

Dysexecutive syndrome model using ACT-R

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Abstract: People with Action Disorder Syndrome (ADS) are prone to executive errors while performing activities. This project proposes to model the four most frequent types of errors: omission, perseveration, anticipation and substitution, modeled with the cognitive architecture ACT-R. The model is based on psychological theories aimed to explain the executive errors. The coffee preparation selected from the Multi Level Action Test (MLAT) is first simulated in ACT-R [1,2]. Two MLAT conditions are simulated with and without distractors. The four executive errors are then introduced to simulate how people with ADS encounter difficulties while performing the activity. The results of the simulation show the same tendency than the literature. Applying the model to another MLAT activity the sandwich preparation has proved the model robustness.

[1] Schwartz, M. F., Montgomery, M. W., Buxbaum, L. J., Lee, S. S., Carew, T. G., Coslett, H. B., et al. (1998). Naturalistic action impairment in closed head injury. *Neuropsychology*, 12(1), 13-28. [2] Anderson, J. R., Bothell, D., Byrne, M. D., Douglass, S., Lebiere, C., & Qin, Y. (2004). An integrated theory of the mind. *Psychological Review*, 111, 136-1060.