

Monday

of visual processing, whereas cues predicting greater signal probability enhanced sensitivity only at low energy levels, consistent with an increased baseline activity in signal-selective cells. Together, these results support 'predictive-coding' theories of perception which propose distinct top-down influences of expectation and attention on visual processing.

◆ **Knowing the error of our ways yet being unable to correct for it**

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When performing a sensorimotor task, eg pointing to visual targets, we constantly make errors. Those errors can be random as a result of noise or they can be systematic due to sensorimotor miscalibrations. It is generally assumed that in the absence of visual feedback we are unaware of the noise-related random pointing errors. Here we investigated this assumption. Participants performed a rapid pointing task to visual targets presented on a touch screen earning points when hitting close to the target. Visual feedback was prevented at movement onset (open-loop). After the movement was completed participants indicated whether they believed to have landed left or right of the target. Results show that participants' left/right-discriminability was well above chance. It was still above chance when participants were instructed to point slowly, enabling them to correct for any unintended movement error. Yet when participants were allowed to make corrections after the initial movement toward the touch screen was completed knowledge about the error was lost. Surprisingly, in this condition participants often did not correct at all and the corrections that they did make were relatively small. Together, this indicates that we have knowledge about the random error yet are unable to use it.

◆ **Informational affordances: Evidence of acquired perception–action sequences for information extraction**

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It is now quite common to speak of "perception for action", emphasising that many of our perceptual systems serve an ultimate role in guiding action. However, we might also legitimately speak of "action for perception", in which action can serve the more proximate goal, of allowing us to better perceive an object's properties. The current study examined whether object perception can automatically prime actions leading to efficient information extraction. Participants in Experiment 1 learned to rotate a cube in a specific way with the end goal of efficiently revealing object-identifying information. In Experiments 2 and 3 the end goal of producing object-identifying information was removed but the stimulus-response associations were preserved. In a subsequent test phase, where the object was irrelevant, only object views associated with actions learned in the context of obtaining object-identifying information caused response interference. These results demonstrate the existence of informational affordances: perception-action sequences acquired with the goal of information extraction that are automatically primed during later exposure to the object. Our results show one way that perception and action are linked in recursive fashion: by way of perception utilizing action in order to facilitate the goal of perceiving.

◆ **Dissociating visual confidence from performance**

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High stimulus uncertainty not only reduces performance in a visual task but also one's own confidence about being correct in the task. As a result, performance and confidence are usually tightly related. However, it is still not clear how confidence is estimated, and under which circumstances performance and confidence can be dissociated. To address the latter question, we trained observers in a motion direction discrimination task under two conditions that differed in predictability. In the most predictable condition, motion directions were sampled from a narrow distribution, thereby reducing the uncertainty of the next stimulus (according to Bayes' rule). However, another consequence of using a narrow distribution is to bias the perception of the next stimulus towards the mean of the distribution, and thus reduce the discriminability of the stimuli. Therefore, if observers base their confidence on the uncertainty of the stimulus in the context of the previous ones, their confidence will be high when their performance is low. For those observers who displayed learning characterized by a decreased performance in the most predictable condition, we found indeed that their confidence increased. This result suggests that visual confidence is better related to the observer's internal uncertainty than to anticipated performance.