

## Mood

**Moore & Sellen** would presumably predict that the effect would not be repeatable with anyone else, since it would not be a discovery. Other commentators have other doubts. **Booth** believes repetitions of the basic effect are “contaminated by . . . [my] knowledge of previous observations.” **Totterdell** wonders if the effect depends on my “abstinence from evening interaction” and “sleep difficulties.” **Voracek & Fisher** say “there is a large history of errors through self-inspection and self-experimentation” and wonder about generality and individual differences.

These concerns are addressed by Figures 1 and 2, which show results from other people. During each morning of the TV phases, the subjects of these figures watched an episode of *Booknotes* (about one hour long, with a very high density of faces) using videotapes that I supplied. They were told to watch TV from a distance of about 102 cm (40 inches) and to avoid watching TV after 7 p.m. They rated their mood each day at about 4 p.m. using the same scales that I had used.

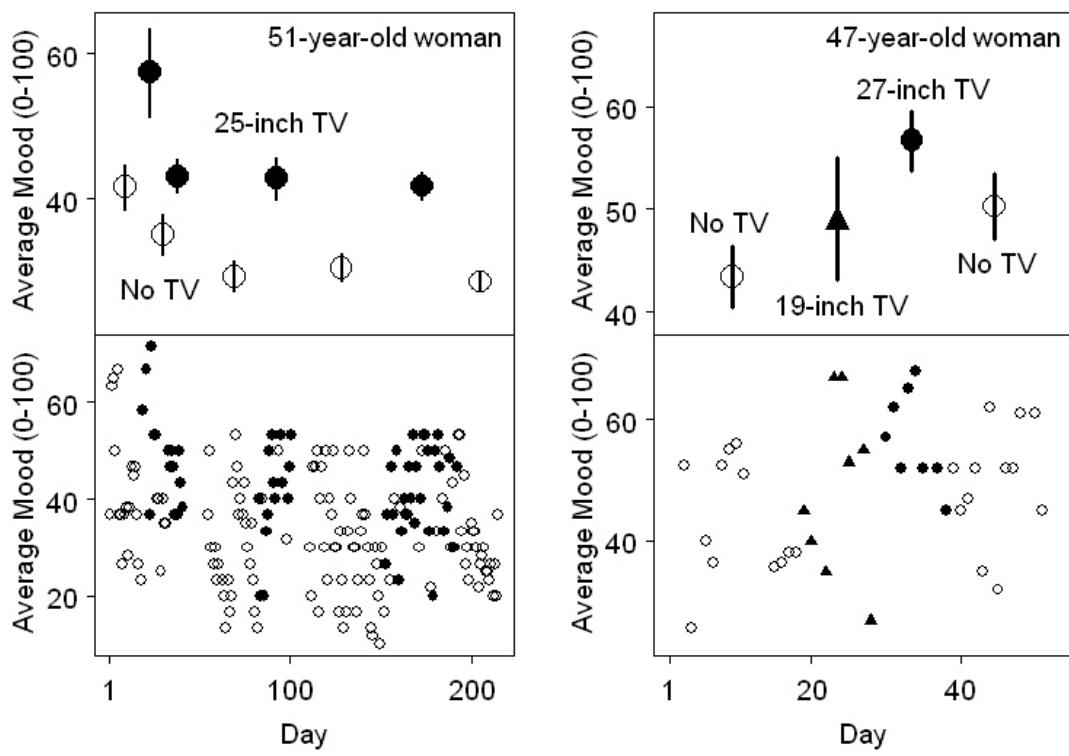
The 51-year-old woman (left side of Figure 1) was a novelist. She lived alone and worked at home and had learned of the study from a friend. Starting in college, she had been repeatedly diagnosed as depressed. She had tried many anti-depressants without finding one whose side effects were tolerable. On TV days, she watched *Booknotes* starting at 7:00 a.m. on a 25-inch (640 mm) TV. Figure 1 shows that this repeatedly raised her mood. The upper panel shows averages over days; the lower panel shows results for individual days.

Evidence that the mood improvement was not a placebo effect came from other observations. During the second no-TV phase, she told me her “panic attacks” (her term) had returned. These were episodes of great fear and anxiety that lasted about a minute—fear that she would not finish her book, for example. Most happened in the morning, not long after waking up; about one-fifth happened in the afternoon. The resumption made her realize (“oh, here they are again”) that she had not had any attacks during the preceding TV phase. Before then, they had occurred several times per week. This was the first I had heard of them. After this comment, she recorded them. The records confirmed her initial observation. Out of the 29 days that followed days when she watched TV in the morning, she had a panic attack on 4 of them (14%). Out of the 76 days that followed days when she did not watch TV in the morning, she had a panic attack on 38 of them (50%), a highly reliable difference,  $t[1] = 10.01$ , one-tailed  $p < 0.001$ . Panic attacks and depression are connected in many ways (Kaufman & Charney, 2000), I learned later.

The 47-year-old woman (right side of Figure 1) was unemployed due to severe rheumatoid arthritis. She lived alone. At the time, she was seeing a therapist for depression but was not taking anti-depressant drugs, with which she had always had poor results. She watched *Booknotes* starting at 6:00 a.m. During the first TV phase, she watched a 19-inch (480-mm) TV; during the second, a 27-inch (690-mm) TV. During the second TV phase but not the first, her mood was reliably higher than during the two no-TV phases combined,  $t[30] = 2.62$ , one-tailed  $p < 0.01$ . The two no-TV phases did not differ reliably,  $t[22] = 1.67$ ,  $p = 0.11$ .

The results shown in Figure 2 are from a 34-year-old man who was unemployed at the time of the study. He had previously been a car painter. About five years earlier he had been diagnosed with major depression and had been hospitalized about 20 times for suicide attempts. Recently he had been diagnosed as bipolar. At the time of the study he was taking anti-depressant drugs. He lived with his wife and two children. During the first TV phase, with a 19-inch TV, he watched the

*Booknotes* tapes starting about 8 a.m. I told him he should start closer to 7 a.m. During the first eight days of the next TV phase, with a 25-inch TV, he started close to 7 a.m.; after that he started at about 6 a.m.



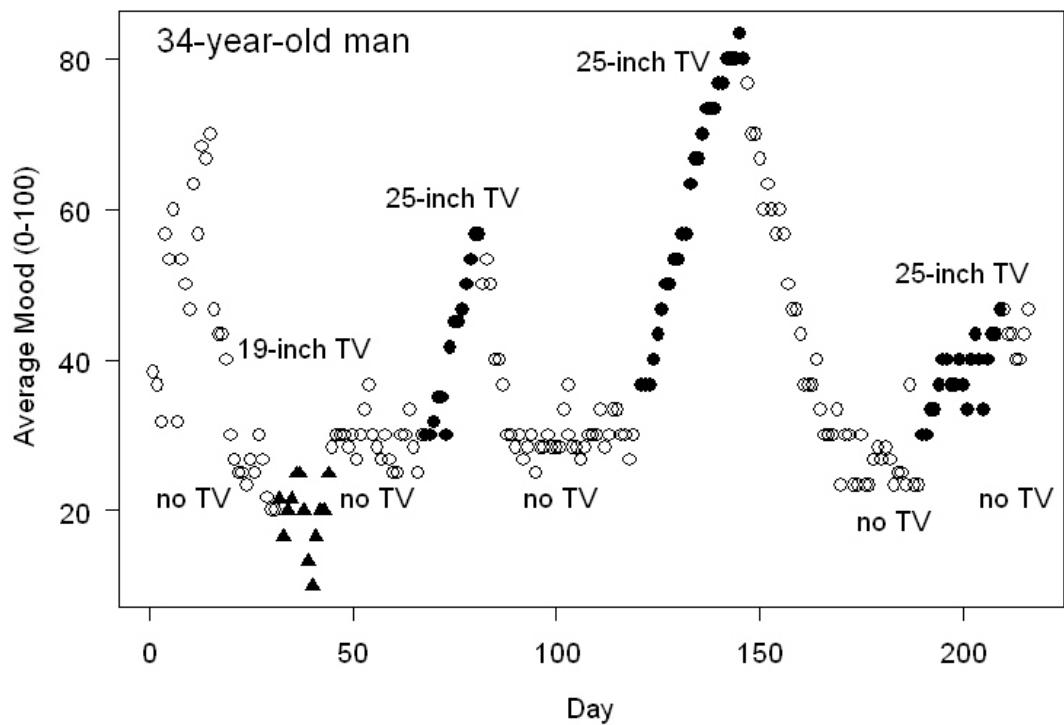
**Figure 1.** Mood as a function of TV watching. Upper panels: Mean and standard errors over days. Lower panels: Average rating for each day. Open circles: Did not watch *Booknotes* the previous day. Filled symbols: Watched *Booknotes* the previous day. Mood was rated on the same scales used in Figures 4-9.

Figure 2 shows that *Booknotes* on the 19-inch TV had no clear effect. On the 25-inch TV, however, it caused his mood to slowly rise over days. When the *Booknotes* viewing was discontinued, his mood slowly returned to its initial level.

Were the changes due to expectations? Before the first TV phase I traveled to his home town to bring him the *Booknotes* tapes and measure his TV to see if it was the right size. He met me at the subway station. I had planned to go to his house but he said, unexpectedly, that he was in a hurry to go out of town. There was no time to go to his house. “How big is your TV?” I asked. He indicated about 25 inches with his hands. So I expected the first TV phase to raise his mood, and presumably he did, too. After the first TV phase I measured his TV and discovered it was 19 inches—too small. It was replaced with a 25-inch TV. The lack of effect of the 19-inch TV, in spite of my and presumably his expectations, suggests that the later changes with the 25-inch TV were not due to expectations. The results with the 25-inch TV were not what I expected either. I had expected results similar to mine (e.g., upper panel of Figure 5) and other subjects (Figure R1), where there is no gradual rise and fall. My mood rose gradually when I returned from a trip across time zones (Figure 9) but the subject of Figure R2 did not take any such trips.

The results in Figure 2, although unexpected, fit well with a discovery made by J. D. Pettigrew, an Australian neuroscientist. A *binocular rivalry task* is one in which the two eyes see different things and the person indicates what he sees. In most cases the percept alternates every few seconds between what the right eye sees and what the left eye sees. This is what Pettigrew found when he tested his students. When he tested himself, however, he found that the percept alternated much more slowly. He wondered if this was related to his bipolar disorder (Gibbs, 2001). As the target article mentions, he was right: Persons with bipolar disorder had lower alternation rates than normal controls (Pettigrew & Miller, 1998; also King & Killian, 2002, and Miller, Gynther, Heslop, Liu, Mitchell, Ngo, Pettigrew, & Geffen, 2003). Pettigrew and Miller (1998) explained the slow switching times by assuming that an underlying oscillator was “sticky” (p. 2141)—inclined to stay in one state or the other.

Figure 2 suggests a more specific version of that hypothesis: The underlying oscillator has an unusually long integration time. The 34-year-old man’s mood depended not only on whether he had seen faces the previous morning (as my mood did) but also on whether he had seen faces many mornings before that (as my mood did not). A longer integration time makes a measuring device more sensitive—able to detect smaller differences if they last long enough. Persons with bipolar disorder, the Pettigrew and Miller finding and Figure R2 suggest, have an mood-controlling oscillator that can detect and react to a small imbalance in exposure to faces that most people (with oscillators that integrate over a shorter period) would not notice. If the subject of Figure R2 saw too many minutes of evening faces and too few minutes of morning faces many days in a row, the results suggest that this could push his mood quite low, where it would resist change. Thus two quite different data sets—Example 2 and Figure R2 are one set, the Pettigrew and Miller (1998) correlation the other—suggest similar ideas about bipolar disorder.

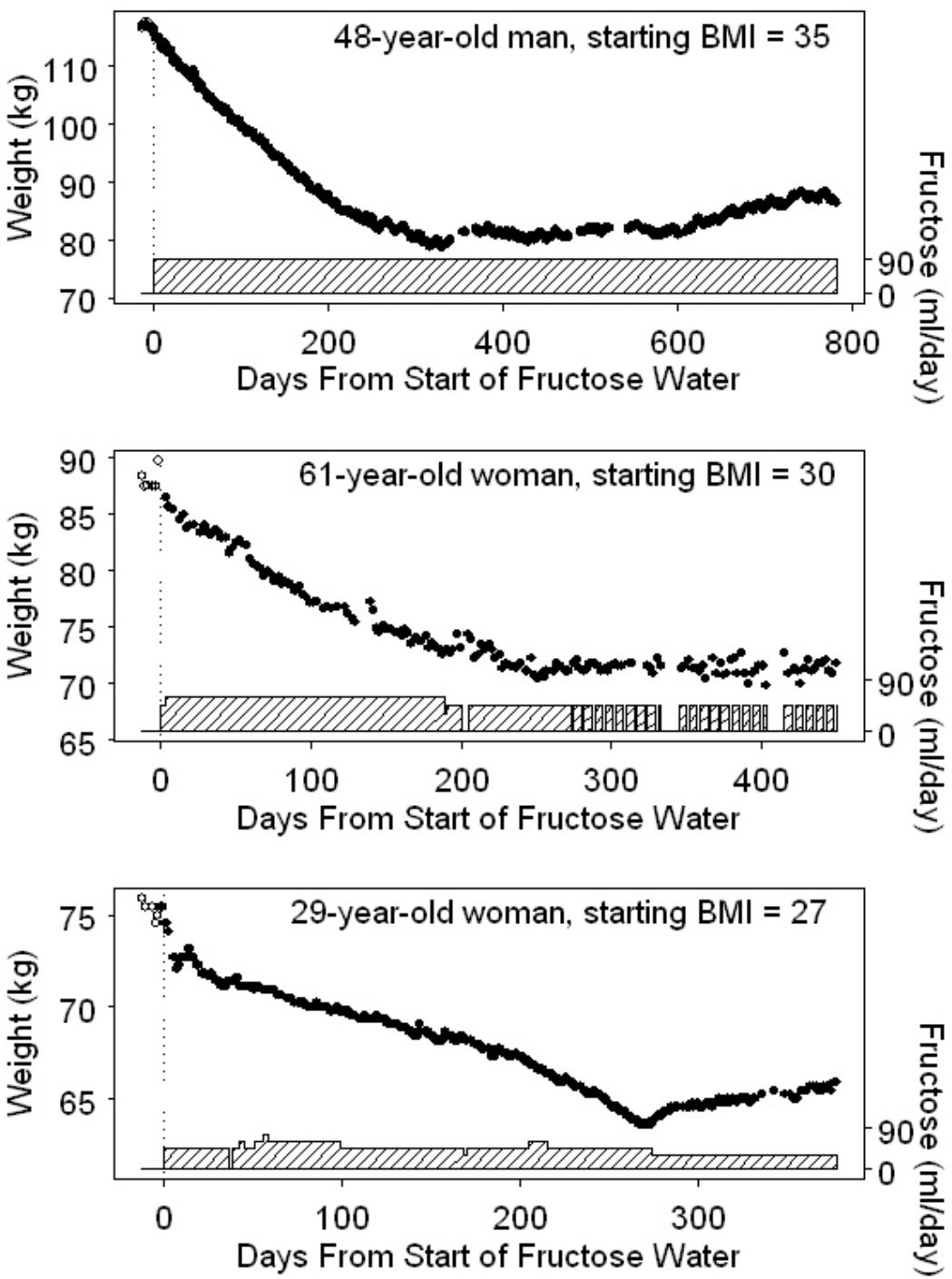


**Figure 2.** Mood as a function of TV watching for a person with bipolar disorder. Open circles: Did not watch *Booknotes* the previous day. Filled symbols: Watched *Booknotes* the previous day. Mood was rated on the same scales used in Figures 4-9.

## Weight

How general will Example 10 turn out to be? Friends noticed my fructose-induced weight loss and told *their* friends about it, and some of those friends contacted me, asking how to do it. I told them (a) 90 ml (6 tablespoons) or less of fructose per day should be sufficient to cause substantial loss of appetite and weight loss; (b) that the amount of water in which the fructose was mixed did not matter, but that it must be unflavored; and (c) the fructose water should be drunk between meals. To lose weight they would have to consume fewer calories than usual, I said, but the fructose water should make it possible to do so without unpleasant hunger. Three of them tried it and kept records. Figure 3 shows the results. The fructose water, they found, made it much easier to eat less and lose weight. The two women, like me, reduced their daily amount of fructose when they reached their desired weight. Plainly Example 10 is not an “error” (**Voracek & Fisher**) or limited to me, and does not require my earlier weight-loss experiences (**Miller**). If it is an “anecdote” (**Booth**), it is a useful one.

Others tried drinking fructose water and did not keep records. I know little about these cases, but they did reveal a variety of possible problems: the fructose water did not taste good, it was difficult to drink, it caused hunger pangs, it was boring to eat less. A *BBS* reviewer tried it and noticed that at a dose that was “considerably lower” than my lowest dose the fructose caused “pain in joints that were ordinarily pain-free.” He or she had a 20-year record of joint pain and had found that “distinctive patterns of pain accompany certain additives in food.” The pain went away when each additive was avoided and returned within hours when it was consumed again. “Using a standard design of fructose, no-fructose, etc., in a matter of two weeks it was clearly demonstrable that I have a strong sensitivity to fructose (at least in the powdered form I used),” the reviewer wrote, which was “quite surprising.” He or she went on to say that self-experimentation by “an informed citizenry” plus aggregation of the results, similar to what **Halberg, Cornélissen & Schack** do with blood pressure, “may be the only way for us to ever recognize the full range of differences among individuals on health and psychological dimensions.” I agree.



**Figure 3.** Fructose water and weight loss. Open circles: before drinking fructose water. Filled circles: while drinking fructose water. The shaded function in each panel shows how much fructose was consumed each day.