

BEWARE THE SNAKE

FEAR OF SNAKES IN THE CRADLE OF HUMAN KIND

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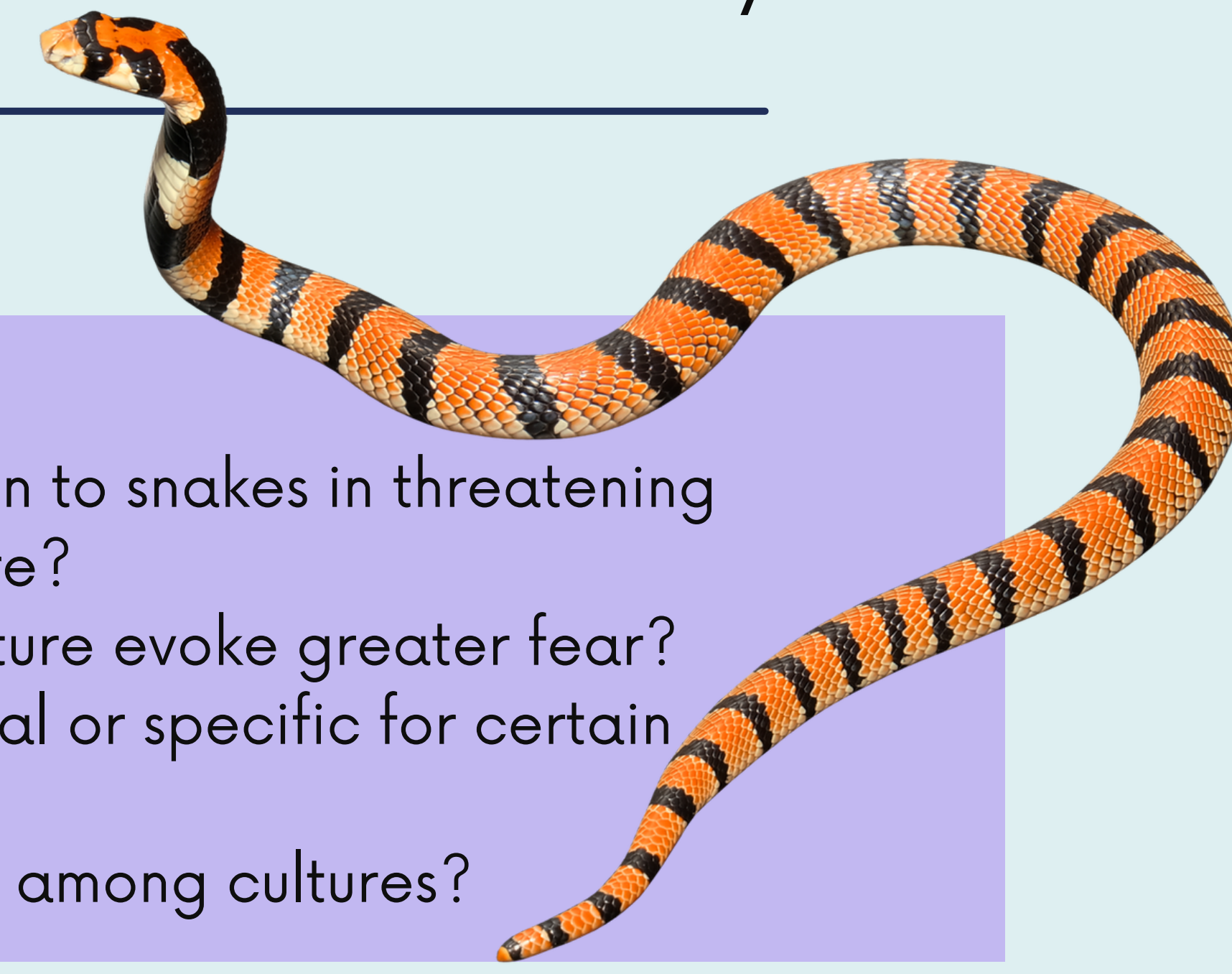
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BACKGROUND

- Many animal species signal their readiness to fight to the opponent
- Such signalling is called a **threat display**
- Among snakes, the most famous examples are cobras and vipers
- Human visual system has evolved to successfully detect inconspicuous snakes (Snake detection theory)
- Whether humans are also sensitive to snake threat display remains unclear

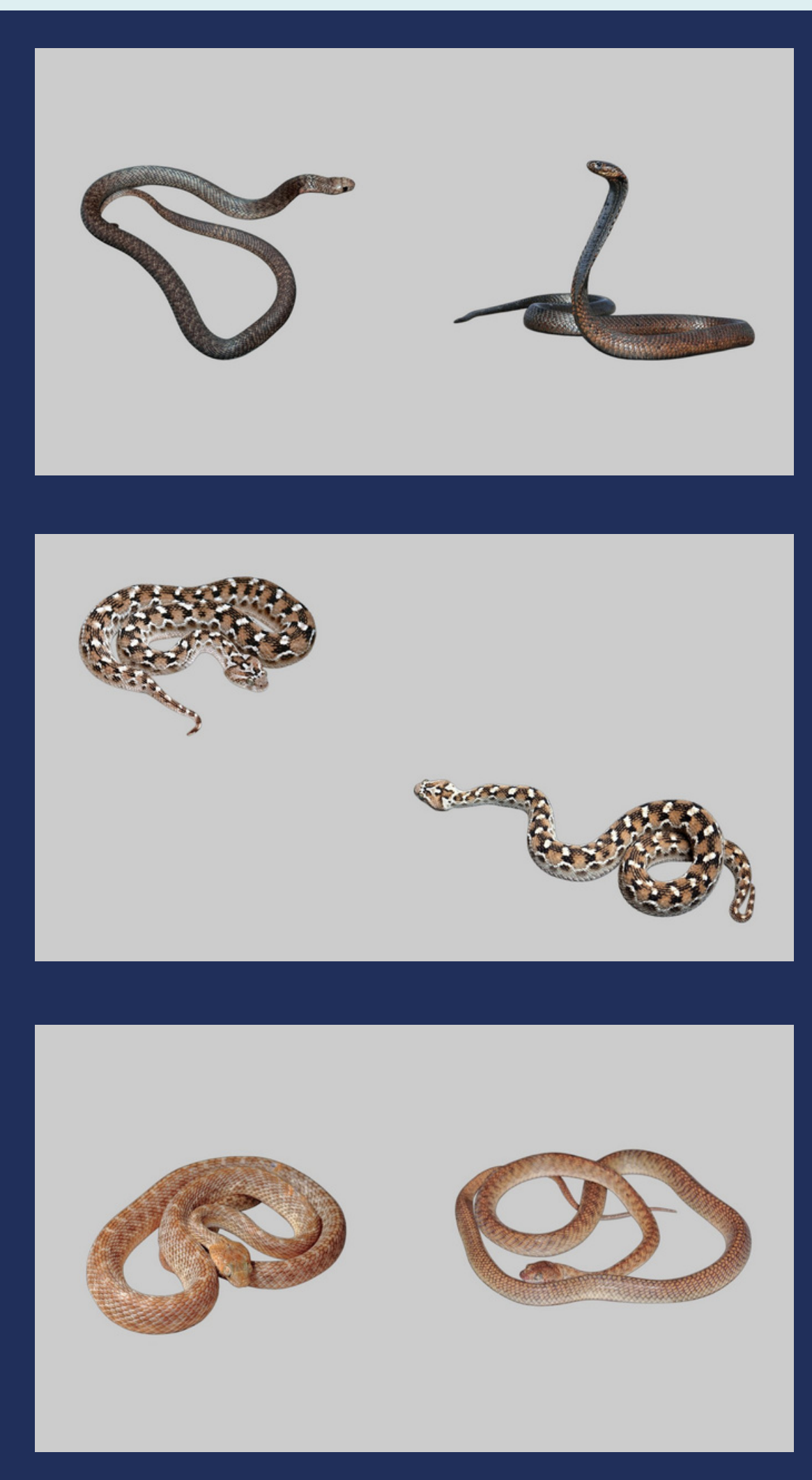
AIMS

1. Do people pay more attention to snakes in threatening posture than in relaxed posture?
2. Do snakes in threatening posture evoke greater fear?
3. Are these phenomena universal or specific for certain snake morphotypes?
4. Are these phenomena shared among cultures?



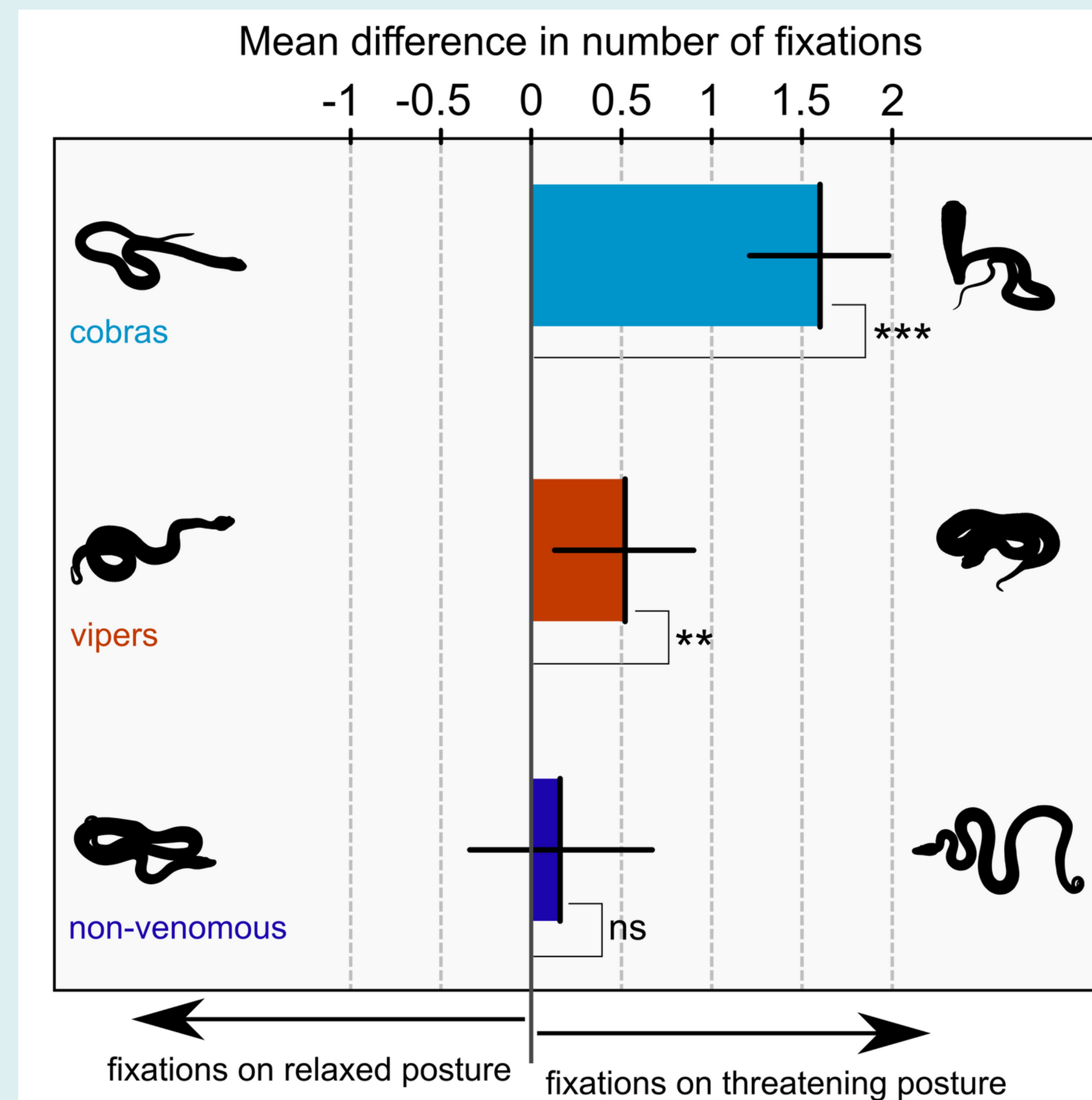
SPONTANEOUS ATTENTIONAL BIAS: AN EYE-TRACKING EXPERIMENT

STIMULI EXAMPLE



METHOD

- 20 snake species of three morphotypes (8 cobras, 8 vipers, 4 non-venomous snakes)
- Each experimental slide consisted of the species in threatening and in relaxed posture
- Slides presented for 5 seconds
- 71 Somali and 71 Czech participants freely watched the slide presentation
- Comparison of number of fixations on the snake in either posture
- The effect of participants' gender, age, and nationality, and snake morphotype was tested using linear mixed-effects models



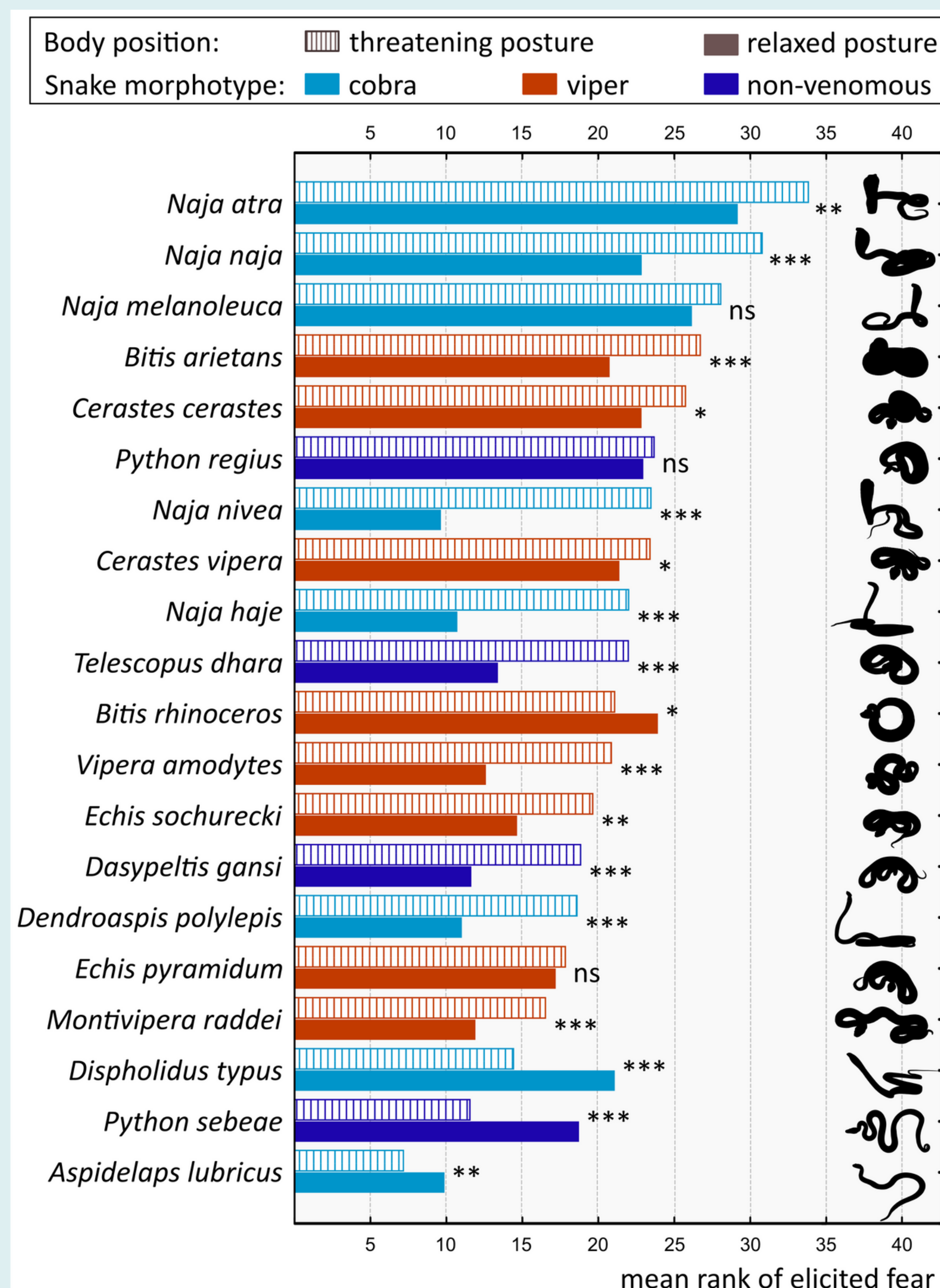
RESULT

- Snakes in threatening posture generally attracted more attention than snakes in relaxed posture ($F=33.29$, $p < 0.0001$)
- Snake morphotype had significant effect ($F=17.18$, $p < 0.0001$)
- **No effect of participants' gender, age or nationality**
- **Figure 1:** Means and confidence intervals of the difference of number of fixations for each snake morphotype.

LEVEL OF ELICITED FEAR: RANKING OF IMAGES

METHOD

- The same 40 snake photos printed singly on paper cards
- Another 124 Somali and another 124 Czech participants ranked the images from the most fear-eliciting to the least fear-eliciting
- Comparison of the mean rank of the same species in either posture
- Friedman-Nemenyi test
- Only data of Somali participants were so far analysed



RESULT

- In 13 species, snakes in threatening posture were ranked significantly higher according to elicited fear. In 4 species, the opposite was true, and in 3 species, there was no difference
- **Figure 2:** Comparison of the mean rank of the same species in threatening and relaxed posture. Higher rank signals higher fear.

CONCLUSIONS

1. Snakes in threatening posture generally attract more attention than snakes in relaxed posture.
2. They also evoke greater fear.
3. The effects are the most prominent in cobras and the least prominent in non-venomous snakes.
4. The same attentional bias can be found in both Somali and Czech people.



ns ... $p > 0.05$
* ... $0.005 < p < 0.05$
** ... $0.0005 < p < 0.005$
*** ... $p < 0.0005$