VR Cocktail Party Experiment

Information Sheet

Dear participant,
This study aims to examine the impact of a dialog enhancing audio system for social VR platforms on the speech intelligibility and user experience. The experiment and questionnaire will take approximately 10-15 minutes to complete and will be self-conducted at home. We are highly confident, that there is effectively no risk involved in the participation of the proposed research. At the end of this session, you will be asked to answer a short questionnaire, which will help us to evaluate our audio system. Thank you for volunteering to participate in the exercise, by doing so you are helping to develop an important area of future research.

Installation Guide

Please follow these instructions to install the provided test template on your Oculus Quest 2. If you haven't already installed SideQuest or Oculus Developer Hub (ODH) yet, you need to do so first (Steps 1-6) before you can install the *'VR Cocktail Party Experiment'* APK/App. If you are familiar with using either of these software programs simply install (drag & drop) the app as usual. For further help, please see the YouTube installation tutorial links below.

Step 1. Register as a developer on Oculus: https://dashboard.oculus.com/organizations/create/

Step 2. Install the ADB drivers: https://developer.oculus.com/downloads/package/oculus-adb-drivers/

Step 3. Enable Developer Mode (Phone App) and reboot

Step 4. Connect a USB cable and allow USB debugging

Step 5. Download & Install SideQuest or Oculus Developer Hub (ODH)

Step 6. Launch SideQuest or ODH

Step 7. Sideload/install the App

Necessary Software and Tutorial Links:

Oculus Developer Hub (Download link and instructions)
https://developer.oculus.com/

or

SideQuest (Download link)
https://sidequestvr.com/setup-howto

YouTube Installation Tutorial: How To Sideload Games On Oculus Quest 2
https://www.youtube.com/watch?v=RoIXxIfRNTw

YouTube Installation Tutorial: Setup SideQuest In 5 Minutes!
https://www.youtube.com/watch?v=E31eYlROLlI

After you have successfully installed the *'VR_Cocktail_Party_Experiment_Version_A/B_OculusQuest2.apk'* you can find and start the app on your Quest 2 device in the **Apps/All/Unknown Sources** drop-down menu:

VR Cocktail Party Experiment Version A/B
com.CocktailPartyProblem.VR

Instructions to self-conduct the experiment

Important Notes before you start!

- It is essential that you are in a silent environment when carrying out the experiment.
- Use the built-in audio system. **No headphones**. Max. Volume recommended unless you have very sensitive ears.
- Please stay seated. Don´t walk around. Check your position and reset your headset view if necessary. You can move your torso and head to focus on the target sound object (Talkers 1-10).
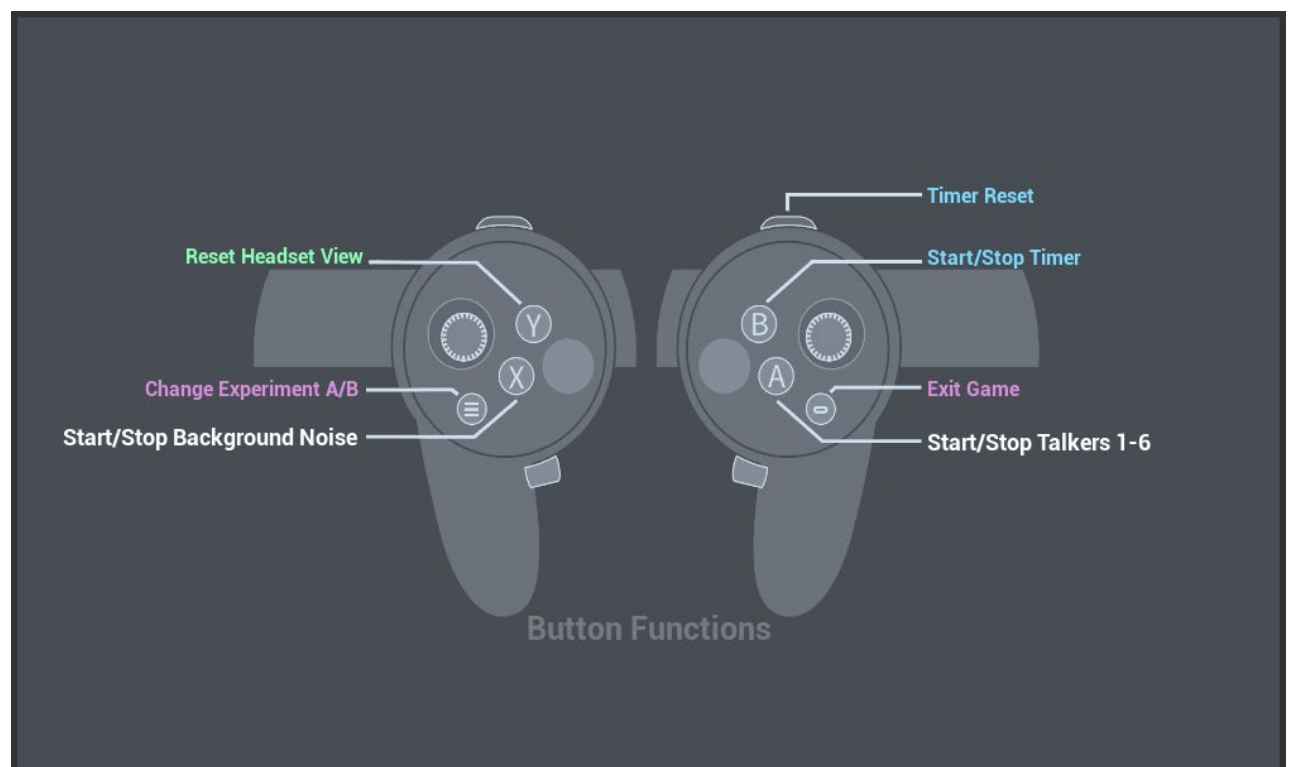
How to undertake the experiment?

After you tested the buttons and made yourself comfortable with the environment please start the experiment. There are different simple listening tasks to be undertaken separated into two parts (Experiment A/B -> Left Menu Button). When you want to record the time, use the timer clock function (starts with button A). Spend as much time as you like in the environment and experience the Cocktail Party Problem and the effect of binaural listening. Switch on/off the background noise and note the difference in speech intelligibility. Later you will be asked about your experience to follow the words or understand full sentences, so please try to memorise your experience and how you perceived the listening target (the talker you intend to listen to) and interferer sounds (other talkers & background noise). Similar to real life, you can improve your understanding by looking at the target talker and focusing on their voice. In the case that the target sound is hard to understand you can use your "best ear" in the direction of the sound source (turn one ear to the talker) to decipher the words.

Once you´ve finished the experiment please click the following link and take some time to fill in the online questionnaire. Many thanks for your contribution!
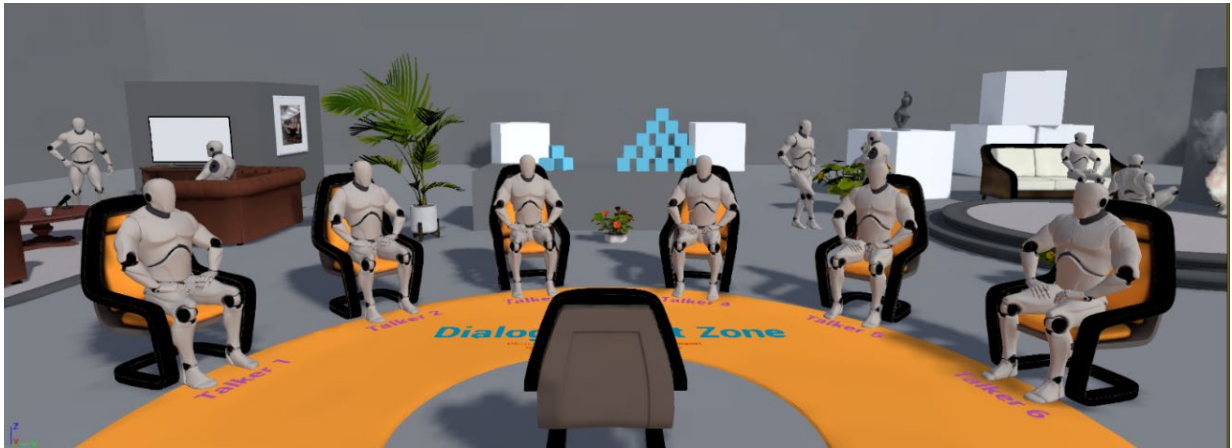
Link: Online *Consent Form & Questionnaire*

https://forms.gle/Ko4nAmjwjCFwKhsRA

Basic Button Functions:

Experiment A – Setup: 6 Talkers (target sounds), same distance/angle, equal volume level.

Leave the background noise (Button X) switched off for now. Activate Talkers 1-6 (Button A) and start the tasks.
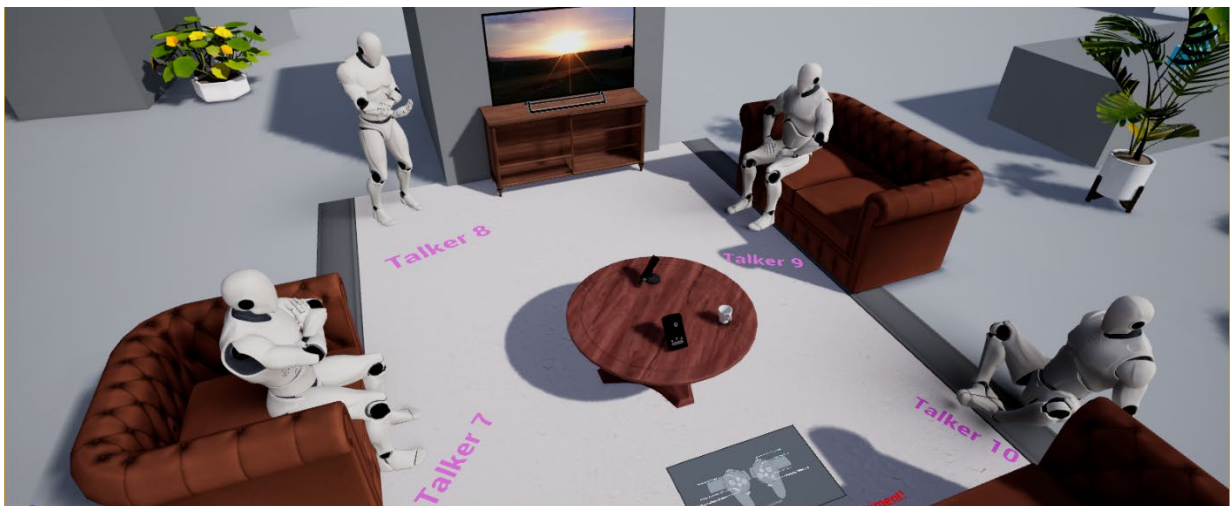
Tasks Experiment A:

- *Task A: Choose a couple of talkers and try to follow their phrases for approx.1 minute each!*
- *Task B: Try to understand a whole sentence of Talker 3 and Talker 6. Note how long it takes!*
- *Task C: Change quickly (every 4sec) between different talkers and try to pick up on the words!*

Task Variation: Switch on the background noise (Button X) and repeat Task A, B and C. Note any effect on speech intelligibility!

When you have completed the tasks, please press the Menu Button and continue with **Experiment B**!

Experiment B – Setup: 4 Talkers (target sounds), varying in distance/angle and volume level.

Tasks Experiment B:

- *Task D: Listen to Talker 7,8 ,9 and 10 and try to follow a couple of phrases!*
- *Task E: Try to understand two full sentences of Talker 9. Note how long it takes!*
- *Task F: Can you understand a whole sentence of Talker 8?*

Task Variation: Switch on the background noise (Button X) and repeat Task D, E and F. Note any effect on speech intelligibility!