

## Trial-by-trial human motor behaviors: making covert brain computations overt

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The human brain is impressively adept at generating appropriate behaviors in both old and new environments, tasks, and challenges. Adaptation requires the brain to abstract relevant information from the world, from the body, and from past experience, then transform that information into updated behavior. My lab and I have used a trial-by-trial motor learning paradigm to ask how the brain quickly performs these calculations.

I will detail our theoretical and experimental foundations, then consider our lines of evidence that the adaptive process of the brain is not static, but itself changes rapidly with experience. I will conclude with reviews and previews of how our research is investigating the brain in childhood development, eye-hand coordination in Parkinsonianism, cognition, and differential adaptation through action or through observation.