Overall Impact:

The proposed research should provide useful information on the role of thalamic inhibition in well-developed and highly stereotyped motor skills. Prior research has indicated a relationship between thalamic GABA concentration and bulk motor output, but the proposed research is innovative in that it will test whether higher GABA concentrations correlate with decreased motor variability and increased motor automaticity. The project will could make a significant impact on the understanding of thalamic involvement in motor automaticity, providing insight into the healthy and disordered human motor behavior.

* Strength: The research strategy was clear, detailed and sound.
* The task (keyboard typing) and subjects (humans) bolster the significance of any findings. The research relies on much less abstraction than do typical motor neuroscience studies.
* Weakness: While previous research was explained with a good level of detail, many citations were missing. *For the purposes of the class, I gave the applicant the benefit of the doubt on any uncited statements that were labelled “(CITE)” and did not score them negatively.*
* Weakness: While the applicant made it clear that the thalamus is important to healthy motor behavior, it was unclear what an assay of thalamic GABA levels might be able to explain about the \*overall\* function of the thalamus in motor control. Namely, it’s unclear what GABA levels might say about thalamic (excitatory) facilitation of motor signals.

Significance:

* The design of behavioral measures and analysis is rigorous and will produce a detailed an thorough behavioral dataset to complement magnetic resonance spectroscopy data.
* By using a ubiquitous naturalistic task (keyboard typing) the research stands to produce findings that are immediately useful for basic neuroscience, and translatable to everyday human behavior with very little abstraction.

Innovation:

* One of the strengths of the proposed research is that it uses keyboard typing to assess motor automaticity. Typing is a ubiquitous human motor behavior, that is at once tightly-defined, well-researched, and naturalistic.

Environment:

* The facilities and equipment are of high quality, as well as the applicant’s understanding of how to use them.
* In the aims and approach section, the applicant gave a few helpful nods to how training will be incorporated into the project.