A Model of Cognitive Rehabilitation: Recovering with Constraints

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Abstract: Neural network modeling offers a useful computational framework for exploring the nature of normal and impaired cognitive processes. Among such modelings, Hinton and Shalllice (1991) and Plaut (1996) lesioned recurrent neural networks and investigated the degree of recovery through retraining. However, many ways of brain damages has remained to be unresolved. The current works propose the method of constraints in which brain damages might occur. In order to understand the nature and variability of recovery in patients, we examined both simple three layerd perceptrons and attractor networks with lesions in various parts of networks, and observed recovery processes in retraining. The findings in this study revealed conditions to recover from brain damages and suggests good and proper ways of therapy in which therapists have to select training words to maximize generalization.