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Development of the Semantic Network: From a random to a complex network

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Abstract: In the present study, we investigate semantic knowledge of both adults and children for early learned words. Previous studies have suggested that semantic knowledge forms a network with particular properties, called a complex network. Since, in theory, a particular kind of network structure may be generated by a particular process, the structure of the semantic knowledge network found in semantic tasks has been supposed to reflect the developmental process of semantic knowledge acquisition. However, at this point, no empirical description is available for the development of children's knowledge –adult substitutes are used. We investigate children's semantic knowledge using an alternative-forced-choice association task. The result suggests that the children's semantic network is closely approximated by a random network which is different from adults' network. However, it is not truly random but contains a reliable structure. We discuss a possible developmental trajectory from a children's random-like network to an adult's complex network.