The practicals were organized as follows:

(1) Section A – mood rating questionnaire.
(2) Section B – cartoon ratings.
(3) Short film (*Panorama: Kids on Pills*, about attention-deficit / hyperactivity disorder [ADHD]). Subjects unaware of forthcoming test on its content, we hope.

(4) Variable film:
Thursday afternoon: 'sad' film (*Rachel's Story*, about a young girl's heroin addiction and death)
Friday morning: 'neutral' film (*Rat Life: A Natural History*, about lab rats released into the wild)
Friday afternoon: 'happy' film (*The Simpsons: Bart vs. Australia*, comedy)

(5) Section C – mood rating.
(6) Affective go / no-go task.
(7) Section D – further cartoon ratings with new cartoons.
(8) Section E – quiz about ADHD film.

All stimuli and tasks were identical for all three groups, except for step (4).

Psychological processes being examined

- Were the films successful in manipulating your mood?
- Did this intervention influence your subsequent ratings of humour?
- Did the mood intervention create *affective bias* sufficient to influence the speed or accuracy of processing emotionally-valenced material (in the affective go / no-go task)?
- Did emotionally-charged film material produce *retroactive interference* for neutral material not deliberately committed to memory, reducing subsequent recall?

Affective go / no-go task

The task is based on Murphy *et al.* (1999) Emotional bias and inhibitory control processes in mania and depression. *Psychological Medicine* **29:** 1307–1321.

Subjects are shown a brief word stimulus, which is either a happy word (e.g. *content*) or a sad word (e.g. *hurt*). Each stimulus is shown for 300 ms, and then there is a 900 ms gap before the next word. In 'happy' blocks, subjects must press the space bar as soon as possible when a happy word appears ('go' trials), and must not respond to sad words ('no go' trials). In 'sad' blocks, subjects must respond to sad words and not to happy words. Each block begins with instructions as to which type of stimulus to respond to, and presents 18 stimuli (9 happy, 9 sad, in randomized order). There are 10 blocks, either in the order HHSSHHSSHH or SSHHSSHHSS, so 180 stimuli (90 happy, 90 sad) are presented in total. Responses with a reaction time below 100 ms are ignored as being 'anticipatory'.

Relevant results include:
- the reaction time on correct 'go' trials
- the number of errors of commission (responses on 'no go' trials)
- the number of errors of omission (lack of response on a 'go' trial)

In advanced analyses, each trial can be classified according to whether the subject is trying to respond to happy or sad words. Each can also be classified according to whether the block of trials was a 'switch' block (e.g. a sad block when the previous one was a happy block), or a 'non-switch' block (e.g. a happy block where the previous block was also a happy block).

Results from block 1 are discarded (it's the first block, so subjects are learning the task, and it's the only one not preceded by another block).

Results, and specific questions you might like to consider

Mood ratings

Group	Before Happy	After Happy	Difference (After – Before) Happy	Before Sad	After Sad	Difference (After – Before) Sad	Before Bored	After Bored	Difference (After – Before) Bored
Happy group range	**0 to 8**	**3 to 9**	**–2 to +4**	**0 to7**	**0 to 7**	**–3 to +2**	**0 to 9**	**0 to 7**	**–5 to +4**
Happy group mean	**5.89**	**6.36**	**+0.50**	**2.68**	**2.14**	**–0.58**	**3.92**	**2.69**	**–1.22**
Happy group SD	**1.71**	**1.57**	**1.18**	**2.20**	**2.02**	**1.23**	**2.18**	**2.33**	**2.03**
Happy group *n*	**37**	**36**	**36**	**37**	**36**	**36**	**37**	**36**	**36**
Neutral group range	**1 to 8**	**2 to 8**	**–4 to +1**	**0 to 8**	**0 to 7**	**–2 to +4**	**0 to 6**	**0 to 7**	**–2 to +3**
Neutral group mean	**5.68**	**4.94**	**–0.67**	**3.42**	**3.78**	**+0.22**	**3.11**	**3.56**	**+0.44**
Neutral group SD	**1.73**	**1.51**	**1.33**	**2.19**	**1.90**	**1.48**	**1.63**	**2.23**	**1.58**
Neutral group *n*	**19**	**18**	**18**	**19**	**18**	**18**	**19**	**18**	**18**
Sad group range	**0 to 9**	**0 to 7**	**–7 to +1**	**0 to 8**	**2 to 9**	**–3 to +8**	**0 to 8**	**0 to 9**	**–6 to +2**
Sad group mean	**5.95**	**3.16**	**–2.74**	**2.21**	**5.72**	**+3.38**	**4.21**	**2.58**	**–1.60**
Sad group SD	**1.85**	**1.80**	**1.86**	**1.91**	**2.20**	**2.68**	**2.08**	**2.25**	**2.11**
Sad group *n*	**43**	**43**	**42**	**43**	**43**	**42**	**43**	**43**	**42**

- Did watching the happy film alter self-reported mood (Section A versus Section C)? Or the sad film? Or the neutral film? *Hint: paired data in each case…*

- Were the questionnaires a good way of measuring mood? What are the pros and cons of alternative techniques, given the group size?

- After the film, were there difference between the moods of the three groups (Section C, comparing happy / sad / neutral groups)? *Hint: unpaired data…*

Cartoon ratings: categorical data

For those subjects for whom we have data from both before and after the film (some sheets weren't handed in or were lost), we can summarize the data as follows:

Number of subjects	Funnier before film	Funnier after film
Happy group	23	13
Neutral group	11	7
Sad group	28	14

- Did the three films differentially affect the proportion of cartoons found funny? We've classified every subject as finding the cartoons *more funny afterwards* (a higher proportion of '4–6' ratings after the film than before) or *less funny afterwards* (a lower proportion of '4–6' ratings after the film than before). Were there different proportions of 'more funny afterwards' and 'less funny afterwards' people in the three film groups? *Hint: categorical data again… What assumptions does the statistical test you are using make? Are those assumptions reasonable?*

Cartoon ratings: means

Group	Before: rating (1–6)	After: rating (1–6)	Change
Happy group mean	**2.54**	**2.56**	**0.02**
Happy group SD	**0.52**	**0.58**	**0.31**
Happy group *n*	**37**	**36**	**36**
Neutral group mean	**2.72**	**2.53**	**–0.19**
Neutral group SD	**0.70**	**0.72**	**0.48**
Neutral group *n*	**19**	**18**	**18**
Sad group mean	**2.64**	**2.58**	**–0.08**
Sad group SD	**0.54**	**0.66**	**0.46**
Sad group *n*	**43**	**43**	**42**

There were no sex differences on the mean cartoon ratings in any condition.

Relationship between mood after the film and change in cartoon rating

Group	Subject ID	After film: happy score	After film: sad score	After film: bored score	Change in cartoon ratings (after minus before)
Happy	64	3	2	2	0.02
Happy	65	7	1	7	0.00
Happy	66	4	0	0	–0.36
Happy	67	6	2	1	0.55
Happy	68	5	5	5	0.01
Happy	69	4	5	6	0.17
Happy	70	7	7	4	0.40
Happy	71	6	1	3	0.28
Happy	72	6	5	7	0.30
Happy	73	9	0	1	0.05
Happy	74	8	6	0	–0.51
Happy	75	3	5	2	–0.35
Happy	76	5	0	5	0.11
Happy	77	7	1	6	0.28
Happy	78	6	3	3	0.11
Happy	79	5	1	0	0.25
Happy	80	8	0	0	–0.20
Happy	81	7	2	3	0.27
Happy	82	5	5	7	–0.01
Happy	83	4	5	4	–0.27
Happy	84	7	1	3	–0.07
Happy	85	7	1	1	–0.73
Happy	86	7	2	2	–0.22
Happy	87	8	2	4	0.21
Happy	88	8	0	1	0.15
Happy	89	8	0	1	0.67
Happy	90	5	4	1	0.49
Happy	91	7	0	1	–0.18
Happy	92	7	0	1	0.12
Happy	93	8	1	1	0.21
Happy	94	8	2	6	–0.10
Happy	95	8	1	0	–0.05
Happy	96	6	2	5	0.34
Happy	97	7	1	0	–0.40
Happy	98	8	1	4	–0.20
Happy	100	5	3	0	–0.44
Neutral	45	2	5	6	–0.78
Neutral	46	5	0	0	–1.24
Neutral	47	6	5	5	–0.55
Neutral	48	5	2	5	–0.08
Neutral	49	6	4	5	–0.33
Neutral	50	5	4	2	–0.15
Neutral	51	5	6	0	–0.28
Neutral	52	2	7	7	0.03
Neutral	53	4	4	6	0.28
Neutral	54	6	4	3	0.16
Neutral	55	4	7	3	0.07
Neutral	56	5	2	3	0.68
Neutral	57	8	2	0	0.06
Neutral	58	5	4	5	0.30
Neutral	59	4	4	2	–0.58
Neutral	60	7	3	2	0.13
Neutral	62	4	4	6	–0.92
Neutral	63	6	1	4	–0.29
Sad	1	0	8	3	–0.92
Sad	2	3	3	2	–0.55
Sad	3	4	4	8	–0.08
Sad	4	0	9	0	–0.37
Sad	5	3	6	0	0.49
Sad	6	0	8	2	0.02
Sad	7	3	5	0	0.37
Sad	8	5	9	5	0.06
Sad	9	3	3	2	1.25
Sad	10	2	8	1	0.08
Sad	11	6	4	5	–0.21
Sad	12	3	8	2	0.41
Sad	13	2	6	1	0.02
Sad	14	5	5	4	–0.24
Sad	15	4	7	3	–0.20
Sad	16	0	9	0	–1.26
Sad	17	5	4	6	0.73
Sad	18	4	7	1	–0.47
Sad	19	5	6	2	–0.35
Sad	20	1	8	6	–0.33
Sad	21	2	8	1	–0.65
Sad	22	4	5	2	0.38
Sad	23	0	4	5	–0.20
Sad	24	1	8	0	–0.39
Sad	25	5	5	3	0.58
Sad	26	7	3	1	–0.11
Sad	27	3	2	3	0.14
Sad	28	4	4	2	0.10
Sad	29	2	2	4	–0.35
Sad	30	2	8	1	–0.27
Sad	31	4	6	5	–0.05
Sad	32	4	5	0	–0.39
Sad	33	3	7	1	–0.11
Sad	34	4	6	3	–0.48
Sad	35	5	2	9	0.49
Sad	36	6	2	6	0.16
Sad	37	2	6	2	–0.12
Sad	38	4	4	2	0.41
Sad	39	3	8	0	–0.43
Sad	40	2	5	3	–0.52
Sad	41	6	3	1	–0.09
Sad	43	3	7	4	0.28

- Was there a relationship between mood after the film (indexed by the self-reported mood scores) and the change in cartoon ratings?

Recall of ADHD film

Group	Score (out of 12)
Happy group range	**2–10**
Happy group mean	**6.22**
Happy group SD	**1.92**
Happy group *n*	**36**
Neutral group range	**3–10**
Neutral group mean	**6.84**
Neutral group SD	**2.46**
Neutral group *n*	**18**
Sad group range	**1–10**
Sad group mean	**6.48**
Sad group SD	**2.01**
Sad group *n*	**42**

There were no sex differences in the recall scores.

- Did the intervening film affect recall of details of the ADHD film? *Hint: unpaired continuous data…*

Affective go/no-go task

Some previously published work with this task

Murphy *et al.* (1999) found that manic patients were slower to respond to sad words than controls, while depressed patients were slower to respond to happy words than controls. (Manic patients also made more errors of commission than controls, and more errors of omission, and there were some other effects relating to switch / non-switch blocks as well.)

Did your results produce a similar pattern with happy / sad moods?

For your data, the effects depend both on your sex and the film group you were in

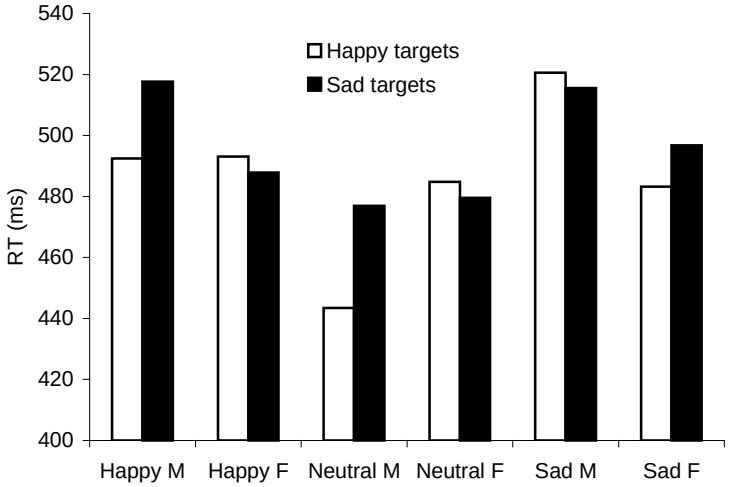
It turned out that some fairly complicated things happened. The analysis is too complex for you to have to perform, so we will state the results here. We will ignore effects involving switch / non-switch blocks.

You made more **errors of omission** to happy targets than sad targets (p = .048), but this wasn't influenced by your group or sex. Your **errors of commission** were not affected by the type of target (happy / sad), group (happy / sad / neutral film) or sex (male / female).

Reaction time was more interesting. Overall, your reaction time was faster for happy targets (mean 486 ms) than for sad targets (mean 496 ms) (significant difference, p = .029). But the way the reaction time depended on target type itself also depended on both your sex and the group you were in (p = .003):

Group	Sex	RT to happy targets (ms)	RT to sad targets (ms)
Happy	M	492.5	517.6
Happy	F	493.1	487.8
Neutral	M	443.5	476.9
Neutral	F	484.8	479.6
Sad	M	520.6	515.5
Sad	F	483.2	496.8

We can draw that:



The film (group assignment) affected both males' and females' performance, but did so differently. There are various ways to phrase the differences. Here are two:

1. Males were faster to process happy targets than sad targets, and this difference was bigger in the Neutral and Happy groups than in the Sad group. Females didn't show an *overall* difference between responding to happy and sad targets, but their responding to happy / sad targets did differ across groups — the sad film appears to have slowed down females' processing of sad targets a bit.

2. In the sad group, males and females didn't differ. In the happy group, there was a sex difference (males were slower to process sad targets). In the neutral group, there was also a sex difference (males were faster to process happy targets).

And in general…

- What defects did this experimental design have — for example, in terms of confounds, subject selection, power, etc.? How might you improve it?

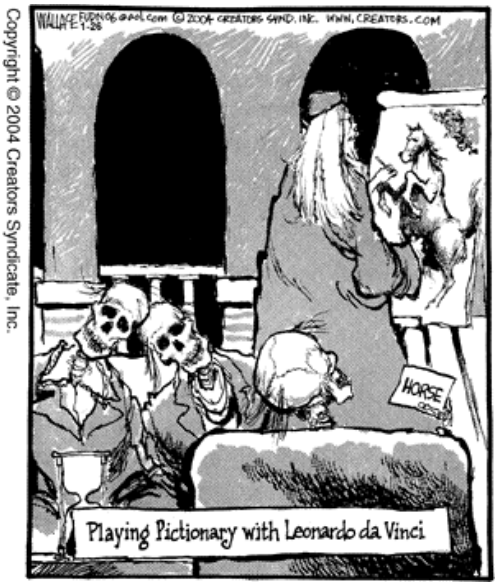
Finally, about the practical as a whole… We apologize for any distress caused by any of the films. We'd appreciate your comments (to *rudolf@pobox.com* or *m.aitken@psychol.cam.ac.uk*) — was the practical any good? Should there be additional warnings? Do you think there are other films that would be better mood-inducers and / or more appropriate across the 1B class as a whole? Etc.

Purely for interest…

Males and females did not differ in their *happy* scores in any way. Females reported higher *sad* scores than males, across the board, but the way the *sad* scores responded to the various films was not different across sexes. There were substantial sex differences in the *bored* scores. On average, everybody was less bored after the films. But in males, the three films affected 'bored' scores in the same way; in females, they didn't. Females became much *more* bored than males following the neutral film, did not differ from males following the happy film, and became much *less* bored than males following the sad film.

All of the cartoons received a '1' rating from somebody; half received a '6' as their maximum rating, and only two were never rated more than '4'. These were the cartoons rated least funny (left) and most funny (right) on average.

Least funny (mean rating 1.51)



Most funny (mean rating 4.03)

(end)