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Hysteresis in face and binocular perception

Multi-stability in categorical perception, as illustrated in the Kanizsa figure and Necker cube, reveals the characteristics of dynamical neural processes underlying perception and cognition. The hysteresis phenomenon, the persistence of the initially perceived pattern despite of parameter changes that would otherwise favour the alternative (Kelso 1995), pertains to these neural dynamics. Here I report a hysteresis effect in face perception using synthetic faces that have an advantage of quantitatively manipulating stimulus dimension.

I will also report an fMRI result, which showed that activity in FFA, unlike in other visual cortical areas (V1, V4v), increased at categorizing faces and this area is responsible for hysteresis effect. Another example of hysteresis effect in binocular perception will be reported. It has been found that there is a hysteresis depending on orientation disparity in a transition between stereopsis and binocular rivalry in tilted gratings. I will also discuss the existence of hysteresis effect in non-Fourier binocular perception and signal changes in V2 area in binocular rivalry observed in a related fMRI study.

Jeounghoon Kim
Korean Advanced Institute of Science & Technology, KAIST