Title: Manipulating serial dependence of confidence judgments in consecutive trials of visual tasks

Presenting Author: Frankie H.F. Law

Author(s): Frankie H.F. Law, Department of Applied Psychology, Lingnan University, Hong Kong, Alan L.F. Lee, Department of Applied Psychology, Lingnan University, Hong Kong

Abstract:

Confidence judgments have been found to demonstrate serial dependence when responses are given in series. In many serial-dependence studies, researchers randomized the order of trials, and explored serial dependence by correlating confidence judgment on a specific trial with those in preceding trials. In the present study, we directly manipulated serial dependence by creating specific serial patterns of task difficulty, and measured the confidence judgment effect on the immediately-following trial.

Participants performed a left-right, direction-discrimination perceptual task on a random-dot motion pattern. Confidence was measured on a 4-point scale simultaneously with perceptual responses. Task difficulty was controlled by manipulating motion coherence. We first calibrated 5 coherence levels to participant’s performance (level 1= hardest, level 5 = easiest) using an adaptive-staircases procedure. We then presented series of trials with manipulated order of difficulty levels. Specifically, each medium-difficult (level 3) trial was preceded by one or two consecutive easiest trials (5-3 and 5-5-3) or hardest trials (1-3 and 1-1-3). The other two difficulty levels (2 and 4) were added in isolated trials as fillers. In post-experiment interviews, we confirmed that participants were unaware of such manipulation of difficulty order.

We found that participants were more confident in the medium-difficulty trial when it was preceded by easy trials than when preceded by difficult trials, even when perceptual performance was matched. Interestingly, in a follow-up experiment, we found that such difference diminished when participants rated the speed of the stimulus instead of their confidence in the preceding trial. Our results show that perceptual confidence in a particular trial depends on both preceding difficulty levels and explicit confidence report.