INTRODUCTION

Binge-eating disorder (BED) is a psychiatric condition characterised by repeated, excessive consumption of palatable food. Impulsivity and a loss of inhibitory control are important factors in BED (1). We have previously validated a model of binge-eating (BE) in which rats are given irregular, limited access to chocolate (2). We have now tested BE rats in a variant of the delay discounting task to determine whether they exhibit impulsive behaviour when given access to chocolate.

METHODS

Adult, female, Wistar rats (n=42) with continuous access to chow and water were trained to lever-press for chocolate pellets in a delay discounting task. One lever delivered a single chocolate pellet immediately while the other delivered a 3 pellet reward with increasing delay after every 5th trial, i.e. 0, 4, 8, 16, 32 sec. Rats were divided into 2 groups: BE rats given intermittent 2 hr access to chocolate over 28 days and non-binge (NB) controls given a pot with no chocolate in it on the binge days. Both groups were tested in delay discounting on Days 17-18 and Days 30-31 of the BE protocol.

RESULTS

Figure 1 shows that (a) BE rats developed robust chocolate bingeing after ~2 weeks with concomitant reductions in chow intake the following day, (b) BE rats consumed ~50% of their daily food intake in the 2hr binges and (c) BE and NB rats gained weight at the same rate.

Figure 2 shows that the NB controls showed a decreasing preference for the larger 3 pellet reward as the delay increased on Days 17-18 and Days 30-31. The responses of the NB rats did not vary over the course of the experiment. In contrast, BE rats showed significantly lower preference for the delayed, larger reward as binge-eating became more established, i.e. their level of cognitive impulsivity increased.

Table 1 shows that BE rats consumed the same number of pellets as NB rats in the tests on Days 17-18, but 10% fewer (p<0.05) on Days 30-31.

CONCLUSION

- Freely-fed binge-eating rats demonstrate unequivocal intolerance of delayed reward and cognitive impulsivity when responding for chocolate rewards in a delay discounting test.

REFERENCES


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CONFLICT OF INTEREST PH Hutson is an employee of Shire Development Inc.