

Instructions “Seeing while Moving”

General Information and Setup

Before the experiment starts, please make sure that your VR device is connected and working. You will perform the experiment sitting on a chair in front of your computer. Please also read, fill in and sign the Informed Consent Form. Here a [video \(Link to YouTube\)](#) on how to easily e-sign a document with Adobe without printing. If you prefer to watch a video with the instructions, you can find one [here \(Link to YouTube\)](#).

The experiment consists of five parts and will take about one and a half hours to complete, including setup. The package you downloaded contains one program for each part, for a total of four programs:

- (1) First Task: Stereovision Test (2 minutes)
- (2) Second Task: Prediction Training (2 minutes)
- (3) Third Task: Prediction (10 minutes)
- (4) Fourth Task: Speed Estimation Training (2-4 minutes)
- (5) Fifth Task: Speed Estimation (40 minutes)

We present the programs in Virtual Reality and you will use your keyboard to interact with the environment and give your responses. You can exit every program by pressing the ESCAPE button on your keyboard, but in this case, all data are lost. For tasks 2, 3, 4, and 5, it is important that you look at the stimulus frontally: if your device is set up on room scale, please orient your chair towards the scene. If it is set up for seated or standing play, the scene should appear in front of you. Please make sure that the interocular distance in your device is comfortable for you. If you feel motion-sick, dizzy or uncomfortable in any way, feel free to take breaks as needed or stop the experiment entirely. You will still be compensated for your time spent. In the following, we explain each task separately.

First Task: Stereovision Test

Program: “Stereotest_200arcseconds.exe” in the folder “1_Stereotest”

Duration: 2 minutes

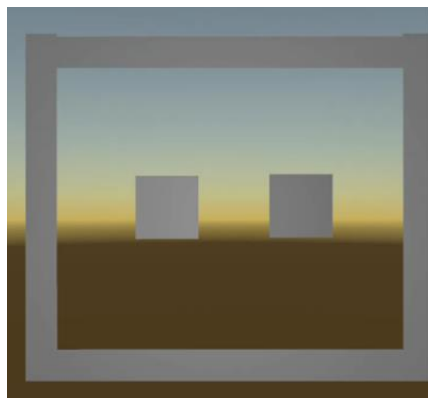


Figure 1: Screenshot from the first task.

In this test, we assess how well you use information coming from both of your eyes simultaneously to perceive depth. We show you two rectangles at a time (Figure 1). One of them should “pop out” and appear closer to you. The rectangles will always appear right in front of you and move with you as you move your head, but please keep your head as still as possible. You can explore the scene freely with your gaze, no need to fixate anything in particular. If the rectangle on the left pops out, please press the LEFT arrow, and if the rectangle on the right pops out, press and RIGHT arrow. The task will take about 2 minutes. You can view a short sequence of this task [here \(Link to YouTube\)](#).

At the end, the program tells you to either proceed to the next program or to discontinue the experiment. If you are told to continue, please proceed to the prediction training part, described under “Second Task: Prediction Training”. If you are told to discontinue, please send the datafile back to us. You find the datafile, a .txt file whose name ends in “Stereotest”, in the folder with the executable. We will send you a compensation proportional to your time – no need to complete the rest of the experiment.

Disclaimer: In no way does this represent a medical diagnosis, and if you believe you might have problems with your stereovision, please consult a medical provider.

Second Task: Prediction Training

Program: “Motion Prediction Training.exe” in the folder “2_Motion Prediction Training”

Duration: 2 minutes

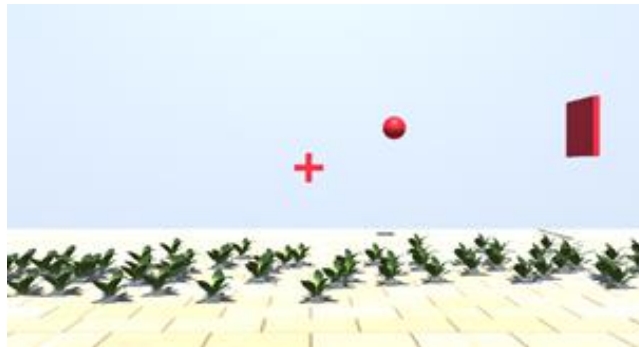


Figure 2: Screenshot from prediction task

Now, you will practice the first experimental task. You will see one red ball (see Figure 2) flying from the left to the right or from the right to the left. In the direction of travel, you will also see a red rectangle. The ball becomes invisible at some point, and it is your task to press the SPACE bar when the now invisible target would hit the rectangle. In the training, the ball becomes visible again when you press the space bar, which gives you an idea of how far off your estimate was. Please keep looking at the red fixation cross at any given moment. You can view a short sequence from this task [here \(Link to YouTube\)](#).

Once you are finished, you can continue directly with the main prediction task.

Third Task: Prediction

Program: “Motion Prediction.exe” in the folder “3_Motion Prediction”

Duration: 10 minutes

This task is practically the same as the training you have just done: keep looking at the red fixation cross and press the space bar when the ball would hit the red rectangle. There are two notable differences: First, the ball does not reappear when you press the space bar, so you have no feedback on how well you are doing. That is by design – just keep on doing your best! The second difference is that you are sometimes moved to the left or to the right (visually only, of course). But your task remains the same regardless of the player motion that we simulate. You can view a short sequence from this task [here \(Link to YouTube\)](#).

Please continue with the Speed Estimation training.

Fourth Task: Speed Estimation Training

Program: “Motion Estimation Training.exe” in the folder “4_Speed Estimation Training”

Duration: 2-4 minutes

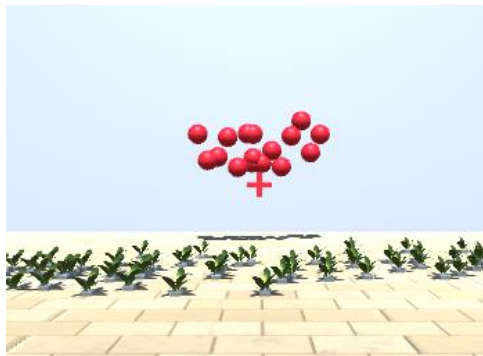


Figure 3: Screenshot from speed estimation task.

Now, you will practice the speed estimation task up to two times. We show you two intervals of motion: one will be one big red ball (like the one from the prediction experiment, see Figure 2) and the other will be a cloud of smaller balls (**Error! Reference source not found.**). Both are moving in the same direction, either from right to left or left to right. After both motion intervals, please press the LEFT arrow on your keyboard if you think the single ball was faster or press RIGHT arrow if you think the ball cloud was faster. If you are unsure, just make your best guess – no need to ponder each decision for too long. Please look at the red fixation cross at all times. You can view a short sequence of this task here (Link to YouTube).

After about 25 comparisons, this part of the experiment ends. The program tells you to either proceed to the next task or repeat the training. If you are told to continue, please proceed to the main experiment, described under “Fifth Task: Speed Estimation”. Otherwise, please repeat the training. If this time around the program tells you to repeat the task again, please discontinue the experiment and send all data files back to us – no need to proceed with the experiment. You can find the datafile for this experiment, a .txt.

file whose name ends in “Speed Estimation Training”, in the folder with the program. You will still be compensated.

Fifth Task: Speed Estimation

Program: “Motion Estimation.exe” in the folder “5_Speed Estimation”

Duration: 45 minutes

This part is very similar to the previous program. You will again see two intervals of motion and judge with the LEFT and RIGHT arrows which one is faster. Press the LEFT arrow if it is the single ball and the RIGHT arrow if it is the ball cloud. There are some differences to what you will be experiencing, however: During some trials, you will experience a visually simulated sideways motion. There is no need to react to that in any particular way; your task stays the same. As for the training, please look at all times at the red fixation cross. This part of the experiment is long, between 40 and 50 minutes. In intervals, a screen will appear that tells you how many trials you have already completed. Feel free to take breaks when these screens appear. For your breaks, you can just take off your headset and the program will pause automatically. Upon returning, press any key and the experiment should resume.

You can view a short sequence of this task [here \(Link to YouTube\)](#).

Wrap-up

After finishing the last task, please collect all data files from the folders. You are looking for “.txt” files whose names end on “Stereotest”, “Prediction Training”, “Prediction”, “Speed Estimation Training”, and “Speed Estimation”, respectively. You can see [here \(Link to YouTube\)](#) where you find the files. Send these files as well as the filled-in and signed informed consent form back to us. Once we receive the files, we will send you the amazon gift card. Once you receive the payment, we will ask you to send back the signed Payment Received form. Once the project is done, we will send you a debrief with the results of this study.

Contact

Feel free to contact us at any time. We are happy to try and help with any issues you might be having.

Björn Jörges

Email: bjoerges@yorku.ca

Twitter: @b_jorges

Rachel Phan

Email: rfan411@gmail.com

Project email: seeingwhilemoving@gmail.com