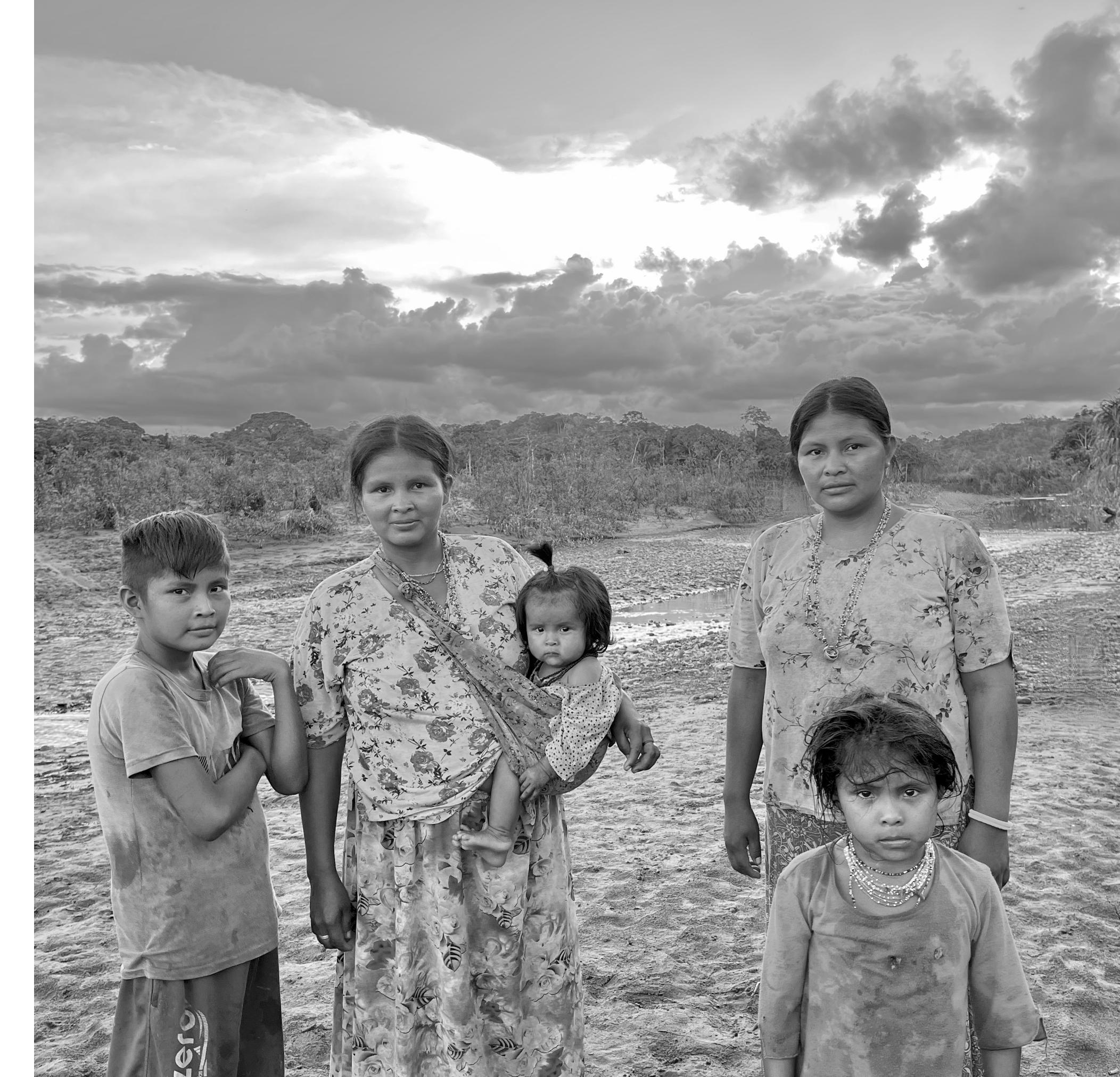


# Oxytocin: a mediator of life history in the Tsimane of lowland Bolivia?

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## 1. BACKGROUND

- Oxytocin is thought to mediate human **life history** strategy via coordinated effects on **personality** and reproductive physiology that lead to variation in **age at first reproduction (AFR)** and **total fertility**<sup>1,2</sup>
- Our current understanding of **oxytocin** and **life history** is derived from industrialized populations, not energy-limited, subsistence societies known to have lower reproductive hormone levels<sup>3-5</sup>

### Research Question:

Do individual differences in **oxytocin** mediate **life history**, via effects on **personality**, in a subsistence population?

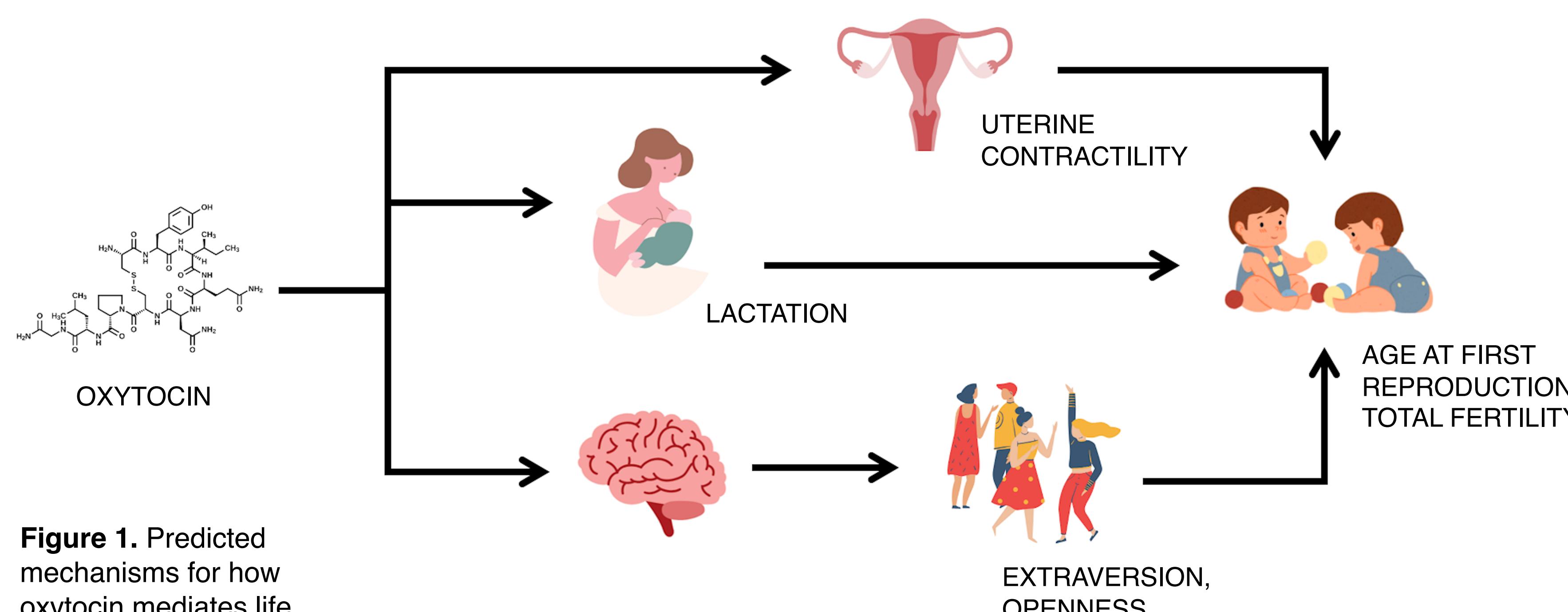


Figure 1. Predicted mechanisms for how oxytocin mediates life history in humans.

## 2. METHODS

- We recruited 209 individuals (102F/107M), aged 2 to 83 years old, living in a remote Tsimane village to participate in this study

### Data Collection:

- We collected urine samples ( $n = 432$ ) and measured **oxytocin** using radioimmunoassay
- We measured **extraversion** and **openness** with a culturally adapted BIG 5 questionnaire ( $n = 21$ )<sup>6,7</sup>
- We derived **AFR** ( $n = 88$ ) and **total fertility** ( $n = 147$ ) from the long-term demographic database

### Statistical Analyses:

#### Using GLMMs:

- We estimated repeatability of **oxytocin** ( $R = 0.34$ , CI: 0.23-0.49)<sup>8</sup>
- We examined relationships between individual differences in **oxytocin**, and **extraversion**, **openness**, **AFR**, and age-standardized **total fertility**

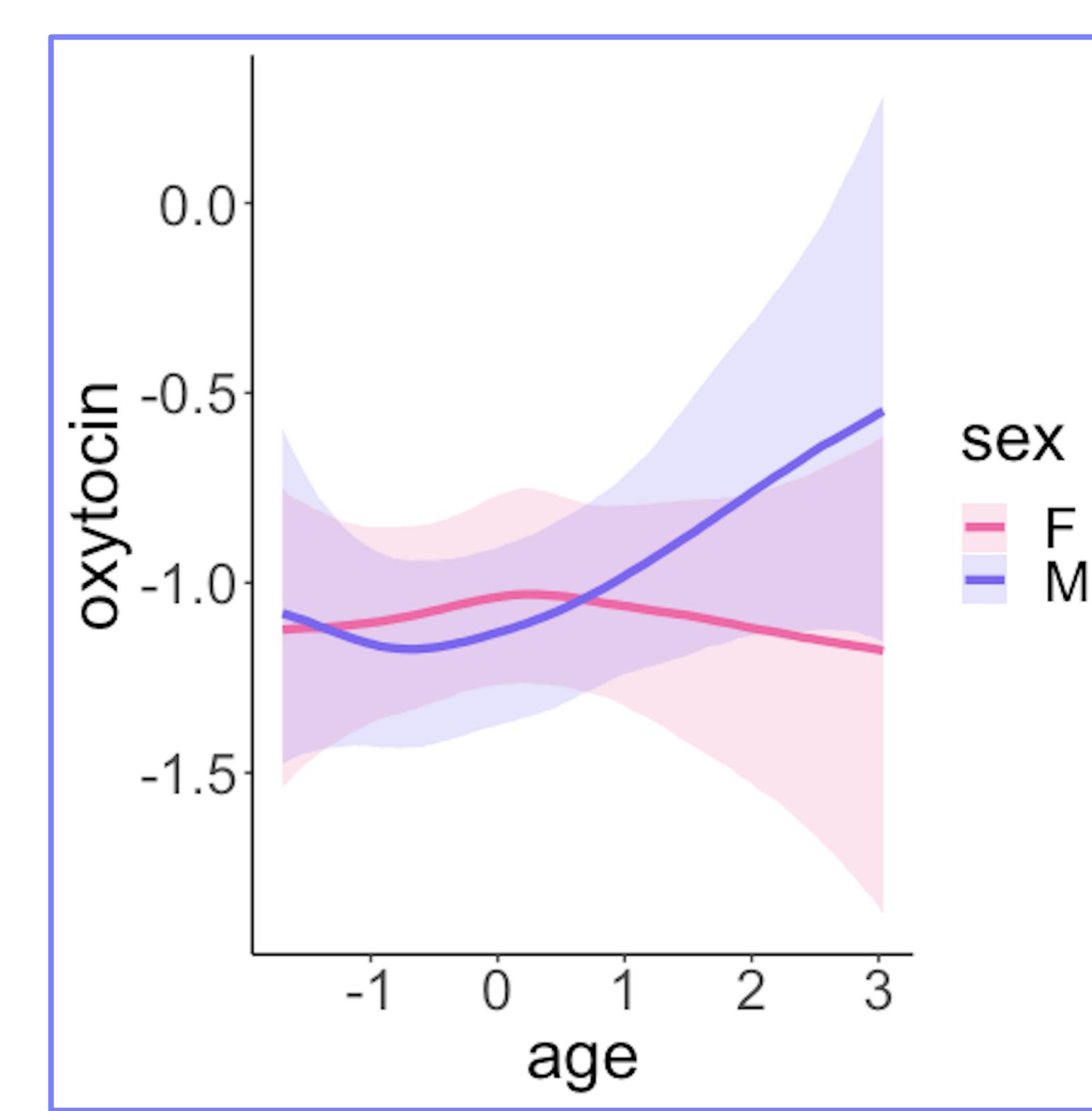


Figure 2. Conditional effects plot for oxytocin ~ age\*sex.

## 3. RESULTS

We found:

- No relationship between oxytocin and **extraversion** (posterior samples  $> 0$ : 0.48) or **openness** (posterior samples  $> 0$ : 0.52)
- A positive relationship between **oxytocin** and **AFR** (posterior samples  $> 0$ : 0.94)
- A negative relationship between **oxytocin** and **total fertility** (posterior samples  $> 0$ : 0.32)

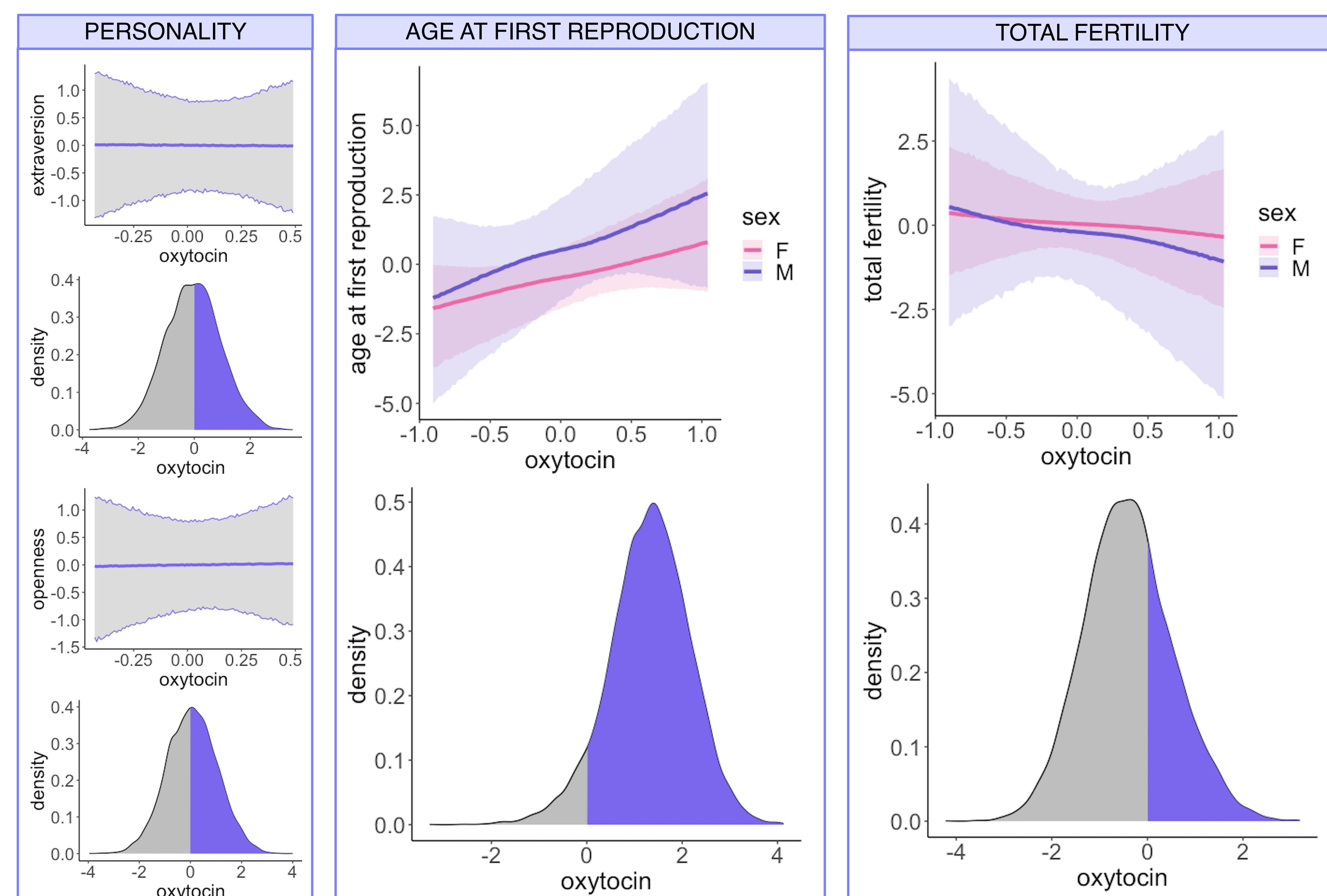


Figure 3. Conditional effects plots for extraversion, openness, AFR and age-standardized total fertility ~ oxytocin (with sex interaction for life history variables) and density plots highlighting the proportion of the posterior distribution for which oxytocin  $> 0$ .

## 4. CONCLUSIONS

- Individual differences in **oxytocin** may mediate **life history**, but not via effects on **personality**, in a subsistence population
- Moreover, our findings suggest that **oxytocin** mediates **life history** in a manner contrary to previously proposed hypotheses<sup>1,2</sup>

### Next Steps:

- 800 more urine samples from the same and other Tsimane villages have been collected
- More extensive demographic and personality interviews are being collected

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R code,  
references

