



Figure 1-figure supplement 2. Imperfectly distributed nose poking inflates interval suppression ratios. In this study, and others from our lab, we consistently find that calculating suppression ratios in short intervals inflates suppression ratios. Here we use hypothetical nose poke data from four trial types to account for this finding. **(A)** For all trial types, the baseline nose poke rate is 10 (pokes/unit time). **(B)** Nose poke rate during each 1 s interval of the 10 s cue is shown for the four trial types. In trial type 1 (blue), nose poking is perfectly distributed across all ten intervals (5 pokes/unit time). In trial type 2 (green), nose poking alternates between 0 pokes/unit time and 10 pokes/unit time every 1 s interval. In trial type 3 (orange), nose poking spikes to 25 pokes/unit time in two intervals, but is zero in all other intervals. In trial type 4 (pink), nose poking is confined to a single interval (50 pokes/unit time). **(C)** These four trial types produce equivalent levels of nose poking when rate over the total cue is considered (5 pokes/unit time). **(D)** As expected, calculation of a suppression ratio for the total cue produces identical ratios for each trial type (suppression ratio = 0.333). **(E)** Calculation of a suppression ratio for each interval, for each trial type, mirrors the pattern of nose poking. The suppression ratio calculation is designed for maximal sensitivity in detecting decreases in poking. A suppression ratio of 1.0 is found $[(10-0) / (10+0) = 1.0]$ when no poke occurs in an interval. Extreme increases in poking (Trial Type 4, First Interval) are not weighted equivalently to extreme decreases, yielding suppression ratios that fall well short of -1.0 $[(10-50) / (10+50) = -0.667]$. **(F)** Calculating a suppression ratio for each interval, then averaging the 10 intervals, only produces a ratio equivalent to the total cue if nose poke rates are perfectly distributed across the entire 10 s cue (as in Trial Type 1, suppression ratio = 0.333). Of course, the natural nose poking behavior of a rat will never match this fixed, rigid schedule. As nose poking becomes imperfectly distributed over the 10 s cue, the mean suppression ratio across all intervals increases [TT4 (0.83) > TT3 (0.71) > TT2 (0.50)]. For this reason, suppression ratios calculated in short time intervals (F) produce inflated suppression ratios compared to the total cue (D). However, inflation is uniform for danger, uncertainty and safety trials, making suppression ratios in short intervals valuable for detecting relative differences in suppression ratios in short temporal windows.