APPENDIX

We present additional results which complement results in the main paper body.

A. Simulator Setup Previous Iterations

The driving simulator had several improvements over the original setup, pictured in Figure 6. We received feedback on the initial setup via a pilot study conducted with eight people, all undergraduate students. Initially, the setup was not mounted on a rack. This caused the pedal rack to slip forward slightly when users braked suddenly. We addressed this by mounting the steering wheel and pedals to a separate driving rack meant for racing games.

Fig. 6. **Previous iteration of the driving setup.**

Pilot users also reported that simulation settings were unoptimal due to increased simulator sickness symptoms. Parameters are difficult to adjust; this is discussed in our supplementary guide to VR studies for driving, which can be found on the project website as well. We addressed unoptimal settings via the method discussed in Figure 2 of the main paper. Some of the primary simulator settings we adjusted for better user experience were fixed frame rate, traffic density, and scenario design. Turning off mirror rendering helped frame rate a lot, but we avoided this to encourage realistic behavior in simulation.

Scenarios were originally longer with a set route which users needed to memorize. We found that, even when the route was fairly simple (e.g. consisting only of a right turn), users would end up forgetting due to the environmental stimuli introduced, such as a jaywalking pedestrian. We modified the simulator scenarios after this to remove turns and focus only on straight line driving, since scenarios were triggered by hitboxes and were thus dependent on users taking the correct route.

We also added usage of the pupillometer later on to standardize headset interpupillary distance adjustments. In pilot studies, it was difficult to communicate with users what optimal lense adjustment should look like, since seeing a "clear image" can be subjective across users.

B. Simulator Sickness Evaluation

We evaluate simulator sickness symptoms for the driving simulator. Simulator sickness is caused by misalignment between perceived and actual sensations by a person's vestibular system, and its mitigation is an ongoing research topic in the VR community. Simulator sickness will be more pronounced for driving than for walking-based VR applications, so we expect that induced simulator sickness for driving will have higher baselines. This is due to the user expecting acceleration forces due to driving in simulation, while remaining completely stationary in reality. During data collection, users often verbally noted that taking turns or braking were the main causes of sickness symptoms; straight line acceleration on the other hand, felt fine. We visualize the simulator sickness before and after in Figure 7.

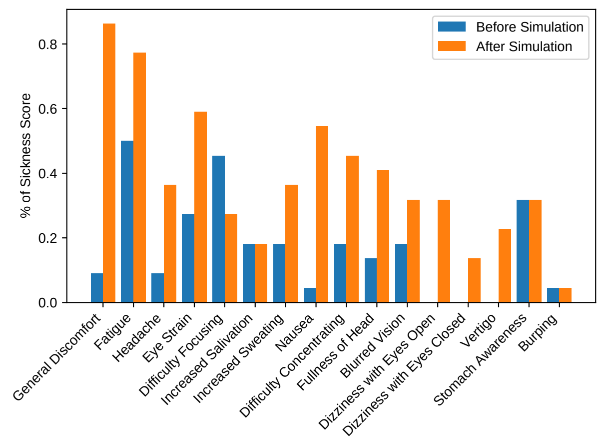

Fig. 7. **Simulator sickness, before and after the VR simulation section.**

C. Autopilot Behavior Classification

Recall that in Section III-B, we trained a model to classify driving personality based on trajectory. We run inference using the same model with the trajectory of CARLA autopilot as input.

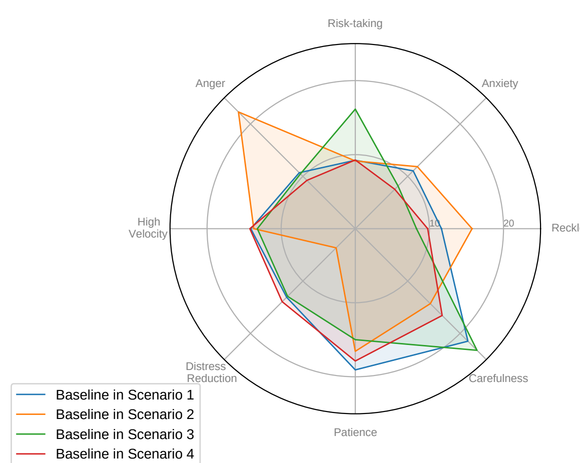

Fig. 8. **Predicted driving personalities of CARLA autopilot plotted for each scenario.**

In Figure 9, we observe that CARLA autopilot exhibits different personalities across scenarios, especially for anger, risk-taking, and carefulness. This is interesting for two reasons: 1) the autopilot feature drives deterministically and similarly regardless which town it is in, and 2) has not been previously evaluated in terms of perceived personality, especially when interacting with risk scenarios.

D. Self Evaluated Personality versus MDSI Evaluation

We include a comparison between self-evaluated personality traits versus those resulting from MDSI questions for four random participants. On the questionnaire, participants answer in a multi-selection question item which personality factors best describe their driving style. We graph their self evaluations in red, and their resulting MDSI personality vector in blue. We show these results to demonstrate the advantage of using MDSI as a personality classification rather than using self evaluations, which can be subjective and less descriptive of differences between users.

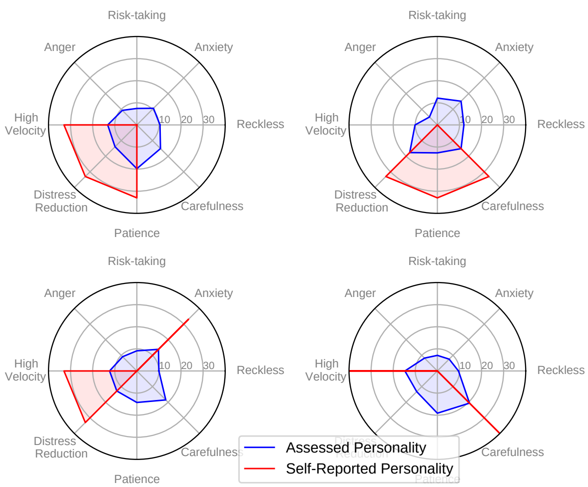

Fig. 9. **Self-evaluated driving personality traits versus MDSI evaluated traits.**