

Material perception: experimental instructions

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In this experiment, we are interested in the perception of object material properties and object color. By material properties we mean both what an object appears to be made of (e.g. plastic, wood, metal, fabric, etc.) and what color it is (red, blue, gray etc.). In this experiment the only variation in object color will be across different shades of gray (e.g. light gray, dark gray, black, white, etc.)

We will measure when objects appear to be made out of the same material. On each trial of the experiment, you will see two spheres side by side. The sphere on the left is the standard sphere, that is, it will stay the same throughout the trial. Your task is to make the test sphere on the right look like it is made out of the same material as the standard sphere on the left. You can change the lightness of the sphere, in other words, make it appear darker or lighter. You can also change the glossiness of the sphere, in other words, make it appear less or more glossy. You can use the joystick buttons on the left to change lightness, and the joystick buttons on the right to change glossiness. Once you think the two spheres appear to be made out of the same material (that is, that they have the same lightness and glossiness), you can press button #1 to go to the next trial.

At the beginning of a trial, one button press will cause a large change in the lightness and glossiness of the test sphere. You can use button #3 to change the stepsize. When you press #3, you will hear one, two, three or four beeps indicating which stepsize is active at any given moment. One beep means you are at the largest stepsize (default), two beeps indicate the second largest, three the second smallest, and four the smallest stepsize. Pressing #3 while at the smallest stepsize makes the stepsize large again. It is recommended that you start by making a rough setting at the larger stepsizes first. Once you are close to the right setting, you can make the stepsize smaller by pressing #3 until you hear three or four beeps, and then make the final setting. Note that the program expects you to make the final setting at the second smallest or smallest stepsize before moving to the next trial.

Although we are interested in how well you can match object materials and colors, there will also be irrelevant differences between the spheres. In particular, there are conditions where each sphere will be illuminated differently. We would like you to ignore the illumination differences and judge what the spheres appear to be made out of.

Before the actual experiment, there will be a couple of practice trials to get you familiarized with the task. Even though making the adjustments might seem hard at first, it will become easier as you get used to the task.

In the experiment, each block will consist of 20 adjustments. It will be possible to take a break between adjustments and between each block. There will generally be two or three blocks per session. One session will usually take approximately an hour.