restraint during training or in their home cages. Based on the natural ability to use the forelimbs the rats were classified into two groups: (i) “Ambidextrous” animals could perform the task equally with both forelimbs and both forelimbs were trained; (ii) Unidextrous, animals could perform the task only with one forelimb and that forelimb was trained. In addition we had another group of ambidextrous animals in which only the preferred forelimb was trained, “pseudo-unidextrous”. Once the animals behavior attained plateau performance the forelimb motor cortex contralateral to the preferred forelimb was lesioned by sub-pial aspiration. Skilled forelimb pellet retrieving behaviour of the forelimb connected to the injured motor cortex was tested following the lesion. We found significant deficits in the behavioral performance. These deficit were long-lasting. Our result show that the prior training of the forelimb connected to the intact cortex, after unilateral cortical lesion does not alter the behavioral deficits exhibited by forelimb connected to the injured cortex. Funding for this study was from International Senior Research Fellowship Grant GR066676MA from The Wellcome Trust to Dr V. Rema

Disclosures: **R. Chaudhary:** A. Employment/Salary (full or part-time):; National Brain Research Centre. **J. Venkatesh:** A. Employment/Salary (full or part-time):; National Brain research Centre. **V. Rema:** A. Employment/Salary (full or part-time):; National Brain Research Centre. B. Contracted Research/Research Grant (principal investigator for a drug study, collaborator or consultant and pending and current grants). If you are a PI for a drug study, report that research relationship even if those funds come to an institution.; Welcome Trust Senior Research Fellowship.

Poster

634. Motor Skill-Learning

Location: Halls A-C

Time: Tuesday, November 18, 2014, 1:00 PM - 5:00 PM

Program#/Poster: 634.12/KK28

Topic: F.01. Human Cognition and Behavior

Support: KTIA_NAP_13 (Neurocognitive disorders of frontostriatal sytem)

> KTIA_NAP_13 (Neurocognitive disorders of frontostriatal sytem), Bolyai Janos Research Scholarship of the Hungarian Academy of Science

Title: Differential vulnerability of different forms of skill learning in Parkinson’s disease

Authors: *A. LUKACS[1], F. KEMENY[1], G. DEMETER[1], I. VALALIK[2], M. RACSMANY[1]; [1]Dept. of Cognitive Sci., Budapest Univ. of Technol. and Econ., Budapest, Hungary; [2]Dept. of Neurosurg., St. John's Hosp., Budapest, Hungary

Abstracts: The striatal dopaminergic dysfunction in Parkinson's disease (PD) has been associated with deficits in skill learning in a number of studies, but the results are inconclusive so far. Motor sequence learning (especially sequence-specific learning) is found to be deficient in the majority of studies using the Serial Reaction Time Task (SRTT; Siegert, Taylor, Weatherall, & Abernethy, 2006; Jackson et al., 1995; Ferraro, Balota and Connor, 1993; Pascual-Leone et al., 1993, Muslimovic et al., 2007; Gobel et al., 2013; but see Kwak et al., 2012), although results are contradictory when verbal response is required instead of button presses (Westwater et al. 1998; Smith, Siegert and McDowall 2001). While problems with motor sequences seem to be prevalent, PD patients show intact performance on Artificial Grammar Learning (AGL) tasks, suggesting that the sequencing problem may be response type- or task type-dependent (Smith, Siegert and McDowall 2001; Witt, Nühsman and Deuschl, 2002) Acquisition of nonsequential probabilistic associations also seems to be vulnerable as evidenced by impaired PD performance on a probabilistic category learning task (Knowlton, Mangels et al., 1996; Shohamy, Myers, Onlaor, & Gluck, 2004). Our aim was to explore the nature of the skill learning deficit by testing different types of skill learning (sequential versus nonsequential, motor versus verbal) in the same group of Parkinson's patients. 14 patients with PD (mean age: 59.77 range: 45.5-74) were compared to age-matched typical adults using 1) a Serial Reaction Time Task (SRTT) testing the learning of motor sequences, 2) an Artificial Grammar Learning (AGL) task testing the extraction of regularities from auditory sequences and 3) a Weather prediction task (PCL-WP), testing probabilistic category learning in a non-sequential task. In motor sequence learning on the SRTT task, the two groups did not differ in accuracy; PD patients were generally slower, and analysis of z-transformed reaction times showed no evidence of sequence learning in PD. A deficit in artificial grammar learning was present only as a tendency in the PD group. The PD group showed evidence of learning on the PCL task, and their learning performance was not statistically different from that of the control group. These results partly support and also extend previous findings suggesting that motor skill learning is vulnerable in PD, while other forms of skill learning are less prone to impairment. Results are also in line with previous assumptions that mechanisms underlying artificial grammar learning and probabilistic categorization do not depend on the striatum (Reber & Squire, 1999; Skosnik et al., 2002).

Disclosures: A. Lukacs: None. **F. Kemeny:** None. **G. Demeter:** None. **I. Valalik:** None. **M. Racsmany:** None.

Poster

634. Motor Skill-Learning