

Editorial

A New Concept “Behavioural Instability” Provides Measuring Tools and a Deeper Understanding of Animal Behaviour and Personality

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This special issue aims to provide a series of studies, which investigate captive animals with the main scope illustrating how quantitative techniques can be used to investigate the complexity of animal behaviour. These quantitative techniques measuring “behavioural instability” allow robust conclusions including the personality of the animals studied. Traditional behavioural studies might miss the quantitative evaluation of personality and observations which could decrease the reproducibility of the results. In worst case it can lead to the misinterpretation that behavioural changes are random processes, a bias that can occur due to the unpredictability of animal behaviour i.e. behavioural instability. Behavioural instability is subsequently, a behavioural component that should always be incorporated in behavioural studies. Most important, the use of a standardised statistical pipeline will allow the comparisons of different studies.

Personality tests in humans are widely used to diagnose psychological problems as well as to screen candidates for different employments. These tests indicating that humans have distinguishable personalities, personalities that make individuals more or less capable to cope with life challenges and tasks. Although it is commonly accepted that e.g. mammals and birds have personalities it is challenging to find data based convincing methods to show differences in animal personalities. Animal personalities are indicated by consistent variations in an individual's behavioural tendencies over time. Personality traits such as aggression, boldness, fearfulness, cooperativeness, and explorative tendencies are used to distinguish between different personality types in a population. Differences in animal personality are conceivably linked to genetic variations in individuals or differences in phenotypic plasticity caused by different experiences that the individual faces throughout lifetime, or a mixture of both factors.

An individual's personality can be shown by their behavioural reaction pattern. A behavioural reaction pattern is a set of behavioural phenotypes expressed by an individual in a specific set of environmental conditions. When investigating the behavioural reaction of an individual, the concept of behavioural instability can be applied. The application of behavioural instability is a quantitative approach that incorporates the personalities of animals. This method can therefore provide

researchers with a relatively unbiased assessment of behavioural responses, thus enabling the reproducibility of results. The results of these evaluations can furthermore be used to indicate the effectiveness of enrichment strategies and thereby contribute to the improvement of enrichment programs and animal welfare in captivity. Behavioural instability as a quantitative and systematic approach is also relevant in animal conservation studies. It has been debated whether the study of animal personality can contribute with new knowledge to the field of behavioural ecology. Populations containing individuals with many different personalities are expected to have an evolutionary advantage over populations with few personalities, as well as populations with high genetic variability will have in the meeting with new environments and new tasks. Hence, a better understanding of the verity of animal personalities can provide insight on how to preserve a vital variation in behavioural responses that could be favourable in the wild and can therefore contribute to conservation programs with the aim of re-introducing individuals to the wild.

Author's contributions

All authors contributed equally.