

The Sith Lords are concerned that their recruiting slogan, "Give In to Your Anger," isn't very effective. Darth Vader develops an alternative slogan, "Together We Can Rule the Galaxy." They compare the slogans on two groups of 50 captured droids each. In one group, Emperor Palpatine delivers the "Anger" slogan. In the other, Darth Vader presents the "Together" slogan. 20 droids convert to the Dark Side after hearing Palpatine's slogan, while only 5 droids convert after hearing Vader's. The Sith's data scientist concludes that "Anger" is a more effective slogan and should continue to be used.

**Both groups should be presented the slogan by the same person to avoid bias. Perhaps Palpatine was simply more convincing at giving the slogan.**

In the past, the Jedi have had difficulty with public relations. They send two envoys, Jar Jar Binks and Mace Windu, to four friendly and four unfriendly planets respectively, with the goal of promoting favorable feelings toward the Jedi. Upon their return, the envoys learn that Jar Jar was much more effective than Windu: Over 75% of the people surveyed said their attitudes had become more favorable after speaking with Jar Jar, while only 65% said their attitudes had become more favorable after speaking with Windu. This makes Windu angry, because he is sure that he had a better success rate than Jar Jar on every planet. The Jedi choose Jar Jar to be their representative in the future.

**This experiment is flawed because the planets visited by Jar Jar and Windu are not similar in attributes. Jar Jar is visiting friendly planets. Windu is visiting unfriendly planets. To control the experiment, both Jar Jar and Windu should visit a set of planets that represent about the same mix.**

When people install the Happy Days Fitness Tracker app, they are asked to "opt in" to a data collection scheme where their level of physical activity data is automatically sent to the company for product research purposes. During your interview with the company, they tell you that the app is very effective

because after installing the app, the data show that people's activity levels rise steadily.

**This experiment is flawed because it is excluding the group of app users who do not opt in. Perhaps the group that opts in are more likely to be motivated by the app. A better experiment would be to monitor the usage of the app across all users that install the app.**

To prevent cheating, a teacher writes three versions of a test. She stacks the three versions together, first all copies of Version A, then all copies of Version B, then all copies of Version C. As students arrive for the exam, each student takes a test. When grading the test, the teacher finds that students who took Version B scored higher than students who took either Version A or Version C. She concludes from this that Version B is easier, and discards it.

**This experiment is flawed because if there is a known cheating problem, the tests should have been stacked in random order. Because the way were not stacked randomly, it is possible that people who arrived together, pulled the same version, sat next to each other, cheated, thus biasing the experiment.**