For visual task performance (Figure 11), we performed a 2 (task [color, number]) x 2 (order [visual first, auditory first]) x 5 (Auditory contrast [levels 1-5]) repeated measures on percent correct. We found a significant three-way interaction ($F(1,7) = 19.471$, $MSE = 56.662$, $p = .003$). A separate repeated measures ANOVA was performed for each order to further understand the three-way interaction effect. When visual target was reported first (V1), we found a significant effect of task, where average percent correct was higher on the color (mean = 96.523%) versus the number task (mean = 76.449%; $F(25.329$, $MSE = 8059.628$, $p = .002$). There was no main effect of auditory contrast on visual performance ($F(4,28) = .966$, $MSE = 15.834$, $p = .442$), nor a significant interaction between auditory contrast and task ($F(4,28) = 1.208$, $MSE = 15.885$, $p = .330$). This suggests that visual performance was not affected by the difficulty of the auditory task. When the auditory target was reported first (A1), we still found significant effects of task, where average percent correct was higher on the color (mean = 95.459%) versus number task (mean = 72.862%; $F(1,7) = 114.540$, $MSE = 10212.285$, $p < .001$). While there was no interaction between auditory contrast and visual task, $F(4,28) = 1.138$, $MSE = 25.788$, $p = .359$, there was a trend for overall visual performance to be affected by auditory contrast ($F(4,28) = 2.658$, $MSE = 102.427$, $p = .054$).
Figure 11. **Visual Performance in the AM Experiment**: (A) Data from a sample observer plotting percent correct detection of the visual target as a function of auditory contrast for the 5Hz sound when the visual stimulus was judged first (left-hand column) or second (right-hand column). Performance on the visual task was fairly stable across auditory contrast and across visual task order. (B) Average visual percent correct for each visual task (+/- sem across observers) and each task order, collapsed across auditory contrast. Overall, performance was worse in the visual number versus color task regardless of task order, whether the auditory judgment was made first or second. This was significant in each observer and across observers (n = 8 observers; total number of trials =12000; mean number of trials per visual task per task order = 3000).

Further analysis assessed if the effect of task and order on auditory thresholds, slopes and lapses depended on whether the visual and auditory targets occurred in the same versus different intervals. We found no main effect of same/difference condition (ps > .229), and no interaction between task and same/difference condition (ps > .126), nor between order and same/difference condition (ps > .853) on any of the auditory dependent variables tested (Figure 12).
Figure 12. **Performance When Visual and Auditory Targets are in the Same versus Different Intervals.** (A) Percent correct on the visual task and auditory AM (B) thresholds, (C) slopes, and (D) lapse rates when the visual and auditory targets were in the same versus different intervals, for each visual task (+/- sem across observers) and each task order. There were no significant differences between conditions.