

# IMITATION OF HUMAN PLAY IN CAPTIVE CHIMPANZEES



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# INTRODUCTION

# Play Behavior & Imitation

## Play

- Sex differences in play exist in chimpanzees (*Kahlenberg & Wrangham, 2010*)
- Negative correlation between age and play (*Mendoza-Granados & Sommer, 1995*)

## Imitation

- Chimpanzees imitate zoo visitors (*Persson, 2018*)
- Learning to imitate strengthens the same brain networks in chimps as in humans (*Pope et al., 2018*)



## Research Question

How does human playing behavior influence captive chimpanzee playing behavior?

# How

- Buoy with rope inside/outside enclosure
  - **Day 1:** No demonstrations
  - **Day 2:** Cooperative behavior demonstrated
  - **Day 3:** Competitive behavior demonstrated
  - **Day 4:** No demonstrations
- Ethogram
  - **Buoy Touch**
  - **General Play**
  - **Cooperative Play**
  - **Competitive Play**
- Measurements
  - Focal continuous sampling on buoy







# Hypothesis

Chimpanzee play behavior will occur more often if facilitated by human play



## Prediction

Seeing human play behavior increases the frequency of the associated play behavior in chimpanzees

# OBSERVATIONS



# First Encounter

# General Play

# Cooperative Play?



# Competitive Play





# RESULTS

# Interobserver Bias

- $\text{Rho} = 0.912$  and  $\text{P} = 10^{-4}$
- Both observations reliable!
- Mean taken

Case	0	W
1	0.116071429	0.157894737
2	0.013392857	0.030075188
3	0	0
4	0	0.007518797
5	0.015209125	0.018518519
6	0.045627376	0.037037037
7	0	0
8	0	0.003703704
9	0.020833333	0.029411765
10	0.052083333	0.073529412
11	0	0
12	0.003472222	0.003676471
13	0.007722008	0.02189781
14	0.019305019	0.02189781
15	0	0
16	0.011583012	0.025547445

```
> res
```

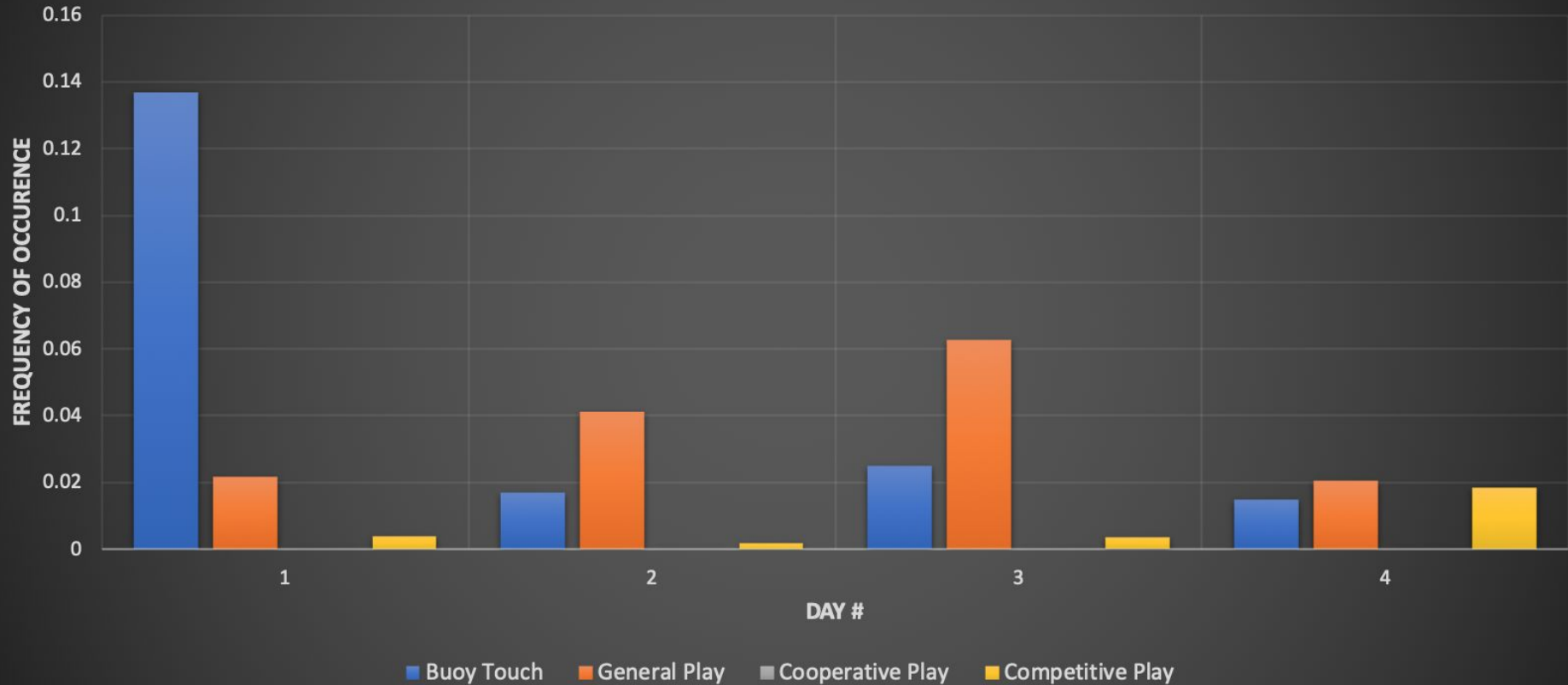
```
      rho  N      P n_perms      method correlation_method remark
0.9118721 16 1e-04  10000 approximate              spearman  none
```



## Results

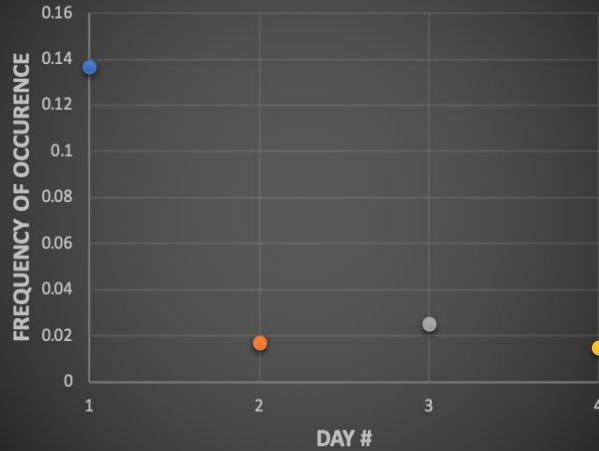
- Most play by **Vizuri** (*castrated male*)
- Competitive play between **Vizuri** and **Ajani** (*juvenile*)
- Used in dominance displays by **Wakili** (*alpha male*)
- Little **female** interaction
- No clear **cooperative play**

## Frequency of Behaviours Per Day

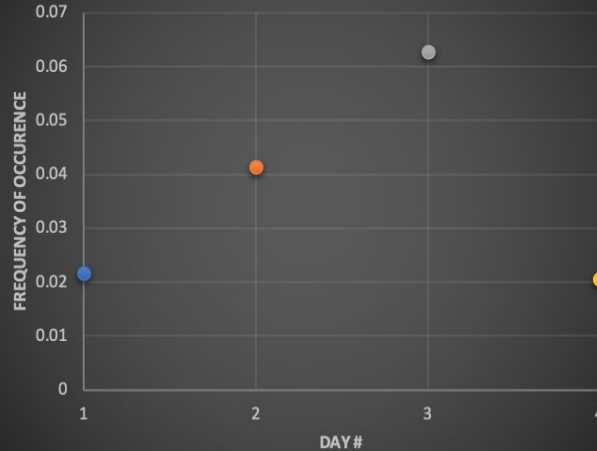




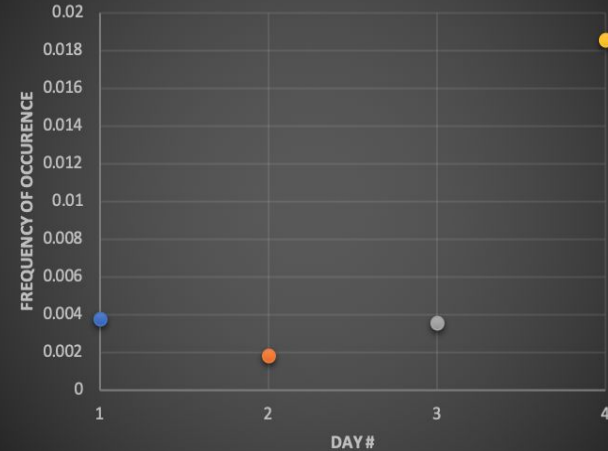
### Buoy Touch Frequency per Day



### General Play Frequency per Day



### Comp Play Frequency per Day



## Results

- Many interactions on day 1:
  - Curiosity?
  - Food?
- General play frequency increased until day 4
- Competitive play increased remarkably

# 6 MONTH STUDY PROPOSAL

# Research proposal

What is the influence of **competitive demonstration bouts** on **competitive play frequency** in chimpanzee groups?

- **Month 1 - 2:** No demonstrations
- **Month 3 - 4:** Daily demonstrations (*Competitive play*)
- **Month 5 - 6:** No demonstrations

Difference in comp. play frequency between month 1-2, 3-4, and 5-6.

**Appropriate test:** Repeated-measures ANOVA



## Relevance

- Fun enrichment object for chimps and spectators
- Insight into imitation and play
- Insight into how games and sports spread



# Improvements and tips

## Limitations

- Small sample size and little time
- Rope was pulled out of buoy on day 1

## Tips

- **Specific ethogram** lowers inter-observer bias
- Write down **breaks!**
- Think about **what** to measure and **how**



# SOURCES

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