

NSF Budget Justification - Rutgers University, PI

A. Senior/Key Personnel *

(Principal Investigator). holds appointments as Director of the Rutgers University Center of Mathematics, Science and Computer Education (CMSCE) and tenured Associate Professor in the Rutgers Graduate School of Professional and Applied Psychology. Funds are budgeted to compensate Dr. Shernoff for his time as lead PI of the collaborative research project in the form of 1 summer month for all 5 years of the project. Assuming overall leadership for the project, he will be responsible for ensuring effective completion of all research and business activities associated with the proposed 5-year project. He will assume overall responsibility for study management including hiring staff; oversight and implementation of all research activities. He will assume responsibility for communication of study findings, production of deliverables, attendance of required meetings and required reporting.

(Co-Principal Investigator). Dr. is a Research Associate at the CMSCE. She will supervise data collection, data management, qualitative data coding, and reliability/fidelity checks. She will contribute 5% effort, she will be compensated 5% of her regular, 12-month salary.

Co-Principal Investigators. are Rutgers 4-H Agents, equivalent to Assistant Professor. They direct 4-H programs in their respective counties (Staffen in Essex County and Kunicki in Passaic County), and have equivalent roles on the project at equivalent compensation. Each will receive compensation in the form of 0.6 of a summer month salary per each of the five project years. They will coordinate and provide instruction for the 4-H STEM Ambassadors program; coordinate recruitment of participants and administration of data collection at 4-H programs; attend research team meetings; consult on research methodology and interpretation of results; and coauthor project reports, conference papers and publication.

Senior Personnel – Senior Rutgers 4-H Liaison

Janice McDonnell is a 4-H Agent (equivalent of Associate Professor) in Science, Engineering and Technology. She is co-director of the 4-H STEM Ambassadors program. She is located on the Rutgers-New Brunswick campus, uniquely positioning her to coordinate participation of Rutgers scientists and engineers for the STEM Ambassadors program. She will be compensated in the form of 0.2 summer months for all five project years. Her role will be the continued co-direction of the STEM Ambassadors program, senior consultation on the interpretation of results, and contribution/coauthoring of selected publications as appropriate.

B. Other Personnel

Postdoctoral Fellow / Project Manager)*

Dr. is currently a research associate at the Rutgers CMSCE with specific expertise in educational psychology and mobile STEM education app development. She will serve as postdoctoral project manager at 85% effort. She will be compensated with a postdoctoral annual salary and fringe benefits at 85% effort in compliance with Rutgers University guidelines. Her responsibilities will include: participant recruitment, the coordination and implementation of data collection procedures, development of the mobile IDD app, survey administration and collection of video capture, and modified ESM. She will be responsible for managing data and assigned statistical analyses, and assisting in qualitative analyses.

Administrative Coordinator

abc is currently Administrative Coordinator at the CMSCE. For her role as administrative coordinator for the project at 10% effort, she will be paid 10% of her regular, 12-month salary. She will be responsible for processing all participant support and participant stipends, tracking payments, data entry as needed, and general administrative support (e.g., copying, scheduling, etc.).

Two Student Graduate Assistants (To Be Hired). Funding is requested to support two part-time GAs. GA 1 will work 75% effort (15-hours per week) and GA 2 will work at 50% effort (10 hours per week). For GA 1, 15 hours X 40 weeks X \$15 per hour = \$9,000; For GA 2, 10 hours X 40 weeks X \$15 per hour = \$6,000. \$9,000 + \$6,000 = \$15,000 X 5 years = \$75,000. These GAs are requested to assist Dr. with the

implementation of data collection procedures, including IDD, survey collection, video capture and modified ESM, and research interviews. They will also assist with qualitative coding and analyses.

* Note: A three percent salary escalation is factored into the personnel costs each year to accommodate a portion of anticipated merit raises and/or promotions during the project period.

C. Fringe Benefits

Rutgers University charges fringe rates of 50.53% for salaried employees & faculty and 7.65% on summer salary. No fringe is charged on student hourly salary. Actual rates in place during the time of the award will be charged. Fringe benefit rates are part of our 2/5/18 indirect cost rate agreement approved by our cognizant agency DHHS, found at <https://costanalysis.rutgers.edu/federal-rate-agreements>.

D. Equipment

Computer supplies - \$10,000 is budgeted in year 1 only for laptop computers for PI Shernoff (\$2,500), the postdoctoral project manager (\$2,500), and each of the two graduate assistants (\$2,500 x 2).

Computer Software- \$2,550 is requested in year 1 for computer software. \$1,150 is budgeted for NVivo qualitative coding software. In addition, developer software for the IDD application, and MPLUS analysis software will be purchased for project use. This software is industry standard for handling large amounts of quantitative and qualitative data. \$100 for Voicethread software for the extended learning enhancement of the 4-H Ambassadors program is also requested in Years 1, 2, and 3 (included in Year 1 request).

E. Travel - Domestic

Graduate Assistant travel - \$8,025 is budgeted for G.A.in-state travel, \$1,605 per each of five years. Graduate Assistants will need reimbursement of mileage (\$.535/mile x 3,000 miles per year = \$1605 X 5 years = \$8,025) to and from project schools and 4-H sites for data collection. *Conference Travel* - \$12,100 is budgeted for conference travel. Funds are budgeted for one project representative (PI) to attend one meeting in or near Washington, DC in years 1, 3, and 5 (\$1400 per trip X 3 years = \$4200). Funds are also requested for travel to six conferences (1 in Y3, 2 in Y4, and 3 in Y5). For each, \$450 in air fare, \$1,000 in hotel (\$250 X 4 nights), and \$150 in per diem (\$37.50 per day X 4 days) is budgeted. $450 + 1,000 + 150 = \$1,600$ per conference X 6 conferences = \$9,600. $4,200 + 9,600 = \$13,800$. $8,025$ (in state) + $13,800$ (conference) = $21,825$ budgeted for domestic travel. *Consultant Travel* – \$25,000 (\$5,000 per year) is budgeted for hosting the Advisory Board in Piscataway, NJ or Boston each year for an Annual meeting. Rutgers per diem rates will be used for this travel. Total Domestic travel request: Year 1- \$8,005, Year 2- \$6,605, Year 3- \$9,605, Year 4- \$9,805, Year 5- \$12,805.

F. Participant Support

A total of \$182,885 is budgeted (Y1: \$25,820, Y2: \$31,625, Y3: \$37,430, Y4: \$37,430, Y5: \$50,580).

Study participants will be compensated \$2 per completion of an Interest Development Diary (IDD). A total possible 18 IDD's per year X \$2 = \$36 per participant per year. We will follow 600 participants for 5 years, 150 participants for 4 years, and 150 participants for 3 years is a total of 4,050 collective participant years tracked. $4050 \times \$36$ per year = \$145,800. Based on prior diary and ESM studies, we expect a maximum completion rate of approximately 70% at the diary level. 70% of \$145,800 = \$102,060

Participants will also be compensated \$15 for completion of questionnaires. They will be administered six times to 600 students, 5 times to 150 students, and 4 times to 150 students = 4,950 administrations. $4,950 \times \$15$ per administration = \$74,250. 90% (expected completion) rate of \$74,250 = \$66,825.

For recruitment purposes, school coordinators will be paid $\$50 \times 8$ schools X 5 years = \$2,000. Eight cooperating teachers will be compensated \$25 per year. 8 teachers X 8 schools X 5 years X \$25 = \$8,000. $2,000$ (coordinators) + $8,000$ (teachers) = \$10,000 (\$2,000 per year).

We plan to interview 24 participants per year, compensating them \$25 per interview. 24 participants X 5 years X \$25 = \$3,000 (\$600 per year). We expect to complete 20 retrospective interviews in Year 5, compensating participants \$50 per interview. $20 \times \$50$ per interview = \$1,000 in Year 5 only.

Total participant support: \$102,060 (IDDs) + \$66,825 (surveys) + \$10,000 (schools) + \$3,000 (interviews) + \$1,000 (retrospective interviews) = \$182,885.

G. Other Direct Costs

Project supplies -- \$11,400 is requested in project supplies for the 4-H STEM Ambassadors program. This includes the cost of supplies and equipment for 3-D printing and demonstrations towards the continued operation of the program (\$2,500 in Ys 1-3); and the cost of poster materials and printing in the extended learning program (\$300 in Ys 1-3). In addition, \$1,000 is requested in the first three years for copying and other supplies needed for the training and recruitment of all study participants. $\$2,500 + \$300 + \$1,000 = \$3,800$ per year X 3 years = \$11,400 (Y1 - \$3,800, Y2 - \$3,800, Y3: \$3,800, Y4 - \$0, Y5 - \$0).

Consultants - \$60,000 is budgeted to compensate our Advisory Board (\$12,000 in all 5 years). \$50,000 is budgeted for stipends for each of our five Advisory Board members ($\$2,000 \times 5$ members X 5 years = \$50,000). In addition, the Chair of the Board will be paid an additional \$2,000 to write an evaluation report from the Board each year ($\$2,000 \times 5$ years = \$10,000). $\$50,000 + \$10,000 = \$60,000$.

Consultants- \$50,000 (approximately \$10,000 per year), is requested to contract an external evaluator to conduct an evaluation the quality of the 4-H STEM Ambassadors program and related goals. This will include a roughly \$500 fee to obtain training on the Dimensions of Success observational protocol charged by the PEAR Institute in both Year 1 and Year 3.

Consultant: \$3,000, or \$600 per year, is requested for the support of the PEAR Institute on administration, analysis, and national norms benchmarking data for the interpretation of results.

Consultants – Total: \$22,600 is budgeted in each of the five project years.

The 4-H STEM Ambassadors Program. \$118,800 (\$39,600 in each of project years 1-3 when new Ambassadors are being recruited for the study) is requested to ensure the continued operation of the program and to make several enhancements including continued extended learning opportunities for the STEM Ambassadors beyond the 1-week, on-campus experience. Continued operation expenses include housing for the youth (\$12,000), meals and catering (\$15,800), bus services (\$1,600), and invited speaker (non-Rutgers) fees (\$3,300) = \$34,600. Extended learning program: student stipends (\$1,800), food (\$500), and bus services (\$500) and invited speaker (non-Rutgers fees (\$2,800) = \$5,000. $\$34,600$ (continued operation) + 5,000 (extended learning) = \$39,600 per year X 3 years = \$118,800.

Subaward - \$140,000 is requested to support the University of Virginia's portion of the project. Dr. Erik Ruzek is a leading expert in multilevel and longitudinal growth curve modeling, analyses and related methodologies. He will join the research team as an important Co-PI in order to plan the study in congruence with planned analyses. He will join all research team meetings in all five project years, and take primary responsibility for longitudinal analyses and related report writing. The UVa budget is attached, and primarily compensates Dr. Ruzek for his time at 12.5% effort, and supports conference travel for products to which he makes a substantive contribution.

H. Total Direct Costs

Total Direct Cost requested \$1,151,940

I. Facilities and Administration Costs

Indirect cost rate for on-campus research is 55% as per our 2/5/18 rate agreement approved by cognizant agency DHHS. F & A costs at Rutgers University are calculated at 55% of the modified total direct cost which excludes equipment, capital expenditures, charges for patient care, tuition remission, rental costs of off-site facilities, scholarships and fellowships, participant support costs and the portion of each subcontract and/or subgrant in excess of \$25,000 regardless of the period covered.

Total Indirect costs = \$ 469,730

J. Total Direct and Indirect Costs

Total Direct & Indirect Costs requested = \$1,621,670