

# University of Pittsburgh

## Annual Progress Report: 2007 Nonformula Grant

### Reporting Period

July 1, 2009 – June 30, 2010

### Nonformula Grant Overview

The University of Pittsburgh received \$3,932,889 in nonformula funds for the grant award period June 1, 2008 through May 31, 2012. Accomplishments for the reporting period are described below.

### **Research Project: Project Title and Purpose**

*Consortium on the Causes and Prevention of Violence* - In this project we will link biological and environmental factors to violence and will examine the effect of a treatment model on behavioral outcomes and on brain function as well. Violent behavior is associated with certain neurotransmitters, and certain genes are linked to the function of these neurotransmitters. We will examine the links between these genes and violent behavior by examining the chain of connections between these genes, the function of regions of the brain believed to underlie aggression, and the course of violent behavior in a sample of adults whose history of violent behavior is well-described. We will test the effect of a treatment program on at-risk children for changes in aggression and changes in associated brain regions.

### Anticipated Duration of Project

6/1/2008 - 5/31/2012

### Project Overview

Primary Components of this Project. This project focuses on: (a) biological factors (genetic predictors and brain function) for aggression/violence in the context of environmental factors and (b) a promising treatment of boys at risk for violence on behavioral change and brain function as identified in (a). A strength of this proposal is the extensive data on aggression/violence and environmental causes from childhood to early adulthood in the Pittsburgh Youth Study (PYS) (N=1,009). Another strength is the involvement of the Stop Now And Plan (SNAP) Steering Committee to provide the SNAP program for boys age 12 and under at risk for violence. Finally, this project brings together experts on biological factors (genes and brain function), on environmental factors, and on treatment for children at risk for violence.

Genetic Predictors: Aims: 1) Among PYS adults, genotype eight genes linked to neurotransmitters that are associated with aggressive and violent behavior. 2) Evaluate the main

effects of genetic variation, environment variation, and gene-by-environment interaction on risk for aggression/violence.

**Brain Function: Aims:** 1) Examine links between brain regions underlying inhibition, emotion processing, and reinforcement responsivity in PYS men with chronic ( $N = 45$ ) or transient violence ( $N = 45$ ), and non-violent controls ( $N = 45$ ). 2) Use results of Genetic Aim 2 and Brain Function Aim 1 as a basis to test the mediation via brain function of genetic variation, environmental factors, and their interaction on aggression/violence. 3) For 10-12 year-old SNAP boys/controls ( $n = 70$ ), describe the pre-treatment association between aggression or violence and brain regions underlying inhibitory control, emotion processing, and reinforcement responsivity. 4) For 10-12 year-old SNAP/control boys ( $n = 70$ ), document treatment-specific changes in brain function that occur following the SNAP treatment program ( $N = 35$ ) in comparison to the alternative treatment ( $N = 35$ ).

**Treatment Aims:** 1) Evaluate the effectiveness of SNAP versus a control treatment on measures of aggression. 2) Examine moderation of treatment effects via brain function, child, family, demographic, and neighborhood risk factors. 3) Examine whether any changes in aggressive behavior result from changes in specific hypothetical mechanisms of change within the child (problem solving skills, emotional regulation skills, and socialization skills) or in terms of parenting behaviors.

### **Principal Investigator**

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### **Other Participating Researchers**

Jeffrey D. Burke, PhD; Dustin A. Pardini, PhD; Magda Stouthamer-Loeber, PhD; Vishwajit Nimgaonkar, MD; Bernard Devlin, PhD; Kodavali Chowdari, PhD; Mary Phillips, MD - employed by University of Pittsburgh

### **Expected Research Outcomes and Benefits**

This project will generate crucial new information regarding the causes and prevention of violence. We will produce an explanatory model of the interaction between environmental risk factors and genetic factors for violence, with the further advantage of specifying the links from genetics to brain function and violence.

This research will also produce new evidence for Pittsburgh regarding the effectiveness of the SNAP treatment for children at risk, but not yet manifesting, violence. The direct benefit of the

intervention component of the research will be the provision of services to children in the Pittsburgh region. This evaluation will be conducted using high scientific standards for replication, which form the basis for further dissemination of the treatment program in Pennsylvania. This evaluation will not only identify whether the treatment is effective but will clarify effective mechanisms of change, both in terms of child and family behavioral change as well as child brain function.

Furthermore, a key element of the SNAP program is a cohesive referral network that will enhance the early identification and referral for services of children. The results of the evaluation will assist decision makers in the county government to support and expand the program through other funding streams.

This project will also yield benefits that address issues of health disparities. Again, direct benefit will go to the children who will participate in the treatment services provided, the majority of whom will be African American. The project will also generate information on early behavioral risk factors and available treatment resources for parents and families in the Pittsburgh region, which will be made available to them through brochures disseminated through a network of community organizations. This project will also include training opportunities for young minority researchers who are interested in developing a career in research on violence prevention.

## **Summary of Research Completed**

### Introduction:

This consortium project has been funded by the Department of Health of the Commonwealth of Pennsylvania for a period of four years beginning in June 2008. The following are the components of the work:

- a) Follow Up of the Pittsburgh Youth Study Participants
- b) Brain Function Study
- c) Genetic Predictors Study
- d) SNAP Program Evaluation Study
- e) Minority Training Program

#### a) Follow Up of the Pittsburgh Youth Study Participants

Under the current research, we are in the process of following up with the oldest and youngest samples of the Pittsburgh Youth Study (N=1,009). The actual number of samples we can follow up with is 921, because 39 subjects are deceased and 49 are firm refusals from previous interview phases. The participants in the oldest sample are, on average, 35 years of age and those of the youngest sample are 28 years of age, on average. We expect to interview at least 800 participants.

The sample is approximately half African American and half Caucasian, with extensive documentation on their history of violence. During the re-contacting of participants, we collect DNA (see below) and information on brain function by means of fMRI in a stratified sub-sample of aggressive and violent individuals (see below). The aim of the new data collection is to link

genetic results to brain function, environmental history, and violent outcomes. Thus, interview assessment of the participants is necessary for the genetic and fMRI aims as well.

By June 21, 2010, we had interviewed 484 participants; however, we were able to collect saliva from only 357 participants for the genetic component of this study due to refusals and the fact that remote saliva collection has not been completed at this point.

We are in the process of hiring two more interviewers. The interviewing in institutions is hampered by the fact that we are not permitted to pay participants in federal institutions. We will postpone interviews for those participants who will be released within a year; for those detainees who refuse to be interviewed, we will approach them again in a few months to see if they have changed their minds.

We have not yet prepared manuscripts from the data because data collection still needs to be completed.

#### b) Brain Function Study

Brain Function Aims: 1) Examine links between brain regions underlying emotion processing and reinforcement responsivity in PYS men with chronic (N = 45) or transient violence (N = 45), and non-violent controls (N = 45). 2) Use results of Genetic Aim 2 and Brain Function Aim 1 as a basis to test the mediation via brain function of genetic variation, environmental factors, and their interaction on aggression/violence. 3) For 8–11-year-old boys with conduct problems (N = 48), describe the pre-treatment association between aggression or violence and brain regions underlying emotion processing and reinforcement responsivity. As part of this aim, examine pre-treatment differences between 8–11-year-old boys with conduct problems (N = 48) and a matched group of normally developing boys (N = 48) in terms of emotion processing and reinforcement responsivity. 4) For 8–11-year-old boys with conduct problems (N = 48), document treatment-specific changes in brain function that occur following the SNAP treatment program (N = 24) in comparison to the alternative treatment (N = 24). These analyses will focus on brain function abnormalities in regions that differed between children with conduct problems and normal controls prior to treatment as documented in Aim 3.

#### Adult fMRI Study:

Recruitment and data analysis for the adult fMRI study continues to progress in line with the general PYS follow-up. A total of 57 participants who were originally targeted for the fMRI sub-study met various rule-out criteria. Only three participants who were approached for the fMRI study refused to participate. To date, a total of 62 participants have been successfully recruited and scanned, including 23 violent persisters, 13 violent desisters, and 26 healthy controls.

*fMRI Data Analysis.* All data collected as part of the adult fMRI study have been pre-processed for the emotion processing and reinforcement responsivity tasks. In addition, the initial stages of data analysis have been completed. Specifically, within-individual contrast images have been created for all adult participants. For the faces task, these contrasts involve comparing the blood oxygen level dependent (BOLD) response to the angry, fearful, and neutral faces versus the BOLD response low level gender identification control condition. For the card task examining

reinforcement responsiveness, individual contrast images have been created comparing the BOLD response to monetary reward trials versus monetary loss trials. These individual contrast images will be combined to compare violence groups once data collection has been completed.

#### Child fMRI Study:

Recruitment for the SNAP fMRI study remains steady, yet slower than originally proposed. A total of 46 children have been brought in for a pre-treatment scan. Of those, 14 were deemed ineligible for a post-treatment scan either because of severe motion in the scanner or failure to complete the scanning tasks. To date, a total of 20 boys have completed post-treatment scans, with another eight whose post-treatment scans are in the process of being scheduled. Five children did not complete a post-treatment scan due to repeated failures to show up or excessive motion.

Procedures have recently been initiated to recruit a matched normal control group of boys for the child fMRI study. Mailers were sent to select families participating in the ongoing Pittsburgh Girls Study (PI: Rolf Loeber). This ongoing longitudinal study consists of a community sample of 2,451 families within the city of Pittsburgh who had girls between the ages of 5–8 when the study began. Flyers were mailed to participants within the study to recruit normally developing male siblings ages 8–11 who could potentially serve as matched controls. While these mailers were only recently sent out, three screening interviews have already been scheduled.

*fMRI Data Preprocessing and Analysis.* Preprocessing and analysis using the same procedures as those described for the adult study is currently underway for children in the SNAP fMRI study. Following the pre-treatment scan, motion correction procedures have been used to determine which children have unusable data due to excessive movement on the fMRI tasks. The families of children with excessive motion have been informed that they are not eligible for a post-treatment scan. As with the adult study, preprocessing and within-individual analysis of fMRI data has been completed for all children who have been scanned to date.

#### c) Genetic Predictors Study

##### Progress to date:

We have thus far received 357 saliva samples. Genomic DNA has been extracted for all samples as of 06/14/10. The DNA is quantified using spectrophotometer readings at A260/A280/A320 and a DNA stock sample at 20ng/μl is prepared. DNA quality is checked using a standard PCR assay. These data are compiled and sent to the clinical staff within 7–14 days. The DNA yield ranges between 17–970μg, with an average of 295μg per sample.

We have designed an iPLEX assay for 36 polymorphisms covering the “tag” SNPs in Serotonin transporter (*5HTT*) and monoamine oxidase A (*MAOA*) genes. The assay will be run once we have sufficient DNA samples for a 384-plate set-up.

We previously reported on the analysis of variable number of tandem repeat polymorphisms (VNTRs) in dopamine transporter (*DAT*), serotonin transporter (*5HTT*) and monoamine oxidase A (*MAOA*) genes. In the current report, we have extended our data analysis for these VNTRs in the enlarged sample, which consisted of 306 individuals. Their breakdown by ethnicity and by the presence or absence of the violence phenotype is as follows: African American: case n=50,

control n=87; Caucasian: case n=37, control n=115). There were also nine controls and seven cases that were not analyzed as they reported mixed or Asian ancestry. One sample reported with missing information.

In this sample, we found *DAT* 3'UTR VNTR allele frequencies that are consistent with those reported in the literature. Alleles 9 and 10 are the most common in this sample. The frequency of 9 and 10 alleles in Caucasian samples is 0.3 and 0.68, and in African-American samples 0.21 and 0.69, respectively. The *DAT* VNTR was in Hardy Weinberg equilibrium in the Caucasian sample as well as in the African American case sub-group; however, we observed a significant homozygote excess in the African American control subgroup ( $p < 0.0001$ ). We conducted association analyses (violence vs. non violence) separately for the African American group and the Caucasian group. Because the *DAT* 3' UTR VNTRs are multi-allelic, we conducted simulations to assess the empirical p values. A chi square test was initially conducted, and then 10,000 Monte Carlo simulations were performed to generate a distribution of chi square statistics. The observed statistic was compared to this distribution to assess the empirical p value. We did not find any statistically significant associations.

For *5HTT* VNTR, the frequency of short (s) and long (l) alleles in Caucasians is 0.41 and 0.59, and in African-American samples, it is 0.24 and 0.76, respectively. We did not find any statistically significant associations when we compared the violence group with non-violent group either in the Caucasian or the African-American groups.

For *MAOA* VNTR, the most common alleles are 3 and 4 alleles, and the frequency of these alleles is 0.31 and 0.62 in Caucasian samples and 0.45 and 0.49 in African-American samples, respectively. The *MAOA* VNTR is an X-linked marker and, therefore, could not be assessed for equilibrium, as the cohort consists entirely of males (i.e., homozygous). We did not find any significant associations when low active and high active binned groups were compared for aggression scores either in the Caucasian or African-American samples.

#### Methods:

SNP genotyping: The SNPs for *DAT* were genotyped in the fMRI samples by DNA sequencing method using a standard protocol. We are optimizing the snapshot assay, a multiplex method to genotype these SNPs for the remaining samples. All genotype calls are read by two different investigators who are blind to the clinical status of the sample.

VNTR polymorphisms: The VNTR polymorphisms are genotyped on standard 2–3% agarose gels with CEPH DNA samples as positive controls and also for consistent calls between plates.

Allele nomenclature: The alleles are coded in the numerical or text format for data analysis, which is consistent with the reported literature.

*DAT* 3'UTR: The alleles in the PYS sample are consistent with those reported in the literature. They are alleles, 3, 8, 9, and 10. Alleles 9 and 10 are the most common in this sample.

*MAOA-uVNTR*: The alleles in the PYS sample are 2, 3, 3.5, 4, or 5 and are categorized in two groups based on the functional effect of the alleles on the MAOA transcription. The alleles 2, 3, and 5 comprise low active group and alleles 3.5 and 4 correspond to high active group.

*5HTT-VNTR*: The alleles in the PYS sample are short (s) and long (l). The longer allele is shown to be a functionally low active group in several *in vitro* studies.

Statistical Analysis: Hardy Weinberg equilibrium (HWE) was evaluated using GENEPOP software. Differences in genotype distributions between cases and controls were evaluated with the Armitage Trends test (SAS software). Analysis of the VNTR was conducted using CLUMP method, and an empirical p value was estimated following 10,000 simulations, using the normal chi-squared test (T1).

#### d) SNAP Program Evaluation Study

The intervention has been carried out as planned over the past year in three sessions (October 2009, January 2010, April 2010) at the Auberle Main site, the Auberle Homestead site, and the Holy Family site. The research protocols have been followed successfully.

#### Study Enrollment

At the time of the last annual report, project recruitment had been struggling. We described a number of steps that we were undertaking to improve the situation. We also modified the schedule of recruitment, planning to enroll 48 participants per session in sessions through the January–March 2011 session. Since implementing these changes, our recruitment efforts have been very successful. For the October 2009 and January and April 2010 sessions, we recruited 48, 49, and 62 participants respectively, and we have eight scheduled for the October 2010 session. Our total recruitment, excluding those scheduled for future sessions, is 170, or 67.5% of the total anticipated sample of 252. Based on our enrollment over the last three sessions, we anticipate no difficulties in achieving enrollment of at least 41 participants over the remaining two sessions.

#### Allegheny County System of Care

As recommended at the interim review, we have worked with System of Care to discuss participant recruitment issues. System of Care assisted us to conduct a focus group of representatives from their Community Evaluation Team. The following is a summary of the SNAP Focus Group:

The SNAP for Boys focus group was held on April 15, 2010. Systems of Care facilitated the group from their Community Evaluation Team (CET), a group of parents and adults representative of the community that Systems of Care typically serves. The purpose of the focus group was to evaluate the various recruitment tools for the Pittsburgh SNAP Evaluation Study and how effective those tools were in soliciting parents to sign their sons up for the study. Approximately 15 CET members participated in the focus groups. The participants were given a set of questions related to “The Pittsburgh SNAP Evaluation Study” promotional materials and were asked to discuss their reactions to the study, the study recruitment efforts, and the recruitment materials.

Generally, focus group participants were positive about the study. They felt that one of the study's strengths was the fact that children in the treatment and control conditions would both receive behavioral health services, regardless of the random assignment procedure. They also felt that the reimbursement for study participation would be sufficient incentive for participation. However, their response to the discussion of the fMRI study was largely hesitant; while they did not immediately reject the idea of their own child participating in the study, all participants indicated that they would need more information before deciding. Regarding the recruitment materials, the focus group members nearly unanimously found them to be boring and lacking any attention-grabbing features. They suggested broader outreach efforts in the community, including attending different parent group meetings, schools, and council and PTA/PTO meetings, as well as placing recruitment materials in local grocery stores and small businesses as a way to increase enrollment.

#### Completion of Follow-Up Assessments

Follow up assessments are conducted at three, nine, and 15 months after baseline assessments. Of those that were due as of 6/15/2010, we completed 90.5% (105 of 116) of the three-month follow ups, 78.6% (22 of 28) of the nine month follow ups, and 100% (3 of 3) of the 15-month follow ups. Across all follow up assessments, we have completed 130 of 147 (88.4%). Our standard for success for all follow ups is 90%. We anticipate meeting this standard across the course of the study.

Data collection procedures have continued to be employed successfully. Data collection is conducted via laptop computers; and the administration and scoring codes have been developed, tested, and deployed in the field. No concerns or issues have arisen regarding the collection, cleaning, maintenance, and storage of the data. Data safety and monitoring processes and protocols are reviewed at least monthly.

#### Randomization

We decided early in the recruitment process that we would not exclude families with siblings from participation. However, because there would be no way to keep parents from learning and using SNAP techniques with one sibling and not the other, we decided that randomization would be performed on the parent rather than the child. At the time of this review, we examined whether randomization was yielding equivalent groups on behavioral measures at baseline and discovered that our groups were different on CBCL measures of externalizing behavior (mean = 34.1 vs. 31.0), aggression (mean = 23.6 vs. 21.4), and DSM oriented Conduct Disorder (mean = 15.2 vs. 13.5), with the children assigned to wraparound being higher on all measures. No significant differences were found between groups on rule breaking behavior, age, or IQ.

Exploration indicated that group differences may have been explained by the non-random selection of siblings. There have been 50 siblings enrolled in 23 sibling cohorts. We randomly selected one sibling from each sibling cohort and excluded the others, which resulted in no remaining significant differences between groups at baseline measures. We will monitor group comparisons as recruitment moves forward and will ensure that our randomization process continues to work as anticipated. If group differences at baseline remain after recruitment is complete, the analyses will take this into account by contrasting results from the full data set with those taken after excluding non-randomly selected siblings.

#### e) Minority Training Program

Dr. Dustin Pardini continues to direct the minority researcher training program, which has targeted African-American scholars at the undergraduate, graduate, and junior faculty levels. The overarching aim of the program is to provide young minority students and faculty with the skills necessary to become successful academic researchers through participation in the Consortium's research activities. The program continues to be supported by a close working relationship with Larry Davis, PhD, director of the Center on Race and Social Problems (CRSP) and dean of the School of Social Work at the University of Pittsburgh, and Ralph Bangs, PhD, associate director of CRSP. As the result of suggestions generated from the interim performance review in 2009, several other individuals from the University of Pittsburgh have become involved in recruitment efforts for the program. Specifically, the Diversity Committee in the Department of Psychology (Celia Brownell, PhD and Julie Fiez, PhD) and assistant dean for graduate student programs (Lorie Johnson-Osho, PhD) have assisted with recruiting minority students into the training program. In addition, announcements regarding minority training opportunities have been sent to administrators at the Centers for Disease Control, editors of African-American journals, and administrators at the Society for the Psychological Study of Ethnic Minority Issues. These efforts have dramatically increased student involvement in the minority researcher training activities, as outlined in detail below.

#### *African-American Faculty Involvement*

Similar to last summer (2009), one month of salary support (2010) has been provided to William Elliott, PhD, from the School of Social Work at the University of Pittsburgh. Dr. Elliott has already completed an empirical paper looking at racial differences in academic achievement between African-American and Caucasian boys using the Pittsburgh Youth Study (PYS) dataset, which is currently under review. Dr. Pardini served as a co-author and advisor on this manuscript. For the summer of 2010, Dr. Elliott will be focusing his efforts on two activities. First, he is gathering information collected as part of the PYS to characterize the multi-faceted problems disproportionately faced by African-American youth living in Homewood, one of the most violent neighborhoods in Pittsburgh. This work is being done in collaboration with John M. Wallace, Jr., PhD, associate professor, School of Social Work at the University of Pittsburgh, to assist with his efforts to develop a comprehensive community revitalization initiative to ameliorate racial and ethnic disparities in social and economic well-being in the Homewood area. Second, Dr. Elliott is preparing grants to local foundations to continue funding the research training activities initiated by the Consortium funds for African-American students.

#### *African-American Researcher Summer Program*

Similar to 2009, part-time summer support has been provided to three African-American students to receive applied research training. This includes a master's level student in social work (Mr. Eric Egahn), a doctoral student in applied developmental psychology (Ms. Sherrell Hicklen), and an undergraduate student in psychology (Ms. Shakoya Pope). As part of this summer research program, these students have been helping with coding and entering criminal record information, conducting research interviews as part of the PYS follow-up, screening participants for inclusion in the fMRI study, and collecting genetic material. In addition, Dr. Pardini has provided applied training sessions on manuscript preparation, the use of statistical

methods to answer substantive research questions using the PYS dataset, and didactic sessions focused on reviewing research related to racial disparities in violence and related problems.

#### *African-American Research Internship Students*

During the 2009–2010 academic year, Mr. Lamar Hill completed two semester-long (20hr/week) research internship courses with the Consortium through the master's program in the School of Social Work at the University of Pittsburgh. Mr. Hill assisted with several aspects of the general follow-up of the Pittsburgh Youth Study, including collecting and coding criminal record information, helping to locate study participants in the community, and performing structured research interviews. As part of this experience, Mr. Hill also worked closely with Dr. Pardini to write a literature review paper on factors associated with the initiation of drug dealing in boys, with a particular focus on disproportionately high rates of drug dealing among African-American boys. He also conducted statistical analysis using the PYS dataset to examine predictors of drug dealing and prepared the findings as a poster for a graduate statistics course.

For the 2010–2011 academic year, Mr. Eric Egahn has enrolled in the two semester long (20hr/week) research internship course with the Consortium through the master's program in the School of Social Work at the University of Pittsburgh. He will assist with research activities associated with the general follow-up of the PYS men, as well as begin working on a research review paper looking at the influence of community-level factors on violence rates within predominantly African-American communities in Pittsburgh.

#### *African-American Student Employees*

Mr. Lamar Hill is in the process of being hired as a full-time research associate working on the follow-up of the PYS while he completes his doctoral work in counseling psychology at Carlow University. Mr. Hill has already developed a strong working relationship with the PYS and will continue exploring his interests in factors associated with the disproportionate involvement in drug dealing among African-American boys. He plans to use the PYS dataset to further explore this issue for his dissertation project.

Ms. Sierra Brown was employed part-time as an undergraduate student research assistant for the spring 2010 semester and has now been hired as a part-time research associate while she completes doctoral studies in counseling psychology at Duquesne University. Ms. Brown has taken a leadership role in training other student researchers on the collection and coding of criminal record information for the PYS. She has also begun performing fMRI scans for the adult and child fMRI studies, as well as screening normal control children for the SNAP fMRI study. Recently she completed a research poster examining differential drop-out rates among African-American youth in the PYS, and she plans to continue this work as part of her master's thesis.

Ms. Amber Farr is employed as a community liaison research assistant working with the SNAP child treatment study. She is currently enrolled in a master's program in communications at Point Park University. As part of her work with the Consortium, Ms. Farr has been involved in developing flyers, brochures, and other advertisements designed to increase recruitment into the SNAP treatment study. She has also been conducting focus groups with families to identify and

overcome barriers to recruiting families into the SNAP treatment study. Ms. Farr has used these applied experiences to complete project requirements for her communication courses.

#### *African-American Thesis/Dissertation Projects*

Ms. Porche Wynn, a recently graduated doctoral student in counseling psychology from the University of Tennessee, has been working on two projects using the PYS dataset to examine childhood predictors of positive adjustment in early adulthood. One served as her master's thesis and the other was her dissertation. She successfully defended both her thesis and dissertation and has submitted both projects for publication in peer-reviewed journals. Ms. Wynn has received ongoing training from Dr. Pardini related to longitudinal data analysis and design and scientific writing.

#### *Key Training Program Accomplishments*

The minority training program has produced several notable accomplishments since its inception. Specifically, three program participants have made a successful transition into various doctoral programs, including those in social work (Mr. Robert Wilson), counseling psychology (Mr. Lamar Hill), and educational psychology (Ms. Sierra Brown). By completing her thesis and dissertation projects with the Pittsburgh Youth Study dataset, Ms. Porche Wynn has successfully graduated with a PhD in counseling psychology and is currently applying for faculty positions. Ms. Sierra Brown completed a research poster in collaboration with Mr. Lamar Hill on racial disparities in drop-outs using the PYS data at the annual diversity research conference in the Psychology Department at the University of Pittsburgh. She received an undergraduate student research award for this poster. Lastly, Dr. William Elliott received a small internal research grant to support his continued work on the PYS research project.