

$N=16$ subjects learned a visual discrimination task on one day and then were tested the following day. Half were allowed to have at least 6 hours sleep, and the other half were kept up all night.

6 hours sleep	No sleep
$N_1 = 8$	$N_2 = 8$
$\bar{X}_1 = 72$	$\bar{X}_2 = 61$
$SS_1 = 440$	$SS_2 = 456$

Is there a significant difference in performance between the two conditions?

One sample of rats receives a drug that lowers serotonin, whereas another receives placebo. The number of aggressive acts is recorded:

Control	Low serotonin
$N_1 = 10$	$N_2 = 15$
$\bar{X}_1 = 12$	$\bar{X}_2 = 16$
$SS_1 = 160.2$	$SS_2 = 135.1$

Does the drug result in increased aggression in rats?

In a classic study of problem solving, Duncker (1945) asked participants to mount a candle on a wall in an upright position so that it would burn normally. One group was given a candle, a book of matches, and a box of tacks. A second group was given the same items, except that the tacks and the box were presented separately as two distinct items. The solution to this problem involves using the tacks to mount the box on the wall, creating a shelf for the candle. Duncker reasoned that the first group of participants would have trouble seeing a “new” function for the box (a shelf) because it was already serving a function (holding tacks). For each participant, the amount of time to solve the problem was recorded.

Box of tacks	Tacks and box separate
$N_1 = 5$	$N_2 = 5$
$\bar{X}_1 = 120$	$\bar{X}_2 = 100$
$SS_1 = 2558$	$SS_2 = 1278$

Does having the items presented separately significantly reduce solution times?