1. **Major Goals**

The major goals of this project, as stated in the approved application, include “[exploring] the formation of social and non-social uncertainty judgements among healthy, neurotypical adults” during the predoctoral phase of the grant, and “[exploring] the formation of social and non-social uncertainty judgements across normative adolescent development” during the post-doctoral stage of the grant. We had proposed using a novel video fMRI paradigm to accomplish these goals which tasked subjects with providing continuous online ratings of a specific social (certainty of a target character’s innocence or guilt) or non-social (certainty of a target image’s brightness or darkness relative to the current video frame) focus while viewing a dynamic, feature-rich stimulus (i.e., an episode from a murder mystery television show). Through the use of intersubject correlations, we aimed to characterize trends in neural synchrony in response to ambiguity and to identify regions which disproportionately contribute to global evaluations of uncertainty. The timeline proposed with this application aimed to complete data collection by July 2025 and data analysis, presentations, and manuscripts completed by December 2025. An additional goal was to identify an appropriate institution and mentor(s) with which to pursue the goals outlined for the post-doctoral phase of this grant.

1. **Accomplishments**
   1. **Major Activities**

* Several accomplishments have been achieved since I began receiving this F99/K00 grant in January 2024. We have completed data collection from forty (40) subjects using the previously described paradigm.
* As outlined within my Activities Planned Under This Award, I had developed proficiency with the use of NLTools for pre-processing and the use of intersubject correlations. I also was awarded a fellowship to attend the 2023 Methods in Neuroscience at Dartmouth Computational Summer School (aka MIND) where I received instruction on neural synchrony and nuances in studying it.
* and are about to begin recruitment for a follow-up study which we indicated we would complete in response to concerns from Reviewers 1 and 2 regarding lack of a non-ambiguous social control within the initial paradigm.
* Analysis
  + Describe any experiments or studies conducted
  + Explain any analysis performed on the collected data
* Dissemination
  + Posters
    - SANS
    - Temple Honors
  + Presentations
    - SAN Lab
    - FINN Lab
* Manuscripts
  + Active V Passive
  + Social Uncertainty
  1. .**Specific Objectives**
  2. **Significant Results**
     1. **Major Findings & Developments**
        1. **Differences in Active V Passive Viewing**
        2. **Memory**
        3. **Synchrony in theory synchronizes brain**
        4. **Social and Non-Social Uncertainty ratings are influenced by very different regions**
     2. **Conclusions**
  3. **Key Outcomes & Achievements**
     1. Ipsos
  4. **Work Remaining**
     1. Memory Analyses
     2. Publications
     3. Learning GEEs

1. Training & Professional Development
   1. MIND
      1. What I learned
   2. COG
      1. What I taught
      2. Detail any courses, workshops, or training sessions attended, including skills or techniques learned.
   3. SAN Lab
      1. Tiara Bounyarith
         1. OCD
         2. What she learned
      2. Caroline George
         1. Memory
         2. What she learned
2. Future Plans
   1. IDP
   2. Program Release development
   3. Identifying Post Doc Mentors
   4. I’d started the process but need to finalize candidates and reach out
      1. Highlight any collaborations with other researchers or institutions, including interviews with potential postdoc labs
3. Challenges & Delays
4. Responsible Conduct of Research

**Format:** I completed both formal and informal responsible conduct of research (RCR) training activities during this reporting period. Formal instruction included renewing my Collaborative Institutional Training Initiative (CITI) certifications. Another formal training opportunity that I had completed since receiving the grant was completing a faculty-directed workshop organized by Temple University’s Psychology & Neuroscience department on research ethics. This includes a collaborative event in which individuals of different experience levels break into groups to discuss and solve examples of realistic research ethics dilemmas. Lastly, as an attendee of the Methods in Neuroscience at Dartmouth (MIND) Computational Summer School and the Computational Psychology Preconference at SPSP 2024, I also received formal ethics training relevant to neuroscience as portions of the curriculum included discussions dedicated to open challenges and ethical issues concerning social psychology and neuroscience. As the primary researcher of my proposed project, I have also been responsible for ensuring that research assistants and staff are sufficiently trained in research ethics and that all research practices meet our IRB’s standard for ethical research practices. This, along with the applied component of our ethics workshop, has given me the opportunity to practice engaging with research ethics in an instructive role, rather than solely as a student. Such exercise is crucial to my own development as an independent social neuroscientist. In terms of informal instruction, I have continued to meet weekly with my sponsors and at least one meeting per month is dedicated to primarily to ethical challenges in social neuroimaging research, though ethical questions frequently are a central topic of discussion in our other meetings as well. Regarding future ethics training, I will continue to meet with my advisors regularly. I also plan to enroll in Temple University’s “Ethics and Ethical Conflicts in Psychological Science” course in Spring 2025, which is its next available offering. This graduate course is faculty-led and will bolster my ethics knowledge for psychological research. I will have the opportunity in this course to discuss ethical dilemmas that I might encounter and create plans for addressing them. I will also seek additional formal ethics training from developmental and neuroimaging conferences, such as FLUX and SANS, when available and possible.

**Subject Matter:** The CITI training modules that I had completed include Responsible Conduct in Research, Practice Runs Training, Biomedical Research, and Social/Behavioral Research which are all now valid until at least November 2025. Our Temple-organized ethics workshops address questions of collaboration, authorship and credit disputes, data integrity, open-science practices, resource sharing, subject protections, and working with vulnerable populations, among other topics. The heterogeneity of experience within each discussion group encourages all participants to think more critically about their responses as they try to navigate these difficult situations together. Novel ethics topics focused upon by MIND’s curricula include the appropriate application and reporting of neuroscience methodologies, as well as tool development, use, maintenance, and crediting. Topics discussed at SPSP 2024 that filled gaps from the previously mentioned sources include the importance of representation in our samples, especially from an international population, and appropriate compensation for subjects. My regular meetings with my sponsors as of late have primarily centered around identifying the most appropriate means of modeling specific neural phenomena relevant to my project. For example, our initial attempt to identify neural activity associated with rating behaviors yielded some interesting, reasonable results that in many ways matched our initial hypotheses, but lack of motor activation for a button-pressing task left us concerned that this was not the most accurate representation of the phenomena. Across several weeks, we devised a plan with input from my consultant, David Smith, to conduct supplementary analyses that would highlight flaws in our analyses and help identify the model that we feel certain most accurately represents the underlying phenomena. However, we also regularly discuss questions of subject compensation, subject safety, subject privacy, and data integrity as part of our ongoing collaborations together.

**Faculty Participation:** Faculty have contributed to my RCR training both through the informal instruction from my sponsorship team, but also via the Temple organized workshops, which are led and attended by many Temple faculty.

**Duration and Frequency of Instruction:** Instruction in RCR has exceed the minimum 10 hours through the completion of workshops, events, and regular weekly meetings with members of my sponsorship team. I will continue to keep my CITI training valid, participate in yearly Temple-organized workshops, and maintain my weekly meetings with my sponsor team.

1. Sponsor Comments

William has made significant progress towards becoming an independent researcher during this reporting He has excelled in his training plan and received consistent positive evaluations from both his sponsorship team and department faculty. His most recent faculty assessment, which we complete at the end of each semester, rated him as "exceeded expectations" in performance, interactions with peers and mentors, and productivity. William had completed all class-based requirements for his degree and was elevated to candidacy in March 2023. His academic work has primarily consisted of completing his dissertation, which includes the project outlined in the F99/K00 application. Only one component remains to be completed, which is a short behavioral study to supplement annotations for our primary stimulus. This data is on track to be collected by September. Speaking to the quality of his dissertation, it recently won a national competition for cutting-edge decision research organized by the global marketing research organization *Ipsos*. William has not only completed his primary project ahead of schedule but has also developed and will soon launch a new iteration of the project which makes several improvements, including the addition of a social control task, as was requested by reviewers of the F99/K00 application.

Regarding publications, William has submitted revisions to a first-author publication under review at the *Journal of Experimental Psychology: General*. He has also just written an empirical paper identifying neural differences associated with rating videos while under fMRI after recognizing that our project was uniquely well-equipped to fill this gap in the research. This manuscript will soon be submitted to the journal *Social Cognitive and Affective Neuroscience* as William’s third first-author publication. He is on track to submit at least two more first-author publications during the F99 phase of this grant and continues to exercise his ability to conduct independent research through additional ongoing collaborations between the co-sponsors’ labs and with consultant David Smith. This work was recently disseminated through poster presentations at the 2024 SPSP and SANS conferences and a symposium at the 2024 APS conference.

As outlined in his development plan, William has continued to lead and mentor other students to develop the skills of a successful future independent principal investigator. Via his collaboration with David Smith’s lab, he is mentoring a graduate student in using analytic techniques (i.e., Representational Similarity Analysis) that he had used in his first first-author manuscript. He also volunteered to work closely on two projects, one of which used memory data from the proposed F99 study, with an undergraduate honors student who sought naturalistic neuroimaging experience. These projects led to two posters presented at local events and, in the case of the memory data, will likely be incorporated into an upcoming manuscript. William has continued to lead his programming education organization, the Coding Outreach Group, by holding weekly office hours, hosting an annual introductory coding bootcamp, and organizing a summer workshop series to develop new programming skills – but is training his and his co-director’s replacements as he prepares to transition to the K00 phase.

William has begun the process of identifying postdoctoral positions by identifying labs that fit the criteria that he had outlined in his initial F99/K00 application and has begun interviewing members of each potential lab to assess how well they align with his goals and preferences. We expect that he will begin more formal proceedings with his top choice of labs by the end of this month, July 2024.

Overall, we are please will William’s progress and look forward to continuing to foster his development in the future.