Society for the
Neural Control of Movement

3-G-34 A framework for explaining serial processing and sequence execution strategies.

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Behavioral research produced many task-specific cognitive models that do not say much about the underlying information processing architecture. Such an architecture is badly needed to understand better how cognitive neuroscience can benefit from existing cognitive models. This problem is especially pertinent in the domain of sequential behavior where behavioral research suggests a diversity of cognitive processes, processing modes and representations. Inspired by decades of reaction time (RT) research with the Additive Factors Method, the Psychological Refractory Period paradigm, and the Discrete Sequence Production task, we propose the Cognitive framework for Sequential Motor Behavior (C-SMB). We argue that C-SMB accounts for cognitive models developed for a range of sequential motor tasks (like those proposed by Keele et al., 2003; Rosenbaum et al., 1983, 1986, 1995; Schmidt, 1975; Sternberg et al., 1978, 1988). C-SMB postulates that sequence execution is controlled by a central processor using central-symbolic representations, and a motor processor using sequence-specific motor representations. On the basis of this framework we present a classification of the strategies to produce movement sequences. We complete this presentation by proposing the neural underpinnings of this framework.

Wednesday, April 27	**3-F-27**	Synergistic changes in muscle coordination post-stroke during split-belt walking	Pablo Iturralde[1], Gelsy Torres-Oviedo[1]	[1]University of Pittsburgh
Wednesday, April 27	**3-F-28**	Pushing the limits: neural representations of motor sequencing task difficulty in older adults	Katherine Cooke[1], Patricia Reuter-Lorenz[1], Rachael Seidler[1]	[1]University of Michigan
Wednesday, April 27	**3-F-29**	Modulation of intracortical inhibition following a bimanual interference task	Florian Kagerer[1], Alexander Brunfeldt[1]	[1]Michigan State University
Wednesday, April 27	**3-F-30**	Extended Single Session Adaptation to Clamped Visual Errors	Ryan Morehead[1], Maurice Smith[1]	[1]Harvard University
Wednesday, April 27	**3-F-31**	Sensorimotor adaptation in unrelated effector systems: common or distinct learning mechanisms?	Robert Hermosillo[1], Kwang Kim[1], Prince Wang[1], David Ostry[2], Ludo Max[1]	[1]University of Washington, [2]McGill University
Wednesday, April 27	**3-G-32**	Speech motor control taking into account feedback: an implementation using a biomechanical model	Andrew Szabados[1]	[1]University of Grenoble-Alpes
Wednesday, April 27	**3-G-33**	Corticospinal Integration and Coordination of Movement Commands	Ning Lan[1], Manzhao Hao[1], Si Li[1], Xin He[1], Qin Xiao[1]	[1]Shanghai Jiao Tong University
Wednesday, April 27	**3-G-34**	A framework for explaining serial processing and sequence execution strategies.	Willem Verwey[1], Charles Shea[2], David Wright[2]	[1]University of Twente, [2]A&M University
Wednesday, April 27	**3-G-35**	Dynamic Stability in Human Control of Complex Objects	Dagmar Sternad[1], Albert Mukovskiy[2], Julia Ebert[3], Tjeerd Dijkstra[4]	[1]Northeastern University, [2]University of Tübingen, [3]Imperial College, [4]Radboud University
Wednesday, April 27	**3-G-36**	Linking Objects to Actions: Incorporating novel objects into existing neural templates	Carlos Vargas-Irwin[1], Jonas Zimmermann[1], John Donoghue[1]	[1]Brown University Neuroscience Department
Wednesday, April 27	**3-G-37**	Characterization of the learning process while operating a body-machine interface	Camilla Pierella[1], Ferdinando Mussa-Ivaldi[2], Maura Casadio[1]	[1]University of Genoa, [2]Northwestern University
Thursday, April 28	**4-A-1**	Unconscious Effects of Pre-Search Cues on Visual Search Scanning Behaviors	Peter Vishton[1], Evan Jones[1]	[1]College of William and Mary
Thursday, April 28	**4-F-2**	Can hand-loss impair motor control and bilateral sensorimotor representation of the other hand?	Fiona van den Heiligenberg[1], Naveed Ejaz[2], Harriet Dempsey-Jones[1], Lucilla Cardinali[2], Joern Diedrichsen[2], Tamar Makin[1]	[1]University of Oxford, [2]University of Western Ontario
Thursday, April 28	**4-E-3**	Defining the dystonic fingerprint of musicians' dystonia	Anna Sadnicka[1], Naveed Ejaz[2], Tobias Wiestler[1], Katherine Butler[3], Mark Edwards[4], Jorn Diedrichsen[2]	[1]University College London, [2]Brain Mind Institute, Department for Computer Science, University of Western Ontario, [3]University of Plymouth, [4]St Georges University