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Neural Basis of Episodic Memory Development: Evidence from Single Nucleotide Polymorphisms

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Abstract: Episodic memory involves a mechanism that binds information into a coherent representation structure. Especially, more complex memory structures are required when there are more overlapping elements among different episodes (Humphreys, Bain & Pike, 1989), and the ability to use memory structures of different complexities increases throughout development (Yim, Dennis, & Sloutsky, 2013). Although the major neural structures considered to underlie the development of episodic memory are the prefrontal cortex (PFC) and the hippocampus, it is possible that the development of episodic memory involves multiple brain mechanisms interacting with different types memory structure. The current study tries to examine the division of labor between the PFC and hippocampus when forming different types of binding structure in episodic memory development. We utilized a multinomial processing tree (MPT) model, and Single Nucleotide Polymorphisms (SNP) genotyping approach to elucidate the division of labor between different brain areas involved in forming different memory structures.