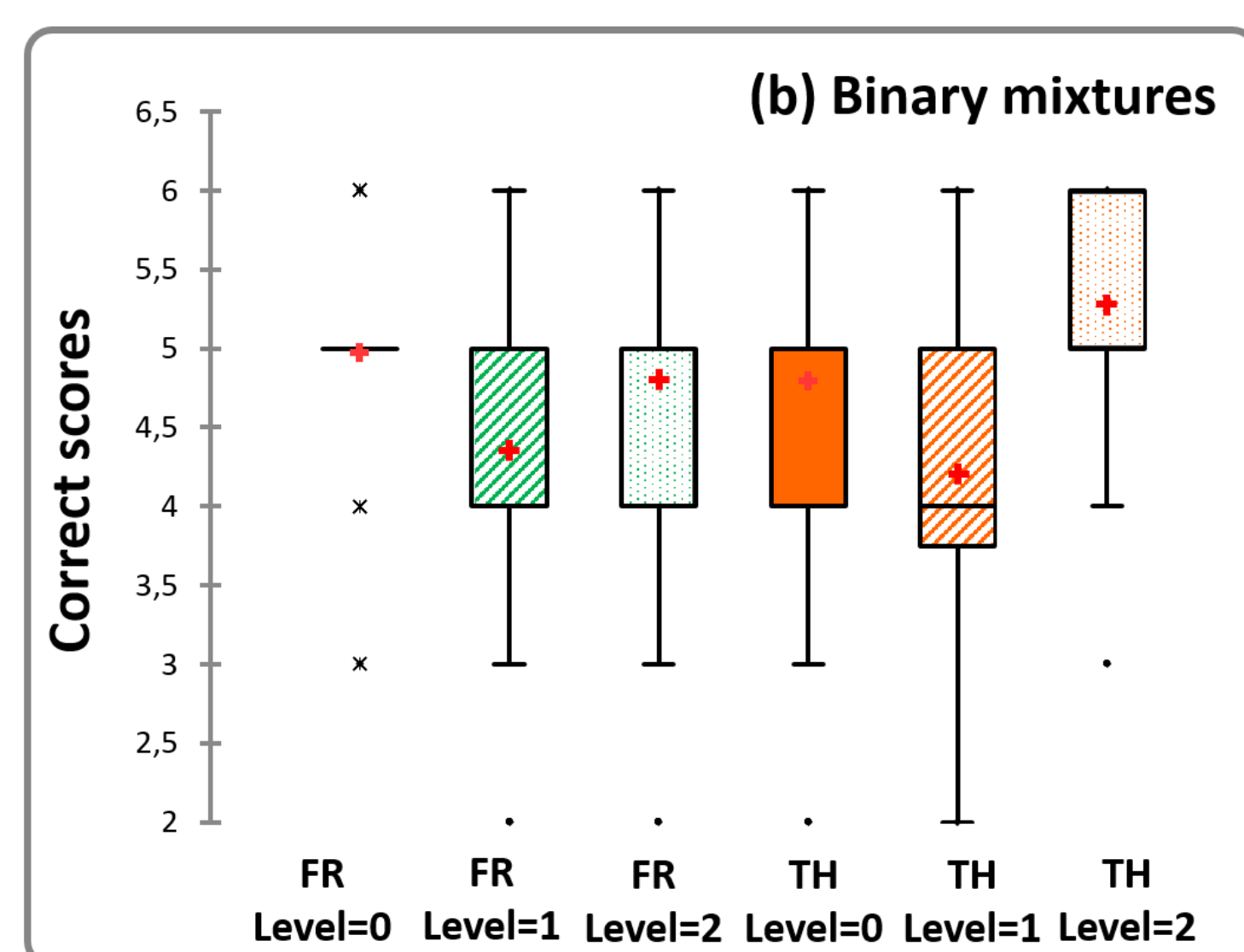
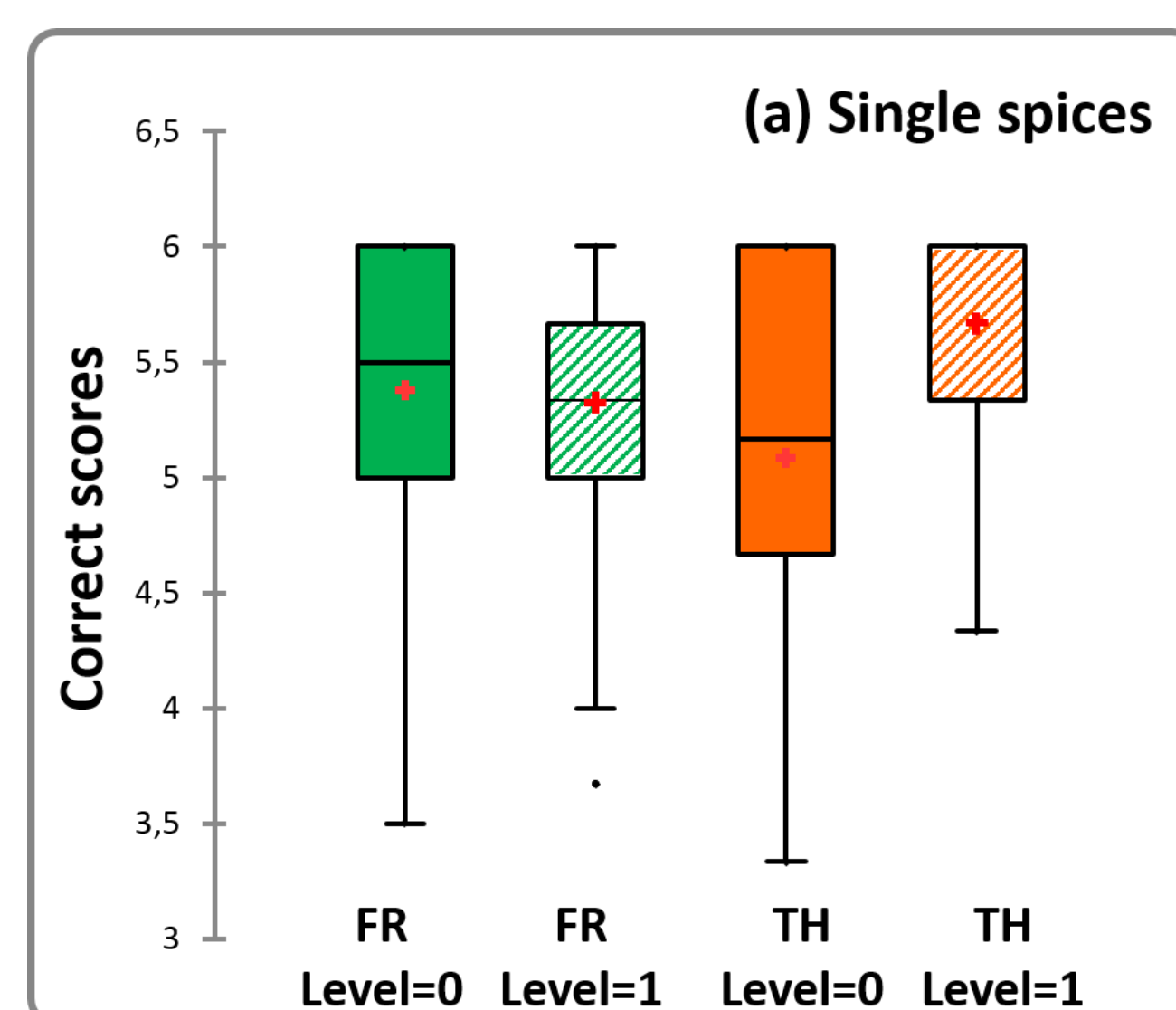


Fig. 3. Box plots of correct score distributions calculated for French (FR) and Thai (TH) participants for: (a) Single spices for the unfamiliar (Level=0) and the familiar spices (Level=1), and for (b) Binary mixtures for the three levels of familiarity (Level=0, Level=1 and Level=2).

- > Globally, Thai did not perform better than French
- > Significant effect of **familiarity**: the more participants are familiar with spices, the more there were able to recognize/identify them (alone or in mixtures).
- > **Interaction** between familiarity level and country:
  - For *single spices*: Familiar spices > Non-familiar spices for TH  
No difference for FR
  - For *binary mixtures*: Non-familiar > Familiar Level 1 > Familiar Level 2 for TH and FR

Conclusion

- > Global effect of the **familiarity level**, more important for Thai than for French participants.
- > Thai participants are better at recognizing than identifying spices alone or in mixtures. No difference between the two processes for French participants.
  - Strengthen previous literature on the impact of familiarity of odor perception
  - This effect depends on several factors like the type of task or personal characteristics (e.g. age, cooking habits).