

NEURAL ACTIVITY CORRESPONDING TO REPETITION PRIMING IN MONKEY
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Repetition priming is a form of rapid perceptual learning, whereby prior exposure to an object allows faster recognition of that object on subsequent exposures. Repetition priming may depend in part on visual-response plasticity among neurons in inferotemporal cortex (IT). Over multiple presentations of the same stimulus, response strength is known to decline in IT - a phenomenon known as repetition suppression. However, there has been no direct demonstration of a correlation between repetition suppression at the level of single neurons and repetition priming. Indeed, repetition priming has never been studied in monkeys. In order to investigate changes in neural activity that accompany repetition priming, we recorded from single IT neurons in a monkey trained to perform a symmetry decision task. In this task, the monkey reported whether a visual stimulus was symmetrical or asymmetrical by making either an upward or a downward saccade. Over the course of the experiment, each stimulus was presented twice, with lags between presentations ranging from zero to sixteen intervening different stimuli. Consistent with human behavioral studies of repetition priming, the monkey's reaction time was shortest for zero lag repeats and increased monotonically with lag. Furthermore, responses of IT neurons were suppressed by repetition at short lags, but not at long lags. We conclude that repetition priming observed behaviorally is accompanied by repetition suppression at the level of single neurons.

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