# 6. Conclusion and Future work

This study explores the extent to which Highly Sensitive Person scores and Interpersonal Reactivity Scores predict feelings of oneness, presence, agency, ownership, and empathic accuracy. IRI was predictive of inclusion of other in the self (oneness), which corresponded to higher empathic accuracy. Stimulation of empathy through the experience is unclear, and further studies will need to clarify the conditions that contribute to greater empathic stimulation. Because this study was so new, designing a suitable control condition was very difficult, but this would be needed to measure and track the differences between empathic accuracy in virtual environments compared to face-to-face interactions, video media, or even cognitive perspective taking. Stimulation of creativity was indicated by subject’s responses during the qualitative interview, and most subjects felt as though they were creating something together with the painter and doing something that they normally would not think that they could do. This pilot study indicates that this virtual environment provides users with a relaxing environment in which to learn a relatively stressful, complex technical skill for novices. Moreover, several subjects reported that the virtual environment provided a new means of communication which felt very offering a new instructional style. One subject described the experience as “trancelike” and remarked, “I didn’t notice the passage of time at all.”

Lastly, the environment offers a new way to teach creativity. Whereas traditional painting instruction requires students to watch and then replicate an expert instructor or artist, this setup reduces the space between an expert and a novice to an absolute zero, literally putting the student in the shoes of the teacher. This makes it so that the student can learn by tracing the movements of an expert to allow painting instruction to be movement based. Future developments for this project as a software application could develop motion tracking, 3D modelling for different paint brushes and illustration/drawing pens/pencils, and movement analyses with interactive video feedback to pause or slow down the video accordingly with the similarity of movement between the teacher/expert and the student/novice. In the future, the project would benefit from using an augmented reality headset, such that the user could see through the semitransparent video screen onto their own physical canvas. Future directions and considerations for the project involve a live interactive setup with a video stream directly from the painter's camera and canvas to the user. Moreover, the possibility of sharing two screens.

With cameras and augmented reality head-mounted displays, allowing both the user and the painter to see one another's canvases as overlays on top of their own physical canvases is being explored through Microsoft HoloLens, Osterhout Design Group, and Magic Leap headsets. This has implications for grander-scale educational implications for expert to novice mentorship and training in a live and interactive setup, but the technology is still in development.