

Project Design Specification—Motor Skills Tester
Kailey Feyereisen, Gina Stuessy, Cali Roen, Lacey Halfen
September 29, 2006

Function: Design an apparatus to test the fine motor skills of rhesus monkeys that minimizes the cognitive portion of problem solving; should be easy to clean, durable, adjustable for human testing, and attach to cage securely.

Client Requirements:

- Improvement on fine motor skills tester for rhesus monkeys
- Ability to test specific hand
- Signals / diodes on openings
- Tester easily cleaned

1. Physical and Operational Characteristics

- a. *Performance Requirements:* Device must secure tightly to the cage and withstand force of the monkey banging or kicking. It will be used multiple times a day and must be easy to reset and clean quickly.
- b. *Safety:* Product must hook securely to the cage and all parts must be securely fastened. There cannot be any sharp edges or exposed or loose wires. Only nontoxic food rewards must be placed in the tester.
- c. *Accuracy and Reliability:* Device must be symmetrical to ensure testing accuracy between the right and left arm trials. The food rewards must be of consistent size and location.
- d. *Life in Service:* Product should have a lifespan of at least five years.
- e. *Shelf Life:* Device should be stored at room temperature in a clean environment.
- f. *Operating Environment:* Device should be cleaned regularly to ensure diode function. It needs to withstand shock-loading and corrosive conditions.
- g. *Ergonomics:* Food must be within easy reach of the monkey. If it is too far away, test results will be compromised. Entrances should be large enough for human testing. Food should not be placed in wells that are too small for the monkeys' fingers to reach into. Older monkeys' disabilities should be kept in mind.
- h. *Size:* Device needs to have the same width as the monkey cage, and should not be deeper than the monkeys' reach.
- i. *Weight:* Device should be light enough to not put a strain on the cage.
- j. *Materials:* Device cannot be cleaned with toxic chemicals. Materials should not become toxic when corroded.
- k. *Aesthetics, Appearance, and Finish:* Able to slide into monkey cage, transparent, smooth edges and surfaces.

2. Production Characteristics

- a. *Quantity:* At this time the client only requires one unit.

- b. *Target Production Cost:* Current unit cost \$2,800. Project budget is \$5,000.

3. Miscellaneous

- a. *Standards and Specifications:* Local standards and international standards need to be met.
- b. *Customer:* Able to be adjustable for human testing, be cleaned easily, and have working electronics.
- c. *Patient-related concerns:* Device should be sterilized and compatible for monkeys' cages. Electronics should be compatible with computer programs.
- d. *Competition:* Our current competition is the mMAP device. This product costs approximately \$2,800.