

Embedded and Situated Visualisation in Mixed Reality to Support Interval Running — Appendix

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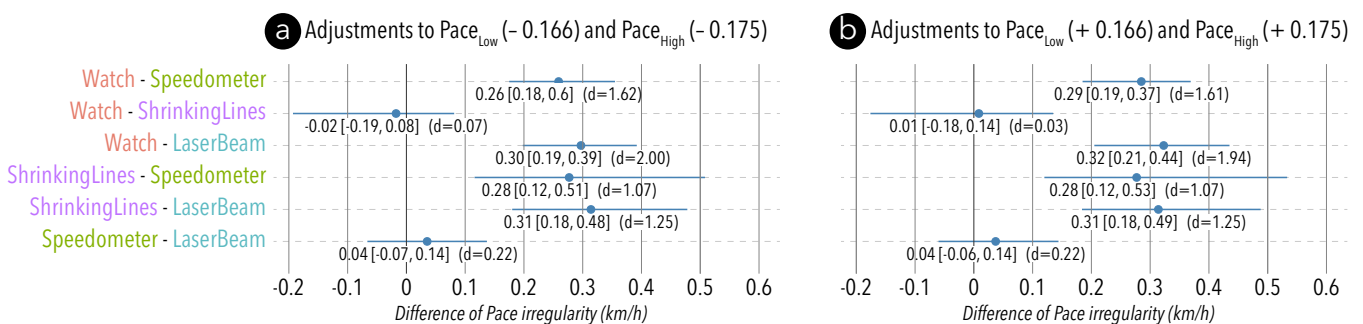


Figure 1: Bootstrapped mean pace irregularity differences between conditions, with (a) adjustments of -0.166 and -0.175 applied to $Pace_{Low}$ and $Pace_{High}$, respectively, and (b) adjustments of $+0.166$ and $+0.175$ applied to $Pace_{Low}$ and $Pace_{High}$, respectively. Mean estimates and CI values are shown below each bar, with Cohen's d indicated in brackets.

Appendix A: Differences in Speed Calculations

Given that there is a difference in speed calculation between our immersive designs and the Watch condition, we investigated the exact difference to assess its impact.

For this, one of the authors jogged three times for five minutes at target speeds of 6 km/h (10:00 min/km), 8 km/h (7:30 min/km) and 10.91 km/h (5:30 min/km) respectively, wearing the same smart-watch and headset and running on the same running track than participants wore and ran on for the study.

While running, we referred to the speed indicated by Laser-Beam and recorded the speed per second in the headset and on the watch. Since the raw GPS data accessible on Garmin is heavily re-sampled, we kept the watch face within sight of the headset and recorded videos while running, so that we could capture the displayed speed each second. We logged readings on the watch manually afterwards.

We excluded data for the first 2 seconds of each 5-minute long run and then computed the absolute difference between the speed displayed on the watch and the speed displayed on the immersive visualisations, in km/h. This average absolute difference was 0.120, 0.166, and 0.175 km/h for the three target speeds, respectively. We applied the measured difference of ± 0.166 and ± 0.175 to the actual data collected at the corresponding target speed for Watch, then

repeated the analysis we report in Section 4.6. CIs generated when -0.166 , and -0.175 were applied (Figure 1a) and when $+0.166$, and $+0.175$ were applied (Figure 1b) conformed to the result without any adjustment. Therefore, we determined that the difference caused by the different tracking mechanisms is small enough to be negligible.

Appendix B: Raw Responses on the Core Flow Scale

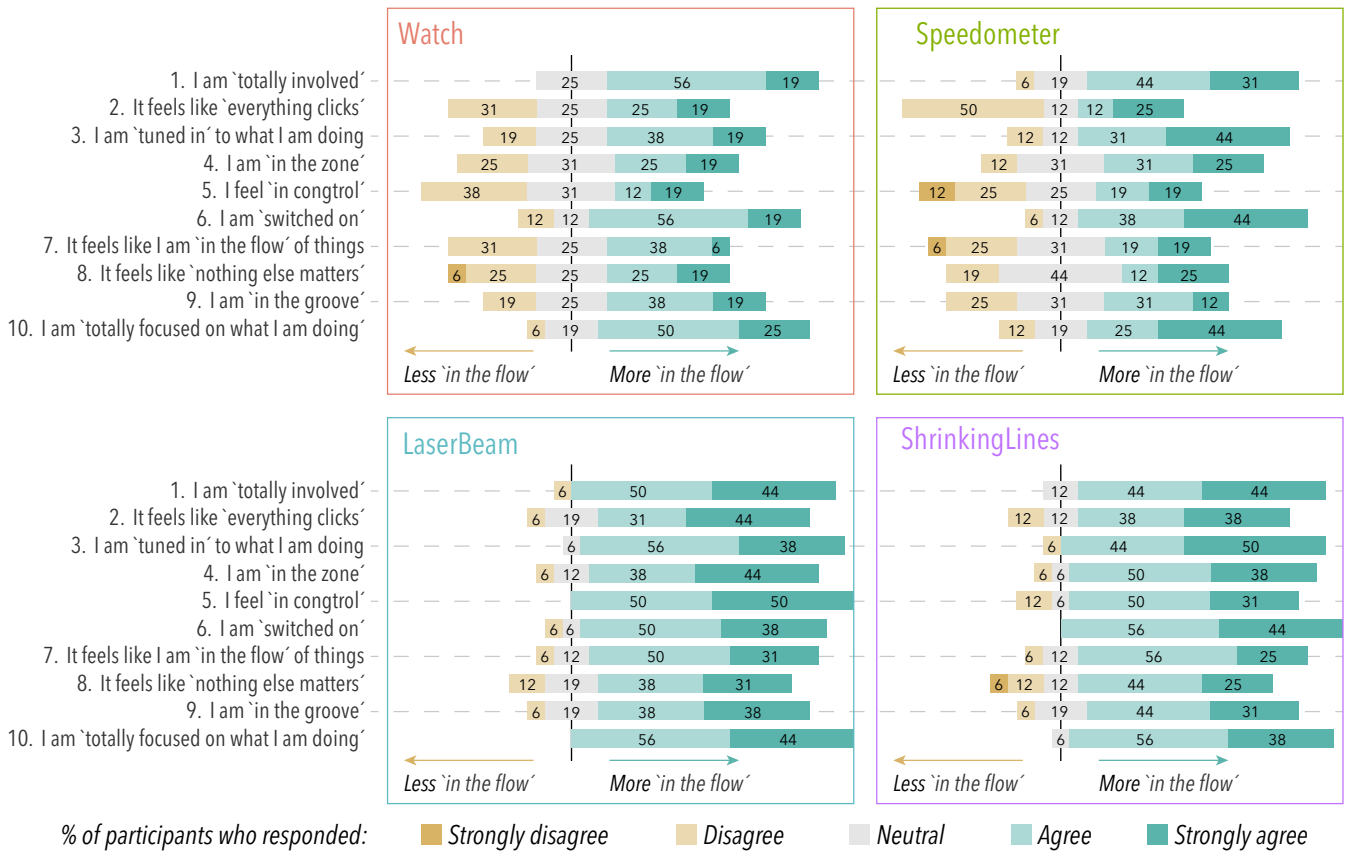


Figure 2: Participants' reflection on their flow experience while running with the four conditions. A higher flow experience accompanies more ease when achieving the same target.