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BEHAVIORAL RESEARCH CASE STUDY

A Within-Subjects Design: Sugar and Behavior

Many parents and teachers have become concerned in recent years about the effects of sugar on children's behavior. The popular view is that excessive sugar consumption results in behavioral problems ranging from mild irritability to hyperactivity and attention disturbances. Interestingly, few studies have tested the effects of sugar on behavior, and those that have studied its effects have obtained inconsistent findings.

Against this backdrop of confusion, Rosen, Booth, Bender, McGrath, Sorrell, and Drabman (1988) used a within-subjects design to examine the effects of sugar on 45 preschool and elementary school children. All 45 participants served in each of three experimental conditions. In the high sugar condition, the children drank an orange-flavored breakfast drink that contained 50 g of sucrose (approximately equal to the sucrose in two candy bars). In the low sugar condition, the drink contained only 6.25 g of sucrose. And in the control group, the drink contained aspartame (Nutrasweet™), an artificial sweetener.

Each child was tested five times in each of the three conditions. Each morning for 15 days each child drank a beverage containing 0, 6.25, or 50 g of sucrose. To minimize order effects, the order in which participants participated in each condition was randomized across those 15 days.

Several dependent variables were measured. Participants were tested each day on several measures of cognitive and intellectual functioning. In addition, their teachers (who did not know what each child drank) rated each student's behavior every morning. Observational measures were also taken of behaviors that may be affected by sugar, such as activity level, aggression, and fidgeting.

The results showed that high amounts of sugar caused a slight increase in activity, as well as a slight decrease in cognitive performance for girls. Contrary to the popular view, however, the effects of even excessive consumption of sugar were quite small in magnitude. The authors concluded that "the results did not support the view that sugar causes major changes in children's behavior" (Rosen et al., 1988, p. 583). Interestingly, parents' expectations about the effects of sugar on their child were uncorrelated with the actual effects. Apparently, parents often attribute their children's misbehavior to excessive sugar consumption when sugar is not really the culprit.