


Summer 2016

Is Rank Associated with the Stress Levels and Social Interactions of Female Green Monkeys?

Gaina-Yvan Pierre
Spelman College

Follow this and additional works at: <http://digitalcommons.auctr.edu/scgstempst>

 Part of the [Life Sciences Commons](#), and the [Social and Behavioral Sciences Commons](#)

Recommended Citation

Pierre, Gaina-Yvan, "Is Rank Associated with the Stress Levels and Social Interactions of Female Green Monkeys?" (2016). *G-STEM Posters*. 8.
<http://digitalcommons.auctr.edu/scgstempst/8>

This Conference Proceeding is brought to you for free and open access by the Enhancing Global Research and Education in STEM at Spelman College (G-STEM) at DigitalCommons@Robert W. Woodruff Library, Atlanta University Center. It has been accepted for inclusion in G-STEM Posters by an authorized administrator of DigitalCommons@Robert W. Woodruff Library, Atlanta University Center. For more information, please contact cwiseman@auctr.edu.

Is rank associated with the stress levels and social interactions of female green monkeys?



Gaïna-Yvan Pierre, Cecily Reese, Trevor Stephens
Advisor: Dr. Kai McCormack



Introduction

- Some social behaviors (ie. affiliative behavior) practiced by nonhuman primate species are similar to those practiced by humans (Taylor et. al, 2000).
- Research suggests that male and female non human primates utilize different strategies to maintain social stability. Females typically adhere to a matrilineal social order.
- Most female species practice affiliative behavior (ie. grooming, touching) to maintain or improve the magnitude of their rank. (Seyfarth, 1977)
- The relationship between rank and stress remains unclear. Stress levels may vary across species and the way in which rank is maintained (Sapolsky, 2009)

Objectives and Hypotheses

Objective: This study examines rank and its effect on social and stress-related behaviors among adult female green monkeys (*Chlorocebus sabaues*).

Hypotheses:

- Primates who are high in rank will exhibit more agonistic behaviors than those of a lower rank.
- Affiliative behaviors will differ based on ranks; reciprocated grooming will be directed towards high ranking females.
- Primates who are high in rank will exhibit less stress-related behaviors than those of a lower rank.

Materials and Methods

Materials:

- Ethogram
- Statistical Package for the Social Sciences (SPSS)
- Sunflower Seeds

Methods

Subjects: A troop of free-ranging Barbados green monkeys (females= 7, males= 2, juveniles= 8). Subjects are inhabitants of the Barbados Wildlife Reserve.

Procedures:

- Preliminary observations were conducted to assess reliability and refine operational definitions.
- 10-minute focal observations were conducted on seven adult female green monkeys. Interactions between subjects, adult males, and juveniles were coded and recorded.
- All data was first documented using a pencil-and-paper recording method and later transferred to a master sheet in Microsoft Excel.
- A series of independent sample-tests were conducted in SPSS to assess the significance of our results

Results

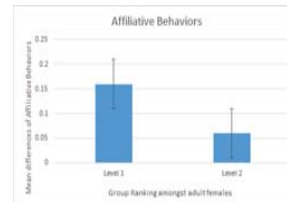


Figure 1: This graph depicts the mean differences of affiliative behaviors between Level 1 (high ranking) and Level 2 (low ranking) adult female Green monkeys (M 1 =.158, SD 1 =.121; M 2 =.055, SD 2 =.067) .

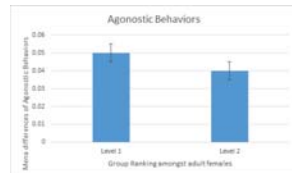


Figure 2: This graph depicts mean differences of agonistic behaviors among adult female Green Monkeys (M 1 = .050, SD 1 = .029 ; M 2 = .037, SD 2 = .033) with Level 1 indicative high rank and Level 2 indicative of low rank.

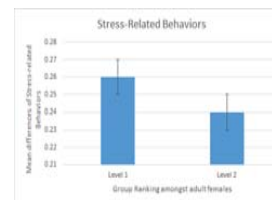


Figure 3: This graph depicts the mean differences of stress-related behaviors between high and low ranking adult female Green monkeys (M 1 = .256, SD 1 = .012; M 2 = .235, SD 2 = .096) with Level 1 indicative high rank and Level 2 indicative of low rank.

Discussion

- Confounding variables include: variations in resource availability, subject sleeping, subject leaves area of view
- Loss of data
- Unknown kinship between subjects
- Presence of infants may increase affiliative/agonistic behaviors



Conclusion

- The hypothesis that primates of a higher social rank will exhibit more agonistic behaviors than those of a lower social rank was also not supported by our data. High-ranking monkeys just as much as low ranking monkeys displayed actions of hostility. We expect to see a significant difference between groups as it relates to agonistic behavior.
- Our hypothesis also stated that low ranking individuals will exhibit more affiliative behaviors than high ranking individuals. Our results did not support this hypothesis. Higher rank females showed positive interactions more than low ranking individuals.
- High-ranking females appear to exhibit more stress-related behaviors than low-ranking females. Confounding variables (ie subject pregnancy) may have impacted our results.



References

- Cheney D. & Seyfarth, R., (1990). How monkeys see the world: Inside the mind of another species, Chicago: University of Chicago Press.
- Sapolsky, M.R., (2005). The influence of social hierarchy on primate health, Science, 308, 648-652.
- Seyfarth, R. (1977). A model of social grooming among adult female monkeys. Journal of Theoretical Biology, 65, 671-698.
- Schino, G. (2001). Grooming, competition, and social rank among female primates: A meta-analysis. Animal Behaviour, 62, 265-271



Acknowledgements



This research was based upon work supported by the National Science Foundation under Grant #HRD-0963629 (G-STEM). Any opinions, findings and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.

This research was performed at Barbados Wildlife Reserve located in Barbados during the June of summer 2017 under the mentorship Dr. Kai McCormack.