

**THE RELATIVE EFFECTIVENESS OF  
MODELS AND PROMPTS ON ENERGY  
CONSERVATION: A FIELD EXPERIMENT  
IN A SHOWER ROOM**

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**ABSTRACT**

Signs were placed in the field house shower rooms of a university campus exhorting people to conserve water and energy by turning off the water while soaping up. Making the signs more obtrusive increased compliance but also increased resentment. Far greater compliance was achieved through a combination of a sign and an accomplice modeling the appropriate behavior. Still greater compliance was achieved when two accomplices performed the requested behavior simultaneously.

There are a number of ways in which the administrators of an institution (like a university) might attempt to promote energy conservation. They might make capital changes by retrofitting buildings; they might attempt to change the attitudes of those who use their facilities by public information campaigns; they might exhort or prompt people to turn off lights, keep windows closed, turn down thermostats, take shorter showers, etc., by placing appropriate signs all over the place.

Several observers have argued that impersonal measures like prompts, information campaigns and the like might not be an effective tool for energy conservation because, frequently, what is being asked for is the adoption of an innovation or the change of a life-style [1, 2]. Where the adoption of innovation is concerned, behavioral scientists suspect that individuals might be more effectively influenced by direct contact with the behavior of other people

through modeling and social diffusion than by information campaigns, prompts and media advertising [1–4]. For example, in the 1930's the government attempted to disseminate information to farmers about improved agricultural techniques. They tried to persuade farmers to adopt these techniques through distributing pamphlets filled with statistics, charts and graphs showing the proven benefits of these innovative procedures. The information campaign was a dismal failure. Then, the government set up a demonstration project in which government agents worked side by side with a few selected farmers. When individuals from neighboring farms observed the successful behavior of their peers, they were quick to adopt those new techniques [5]. Similarly, soon after supermarkets opened their doors, store owners introduced the shopping cart as a means of reducing breakage. But customers were slow to make use of this innovative device, according to Sylan Goldman, the inventor of the shopping cart.

Women customers would come in . . . but very, very few would take one. Their comment was “No, we have pushed enough baby buggies around” . . . and the men customers would say “with my big arms, I can carry my baskets.” Hiring people to stroll around with carts was the gimmick that did the trick (quoted by Simons [6]).

We were presented with an interesting opportunity for testing this notion in the Santa Cruz campus of the University of California. The area had recently experienced an acute water shortage during which time signs were posted in the shower rooms of the athletic field house exhorting students to conserve water by turning off the shower while soaping up. Specifically, the sign said: Conserve water: 1. Wet Down. 2. Water off. 3. Soap. 4. Rinse. Although the water shortage was long since over, we wondered whether people would obey the message of those signs as a way of conserving *energy*. We believed that this would be likely to occur in this specific situation because the student body at Santa Cruz professes to be particularly conscious of their environment and particularly prone toward conservation.

We first wanted to determine whether people were aware of the signs. As a quick check we approached a random sample of forty-five male<sup>1</sup> students and asked each of them if they were aware of any signs posted in the shower room of the field house. Forty-two (93%) *were* aware of signs and all of them knew that they had something to do with conserving water.

Next, we wanted to determine whether people were aware of a connection between using less water in taking a shower and conserving energy (the energy it takes to heat the water). A different sample of forty-five undergraduates was approached, individually and asked “Why should people take short showers?” Of these, thirty-eight (84%) included the conservation of energy among their

<sup>1</sup> We confined our sample to males because we intended to observe the behavior of individuals in the men's shower room only.

first two answers. Thus, we can conclude that the great majority of students were aware of the signs; although the signs were specific to the conservation of water the great majority of students easily made the connection between restricting the use of warm water and conserving energy. Thus, although there was no longer a shortage of water, we believed that a large percentage of the student body might comply with the message on the signs — interpreting it as a useful prompt for the conservation of energy.

### THE BASELINE CONDITION

Our first step was to observe the shower-taking behavior of students in the university field house, in order to find the baseline of energy-conserving behavior. Specifically, we wanted to determine whether or not a student turned off the water while soaping up. While, at first glance, the systematic observation of shower-taking behavior might seem like a delicate and risky operation, it turned out to be an easy task to accomplish without arousing suspicion. This is due in part to the layout of the men's shower facilities at the university field house. The shower room is one large, open space consisting of eight shower heads spaced approximately four feet apart. Adjacent to the shower space is a "towelling-off" space; there are no doors connecting the two rooms. Thus, it proved easy for our observers to make careful and accurate observations from the drying room in an apparently casual, "corner-of-the-eye" manner, while towelling themselves off following a shower. We used three undergraduates as observers. So as not to arouse suspicion (by loitering too long in the drying room) each observer remained for only a few minutes and then moved into the locker room as he was replaced by a new observer. Because each subject remained in that area for only a brief time, it was easy to rotate ("recycle"?) our three observers continuously without arousing suspicion.

Observations were made for three consecutive hours (identical in all conditions) for five consecutive days (Monday through Friday). Of the 148 young men who took showers during this period only nine (6%) followed the posted instructions; the vast majority did not turn off the water while soaping up.

### THE OBTRUSIVE SIGN CONDITION

We suspected that the small degree of compliance might have been due in part to the fact that the signs were rather obscure having been placed high up on the wall of the shower room. Thus, even though our survey showed that students were generally aware of the signs, still, they might easily ignore the prompt due to its unobtrusiveness. Accordingly, our next step was to make the prompt more obvious. We constructed a large sign containing the same message and attached it to a tripod, which we placed in the middle of the shower area.

This sign was impossible to ignore; indeed, students were forced to walk around the sign in order to place themselves under a shower-head. We observed their shower-taking behavior for five consecutive days during the same three hour period. During that period, 19 per cent of the shower-users (27 of 139) followed the instructions. Thus, making the sign obtrusive tripled compliance with the prompt.

### MAKING THE PROMPT SPECIFIC

While observing the behavior of the students in the above condition, our observers overheard several students complaining about the fact the water shortage was over – thus questioning the legitimacy or wisdom behind the placing of the sign. These comments were frequently accompanied by some expression of annoyance or resentment; e.g., the sign was knocked over several times. This led us to suspect that if we made the instructions more appropriate we might further increase the rate of compliance. Accordingly, we constructed a new sign which was almost identical to the old one but instead of reading “Conserve Water” it read “Conserve Energy.” We placed this sign on a tripod in the center of the shower room.

The results in this condition were almost identical to those in the previous condition. During fifteen hours of observation over five consecutive weekdays, 20 per cent of the shower-takers (32 of 161) complied with the instructions. The similarity of the results in these conditions confirms our earlier finding that the vast majority of individuals *are* aware that taking short showers conserves energy as well as water. It also raises the intriguing possibility that those who questioned the appropriateness of the earlier sign might have been justifying their lack of compliance and might not have complied even if the sign had been more appropriate. This speculation was bolstered by the fact that a fair number of students continued to derogate the sign, kick it over, etc. Moreover, all of our observers noticed that those students who expressed annoyance at the sign proceeded to take inordinately long showers. It is conceivable that many people react against heavy handed attempts to influence their behavior by performing in a manner directly opposite to the behavior requested. Jack Brehm refers to this behavior as *psychological reactance* and has documented its occurrence in a wide variety of contexts [7]. If *reactance* operates on some people in response to prompts it could conceivably wipe away whatever energy is saved by the people who comply.

### MODELING

At the beginning of the fourth week of our study, we introduced a young man who modeled the appropriate behavior. We allowed the sign to remain standing on the tripod so that students could continue to be apprised of the

behavior that was being requested and the reasons for it. Our model entered the shower room when it was empty, stood under a shower-head at the far end, wet himself down, and turned off the shower. He then turned toward the corner (with his back to the entrance) so that he would not be perceived by the subjects as being aware of their behavior. As soon as he heard someone enter the shower room, with his back still turned to the subject, he began vigorously soaping up. The fact that his shower was turned off could not easily be ignored. He then turned his shower on for a brief period of time, rinsed off, and left the shower room without glancing at the subject. The behavior of the subject was observed unobtrusively, by an observer who entered the adjacent (drying) room as the model left. By judiciously using four accomplices who alternated between the role of model and observer, we were able to continue a flow of observations without arousing suspicion that might have been caused by having the same individual take a series of consecutive showers.

There was a striking increase in compliance due to modeling. Specifically, of 109 subjects, fifty-three (49%) turned off their showers while soaping up.

We then introduced two people into the situation – each modeling the behavior called for by the sign. The compliance rate jumped to 67 per cent. Again, it was quite clear that the students were unaware that they were being observed. Thus, it is unlikely that they were conserving water to avoid censure or ridicule. Rather, it is our conclusion that having people model the appropriate behavior suggests to others that conserving water by turning off the shower is a reasonable and worthwhile thing to do.

This experiment was confined to shower taking behavior only because such behavior was relatively easy to observe under controlled conditions. At the same time, we believe that it is likely that our results may have meaning far beyond the confines of a university shower room. When our results are combined with other findings under the general rubric of social diffusion, they suggest that a policy which encourages highly visible people (e.g., community leaders) to perform obtrusive acts of conservation (retrofit their homes, install solar collectors, etc.) might have a wide and deep impact on the behavior of others in the community. Specifically, suppose in each community a highly respected person were provided with great financial incentive for retrofitting his house with the provision that in exchange he would encourage neighbors to tour his home, examine his utility bills (before and after the change), etc. It is possible that funds spent on such a program would be more cost effective than those currently being spent to promote energy conservation *via* media advertising.

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