CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY

Name(s)
Nicholas A. Toscano

Project Number
J2119

Project Title
Childproof Lids. Do They Work?

Abstract

Objectives/Goals

Childproof medicine bottles are bottles meant to keep children from eating medicine. Experiments were performed to determine what bottles were the least childproof. The hypothesis was that the screw top bottle and the "push and twist" would be the least childproof, while the "align the arrows" and "squeeze the sides" bottle would be the most childproof.

Seventy-one test subjects were observed and recorded. Each subject was given four different types of bottles. The first bottle, A, was an average bottle with a screw top lid. The second bottle, B, had a "push down and twist" lid, the third bottle, C, was an "align the arrows" bottles, and the fourth bottle, D, was a "squeeze the sides" bottle. The data was recorded as successes and fails.

The results showed that bottle A had the highest opening rate with 100%. Bottle B had the second highest opening rate with a 63.4%. Bottle C had the lowest opening rate with 12.7%. Bottle D had the third highest opening rate with 15.5%. The children who were tested had difficulties opening bottles C and D rather than bottles A and B.

In conclusion the hypothesis was proven correct and bottles A and B have a higher opening rate than C and D.

Methods/Materials

I tested three different types of childproof lids and one regular screw top lid. Handed them to children of the ages 3-7 and observed if they could open each bottle.

Results

During this experiment the bottles A, the bottle with the screw top, and B, the bottle with the "push and twist" lid, were opened the most by the children. The control, bottle A, had the highest opening rate which was 100%. Bottle C, the bottle with the "align the arrows" lids, had the lowest opening rate from all bottles. It had an opening rate of 12.7%. Bottle B had an opening rate of 63.4% and was the second most opened bottle. Bottle D, the bottles with "squeeze the sides" lid, had the third most opened bottle, with an opening rate of 15.5%.

Conclusions/Discussion

Through a series of multiple tests, it was concluded that my hypothesis was proven correct. Bottles A and B were not childproof but bottles C and D mainly were.

Summary Statement

Through tests I showed regular lids and "push down and twist' lids are not childproof, while "align the arrows" and "squeeze the sides" lids are.

Help Received

My science teacher corrected my binder.