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Do social factors related to allostatic load affect stereotypy susceptibility? Management implications for captive social animals

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Abstract

*Stereotypies are frequently associated with sub-optimal captive environments and are used as welfare indicators. However, susceptibility to stereotypy can vary across individuals of the same group. As such, identifying which individuals are more susceptible to this behaviour may be helpful in managing this issue. We have investigated which sex-age class of semi-captive capuchin monkeys (*Sapajus spp*) is more susceptible to stereotypic behaviours and evaluated whether or not they are also more affected by the social factors that typically influence and increase allostatic load. To accomplish this, we used instantaneous sampling to collect data on a group of capuchins kept on an island in an urban park in São Paulo, Brazil. We found that sub-adult males were the only sex-age class to display stereotypic behaviours and they all displayed pacing. Furthermore, 33% of sub-adult males also exhibited a second stereotypic behaviour associated with their pacing. Compared to the other sex-age classes, sub-adult males had a higher participation in social conflicts and experienced higher social isolation. Sub-adult males also demonstrated a lower level of positive social interactions. All of these factors typically increase allostatic load. We suggest that distal causation of the observed pacing behaviour would be the ecological/evolutionary need of sub-adult males to disperse from their natal group and that the proximal causation would relate to the high allostatic load from social sources. We recommend that managers of zoos and other facilities monitor changes in the social composition of captive groups and evaluate individuals' age so that necessary alterations may be made, where appropriate, to reduce allostatic load and generate better welfare at individual and group levels.*

Keywords: *allostatic load, animal welfare, capuchin monkeys, pacing, social animals, stereotypy*