Does ‘playtime’ reduce stimulus-seeking and other boredom-like behaviour in laboratory ferrets?

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Abstract

Much environmental enrichment for laboratory animals is intended to enhance animal welfare and normalcy by providing stimulation to reduce ‘boredom’. Behavioural manifestations of boredom include restless sensation-seeking behaviours combined with indicators of sub-optimal arousal. Here, we explored whether these signs could be reduced by extra daily play opportunity in laboratory ferrets (Mustela putorius furo). Specifically, we hypothesised that playtime would reduce restlessness, aggression, sensation-seeking and awake drowsiness, even 24 h later in the home-cage. Female ferrets (n = 14) were group-housed in enriched multi-level cages. Playtime involved exploring a room containing a ball pool, paper bags, balls containing bells, and a familiar interactive human for 1 h. This was repeated on three consecutive mornings, and on the fourth, home-cage behaviour was compared between ferrets which had experienced the playtime treatment versus control cage-mates which had not. Their investigation of stimuli (positive = mouse odour or ball; ambiguous = empty bottle or tea-strainer; and negative = peppermint or bitter apple odour) was also recorded. We then swapped treatments, creating a paired experimental design. Ferrets under control conditions lay awake with their eyes open and screeched significantly more, but slept and sat/stood less, than following playtime. They also contacted negative and ambiguous stimuli for significantly longer under control conditions than following playtime; contact with positive stimuli showed no effects. Attempts to blind the observer to treatments were unsuccessful, so replication is required, but the findings suggest that playtime may have reduced both sub-optimal arousal and restless sensation-seeking behaviour, consistent with reducing boredom.

Keywords: animal welfare, boredom, environmental enrichment, exploration, ferrets, laboratory animals

Introduction

Many environmental enrichment (EE) attempts are intended, at least partly, to relieve boredom, either stated explicitly or implicitly, such as when the aim is to increase ‘stimulation’, ‘exploration’ or ‘cognitive challenge’ (eg Anderson & Wood 2001; Celli et al 2003; Wells 2004; Meehan & Mench 2007; Puppe et al 2007; Langbein et al 2009). EE has been well-defined before, and can encompass any environmental or husbandry modification that increases the welfare or biological functioning of a captive animal (eg Chamove 1989; Newberry 1995; Patterson-Kane 2001; Swaisgood & Shepherdson 2005). In the case of laboratory animals, EE is additionally important for increasing animal normalcy, to maximise the external validity of research (Bayne & Würbel 2014). The specific aims can vary, such as reducing fear (eg providing secluded shelters) or satisfying species-specific needs (eg providing perches for arboreal species), but it is those aimed at providing sensory or cognitive stimulation (eg novel objects, sensory stimuli, or exploration) that are particularly relevant for combating boredom (Meehan & Mench 2007; Manteuffel et al 2009; Wells 2009; Meagher 2019). Opportunity to play generally could be effective, as play has been suggested as a mechanism for counterboring (eg Burghardt 1984, 2014; Held & Špinka 2011; Ahloy-Dallaire et al 2018). However, until recently, objective indicators of boredom were lacking, so it was difficult to assess whether stimulating EE was ever successful in tackling it.

Boredom is a negative emotion, which is caused by monotony that fails to engage attention and to maintain optimal arousal levels (Wemelsfelder 2005; Eastwood et al 2012; Burn 2017). It includes a motivation for almost anything different or more arousing than the stimuli available (Mason & Burn 2011; Meagher & Mason 2012; Meagher 2019). The motivation for general stimulation as being key to objectively indicating boredom was identified and used by Meagher and Mason (2012) who distinguished possible reasons why environmentally unenriched farmed mink (Neovison vison) were observed to lie awake with their eyes open more than enriched mink (Meagher et al 2013). They suggested that if lying awake was due to boredom, the mink without EE would voluntarily interact