

This five-year R01 project requires the following resources to accomplish the proposed aims:

PERSONNEL

Principal Investigator (Dr. Jane Smith, 25% effort): Dr. Smith will provide overall scientific leadership for the project, oversee all aspects of study design, data collection, analysis, and dissemination. She will supervise research staff and ensure adherence to timelines and research protocols.

Co-Investigator (Dr. Robert Johnson, 15% effort): Dr. Johnson will contribute expertise in neuroimaging methods and analysis, assist with fMRI protocol development, and supervise the neuroimaging data processing pipeline.

Co-Investigator (Dr. Sarah Williams, 10% effort): Dr. Williams will contribute expertise in developmental psychopathology, assist with clinical assessments, and help interpret findings in the context of neurodevelopmental disorders.

Postdoctoral Researchers (2 FTE): Two postdoctoral researchers will coordinate data collection, implement preprocessing and analysis pipelines, conduct statistical analyses, and prepare manuscripts and presentations.

Research Assistants (2 FTE): Two research assistants will recruit and schedule participants, administer cognitive and clinical assessments, assist with neuroimaging data collection, and manage research databases.

MRI Technician (25% effort): A certified MRI technician will operate the MRI scanner during data collection and ensure high-quality neuroimaging data.

EQUIPMENT

EEG System Upgrade (\$75,000, Year 1 only): Funds are requested to upgrade the existing EEG system to enable simultaneous fMRI-EEG recording. This includes MRI-compatible caps, amplifiers, and software.

Computing Cluster Expansion (\$50,000, Year 1 only): Additional computing nodes are needed for the intensive computational modeling and machine learning analyses proposed in Aims 2 and 3.

SUPPLIES

Neuroimaging Supplies (\$15,000/year): Includes MRI-compatible response devices, head cushions, disposable EEG electrodes, and participant monitoring equipment.

Computing Supplies (\$10,000/year): Storage media, backup systems, software licenses, and computing peripherals.

Office Supplies (\$5,000/year): General office supplies, printing costs for assessment materials, and participant recruitment materials.

TRAVEL

Conference Travel (\$15,000/year): Funds for PI, co-investigators, and postdocs to attend and present at 2-3 major conferences per year (e.g., Organization for Human Brain Mapping, Society for Neuroscience, Cognitive Neuroscience Society).

Collaboration Travel (\$5,000/year): Travel for PI and key personnel to meet with collaborators for specialized training and data analysis.

PARTICIPANT COSTS

Participant Compensation (\$60,000/year): Compensation for 180 participants (60 per group) at \$250 per participant for approximately 6 hours of testing (includes neuroimaging, cognitive assessments, and clinical interviews) plus travel expenses. Additional funds for follow-up testing in years 3-5.

Participant Recruitment (\$10,000/year): Advertising costs, community outreach materials, and screening expenses.

OTHER DIRECT COSTS

MRI Scanner Time (\$120,000/year): 300 hours of scanner time per year at \$400/hour for participant scanning and pilot testing.

Publication Costs (\$10,000/year): Open access publication fees for approximately 4-5 manuscripts per year.

Research Computing Services (\$15,000/year): High-performance computing resources and technical support for computational modeling and large-scale data analysis.

BUDGET JUSTIFICATION SUMMARY

The requested budget is appropriate and necessary to complete the proposed research. Personnel costs reflect the interdisciplinary expertise required for this complex project involving clinical populations, advanced neuroimaging methods, and sophisticated computational analyses. Equipment costs are essential for the simultaneous fMRI-EEG recording central to our approach. Participant costs reflect the comprehensive assessments and the need to adequately compensate families for their substantial time commitment. Neuroimaging costs are based on current rates at our institution's imaging center. This budget has been carefully planned to ensure the most efficient use of resources while enabling the successful completion of all aims.