

Melatonin increases reactive aggression in humans

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Abstract

Objective Melatonin is a neurohormone that is secreted by the pineal gland and is known to regulate circadian rhythms and sleep. It is also known to have anxiolytic and sedative effects. However, the effects of melatonin on aggression are less clear. In this study, we investigated the effects of melatonin on reactive aggression in humans. We found that melatonin significantly increased reactive aggression in humans, as measured by the aggression paradigm. This effect was mediated by the melatonin receptor 1B (MT_{1B}). These findings suggest that melatonin may play a role in the regulation of aggression in humans.

Methods

63 healthy young men (M = 23.5 years, SD = 1.8) participated in the study. They were randomly assigned to either a melatonin (3 mg) or a placebo (3 mg) group. The aggression paradigm was used to measure reactive aggression. The aggression paradigm involves a video game in which participants are asked to shoot at a virtual target. The number of shots fired is a measure of aggression. The aggression paradigm is a well-established measure of reactive aggression in humans.

Results

The melatonin group showed significantly higher levels of reactive aggression than the placebo group. This effect was mediated by the melatonin receptor 1B (MT_{1B}). These findings suggest that melatonin may play a role in the regulation of aggression in humans.

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 (N = 400)
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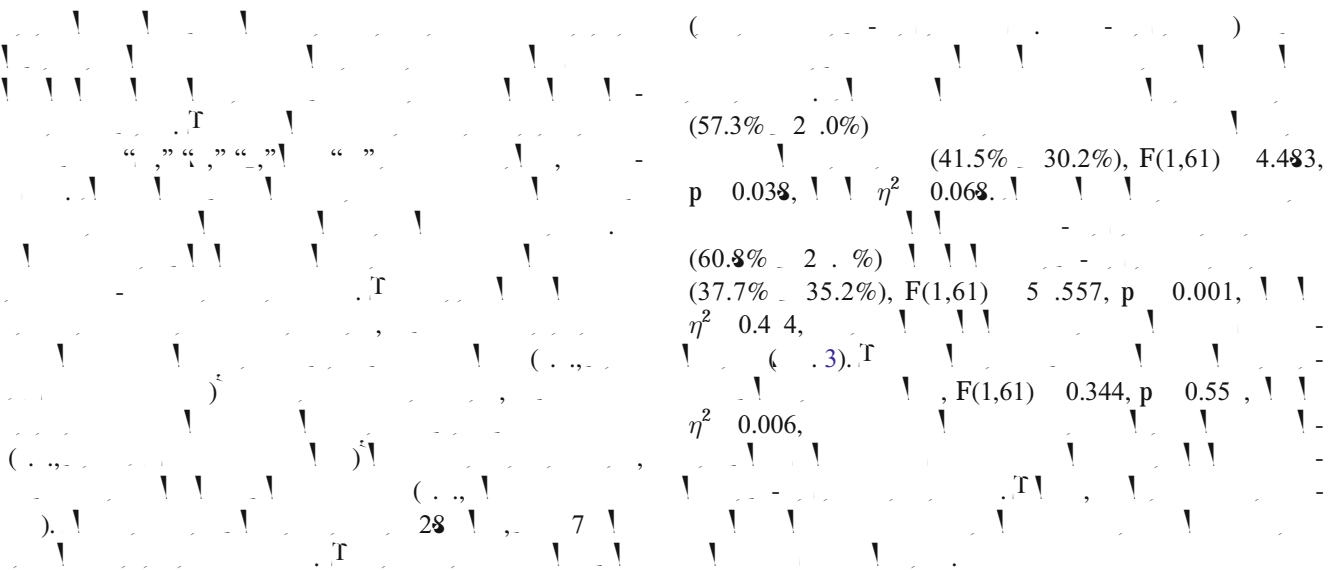
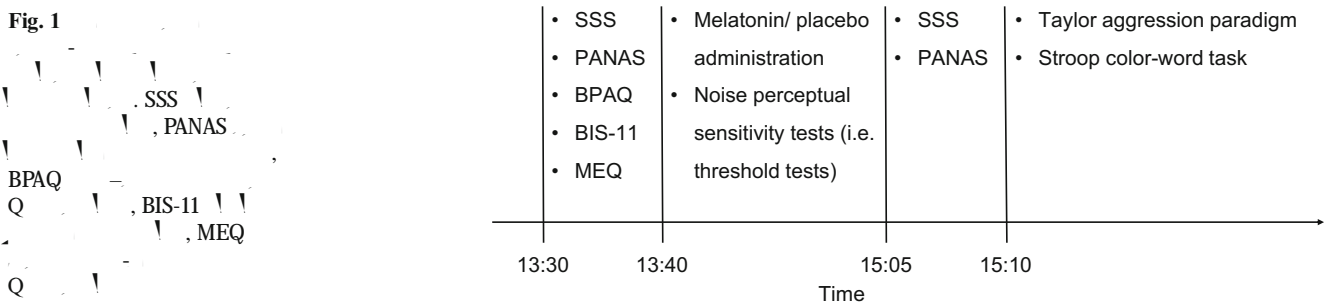
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Methods and materials

Participants

64
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Fig. 1



The Stroop task

Results

The TAP task

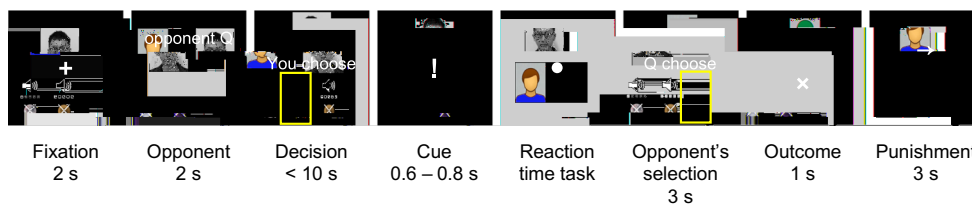
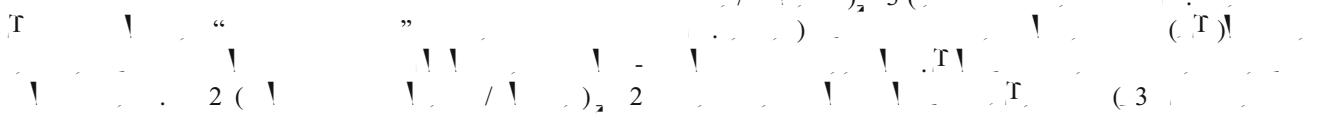
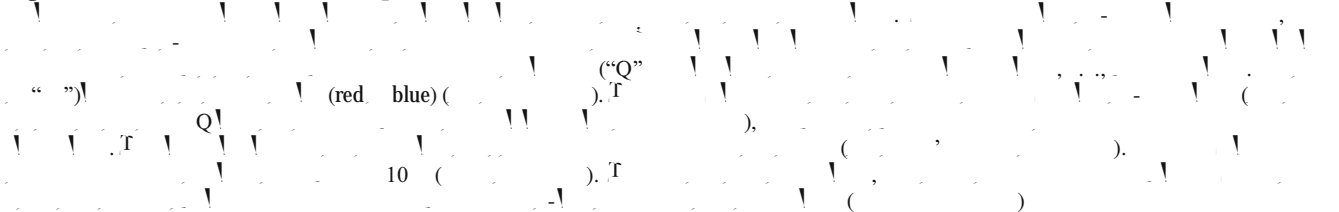


Fig. 2



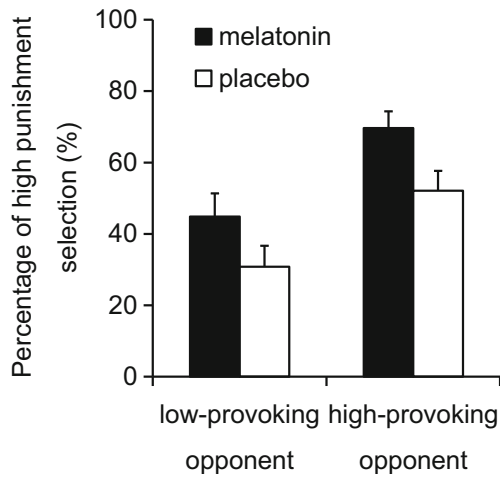


Fig. 3

..., p 0.55

..., F(2,60) 46.484, p 0.001, η^2 0.608

..., F(2,60) 13.370, η^2 0.308

..., ps 0.001 (1)

..., (p 0.237, 0.08)

..., (p 0.728, 0.355)

Table 1

	()	()	()	()	()	()	()
	814	177	54	186	808	125	857
	755	157	17	18	76	137	812
(%)	4.3	5	8.1	6.0	3.7	4.1	5.3
	4.6	4.4	11.6	8.8	4.8	5.4	7.0

20,000

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(2008)

-0.0034, 0.0080, 5%

-0.0507, 0.0104

Sleepiness

2 ()

2 ()

(F(1,60) 3.31, p 0.052, η^2 0.061)

(F(1,60) 40.624, p 0.001, η^2 0.404)

F(1,60) 4.3, p 0.040, η^2 0.068

(3.83 1.23)

(3.0 1.12), t(60) 2.476, p 0.016

(2.58 0.8 2.44 0.84)

t(61) 0.658, p 0.513

, r -0.15, p 0.128

20,000

0.0027, 0.0203, 5%

-0.034, 0.044

Controlling for potential contributing factors

(1, 2)

(1)

2,

, p 0.03 (3)

Acknowledgments

Author contributions

Compliance with ethical standards

Funding

Conflict of interests

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