The relationship between personality traits and physiological indicators of chronic stress in ring-tailed lemurs (*Lemur catta*)

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Personality traits have been linked to chronic stress in humans, which can contribute to poor health outcomes. Less work has been done to understand the relationship between personality traits and chronic stress in non-human primates such as lemurs. The objectives are to 1) describe personality traits in ring-tailed lemurs under human care, 2) determine how reliably human raters can assess these traits, and 3) evaluate the association between personality trait ratings, age, sex and physiological indicators of chronic stress. A total of 22 ring-tailed lemurs housed at the Duke Lemur Center, Durham, NC will be included in the study. To assess personality traits and determine inter-rater reliability, 14 keepers will be given electronic surveys for each lemur and at least 2 keepers will rate each animal. The surveys will include a 54-item Hominoid Personality Questionnaire that has been validated for non-human primates. Chronic stress has previously been evaluated for each lemur using an "Allostatic Load Index" (0 to 6) calculated using a combination of 6 biomarkers associated with chronic stress (albumin, cortisol, DHEA-S, DNA damage, glucose and PGE-2). The hypotheses are that a range of lemur personality traits will be found, and that the questionnaire will be a reliable method to assess these traits. It is anticipated that older animals will rate lower in extraversion, neuroticism and openness, females will rate higher in dominance and that animals that rate higher in neuroticism will have higher indicators of chronic stress. Gaining a better understanding of personality traits in ring-tailed lemurs under human care will lead to improved welfare and has the potential to be applied on native range animals.

Atlantic Veterinary College Summer Research Award
Columbus Zoo and Aquarium Conservation Fund