



Activity Budgets of White-Handed Gibbons (*Hylobates lar*) at the Racine Zoological Society

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Abstract

White-handed gibbons (*Hylobates lar*) are primarily monogamous lesser apes that typically disperse to new territories when they reach adulthood. At the Racine Zoological Society, a father and daughter pair have been housed together into adulthood. The purpose of this study was to establish a better understanding of the behavioral dynamics of gibbons in captivity. Between August 2012 - 2013, these gibbons were video-recorded. Thirty-three behavioral activities were coded across four main categories (locomotion, foraging, prosocial, and agonistic). A 1/0 ethogram was used to code for the presence/absence of each behavior using one-minute increments. Activity budgets were tallied and compared for each category. For both gibbons, the most common activity was gripping (19.67% (M), 22.16% (F)). The second most common activity differed between the two gibbons. The male's activity was hanging (14.57%), whereas the female's was sitting (18.10%). The third-most common activity also differed between the gibbons. The male's activity was sitting (13.26%), whereas the female's was a tie between brachiating and hanging (11.38%). These activities represent 47.5% of the males and 51.64% of the females observed behaviors. These behaviors are congruent with previous research in wild gibbons. Through activity budgets, researchers are able to gain insight into how gibbon pairs behave in captivity. Future research will focus on examining the behaviors of gibbons at other zoos.

Introduction

The gestural behavior in captive white-handed gibbons (*Hylobates lar*) is relatively unknown. Researchers studying wild gibbons at the Khao Yai National park showed that 10% of the total time budget was spent on prosocial activities (Bartlett, 2003). Captive gibbons at the Racine Zoological Society are expected to have higher percentages of prosocial behaviors. This is because these gibbons are not dependent on resource abundance and therefore spend less time foraging for food. Analyzing social behaviors in zoo gibbons can provide researchers with insight into captive family dynamics.

Methods

Data Collection:

Two white-handed gibbons, a father-daughter pair, were videotaped from August 20th 2012 to August 1st 2013 at the Racine Zoological Society in Racine, Wisconsin.

Data Analysis:

A 1/0 ethogram was used to code thirty-three gibbon behaviors grouped into four different categories: locomotion (n= 13), foraging (n= 10), agonistic (n= 6), and prosocial (n= 4). Behaviors were recorded every minute showing the presence/absence of the specific behavior being exhibited. Activity budgets were tallied for each gibbon and a bar graph was constructed. A one-way ANOVA test was used to determine any statistically significant differences between the exhibited behaviors.

Results

This study found that in the locomotion behaviors, the male's top three activities were gripping (19.67%), hanging (14.57%), and sitting (13.26%). The female's top three activities were gripping (22.16%), sitting (18.10%), and hanging/brachiating (11.38%), where brachiating and hanging are tied for the third most common activity.

In the foraging behaviors, the male and female's top three activities were eating (52.73% (M), (51.02% (F)), object hand hold (23.64% (M), (24.49% (F)), and foraging (14.55% (M), (14.29% (F)).

In the agonistic behaviors, only two behaviors were observed and coded for due to lack of agonistic behaviors displayed. The male's two activities were chase (83.33%) and teeth baring (16.66%). The female's two activities were also chase (75.00%) and teeth baring (25.00%).

In the prosocial behaviors, the male's top three activities were play (72.22%), grooming other gibbon (24.44%), and self-grooming (3.33%). The female's top three behaviors were grooming other gibbon at (61.24%), play (35.39%), and self-grooming (2.81%).

Total Activity Budgets for Locomotion, Foraging, Prosocial, and Agonistic Behaviors

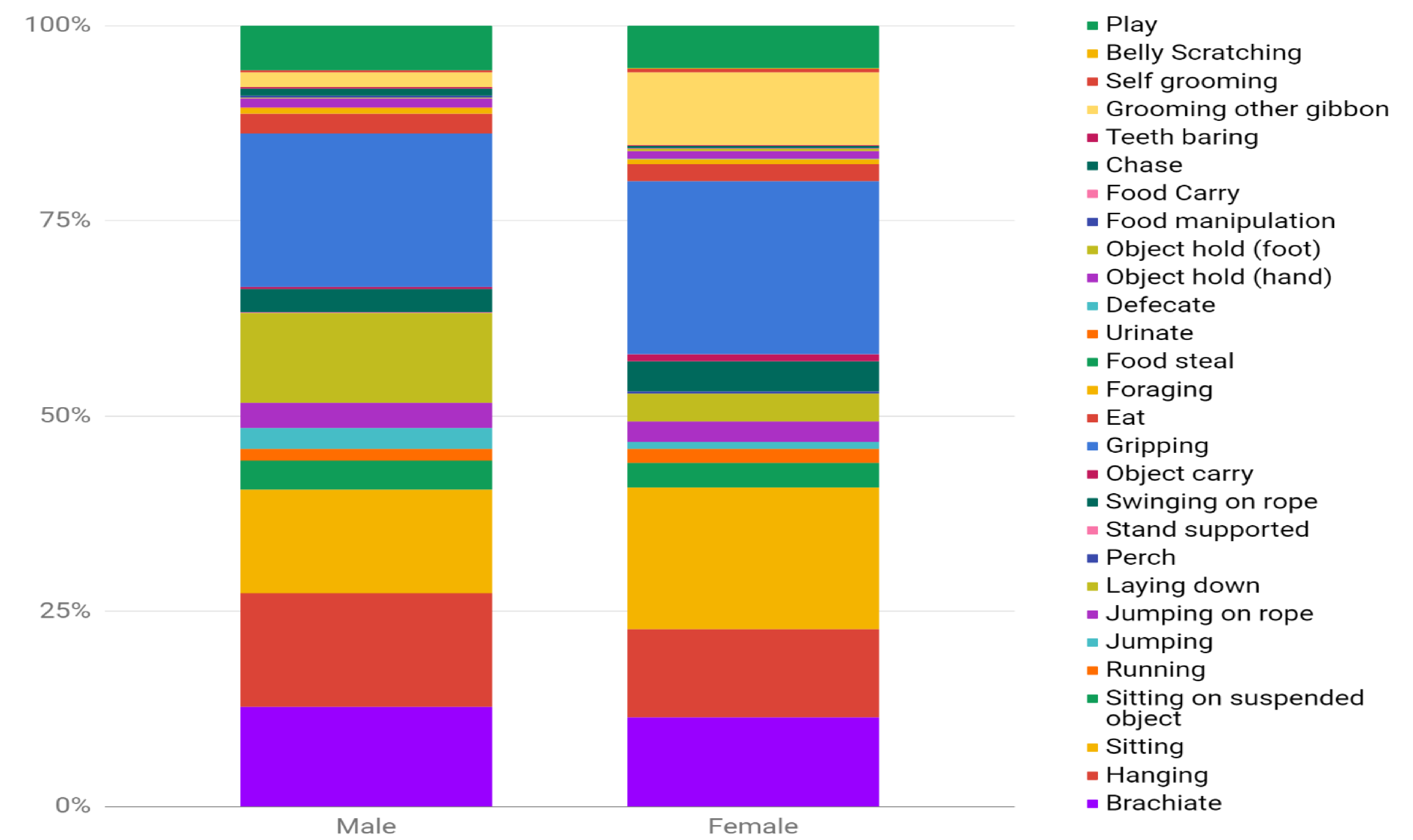


Figure 1: Thirty-three behavioral activities were coded for and analyzed. Biting, avoid, bleating, piloerection and drink are not present in the figure because they were not observed in the study.

Discussion

The most common activity for both gibbons was gripping. Gripping is identified as holding onto an object with hand or foot but not moving the object, such as rope, fence, or another individual. Both gibbons were typically observed holding onto the rope or fence simultaneously during the hanging behavior. As arboreal primates who spend a majority of their time in the canopy of trees, gibbons are specialized brachiators which explains why their activity budgets showed such a high percentage of gripping (Caldecott, 1980). The two gibbons differed in their second most common activities. The male's second most common activity was hanging whereas the female's was sitting. Hanging and sitting are energy conservation strategies that are used amongst gibbons because they are an arboreal species.

The three most common prosocial behaviors in adult Khao Yai gibbons were grooming (~80%), followed by play (9.4%) and social contact (7.1%) (Bartlett, 2003). In the Racine gibbons, the female's most common prosocial behavior was grooming followed by play, where as the male's most common behavior was play followed by grooming. While play dominated the male's prosocial activity budget, the female engaged in play behavior but also spent the majority of her time budget grooming the male. The difference between the wild and captive social activity budgets is unsurprising because the captive gibbons spend less time foraging for their food, whereas, the Khao Yai gibbons have to spend more of their time foraging.

It is surprising that the adult Racine gibbons had high percentages of play behavior. In the wild, it is the juveniles who spend the majority of their prosocial budget playing while the adults forage. It is typical for wild offspring to eventually disperse from their parents, but at the Racine Zoological Society, the father-daughter pair have been with each other for the daughter's entire life. This could have disrupted the maturation process of the female resulting in continuous high bouts of play behavior between the pair into adulthood. Future studies will include collecting video and audio focused on further describing the play behavior in detail between discrete captive family units.

Acknowledgements and References:

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