Abnormal behaviour in captive sooty mangabeys

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Abstract

The influence of several factors on abnormal behaviour was investigated in 46 singly housed sooty mangabeys (Cercocebus atys) (eight nursery-reared, 38 mother-reared), including self-injurious, self-directed, stereotypic locomotion, and faeces/urine-related behaviours (SIB, SDB, SL, FUR, respectively). An analysis of behavioural assessments spanning a mean of four years per subject showed that 83% displayed at least one form of AB during that time, with SL being the most common (mean of 3.06% of observation sessions and displayed by 59% of subjects) and SIB the least common (mean of 0.09% of all observation sessions and displayed by 20% of subjects). Like other primate species, displaying AB was influenced by the percent of life spent singly housed and by nursery-rearing during infancy. However, unlike some other primates, there was no influence of the number of yearly sedations or room relocations on AB; also, females were more likely to display AB than male mangabeys. To investigate the effects of nursery-rearing further, we compared the eight nursery-reared, singly housed subjects with eight nursery-reared subjects that were socially housed since the age of three years. While nursery-reared subjects in single housing displayed SL and FUR in higher proportions than those in social housing, subjects from both environments displayed SIB and SDB in equal proportions, suggesting that they are persistent forms of AB for nursery-reared mangabeys even after long-term social housing. To reduce future incidence of AB in captive mangabeys, we recommend minimising nursery-rearing and the duration of single-housing whenever feasible or avoiding them altogether.

Keywords: abnormal behaviour, animal welfare, nursery-rearing, single-housing, sooty mangabey, stereotypic behaviour

Introduction

The term abnormal behaviour refers to behaviours that are species-atypical in form or frequency, repetitive and/or functionless, and potentially physically harmful (Erwin & Deni 1979; Walsh 1982; Mason 1991; Lutz et al 2003). Abnormal behaviour is often categorised as either whole-body locomotor stereotypies (eg pacing, flipping) or self-directed behaviour (eg eye-poking, bizarre body posture, digit sucking; Novak 2003). Self-injurious behaviour (SIB) is considered an extreme form of self-directed behaviour and includes behaviours that have the potential to cause serious injury, such as head banging and self-biting. Accordingly, SIB is widely regarded as an indicator of poor psychological welfare (Novak 2003). Animals may engage in abnormal behaviour as a way to cope with stressors and alleviate anxiety, out of frustration, compulsion, or habit (Mason 1991; Tiefenbacher et al 2005); however, it is generally accepted that well-being is compromised in animals that express abnormal behaviour because these behaviours often occur in contexts where the animals lack physical space, sensory and social stimulation, and/or control over their environment (Mason 1991). Maximising psychological welfare is important not only for the animals’ sakes, but to enhance the quality of research, as animals that display abnormal behaviour are physiologically and cognitively different from those that do not; for example, they tend to have dysregulation of the systems regulating response to stress and anxiety and slower procedural and reversal learning (Tiefenbacher et al 2000, 2004, 2005; Tanimura et al 2008). Thus, it is important for researchers using animal models to reduce and/or avoid conditions that contribute to engagement in abnormal behaviour, as it can directly impact the measures in their studies.

As natural hosts of the Simian Immunodeficiency Virus (SIV), sooty mangabeys (Cercocebus atys) are an important animal model for Acquired Immune Deficiency Syndrome (AIDS) research. The Yerkes National Primate Research Center (YNPRC) houses a colony of sooty mangabeys, a subset of which is singly housed, to participate in IACUC-approved research protocols. Although much is known about mangabey social and reproductive behaviour (eg Bernstein 1971; Ehardt 1988a,b; Gust & Gordon 1991,