

Review of the MSc thesis 'Relationship between personality and social network characteristics' by Klára Valentová, University of South Bohemia, České Budějovice.

This work examines the structure and assortativity of the Barbary macaques social network and investigates whether individual position in the network can be explained by its personality profile. The topic is timely and addresses important questions in social ecology of mammals. Two types of observational data were used to generate networks for the analysis: social proximity (undirectional, weighted network) and grooming frequency (directional, weighted network). The results indicated that personality may play a role in defining individual interactions and connectivity within the social group and provide interesting insight into how behavioral variation among individuals can contribute to network structure and assortative mixing. However, due to limited sample used for the analysis (one social group of 26 individuals observed during one mating season), inferences are not strong. The student did not collect the original data and is building upon data and results of the previous study of Dr Martina Konečná, the thesis supervisor. In the thesis, social network analysis is applied to available data and existing individual personality profiles are used as predictors in models explaining variation in network centrality measures. The fact that analyses are based on the data not collected by the student does not undermine the quality of the thesis since the analytical part is a strong asset of this work. In my view, it fulfills requirements for self-reliant study at MSc level. Overall, I rate highly the choice and application of methods, presentation of the results, and quality of writing. Please see specific comments on each section of the thesis below.

Introduction

This part is well structured and the context of the study is sufficiently outlined and supported with relevant literature. I found the part introducing the study species (page 13) a bit lacking in details on the social behavior and social system of the Barbary macaques. This information could be used to better support the predictions and help interpreting the results. I was also not convinced by disregarding the effect of kinship on social interactions in the study species. Please consult this study (not referenced in the thesis): *Widdig, A.; Streich, W. J. & Tembrock, G. (2000). "Coalition Formation among Male Barbary Macaques (Macaca sylvanus)". American Journal of Primatology. 50 (1): 37–51.*

Methods

The analysis is well designed, rich and appropriate to the aims of the study. The network methodology and statistical test are well described and represent currently used approaches, which as an advantage. While quantifying personality scores were not part of this study, explanation of the methods and reference provided is sufficient. However, I missed the description of how rank of individuals was determined. Major limitation of the study is low sample size which probably contributed to rather weak relationships detected. Should this work be prepared for scientific publication, which I encourage, I would advise to include additional datasets from other seasons to have greater support for the results. I would also recommend to reverse predictions from Table IV in order to match models formulation, i.e. each network characteristics (a response in the model) should be predicted to have a certain relationship with personality dimensions and other variables (sex, rank) as they are predictors in the models.

Results

Presentation of the results is satisfactory and easy to follow. I missed the information on whether the p-values reported in the Tables VII and VIII correspond to the models performed only on the observed networks or result from comparison of the observed and randomized networks. Adding descriptive statistics of network metrics (e.g. histograms) could help evaluate variation in the data.

Discussion

The results are interpreted in a meaningful way and with reference to other study systems. Literature cited is relevant and exhaustive. Quality of writing and reasoning is satisfactory. Again, I found the structure of subchapters based on personality dimensions, as opposed to network centrality measures which were the subject of investigation, a bit odd but I understand that it followed the structure of predictions outlined earlier. The confusion about the directionality of predictions is visible several times in the Introduction and Discussion where declared goal of the study is stated either as "The aim of this work is to test whether the position of an individual in a group may be related to its personality traits" (page 14) or "The aim of my theses was to find out whether an individual's personality can be related to its social network position" (page 48). Those statements are not interchangeable and it is clear that the former statement is correct for this study. However, this brings about interesting question on the causality of the personality-network relationship. Does individual personality determine its social interactions and hence network connectivity or can social environment influence individuals behavior and effectively alter its personality profile? Also, as personality dimensions did not seems to explain much of the network metrics, what other factors, not considered in the thesis, can potentially influence individuals position and connectivity within the network?

Other, more general, questions which came to my mind while reading the thesis are:

- could there be an effect of the study setting (e.g. semi-natural habitat, food provisioning) on the observed association patterns?
- what was the variation in personality types in the studied group? For example, were there superfriendly or hyperactive individuals?
- which network centrality measures in Barbary macaques society could have adaptive value? Which personality types could be beneficial for individual's fitness and why?

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