Abstract

Recently, the traditional view of bottom-up object recognition has been challenged. The new models suggested that a human subject could recognize images not only with the bottom-up process, but also in combination with the top-down process that was based on his/her experience. As the low spatial frequency information could pass the magnocellular pathway that was much faster than the parvocellular pathway, it should correspond to the top-down process in the subject's brain, thus facilitating the object recognition. However, it was unclear whether this facilitation also existed in reading. And if so, which range of spatial frequency information might be optimal to trigger the character/word processing by the magnocellular system. To answer these questions, we presented a number of traditional Chinese characters in a masked priming paradigm to native Cantonese speakers and varied the spatial frequencies of the prime to see the priming effects in the target characters. Our findings suggested that there was indeed facilitation in reading if we had a priming object consistent with the target object for all spatial frequency conditions. We also found that the unfiltered stimuli had a much stronger priming effect than both low spatial frequency ones and high spatial frequency ones. It was still not conclusive which level of spatial frequency triggered the facilitation in the study or which level of low spatial frequency was more effective for the priming effect.

Key words: Spatial frequency, Object recognition, Magnocellular, Priming effect, Unfiltered.