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“Enhanced Red/Green Color Input to Motion Processing in Infancy: Evidence for Increasing Dissociation of Color and Motion Information during Development”

Early in postnatal development, the brain produces exuberant connections, some of which are later retracted. This retraction process is thought to play a role in the formation of functionally segregated modules in the brain. In the case of visual development, retraction between visual areas might underlie the known psychophysical and neural segregation of processing for different aspects of vision (e.g., color, motion, form, depth) known to exist in adults. The segregation between color and motion processing is a particularly interesting case to study, since in adults, a wealth of psychophysical and neural data has documented the limited contribution of chromatic information to motion processing, which is thought to arise from minimal cross-talk between neural areas encoding object color vs. object motion. In this talk, studies investigating the development of chromatic (red/green) contribution to motion processing in human infants are summarized and discussed. The results of these studies demonstrate that, compared to adults, infants exhibit a relatively enhanced ability to use chromatic information for motion processing. Such findings suggest the possibility of greater connectivity between color and motion areas early in life. Presumably, motion areas must then specialize to the adult-like state by re-weighting or selectively pruning their chromatic inputs over the course of development.