



# The influence of Androstenedione on aggression

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## Introduction

- Androstadienone (AND), a putative chemosignal mainly found in male, has previously been shown to communicate opposite sex information and its effects on social behaviour are gender-specific.
- AND serves as a chemosignaling threat cue to men, can trigger avoidance behavior during competitive interaction with another man<sup>1</sup>, which may block recipient's aggressiveness. Subliminally perceiving AND enhance intrasexual competition strategies in women<sup>2</sup>, thus may increase indirect aggression.
- Depending on inducement of aggressive behavior, aggression can be classified into proactive aggression and reactive aggression.
- This study investigated the effects of AND on proactive aggression and reactive aggression in two sex groups.

## Methods

- Heterosexual participants were exposed to either AND (500 μM in 1%v/v clove oil propylene glycol solution) or a carrier solution in a randomised double blind, placebo controlled, between-participant design.
- We excluded 26 participants who choose the same option across the task or violate experimental instructions in the interference reaction time task, and excluded 30 participants in the Taylor Aggression Paradigm. Then the data of 226 participants ( $N_{AND,male}=59$ ,  $N_{AND,female}=54$ ) in the interference reaction time task and 222 ( $N_{AND,male}=59$ ,  $N_{AND,female}=54$ ) participants in the Taylor Aggression Paradigm entered the follow-up analysis.
- The participants completed two tasks: the interference reaction time task and the Taylor Aggression Paradigm, decision making tasks commonly used to measure proactive aggression and reactive aggression respectively.

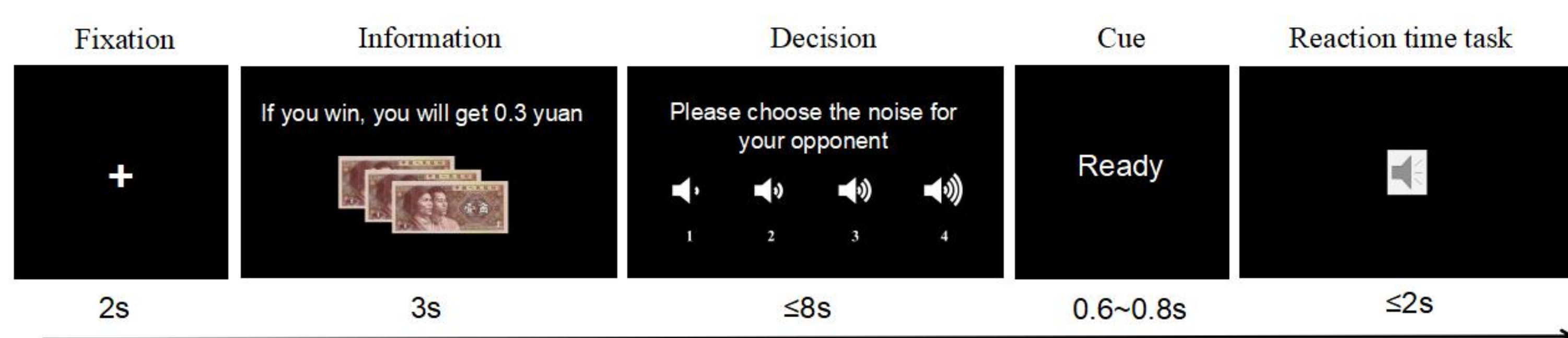


Fig.1. Example of a trial in the interference reaction time task. The task was divided into two blocks. Each block was composed of 10 trials involving high reward (¥1-5, an increase of ¥1) and low reward (¥0.1-0.5, an increase of ¥0.1). Before the game, participants chose one of the four levels of noise (80/90/100/110db) for the opponent.

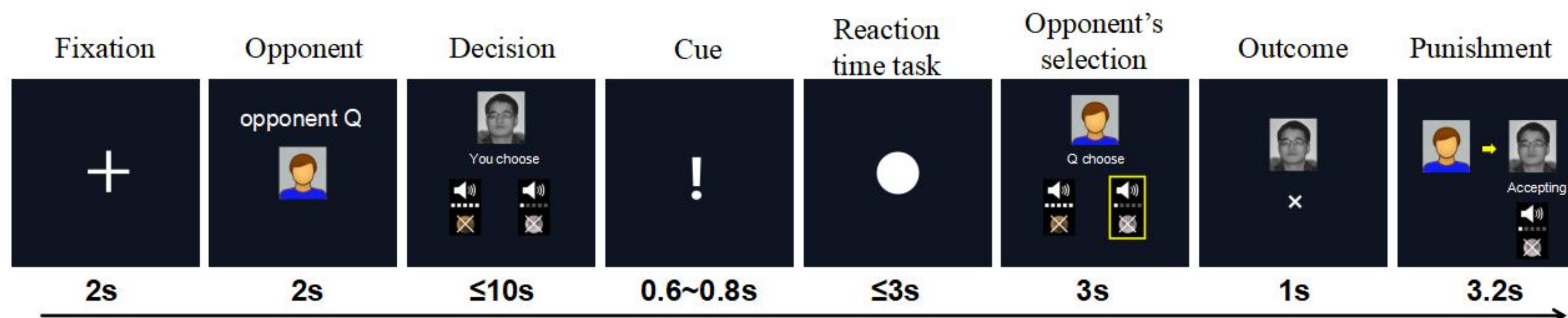


Fig.2. Example of a trial in the Taylor Aggression Paradigm. The task was divided into two blocks. Each block was composed of 10 rounds against a low-provoking opponent (20% high aggression) and high-provoking opponent (80% high aggression). When lost the game, participants received a high (75db, -¥0.5)/low punishment (15db, -¥0.1) from his opponent.

## Results

- 2 (olfactory stimuli: AND, the carrier solution) × 2 (sex: female, male) × 2 (reward: high, low) mixed ANOVA
- Androstadienone decreases proactive aggression in men, but the effect on female is not significant.

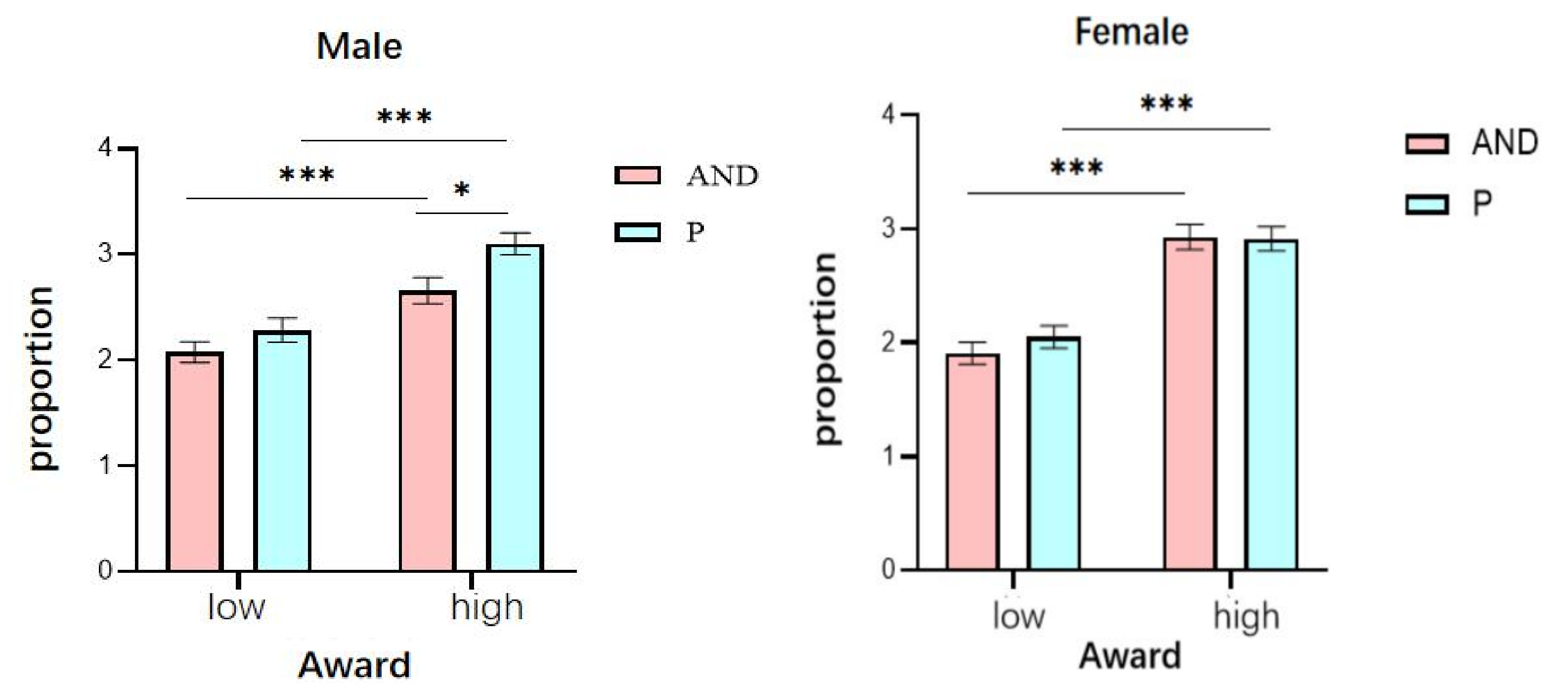


Fig.3. The effect of olfactory stimuli on proactive aggression (Left: Male; Right: Female)

- 2 (olfactory stimuli: AND, the carrier solution) × 2 (sex: female, male) × 2 (opponent's aggressiveness: high, low) mixed ANOVA
- Androstadienone blocked reactive aggression in men, but triggered reactive aggression in women.

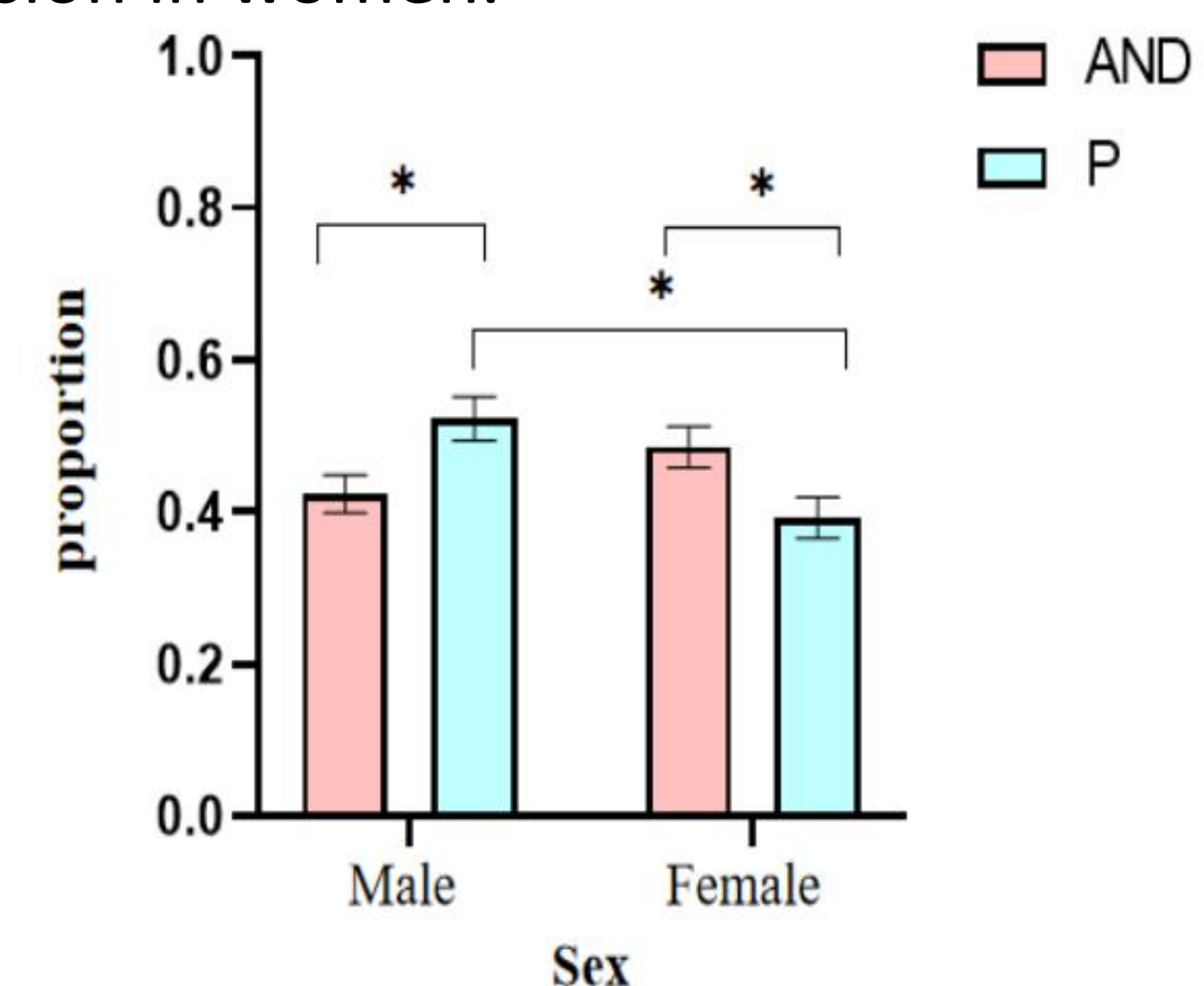


Fig.4. The effect of olfactory stimuli on reactive aggression

## Conclusions

- The way androstadienone elicits aggression is in a sex-appropriate manner
- Support the link between social chemosignaling and human aggressive behaviour

## Bibliography

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