Literature Review

The key goal of this project is to measure the influence VR has on the perceptions of reality. Emulating motion within a virtual domain is one way of doing this. Visually induced vection, is suggested to significantly enhance self-motion perception within VR (Cititaion). However, Brendan Walker’s creation ‘Oscillate’ suggests otherwise. Essentially, oscillate is a real swing with simulated visuals. In adopting the swing idea, and using real world motion within a virtual environment, a comparison can be made between swinging in a real and virtual domain. By altering factors within the virtual domain, for example environmental height, it can be seen whether the virtual environment can influence perceptions of increased motion. In contrast, the antithesis of vection where the user swings but has a still visual field could produce results, which indicate perceptions of decreased, or no motion. For example, the user sensing a stationary motion whilst slowly swinging in real space.

Creating a sensation of direction is another way of influencing the perception of reality. Grechkin suggests a rotate and walk technique. In his study, if a user is attempting to reach an out of bounds target ‘t’ the user is then prompted to go to a sub target ‘I’. As they walk to ‘I’ the world rotates to encompass the ‘t’ again. The study deceives a user’s ‘visual’ sensory information to create a feeling of increased virtual space. By incorporating this technique of world rotation, one could evaluate the extent to which a user goes off track in a real domain when following a track in virtual space. Inaccurate trailing of the real world track would suggest VR’s high influence on a users perception of reality. Use of this technique could also be used to address the navigational limitations within VR.

Heydariana explores the performance of office space activities in both real and virtual environments. Even with increased complexity over distance estimation, results indicate differences in performance to be non-significant. In terms of the project this means created tasks will be manageable for all participants, especially with the likely tasks being relatively less complex than those in Heydariana’s experiment. This also suggests the future capabilities of VR for rehabilitation, skill training and performance testing. This re-enforces the idea of presence within VR.

Other research such has attempted to facilitate the illusion of locomotion. Turchet argues that the rendering of a virtual body has to be consistent with the user's body. Prior research has demonstrated the possibility of identifying a walker’s gender (Li et al, 1991) and emotions (Bresin R, 2006) based solely on auditory data. As a result, auditory input of a participant's anthropomorphic appearance could play a key part in simulating presence and locomotion within a virtual environment.