

Affiliate or Isolate?

John A. Zeman & Michelle A. Rodrigues
Department of Social and Cultural Sciences



Understanding the health implications of social choices in bonobos

Introduction

- This research aims to better understand bonobo health by examining the impact of social choices in grooming, as a form of social support, subgrouping patterns, and aggression risks.
- Research Questions
 - Do grooming relationships, relative to other affiliative behaviors, predict subgroup choices?
 - Do male and female bonobos differ in the strength of associations between grooming relationships and subgroup size?
 - Are rates of grooming and/or aggression correlated with subgroup size?

Background

- Grooming is crucial to managing stress (Crockford et al, 2013; Rodrigues & Boeving, 2019)
- Living in social groups also produce conflict, which can be a potential stressor
- The benefits vs. risks of social affiliation (Rodrigues 2017; Rodrigues & Boeving 2019)

Methods

- Data collected at the Columbus Zoo by Dr Rodrigues from June to August in 2013 using focal animal sampling
- The social group include 11 adult bonobos
 - 5 Females
 - 6 Males
- Ran test using the statistic software program SOCPROG
 - Multiple Quadratic Regressions Assignment Procedure (MQRAP)
 - Mantel test

Main Points

- Grooming significantly predicts subgroup choices ($p < 0.002$). Proximity ($p = 0.014$) and sociosexual behaviors ($p = 0.008$) also predict subgroup choices, but aggression does not.
- Sex differences do not mediate the relationships between grooming and subgrouping.
- Grooming is significantly correlated with subgrouping ($p < 0.001$), but aggression is not.

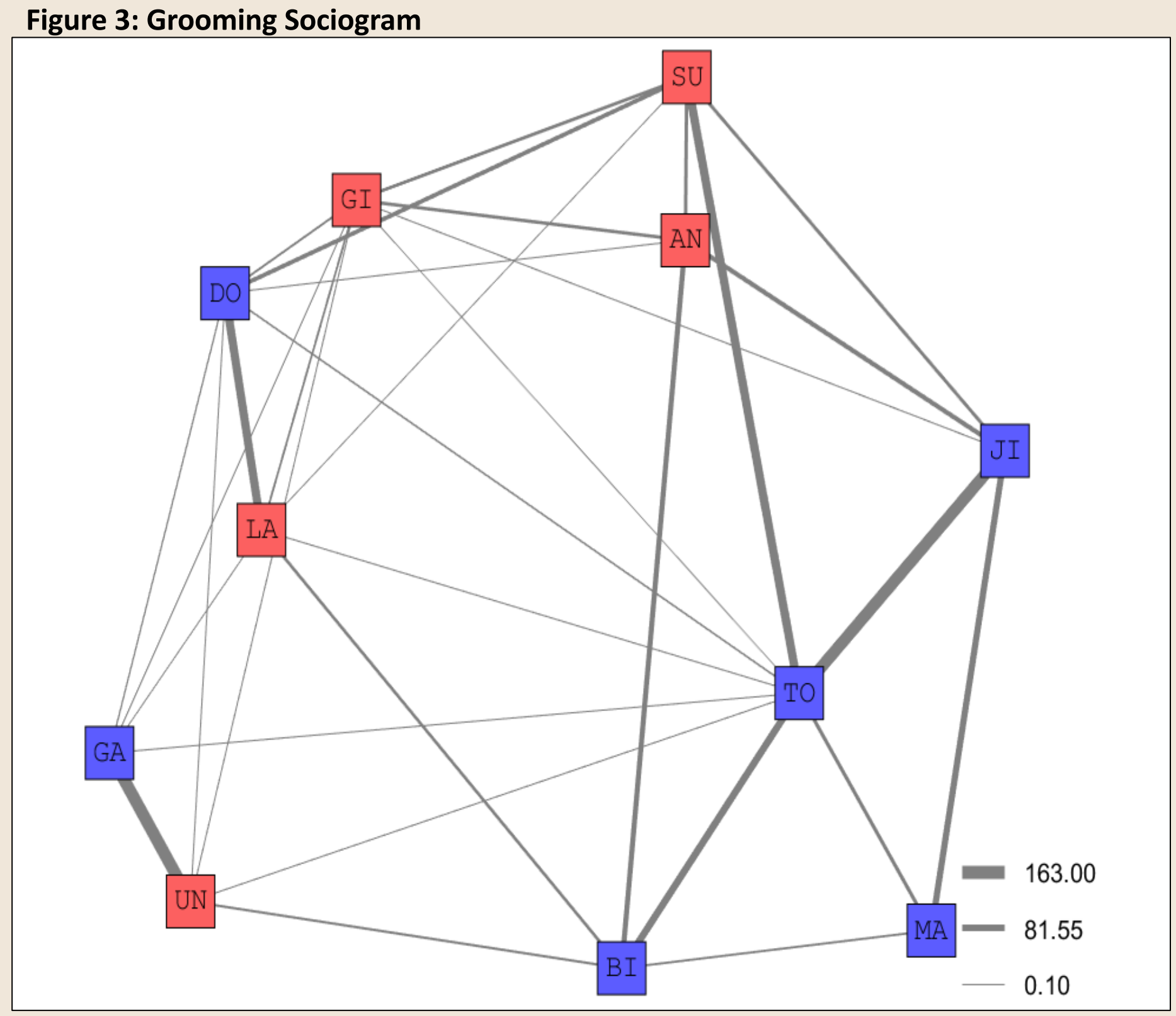
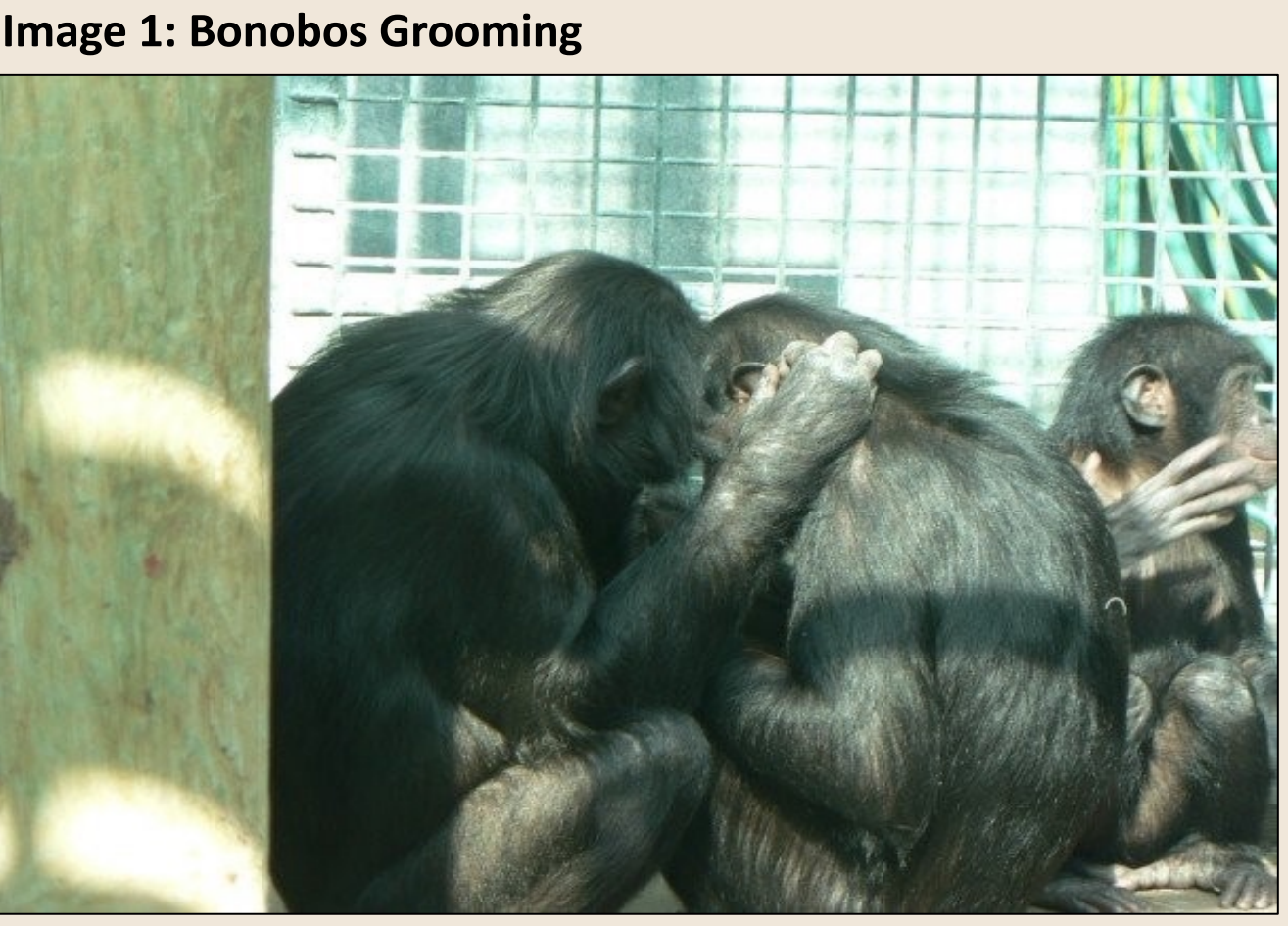
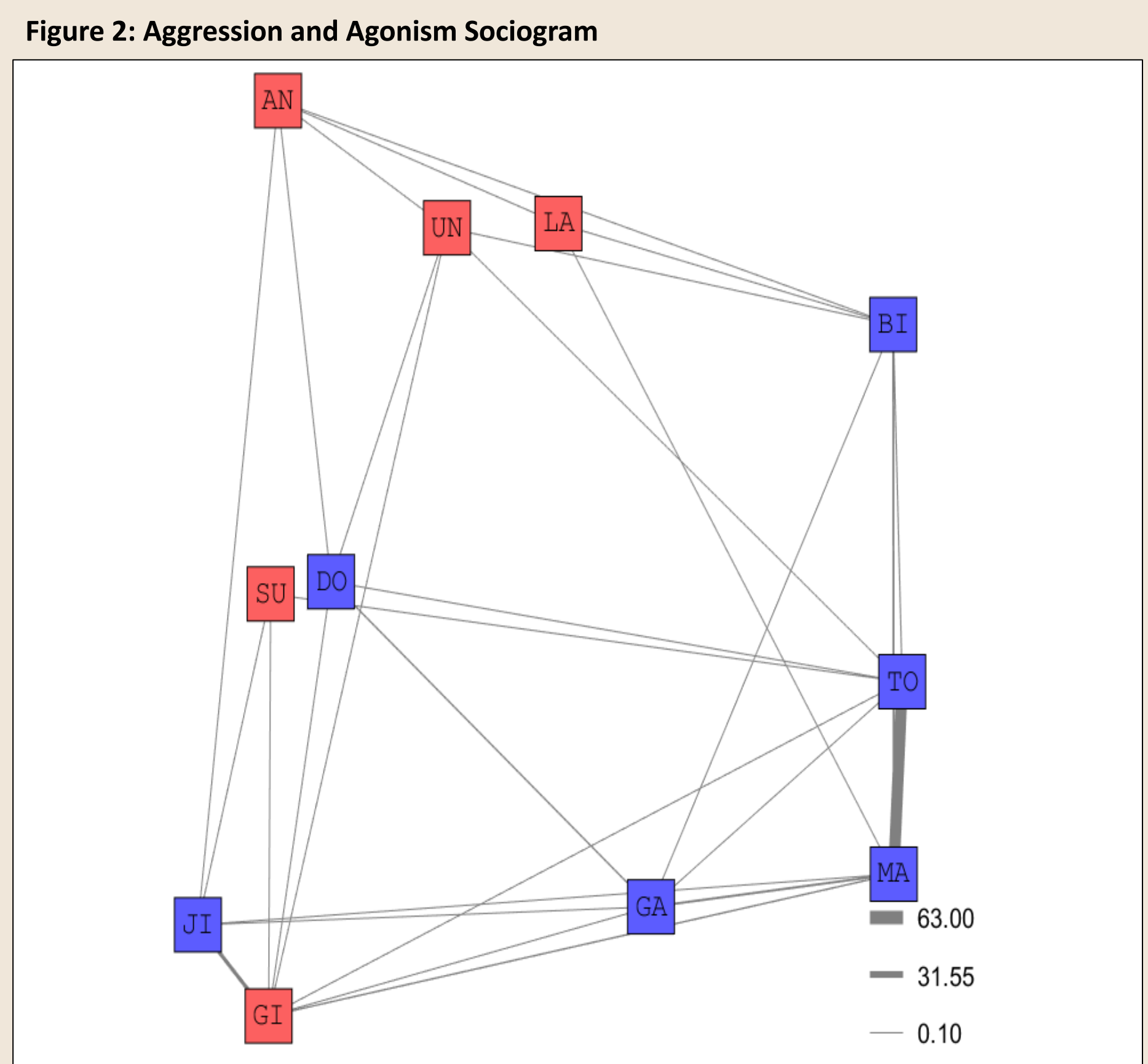
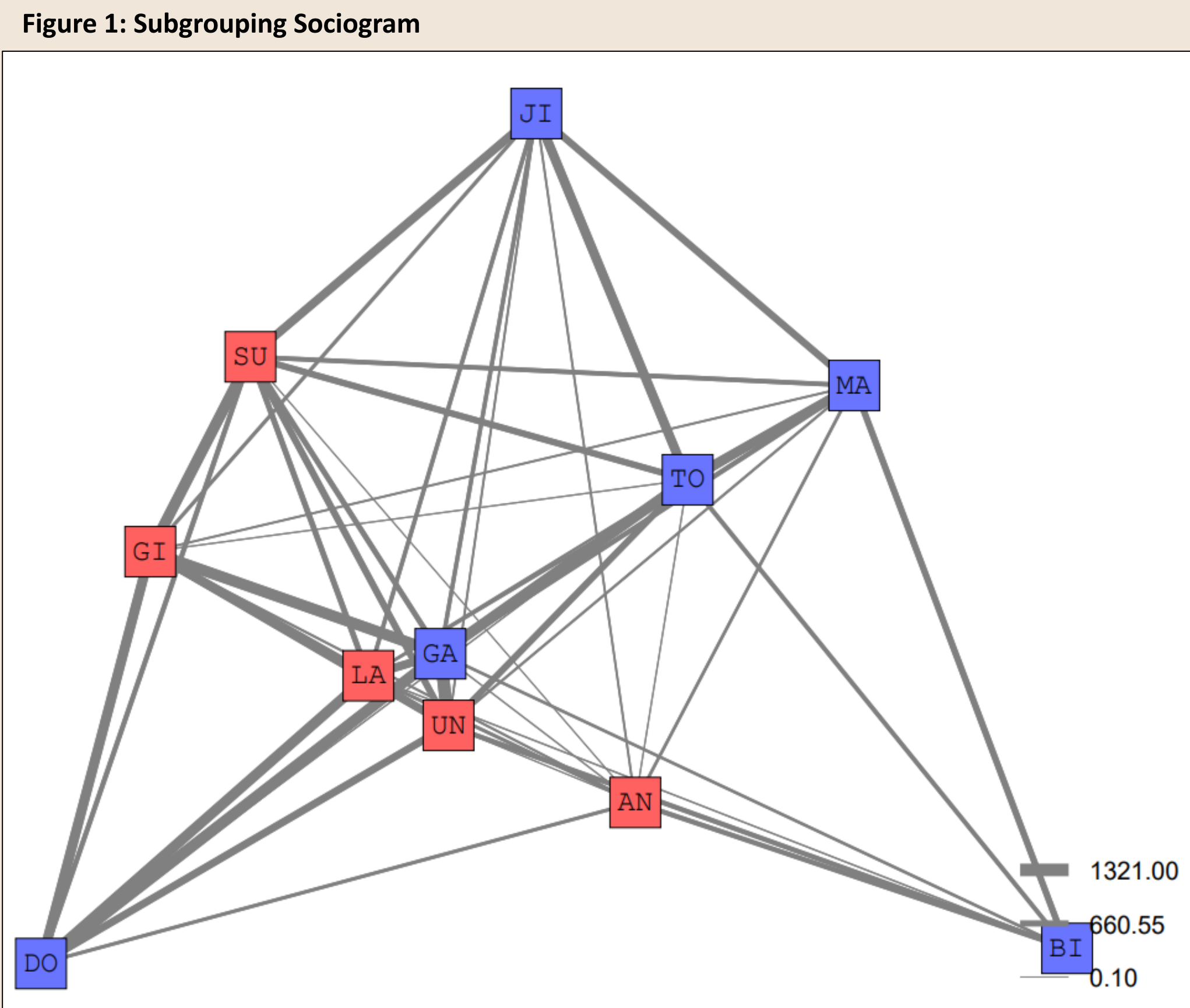


Table 1: Subgrouping Matrix

AN	0											
BI	495	0										
DO	360	0	0									
GA	150	300	1140	0								
GI	241	0	1035	1140	0							
JI	225	0	0	436	360	0						
LA	345	165	1065	855	930	435	0					
MA	315	660	0	495	225	720	300	0				
SU	121	0	510	555	1141	870	585	480	0			
TO	150	450	150	1081	150	976	255	960	660	0		
UN	75	495	765	1321	840	226	435	255	690	676	0	
	AN	BI	DO	GA	GI	JI	LA	MA	SU	TO	UN	

Acknowledgments

- Funding provided by Honors Research Fellowship
- Thank you to Audra Meinelt and keeper staff at the Columbus Zoo

Results

- Question 1:
 - Grooming controlling for other predictors had a partial correlation of .3696
 - $p = 0.002$
 - Nearest Neighbor controlling for other predictors had a partial correlation of .3359
 - $p = 0.0140$
 - Social sexual behavior controlling for other predictors had a partial correlation of .3545
 - $p = 0.008$
- Question 2:
 - Correlation of grooming x subgrouping
 - $R = .4658$ $p < 0.001$
 - Female female relationship
 - $R = .4658$ $p = 0.726$
 - Male male relationship
 - $R = .4555$ $p = 0.102$
- Question 3:
 - Aggression/agonism x subgrouping
 - $R = .2292$ $p = .124$

Conclusions

- Understanding Health
 - Results indicate that social bonding and stress reduction are more important in driving subgroup choice than aggression risk
 - positive effects of social affiliation outweighs the risk of aggression
 - This research has implications for considering how humans weigh social choices in risky environments
- Future research
 - Expand sample size by collecting comparative sample at the Milwaukee Zoo
 - New techniques such as hormonal measures. (Wittig, R., Crockford, C., Weltring, A. et al, 2016)
- This research helps us understanding how bonobos make social choices to manage the benefits and risks of affiliation, and has potential implications for considering human social choices during the COVID-19 pandemic