**Changes to the VR pole experiment (29th September 2017)**

We tested several aspects over two sessions and below is our detailed “wish-list” for changes.

We had slight problems connecting the trackers, but on day 2 we paired them one by one and after that it worked, so this might not be an issue in the future. There might have been an firm update?

**Conditions**

-I made a Condition overview (sorry should have done that before) detailing the different settings we need for each condition:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Condition 1** | **Condition 2** | **Condition 3** | **Condition 4** |
| VR | Yes | Yes | No | No |
| Pole | Short (Hip) | High (Shoulder) | Short (Hip) | High (Shoulder) |
| Pole Positions | Virtual Setting | Virtual Setting | Pole Trackers | Pole Trackers |
| Aperture Reference – WIDTH | Hip | Shoulder | Hip | Shoulder |
| Height of Pole | Hip height | 2 m | Hip Height | 2 m |
|  |  |  |  |  |
| Hand Trackers | Yes | Yes | Yes | Yes |
| Hip Trackers | Yes | Yes | Yes | Yes |
| Shoulder Trackers | Yes | Yes | Yes | Yes |

1. At the moment we can change from one condition to another by renaming the parameter file, which is fine (e.g., we can have 4 files for each condition and then rename them each time we start a new condition). Alternatively, is there any other options we could easily implement? E.g. ask the program for a condition and then use a parameter file condition dependent?

SP: You can now have 5 different parameter files. They should be named: parameters.txt (default), condition1.txt, condition2.txt, condition3.txt and condition4.txt. Put whatever you like in these files. When you first execute the experiment, the experimenter will be prompted to choose the parameter file by pressing 0, 1, 2, 3 or 4.

RZ: Thanks!

2. Condition 2 and 4 require the poles to be position based on shoulder width. Could we please add that option to the parameter file?

SP: Previously, the experiment would pick shoulders if shoulders or hips and shoulders were tracked, and hips if only hips were tracked. Now, you can choose using the BodyWidthMeasurement parameter, so that you can use shoulders even if hips are also tracked. 0 = hips, 1 = shoulders

RZ: Thanks!

3. At the moment it seems when running Condition 3 it automatically uses shoulder width, solving 2. would probably solve this.

SP: Fixed so that you pick based on the BodyWidthMeasurement setting. I will present an error message if, for example, you choose shoulders, but there are no shoulder trackers detected.

4. Running Condition 2 (virtual high poles) the poles where both positioned to the side (possible bug?)

I don’t know why this would happen for that specific case. The pole placement is set independently of pole height. Maybe something got mixed up on this particular execution of the experiment. Maybe the vive sensor got bumped, dunno. Would need to see it to try and reproduce this error.

RZ: Did not happen again

**Subject names**

Could there be an option to enter subject/condition numbers and add these to the output file folder? (no problem if not, we can work around, just if easy)

Can now choose participant ID and condition before the experiment starts. Subdirectories will be named “<ParticipantID>\_Condition<condition number>”. So, if you enter participant id “RZ” and condition “2”, the subdirectory will be “RZ\_Condition2”

RZ: Thanks!

**Change Instructions**

-I think we can get rid of the countdown, as after this participants have to turn around to screen, so we adjust the poles

Countdown commented out in the source code.

RZ: Thanks!

-Text changes:

1. “Please walk to the finish line holding the hand trackers as level as possible.” (let’s simplify this as we cannot control where participants look)

Changed to:

“Walk to the finish line

holding the hand controllers

as level as possible.”

RZ: Thanks!

2. “Tell experiment when you are ready”

Done

RZ: Thanks!

3. “Please return to the start line and wait until the experimenter tells you to turn around.”

Change to:

“Return to the start line.

Wait for the experimenter

to tell you to turn around.”

RZ: Thanks!

**Start and Finish line**

-have a wider line but also a crossed line in the middle like this: -------|-------

Done

RZ: Thanks!

**Experimenter Control and View**

-for Conditions 3 and 4: move display of aperture a bit up if possible (was at bottom of screen and partly covered), If possible also display X and Z values

Done

RZ: Thanks! Visibility is much better! Could we please also have 4 digits for the aperture? I think this could help us to be slightly more precise. Could you please also add the Z-values? This could help us to place the poles approx. symmetrically away from 0.

-could we please start the trial number with 1 instead of 0?

Done –

RZ: Thanks!

-last practice trial did not have the walking back screen? (not sure if this was just random)

At the end of an experiment block (including the practice block) the participant sees a screen telling them to advise the experimenter when they are ready to continue to the next block. I condensed the wording slightly.

RZ: This is great. In addition it is however still confusing, because this screen does not appear until the files are saved. Could we please have a final screen at the end of practice and at the end of each block (before saving starts?) which could be the same as for all other trials “Return to the start line. Wait for experimenter to tell you to turn”.

The practice trials

-Could we please have it so participants walk back to starting line and only when they are across the starting line back facing the wall can the experimenter press space to move the poles (this would ensure that participants always go all the way back and experimenter does not accidently move poles too early), something similar for non-VR version, next aperture only appears once they are back at that line (perhaps could also have it so the experiment does not start if they are not near the starting line? E.g., the screen “Tell experiment when you are ready” does not move to next if not near starting line)

The screen where the participant returns to the starting line and nothing proceeds until the experimenter presses space will stay on screen until both the experimenter presses space, AND the right hand controller is within 10cm of the starting position. (I chose the right hand controller, because if I chose the head, it wouldn’t work in the non-VR version because the participant wouldn’t be wearing the HMD.

RZ: Great, this works really well! In addition could we display the information for the next trial for on the experimenter screen only after space is pressed? This is not absolutely necessary but would help with experimenter control/flow.

-After the calibration, could we please have an instruction for experimenter “Calibration finished”/and participant “Calibration is done you can now put your hands back down”?

I put in a screen for the participant to view to tell them to put their hands down. The experimenter will need to hit space to proceed to this screen, and again to proceed past this screen. However, the experimenter needs to actively decide (and hit space) that the calibration has worked. On the experimenter screen they will get info regarding he calibration, whether something hasn’t worked, and what body parts have been bound. The experiment will need to look at this info, and, if the calibration seems to be ok, they can hit space to continue. If not, they need to make adjustments and then press C again to try calibration again.

RZ: This additional screen did not appear for the participant?

**Data file**

-could we please store shoulder and hip width in the file?

Done

RZ: Thanks!

-could we please safe the aperture for each trial in one data column as well next to shoulder, hip width and pole details?

Aperture is already saved for each trial? Now added shoulder and hip separately. A asterisk on the column label indicates whether hip or shoulder was used for body width measurement for calculating the aperture from the intended Aperture2Body ratio.

RZ: The asterisk always seem to be on hip although the shoulder was used?

Sorry, I actually meant to say having another column with the intended Aperture2Body ratio (values 0.9 to 2) for each trial (this will especially help us with the real pole conditions – where the actual ratios will be slightly off). Could we please also display the Aperture2Body ratio for each trial on the experimenter screen next to the pole aperture?

-I think you said that it is not feasible to save data after each trial? I think we should stick with the blocks, alternatively could experimenter press a button to save data in case participant does not finish all trials? (not super important, just if easy to do)

IF you hit backspace at any time during the experiment, it will dump all data currently in the buffer to a file called PartialDataDump.csv, and then quit the application.

R.Z.: This sounds great, but we could not find this file. Where is it saved?

**Eye-distance**

-Could you find an App we could easily use to adjust for each participant?

So long as steam VR is running (it will start running automatically when you run the experiment) you can do this:

Slowly start turning the knob on the side of the HMD, in one direction (not rapidly back and forth). After some time, a display will appear on the screen inside the HMD that shows the current setting of the inter-pupillary distance (IPD). For most people, it should be around 64-65mm. Once the display appears on the HMD, you can then adjust the knob as much as you like and it will show you the current distance. When you stop adjusting, the display will eventually disappear.

Unfortunately, the display of IPD only appears in the HMD, not on the laptop screen. However, if you hold the HMD just right, you can see the number displayed through the lenses of the HMD without completely putting the HMD on, so the experimenter can perform this adjustment immediately before putting the HMD on the participant without actually wearing the HMD themself. I recommend just measuring the participants actual IPD with a ruler held up to the eyes, resting on the bridge of the nose. Measure the distance between pupils while the participant looks straight ahead over your shoulder (the further away they look, the less eye convergence).

Note for Regine: We still need to try this

Note for Regine: We should also try calibrate the room ourselves

**New Wishlist Items (16th of October 2017)**

**Randomization Question**

We noticed that within one experimental block not all 12 apertures appear and some appear twice. Did you randomize the trial types across all 3 blocks? If yes, I think all ok.

**VR Pole height problem – shoulder condition (Condition 2)**

We used the option 2: Preset value and then specified 2 in the next line: PoleHeightPresetValue: 2.0 (for 2 m). This however did not work and it seemed as if shoulder height or something a bit lower was used for poles in the VR shoulder condition (Condition 2).

**Real Pole distance**

We noticed that compared to the displayed aperture the real poles were approx. 1.5 cm wider (Conditions 3 and 4). Could we please adjust/calibrate this?

**First trial practice/each block**

When experimenter/program – participant gets instruction: “Return to start line. Wait for exp. to tell you to turn around.” This is somewhat confusing could we change this screen for all first trials only to: “Turn around and wait for experimenter to tell you to turn back.”?

**Instruction position**

The instruction is hard to read when using high poles (Condition 2) because they cover it. Could we please move everything up on the screen (perhaps slightly smaller font?)? Alternatively could present between the poles especially the first few screens – later is not so important anymore if poles are in the way.

**Program freeze**

-happened once and space button did not work anymore in middle of block 1 (perhaps we just keep monitoring)