

### Feedback and results from testing the Concawe VRSTT with Subject Matter Experts

These figures below aim to demonstrate the evidence of the validity of the simulation tool we have developed. Validity, of different forms, is important to establish that the simulation is an appropriate training tool to achieve its aim, e.g. improving safety. Below is an explanation of each figure:

**Figure 1:**

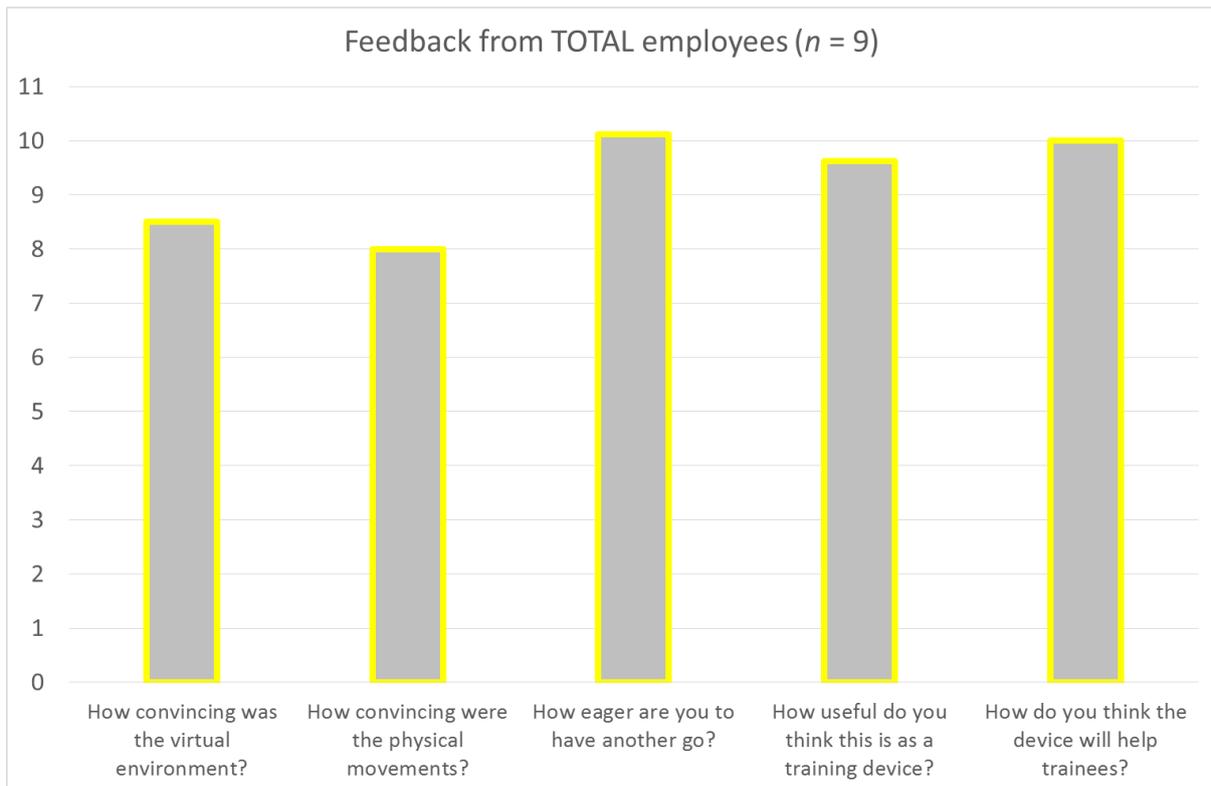
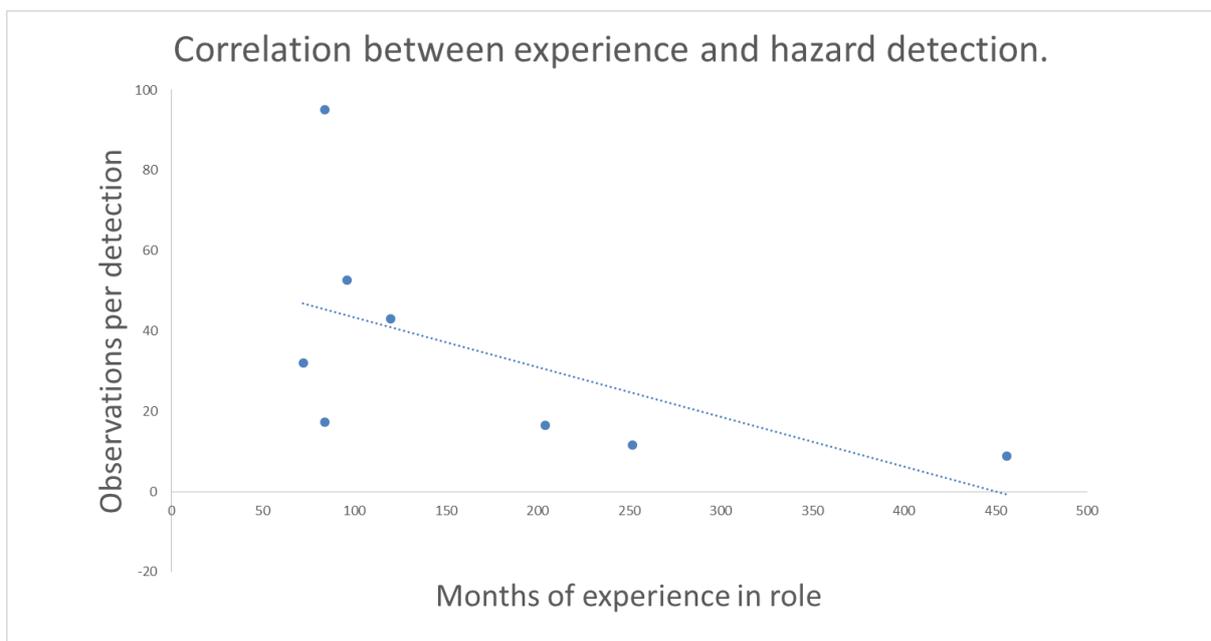
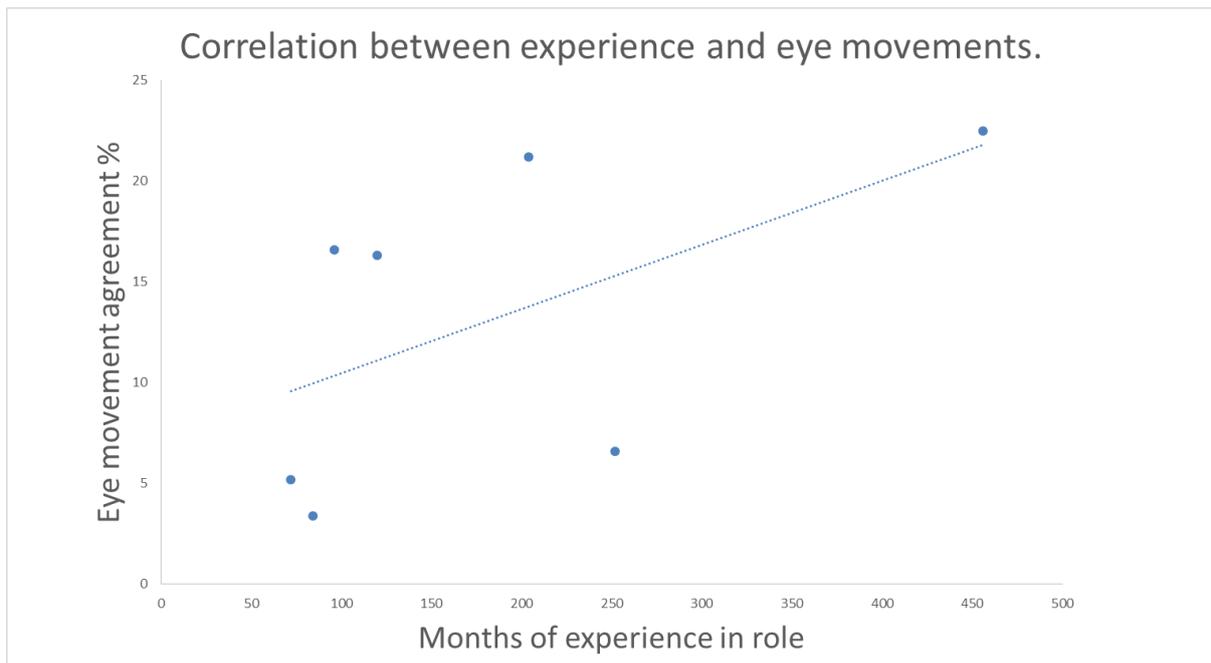


Figure 1: This is a subjective view of subject matter experts (scores out of 11). This shows that they think the simulation has face validity in terms of how it represents their real working environment, and might be a useful training device.

Figures 2 & 3:



Figures 2 & 3: These are from the two hazard identification parts of the simulation (pump and motor space, and the compressor space). They show that expertise is correlated with efficient use of visual information, i.e. within the simulation, as you are more experienced, you are able to detect hazards more easily (i.e. with fewer observations). As such this accurately represents the real-world, where this is also the case (experts are more efficient).

**Figure 4:**

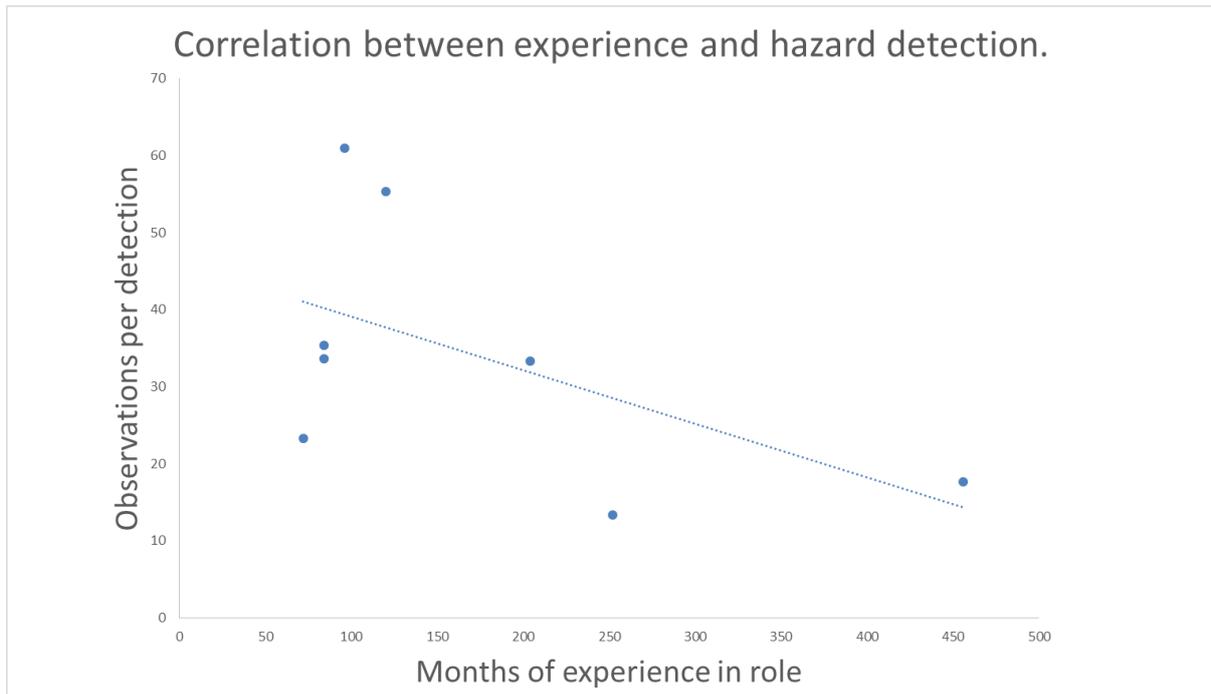


Figure 4: This provides support for our in-game eye movement training tool. Here we show that when viewing eye tracking footage from help operators, your agreement with their eye movements increases as your years of experience increase. So the more experienced operators are more perceptually skilled. This is again an important indication that our simulation is effective.

Overall this data suggests that there is validity in the device we have developed. This is a strong platform from which to launch the device as part of a simulation training curriculum, and thus contribute to the oil refining industries aim of improving safety and performance.

Additional research is needed to further explore the impact that this has on real world performance, to establish whether the benefits of VR training translate and transfer to the real world.