Intellectual Merit Criterion

Overall Assessment of Intellectual Merit
Excellent

Explanation to Applicant
-The applicant has an exceptional publication record with 4 first-author papers already, in addition to multiple other co-authorships and presentations. This level of productivity is consistent with senior graduate students -Extensive research experience and a clear grasp of the topics at hand, as evidenced through the statement as well as the letters of recommendation -The proposed research is interesting and has implications for our understanding of mental illness. One relatively minor question -- recently the use of MTurk has come up broadly with respect to data quality rather generally. A large sample is important, but how will the applicant balance these issues. Is 500 the target sample total? Or 500 participants with useable data (that is to say, responses were made etc)? -Strong letters providing comparisons to past successful students, and coupled with the record thus far, the applicant's intellectual merit is apparent.

Broader Impacts Criterion

Overall Assessment of Broader Impacts
Very Good

Explanation to Applicant
-Though the proposed work is basic science, the application to mental illness is clear and well articulated. The results of the proposed work do stand to be broadly relevant -The commitment to open data sharing and open code was unique and a strength of the application. Data sharing and openness are important, and are increasingly emphasized. A willingness to be open in this way from the outset is excellent -The applicant has been involved in peer counseling, which is relevant given the proposed research -Taking part in Alda Center Workshop for Communicating Science is a strength, and will also benefit the applicant throughout their career

Summary Comments
The applicant has exceptional background in research, including multiple publications, and is on track for future success with an interesting project investigating reinforcement learning. Further, the applicant has been involved in outreach with respect to mental health, related to his work, and is engaging in improving his scientific communication.

Intellectual Merit Criterion

Overall Assessment of Intellectual Merit
Very Good

Explanation to Applicant
The project examines mechanisms of motivation in memory formation using non-invasive human neuroimaging and monitory reward to influence motivation. These are relatively standard protocols and procedures to investigate relatively old/well-research questions - though the key innovation is a mutimodal approach that includes neuroimaging and computational modeling.

Broader Impacts Criterion

Overall Assessment of Broader Impacts
Very Good

Explanation to Applicant

The findings have the potential to shed new light on the old dilemmas of the mechanisms of learning. The student has a strong research/publication background and an interest in making neuroscientific data accessible to clinical, scientific and lay audiences.

Summary Comments

The clearly articulated proposal comes from a student from a student with a strong research background.

Intellectual Merit Criterion

Overall Assessment of Intellectual Merit

Excellent

Explanation to Applicant

This application demonstrates outstanding intellectual merit. He completed undergraduate training in cognitive neuroscience at Johns Hopkins University with the near-perfect grades and now pursue his Ph.D. at Princeton Neuroscience Institute (PNI). The applicant co-authored a total of 8 journal publications and contributed to 9 conference presentations, which are exceptional publication records for 2nd year Ph.D. student. The applicant also received multiple prestigious awards and fellowship during his undergraduate and graduate training. In particular, the applicant completed the visiting undergraduate research fellowship in Cognitive Science program at Indiana University. Through his training, the applicant appears to develop rigorous methodological skills including computational modeling. The applicant accumulated extensive research experience in the interdisciplinary fields of cognitive psychology, neuroscience, and clinical psychology and psychiatry, which would be a great asset to conduct research in the chosen field. The research statement describes rigorous study plans that will utilize a set of behavioral experiments, computational models, and fMRI methods. The applicant appears to be very well prepared to conduct the proposed research.

Broader Impacts Criterion

Overall Assessment of Broader Impacts

Excellent

Explanation to Applicant

The application demonstrates outstanding potential for making broader impacts through his research, education, and research-related services. The applicant has been engaged to impactful activities including volunteering at a mental health institute and counseling center, completing certificates in peer counseling and crisis intervention, and giving lectures on neuroscience and computational methods. The research the applicant proposes would have significant implications and potential for broader impacts especially for improving public mental health. In addition, the applicant demonstrates good communication skills and the motivation to further improve the skills through training for effective and broader research dissemination.

Summary Comments

The applicant demonstrates the outstanding potential to become a successful researcher and educator. The applicant is a highly motivated individual with excellent potential both for intellectual merit and broader impacts. He appears to be well prepared to conduct the proposed research and ultimately for a successful career in his chosen field.