Title: Sex-dependent modification by chronic caffeine of acute methamphetamine effects on anxiety-related behavior in rats

Authors: Robert N. Hughes, Jennifer J. Hamilton

PII: S0166-4328(17)31909-5
DOI: https://doi.org/10.1016/j.bbr.2018.02.013
Reference: BBR 11288

To appear in: *Behavioural Brain Research*

Received date: 27-11-2017
Revised date: 15-1-2018
Accepted date: 9-2-2018

Please cite this article as: Hughes RN, Hamilton JJ, Sex-dependent modification by chronic caffeine of acute methamphetamine effects on anxiety-related behavior in rats, *Behavioural Brain Research* (2010), https://doi.org/10.1016/j.bbr.2018.02.013

Sex-dependent modification by chronic caffeine of acute methamphetamine effects on anxiety-related behavior in rats

Robert N. Hughes*, Jennifer J. Hamilton

Department of Psychology, University of Canterbury, Christchurch 8140, New Zealand

*Corresponding author at: Department of Psychology, University of Canterbury, Private Bag 4800, Christchurch 8140, New Zealand. Tel.: +64 3 369 4382; fax: +64 3 364 2189.

E-mail address: rob.hughes@canterbury.ac.nz (R.N. Hughes).

(Highlights)

- Acute methamphetamine (MA) is anxiolytic for males irrespective of caffeine intake.
- MA may only be anxiolytic for females when accompanied by 31 mg/kg/day caffeine.
- Possible MA effects on female memory with caffeine may be due to modified anxiety.
- 31 mg/kg/day caffeine on its own does not affect either sex.

(Abstract)

For fourteen days, male and female PVG/c hooded rats were provided continuously with either pure drinking water, or water containing caffeine in a quantity approximating a daily dose of 31.1 mg/kg. Then at intervals of 3 days, they were administered 1, 2 mg/kg methamphetamine (MA) or saline before being tested for anxiety-related behavior in a zero maze or a light/dark box, or their short-term spatial memory was assessed in a Y maze following introduction of a novel brightness change in one of the arms. Each rat experienced each type of apparatus with the same acute MA or saline treatment while still exposed to chronic caffeine or