



Yes, personality matters: personality and social organization in wild bottlenose dolphins

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What is personality?

Consistent individual differences in behaviour over time and across contexts (shy/bold axis)¹.

Research Objectives

To explore for the first time in wild bottlenose dolphins (*Tursiops truncatus*):

- individual differences in personality
- influence of personality on social structure

How was personality measured?

- Individual reaction as a trade-off between an exploratory behaviour (boldness) and a risk-averse behaviour (shyness).
- 24 photo-identified individuals (> 20 times across at least 4 years of research between 2004-2013).
- Reaction = shortest distance (m) between the individual and:
 - Acoustic Harrassment Device² (96 trials)
 - Underwater observer³ (96 trials)
- Personality score = independent scores of the 1st component of PCA

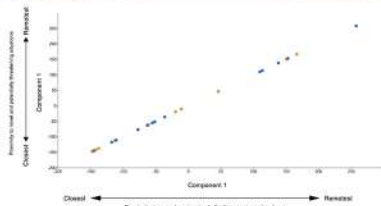


Figure 1. Independent scores of the first PCA component (86.7% variance). Dots = individuals; Blue dots = females; orange = males.

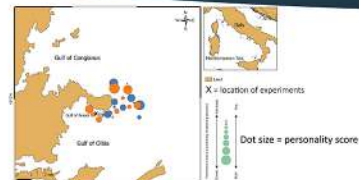


Figure 2. Study area (NE Sardinia, Italy) with the core range centroids for each of the 24 bottlenose dolphins.

Wild bottlenose dolphins show individual differences in personality

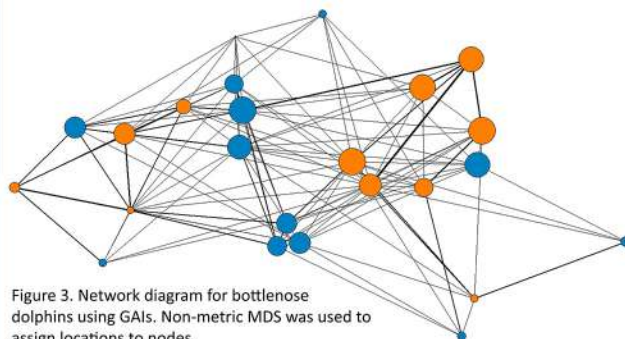


Figure 3. Network diagram for bottlenose dolphins using GAI. Non-metric MDS was used to assign locations to nodes.

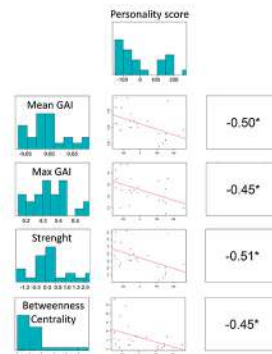


Figure 4. Scatter plot with fitted line and Spearman rho coefficient between personality rate (x axis) and each affiliation and network metrics (y axis). * = P < 0.05

Bottlenose dolphin social network is structured by personality

Bold dolphins play an important role in group cohesion, group stability, and spread of information and pathogens

Bold dolphins:

- are more social
- have a higher probability to acquire more "threatening but rewarding" resources
- are more vulnerable to human threats than shy individuals.

This study highlights the importance to advance the understanding of ecological, evolutionary, and conservation implications of inter-individual behavioural differences.

Social network analysis

- Factors that may influence Social affinity index (SAI) : Space-use / temporal overlap; Sex / age similarity; Gregariousness; Cumulative number of sightings for each dyad.
- Multiple Regression Quadratic Assignment Procedure (MRQAP) & Generalized Affiliation Indices (GAIs)⁴.
- Social network based on the association matrices defined by the GAI among individuals.

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