Prioritizing User Experience, Human-Centered Design, Accessibility, and Usability

THE PRESCRIPTION PILL BOTTLE AND DRUG LABEL
Human factors is an interdisciplinary field that applies principles of cognitive psychology and human physiology to the engineering, design, and aesthetics of a product.

In PSYC 330: Introduction to Cognitive Science, we were tasked with identifying a pain point. After identifying a pain point, we were to create a new product or redesign a current product that alleviated this pain as well as prioritized the user experience.
THE PAIN POINT
The pill bottle has barely changed in the past 50 years or so. Most pill bottles are cylindrical with a screw-on cap and a printed instruction label.

Often times, screw-on caps can be difficult to be come off.

If a patient has arthritis or other wrist and hand conditions, taking medication can be a painful and difficult task—especially without the help of a caretaker.

Additionally, pharmacists and pharmacy technicians may fill 100 bottles a day.

In the r/pharmacy subreddit on Reddit, workers in the pharmaceutical industry complained about the difficulty of opening bottle caps. One pharmacist heard of many colleagues developing carpal tunnel syndrome as a result of the bottles.

The current design of the drug label is intimidating and confusing to read. It does not take into account visually-impaired individuals or non-fluent English speakers.
PROTOTYPE WAS MODELED USING SHAPR3D ON IPAD PRO

The pill cap as side indents that squeeze to open (think TidePod packaging)

The hole allows for easy dispensing for disabled users

Clear bottle design allows patients to see how many pills are remaining without opening the bottle
DRUG LABEL

The needs of the disabled and readability of the label took priority in this redesign.

The label was created using Adobe Illustrator.
Digital Prototype of Pill Bottle

CAD model + Drug Label were then styled using Adobe Dimensions
USER FEEDBACK
Patient-centered labeling should include the following:

- The patient name, medication name, quantity, refills, and directions should be listed in large, bold fonts;

- A timetable of administration should be on the label to assist the patient.

- A r/pharmacy user suggested attached caps as a solution.

- After research, I learned clear bottles are not ideal as many drugs undergo photochemical reactions.
ADDRESSING ISSUES IN THE USER FEEDBACK REPORT; IMPROVEMENTS; CHANGES
Modeling a cap for the current bottle proved to be difficult. In addition, 3D printing the cap failed numerous times.

I did not want to change the cap to the traditional cap, as it this defeats the purpose of the redesign and reduces the usability for certain users.

I decided to ditch the cylindrical design of the bottle and cap all together.

The new design is rectangular. The cap is a push-pull cap, which lowers stress on the wrists and fingers.
IMPLEMENTING CHANGES
CREATING THE NEW BOTTLE AND CAP

Digital prototype modeled using Shapr3d on iPad Pro
CREATING THE NEW BOTTLE AND CAP

Physical prototype created using the QIDI 3D printer
THE FINAL PROTOTYPE
THE FINAL PROTOTYPE

While the cylindrical cap would not correctly 3D print, the bottle did. I kept the bottle to highlight what the drug label would look like on current prescription pill bottles.
“PUSH-PULL” CAP

Closed Bottle

Open Bottle