

BIOSTATISTICS SEMINAR

UCLA

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Studying the impact of rewards on multi-scale sensorimotor learning processes during a sequential joystick task

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3:30pm - 4:30pm, Dentistry 13-041

Refreshments served at 3:00 PM in room 51-254 CHS

ABSTRACT:

When humans perform repeated movement tasks, recent motor learning models propose that sensorimotor learning occurs on multiple time scales, including both fast adaptive learning processes (with rapid changes of performance) and slow learning processes (with more gradual improvement). Based on movement time measurements from a discrete sequence production joystick task, we use mixed models for longitudinal data to study the impact of different reward levels on these fast learning and slow learning processes. Across each subject's sequence of trials, the subject needs to adapt to changes in visuomotor rotation of the joystick (a fast learning adaptation process), while executing two repeated sequences of joystick movements (8 out-and-back movements within each trial in one of two specific target sequences, both of which they learn slowly across trials). Two reward levels are considered. Our analyses indicate that slow learning is influenced by reward level, but that other effects dominate the fast learning adaptation processes. This has potential relevance for skill learning in fields such as neurorehabilitation. Practical challenges arising from between-subject differences in task performance will be discussed.