PREVENTION RESEARCH TRAINING IN MENTAL HEALTH PROGRAM PLAN

A. BACKGROUND

In recent years prevention science has been increasingly based on an integration of three scientific perspectives: The first is life course development with a focus on early risk and protective factors and developmental paths; the second is community epidemiology with a focus on defined populations in their environment, variation in developmental paths, and control of selection bias; and the third is experimental interventions precisely targeting early risk factors in developmental models (Mrazek & Haggerty, 1994; NIMH, 1993; Kellam & Rebok, 1992). This paradigm reflects progress in research over the last 30 years on early risk and protective factors along developmental paths, with increasing specification of mediators and moderators, that are now being designated targets for preventive intervention trials (Durlak & Wells, 1997; Gersten, Beals & Kallgren, 1991; Kellam & Van Horn, 1997). This form of prevention science is multi-disciplinary, requiring the coming together of biological, psychiatric, psychological, social and cultural, economic, and biostatistical disciplines. While there are a few prevention research sites that are now doing this kind of prevention research, the numbers of such researchers is very limited, and the need for training the next generation of prevention researchers is a very high priority (Mrazek & Haggerty, 1994; NIMH, 1993). In this application for a continuation for five years we outline the course and progress of the training program at Johns Hopkins and our proposed plans for the next stage of training. The original proposal was developed in the context of the NIMH funded Johns Hopkins Prevention Intervention Research Center (JHU PIRC) and two generations of theory-driven, randomized, developmental epidemiologically-based, preventive trials directed at early antecedents of problem outcomes. The second generation (1993-94) of JHU PIRC trials was designed based on the results of the first generation trial (1985-87). In both generations the interventions were directed at maladaptive behavioral responses of children to the social task demands of the classroom shown to be specific risk factors for later depressive and conduct disorders and drug abuse. The first generation (1985-87) trial was directed at the classroom and peer group social task demands and the child’s behavioral responses, while the second generation (1993-94) trial included the family as well.

The two generations of trials involved a total of 28 schools and over 3000 children and families who, along with the schools and over 70 first grade teachers, were randomly assigned to intervention or control conditions. These preventive trials could not have been done without a strong and continuing partnership with the Baltimore City Public Schools, and without very strong parent support. For example, in the second generation (1993-94) trial, 97 percent of parents agreed to randomization of their children into one of two interventions or one control condition in each of the nine elementary schools.

Currently, our training program faculty and fellows continue to analyze data from the age 19-21 follow-up of 2311 children who were participants in the first generation JHU PIRC trial (1985-87). We continue to collect record information from these young adults and have a proposal under review for an age 27 follow-up, which will also include the collection of DNA for molecular genetic analyses. In addition, we are following the participants in the second generation (1993-94) JHU PIRC trial from middle school into young adulthood with funding from both NIMH and NIDA (Dr. Ialongo, P.I., Dr. Kellam, Co-P.I.) and recently received a supplement from NIDA to collect DNA for molecular genetic analyses.
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Besides the ongoing follow-ups, Dr. Kellam and Brown (Core Training Grant Faculty) are leading a 3rd generation school-based, universal preventive intervention trial in Baltimore, which has provided opportunities for fellows to participate in the design of the trial and analysis of the data. Dr. Leaf (affiliated faculty) is the PI on a 37-school randomized field trial of Positive Behavioral Intervention Supports, a whole school approach to improving student behavior and school climate. Finally, Dr. Ialongo is director of an NIMH/NIDA funded Advanced Center for Intervention and Services Research, the Center for Prevention and Early Intervention. The overall aim of the Center is to develop the infrastructure and carry pilot and feasibility studies within the Baltimore City Public School System in preparation for RO1 funded effectiveness trials of a nested approach to preventive and early intervention programming in elementary schools.

The existing database coupled with the field work involved in the follow-up of the first and second generation JHU PIRC intervention trials (Drs. Kellam & Ialongo), the Prevention Services in Schools for Early Drug Abuse (Drs. Kellam & Brown), Dr. Leaf’s PBIS evaluation, and the Dr. Ialongo’s ACISR provide the context for postdoctoral fellows to study specific core aspects of the emerging field of prevention science. These include: 1) interventions directed at early risk factors in child development, in epidemiologically defined populations; 2) their developmental trajectories to disorders or health as revealed by the epidemiologically defined control groups; 3) their malleability as revealed by the intervention groups; 4) the measurement and biostatistical methods required; 4) the role of genetics in development and intervention outcomes; and 5) the community and institutional base required for research of this kind. In this application, we outline how this training is conceptualized and organized. By working intensively in interdisciplinary research work groups, through courses, seminars, and field work, fellows can become skilled at this paradigm and compare this scientific approach to others that are complementary, such as community-wide strategies and broader social structural interventions including natural experiments provided by the changing of laws regarding driving age or age of legal alcohol consumption.

We will continue to recruit from the core disciplines including psychology, sociology, biology, and psychiatry. Moreover, we will maintain our efforts to recruit trainees with backgrounds in biostatistics (e.g., Dr. Katherine Masyn, Postdoctoral Fellow (PDF), 2004–05), who will work closely with Drs. Brown, Muthen, Zeger and Bandeen-Roche, but will also be mentored by one or more of substantive researchers on the training grant faculty. We will also continue to recruit mid-level to senior scientists as fellows during a sabbatical year (e.g., Dr. Warren Rhodes, PDF, 2004–05) to broaden their understanding of prevention research and its relation to their own work, to provide models for younger trainees in expanding their disciplinary perspective, and to enrich their own academic environment after returning. In addition, under the guidance of Dr. Salkever, the senior economist in the JHU School of Public Health, trainees will be afforded the opportunity to develop a working knowledge of basic economic principles and cost-benefit and cost-effectiveness analysis via formal course work and hands-on-analysis of economic data from the ongoing follow-up evaluations of the two JHU PIRC prevention trials and the intervention fields trials being carried out by Drs. Kellam and Brown, Dr. Leaf, and Dr. Ialongo’s ACISR, the Center for Prevention and Early Intervention.

The Evolution of the Department, the School and the Training Program to Consistent with the NIH Roadmap Themes. In 2002-2003 the leadership of the NIH engaged in a process dubbed the “NIH Roadmap.” The purpose of the roadmap was to chart the future of NIH research in the light of flattening budgets and emergence of dramatic new scientific developments such as the completion of the Human Genome Project and the emergence of
proteomics and bioinformatics as new scientific disciplines. Themes of the NIH Roadmap include the need for interdisciplinary work and efficient translation of results from bench sciences to new treatments.

These Roadmap themes are reflected in the evolution of our research since our last competing renewal application, which includes a collaboration with Dr. Denni Fishein and colleagues at the Research Triangle Institute around a NIDA funded study of the neurocognitive prerequisites for preventing drug abuse within a subsample of youth from the 2nd generation JHU PIRC intervention trial study population (Fishbein et al., in press; Fishbein et al., 2006; Paschall et al., 2004). Also reflecting the Roadmap themes is a NIDA funded collaboration with Drs. George Uhl and Jenae Neiderhiser around the collection of DNA from the 2nd generation JHU PIRC trial participants. The goal of this work is an examination of the genetic contributions to variation in developmental and intervention outcomes. Dr. Uhl is the chief of the Molecular Neurobiology Branch at the NIDA-IRP and a pioneer in addiction molecular genetics and association genome scanning for complex disorders, whereas Dr. Jenae Neiderhiser, an Associate Professor in the Department of Psychiatry at the George Washington University School of Medicine, is among the leading experts on how genes and environment work together to influence development and the processes involved in their interplay. Dr. Neiderhiser has just completed a landmark study of gene x environment interactions, in which she collected DNA from a sample that was assessed longitudinally from early adolescence to young adulthood.

The Roadmap themes are also reflected in curriculum developments in the Department of Mental Health and the Prevention Research Training Program since our last competing continuation application. The department has added to its Masters and PhD curriculum courses on the brain and behavior (Neuropsychology of Mental Disorders) and on psychiatric genetics (Introduction to Psychiatric and Behavioral Genetics), respectively, which we ask the fellows to take if they have not had previous coursework in these areas. Beyond the Department of Mental in the School of Public Health, the Department of Environmental Health Sciences now offers a course in Molecular Epidemiology and Biomarkers in Public Health, jointly with the Department of Epidemiology, and the Department of Biochemistry and Molecular Biology now offers a course in Genomics for Public Health which our trainees can elect. The Department of Biostatistics and the Department of Molecular Microbiology and Immunology now offer a Masters degree program in Bioinformatics. Our fellows can take any or all of these courses.

Finally, Dr. Ialongo’s Center for Prevention and Early Intervention reflects the Roadmap’s focus on the translation from research to practice in its efforts to develop the infrastructure for effectiveness trials of promising and evidence-based preventive and early treatment interventions. The Center and its aims are described in more detail below.

Theoretical Framework. Prevention science requires a theoretical framework to identify what to measure in developmental modeling and early antecedents, and to guide the choice of the interventions and the hypotheses to be tested. The scientific orientation that has and continues to guide our prevention work is developmental epidemiology. As mentioned earlier, this prevention research perspective integrates the life-course developmental orientation with community epidemiology (Ialongo, Kellam, & Poduska, 1999; Kellam, 1990; Kellam, Branch, Agrawal, & Ensminger, 1975; Kellam & Ensminger, 1980; Kellam et al., 1983; Kellam & Werthamer-Larsson, 1986; Kellam, Werthamer-Larsson, Dolan et al., 1993). A core strategy of this integrated perspective is the tracking of total defined populations or representative samples of populations and their environments over time and defined stages of development.

The mapping of developmental paths within defined populations over periods of the life course has supplied the target risk behaviors for our preventive trials in Baltimore. It is now
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providing the basis for periodic follow-up of intervention outcomes along with the identification of targets for further intervention research.

When coupled with the developmental perspective, community epidemiology allows the study of the developmental paths of specific cohorts of children who develop toward psychiatric distress and disorders, compared to those in the same community and cohort who do not. This is accomplished by examining variation in the children and in such social fields within the community as family, classroom, or peer group. From a developmental epidemiological perspective, our effort is to explain variation in developmental paths within or across neighborhoods or other fairly small populations. By starting with epidemiologically defined populations, we can control selection bias; calculate rates of the antecedents, mediators, moderators, and outcomes; and examine variation in the function of hypothesized mediators or moderators in their relationships to each other and to mental health outcomes. This population-based strategy informs us about development and prevention in a particular community. Through direct and systematic replication in similar or different communities or neighborhoods we can identify the variation in the frequency and in the consequences of a developmental model in different and similar community conditions.

Whereas the developmental epidemiological orientation provides a broad framework, a more contextually specified framework was needed for modeling and designing theory-based preventive trials. Life course/social field theory as elaborated most recently in Ialongo et al. (1999) (see also Kellam & Rebok, 1992; Kellam et al., 1975; Mrazek and Haggerty, 1994, pg. 224), focuses on the close linkage between stages of life and specific social fields in which social task demands are made and to which individuals respond more or less adequately in the view of natural raters, such as teachers, parents, spouses, or supervisors (Kellam et al, 1975). The theory posits in general that failure to perform adequately specific social task demands in specific social fields will be a risk factor for poor psychological/pyschiatric well-being, and conversely, poor psychological/pyschiatric well-being will be a risk factor for social maladaptive performance. The family, classroom, and peer group are most often central social fields for children in our culture. In the classroom, where much developmental epidemiological tracking has occurred, the main tasks appear to be achievement; concentration/attention; obeying rules against disrupting, fighting, and truancy; and social participation in the form of raising one's hand and not being too socially isolated.

Maladapting to these main social task demands in the classroom through aggressive-disruptive behavior and poor achievement have been found over many prospective epidemiological studies to be predictive of specific problem outcomes later in the life course. In accord with the theory, prevention intervention trials have demonstrated that changing specific early social maladaptive responses such as aggressive disruptive behavior have had long term consequences on later conduct problems, suggesting that this earlier maladaptive behavior has an etiological or developmental importance to the later outcome. The processes involved in these early maladaptive responses have been the targets of both the 1985-87 and 1993-94 JHU PIRC epidemiologically based preventive trials in Baltimore. Periodic outcomes have been assessed, and the evolving courses of development and of impact of the trials continue to be analyzed (Storr et al., 2002; Ialongo et al., 2001; Ialongo et al., 1999; Kellam & Anthony, 1998; Kellam, Rebok, Ialongo, & Mayer, 1994; Kellam, Rebok, Mayer, Ialongo, & Kalodner, 1994; Kellam et al., 1991).

The theoretical framework distinguishes social task demands and adequacy of performance from psychological well-being (PWB). In each main social field at each stage of life a person or persons, such as teacher, parent, spouse, or supervisor on the job, lays out
social task demands and judges the adequacy of social task performance. Maladaptive responses to social task demands in the classroom and peer group, as well as in the family have been found to be important risk factors. We have termed this interactive process of demand/response social adaptation, and the judgments of the adequacy of the individual's performance by, natural raters, such as parents, teachers, and supervisors, social adaptational status (SAS) (Kellam et al., 1975). Psychological well-being concerns internal states of symptoms or disorders such as anxiety, depression, bizarre feelings and thoughts, self-esteem, neuropsychological processes, and physiological status. Life course/social field theory posits that there is stability over time in SAS and in PWB as well as reciprocal relationships such that maladapting in a particular social task in a specific social field can lead to poor PWB as well as the reverse being the case.

We can illustrate these concepts with the two JHU PIRC developmental epidemiologically-based preventive intervention trials. The design of the first generation trial (1985-87) involved 2311 children in first and second grade classrooms in 19 elementary schools with random assignment of children and teachers to classrooms as control, curricular or behavioral management intervention conditions. One intervention was aimed at maladaptive aggressive responses to classroom social task demands (breaking rules, truancy, and fighting), shown as early as first grade and even in preschool ages to predict antisocial behavior, criminality, and heavy substance use -- including I.V. drug use -- through adolescence and into adulthood, especially in males (Block, Block, & Keyes, 1988; Ensminger, Kellam, & Rubin, 1983; Farrington, Gallagher, Morley, St. Ledger, & West, 1988; Kellam, Brown, Rubin, & Ensminger, 1983; Robins, 1978; Shedler & Block, 1990; Tomas, Vlahov, & Anthony, 1990; Tremblay, Masse, Perron et al., 1992). The other intervention was directed at poor academic achievement, an antecedent in vulnerable children of later depressive and other psychiatric symptoms and possibly depressive disorder (Kellam et al., 1983; Shaffer, Stokman, O'Connor et al., 1979). Both interventions were directed at the social adaptational processes in the classroom, hypothesizing that improvement in the specific SAS antecedent would improve the PWB outcome.

The two antecedent risk factors (aggressive-disruptive classroom behavior and poor academic achievement) are correlated, but their causal directions have not been known. Much time is spent in the post-doctoral seminars and forums on the role of theory in intervention choices and in design. The use of two interventions with random assignment of schools, classrooms, and children allows analysis of effects of each intervention on not only its own proximal target (aggressive-disruptive behavior and academic achievement), but also the effects of each on the proximal target of the other, taking into account the effect on its own target. This strategy is a useful tool in determining directionality in developmental modeling (Kellam et al., in press). It is also illustrative of the discourse in the training.

The design for the second generation (1993-94) of preventive intervention trials was based on knowledge gained from the effects of the first generation (1985-87) trials (lalongo et al., 2001; lalongo et al., 1999). Nine new schools and their approximately 700 first grade children and their families participated in a design involving the combination of the behavioral and curricular interventions to test whether the classroom-based curriculum plus behavioral intervention revealed redundancy, additivity, or synergism in their impact--i.e., whether the combination of curriculum and behavioral intervention did more than either did separately, and how much more. The trials contribute to the empirical basis for theory construction, particularly in regard to life-course development, socialization, pathogenesis, and malleability (i.e., preventability). If the interventions improve their proximal targets, and if improvement in the
proximal targets result in improvements in distal targets (e.g., later conduct problems and depressive symptoms), then the hypotheses regarding the developmental roles of the proximal targets are supported.

The training program is immersed in this thinking through the mechanisms mentioned above. Fellows are intensively exposed to life course social fields theory, which served as the foundation for the JHU PIRC’s first (1985-87) and second generation (1993-94) preventive intervention trials and the ACISR that Dr. Ialongo directs. Fellows also participate in research teams aimed at testing the hypotheses emanating from the life-course social field theory, for example, whether the targeted SAS measure is changed by an intervention and whether the change results in improved PWB. They also are encouraged to test hypotheses relevant to their own research interests using existing data from the JHU PIRC trials and follow-ups regarding the role of early risk factors in etiology and in development. The data from the young adult follow-up of the first generation (1985-87) JHU PIRC cohorts and the high school follow-up of the second generation (1993-94) JHU PIRC cohorts have and will continue to provide specific developmental psychopathological research questions in keeping with the advancing period of expression of mental disorders in adolescence and adulthood. Moreover, the fellows will soon be able to include the role of genetics in their analyses of normal developmental and psychopathologic processes and variation in intervention response. Indeed, they will potentially able to examine gene x environment x intervention interactions within a large community defined population of predominantly economically-disadvantages African-American youth. We know of few data sets of this kind and, as such, we believe this to be a unique opportunity for the fellows and the field.

Goals and Principles of the Training. The trainees have many opportunities to test the utility of the guiding theoretical framework and to develop modifications using the data generated by the two generations of JHU PIRC trials, their continuing follow-up evaluations, Drs. Kellam and Brown’s ongoing NIDA funded field trial, Dr. Leaf’s PBIS trial, and the pilot and feasibility studies being carried out by Dr. Ialongo’s Center for Prevention and Early Intervention. At a higher level, trainees are able to experience how epidemiology and developmental theory come together and form the basis for deciding and directing preventive trials. They require specific skills involved in interdisciplinary collaboration, such as communication, especially across disciplines, conflict management, essential for working in a collaborative research environment, and in developing the relationships with community leaders and officials which are imperative for initiating and maintaining randomized prevention trials. The training program aims at preparing prevention researchers in these skills by providing membership in core research work groups involving analyzing and writing with prevention research colleagues from other disciplines; selected courses tailored to the needs of each individual trainee; on-going interactive seminars on topics central to faculty and trainee work; and opportunity to play real roles in field operations required for prevention research, including developing partnerships with the population and its institutions. The program provides opportunities for taking the lead role in studies and in the preparation of research grants.

The research work groups described below, in which trainees participate as full members, are at the core of our training program, evolving over the last 18 years, and with new opportunities for refinement over the next 5 years. Through work groups, trainees obtain background and experience with developmental and epidemiological modeling; epidemiological thinking including multi-stage sampling and assessment; designing theory-based interventions; measuring variation in impact such that analyses include the proximal as well as the distal outcomes and contextual influences; and establishing community partnerships that support
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randomized preventive intervention research. Except for MD fellows who may need an extra year for basic research skills and senior level trainees, fellows typically stay for a two-year period of training which focuses on developing knowledge and skills required for preventive intervention research. Preparation of publishable papers, presenting at scientific meetings, and drafting preventive intervention research grant proposal under careful mentorship are core criteria of progress.

1. **Institutional Structure for Prevention Research Training (See Tables 1 and 2)**

   **The Johns Hopkins Bloomberg School of Public Health.** The Bloomberg School of Public Health was the first School of Public Health established in the nation, and is currently the largest. The School was established early in this century as part of the new university made possible by the gift of Johns Hopkins, with the new (at that time) idea that research and education should be combined in the university setting--the "research university." The School is part of the Johns Hopkins Medical Institutions (JHMI), located at an urban campus in East Baltimore, which includes the School of Medicine, the Johns Hopkins Hospital (consistently rated as "best in the country" by U.S. News and World Report), the School of Nursing, the Kennedy/Krieger Institute for developmentally disabled children, and the Welch Medical Library.

   Students of the School benefit from its dedication to quality education and its size. There are about 500 full-time faculty, 2000 students, and more than 50 Centers and Institutes. The School is about twice as large as the next largest school of public health. It is consistently rated Number 1 among the nation's 37 Schools of Public Health by US News and World Report. The school offers more than 500 courses (in the quarter system) each year in Baltimore. In addition, there are about 55 courses offered on line, and eleven separate Summer Institutes, including a Summer Institute in Epidemiology and Biostatistics and a Summer Institute in Mental Health.

   The prevention research training program involves possibilities for collaboration and enrichment of various kinds with all of these institutions, as well as with the School of Arts and Sciences at the campus five miles to the north. The most intense inter-institutional collaboration is with the School of Medicine. The School of Public Health is organized into departments of biochemistry, biostatistics, environmental health sciences, epidemiology, health policy and management, molecular microbiology and immunology, international health, mental health, health, behavior, and society, and population and family health sciences. Many centers of research, training, and practice involve teams of collaborators from various departments and institutions across the JHMI. The nine departments have either a disciplinary focus, such as Biostatistics; or a problem-oriented focus, such as Mental Health. The problem-focused departments are designed to be multi-disciplinary and provide leadership for teams of researchers from varying disciplines who focus on specific problems. Thus, many disciplines are represented in the faculty of the Department. This interdisciplinary structure fits well with the theme "Research Teams of the Future" of the NIH Roadmap. (Appendix A contains a copy of the School of Public Health Catalogue and Appendix B contains a Department of Mental Health Student Handbook).

   **The Department of Mental Health.** The Mission of the Department of Mental Health is to advance understanding of the causes and consequences of alcohol, drug, and mental disorders; to study and apply methods for promoting mental health and for identifying and preventing alcohol, drug, and mental disorders in the general population; and to study the operation of systems of services for treatment of these disorders. The department is the only
one devoted to alcohol, drug, and mental disorders in a School of Public Health in the United States.

Mental health has been a central feature of the Bloomberg School of Public Health since its beginnings in the early part of this century, when Adolph Meyer, the chair of the Department of Psychiatry, became friends with Clifford Beers, who started the Mental Hygiene Movement (Beers wanted from Meyer criticism and comments on the manuscript that later became *A Mind That Found Itself*). William Henry Welch, the first Dean of the School of Public Health, was interested in mental health, attending the founding meeting of the National Committee on Mental Hygiene, and serving as chair of the International Committee on Mental Hygiene for several years. The mental health focus in the school achieved status as a Department in the 1961 under the leadership of Paul Lemkau, a psychiatrist who was a resident under Meyer. Lemkau's early studies in the Eastern Baltimore Health District surveys are now recognized as classics in the field of psychiatric epidemiology. The second chairman was Ernest Grunenberg, during whose tenure the first waves of the Epidemiologic Catchment Area (ECA) surveys were completed. The third was Sheppard Kellam, under whose leadership the department developed a Prevention Research Center aimed towards testing developmental models of psychopathology through preventive intervention field trials. Since 2001 the department has been chaired by William W. Eaton, principal investigator on the NIMH-funded Epidemiologic Catchment Area study in Baltimore. Since 1961 the Department has had 111 graduates at the doctoral level, of whom about half finished their degrees within the last ten years. In the last ten years the Department has had 75 postdoctoral fellows and an additional 107 fellows in the Hubert Humphrey Fellowship Program for mid-level drug abuse prevention and treatment policy makers from developing world countries.

**The JHU Prevention Intervention Research Center (JHU PIRC).** From 1985 to 2004 and the funding of the Center for Prevention and Early Intervention Research, the JHU Prevention Research Center was central to the prevention research training described and proposed in this grant. While based in the Department of Mental Health, it involved members of the School's Departments of Epidemiology, Biostatistics, Health Policy and Management, and groups within these Departments such as the Center for Health Services Research and Development, as well as the School of Medicine Department of Psychiatry and its Division of Child Psychiatry. Members of the Johns Hopkins Center for Elementary and Secondary Education on the Homewood campus collaborated in many of the school-based projects. In addition, both this training grant and the JHU PIRC Center have worked closely with the Prevention Science and Methodology Group (PSMG - see below) and shares faculty with it (Brown, Ialongo, Kellam, Muthen, & Bandeen-Roche).

The JHU PIRC was the basis for the 4 RO1 grants [Dr. Ialongo (2), Dr. Crum (1) and Dr. Furr-Holden (1)] now supporting the follow-up and analysis of the data from the JHU PIRC trials, Dr. Kellam and Brown's NIDA funded Prevention Services in Schools for Early Drug Abuse, and Dr. Ialongo's Center for Prevention and Early Intervention, which Drs. Leaf and Zeger co-direct and is described below.

**The Center for Prevention and Early Intervention** is a collaborative effort between the JHU Bloomberg School of Public Health and our community partners in prevention and early intervention (the Baltimore City Public Schools System, Family League of Baltimore City, Baltimore Mental Health Systems and the Maryland Department of Education), and prevention and early intervention researchers at Morgan State University, Pennsylvania State University, the University of California at Los Angeles, the University of Alabama, Columbia University, and
The Center is supported by National Institutes of Mental Health and Drug Abuse. The mission of the Center is (1) to improve school-based preventive and early treatment interventions for children and adolescents by bridging epidemiologic, intervention, services, and dissemination and training research through the development of a research structure and research strategies capable of evaluating the effectiveness and sustainability of promising and evidence-based interventions; (2) to identify factors that inhibit or facilitate improved prevention and treatment practices and outcomes; (3) to disseminate the knowledge gained in order to improve prevention and treatment research and dissemination and training practices; and (4) to develop within our collaborating community partners the capacity to carry out and disseminate state of the art prevention and early intervention research and evaluations.

The Center consists of 4 Cores. The Operations Core provides support to Center collaborators in the following areas: administration, biostatistics, economic analysis, clinical trials, assessment/evaluation, and dissemination and training. The Research Methods Core is focused on advances in biostatistics, economics, and computerized assessment in support of the Center’s intervention initiatives. The Principal Research Core provides the structure and support for pilot and feasibility studies aimed at setting the stage for school-based, effectiveness trials of promising and evidence-based prevention and early interventions and assessments. The Research Network Development Core focuses on the development of the infrastructure within our community partners for carrying out state of the art prevention and early intervention research and evaluations. Support over the life of the Center will make it possible: (1) to strengthen and extend research initiatives aimed at evaluating the effectiveness of evidence-based, early preventive and treatment interventions for children and adolescents and (2) to disseminate research on the prevention and treatment of mental disorders in children and adolescents.

As described below, both past (Dr. Petras) and current fellows (Drs. Brown, Buckley & Reinke) are actively participating in Center activities.

**Other Training Programs.** The Department of Mental Health currently has four other training grants, as shown in Table 2. The Prevention Research Training program differs significantly in focus from the training provided by other training programs. The Hubert Humphrey Training Program, directed by Wallace Mandell, is for postdoctoral fellowships for mid-career scholars and administrators from outside of the United States in the area of substance dependence. These fellows are not selected by the Department of Mental Health. The psychiatric epidemiology training program directed by Dr. William Eaton focuses largely on adults with serious mental disorders. Moreover, like the NIDA funded drug dependence epidemiology program led by Dr. William Latimer, the focus is on descriptive epidemiology and etiology and not on prevention or early intervention. Finally, the children’s mental health service training program led by Dr. Leaf differs from the Prevention Research Training Program in that the primary focus of the former is research on mental health service systems and organizations and health disparities and unmet need within them. An additional difference between the Prevention Research Training Program and the Psychiatric Epidemiology, Children’s Mental Health Services, and Drug Dependence Epidemiology training programs is that the sole focus of the Prevention Research Training Program is on training postdoctoral fellows as to predoctoral students.
B. PROGRAM PLAN

1. Program Administration - The multidisciplinary training program is under the direction of Nicholas Ialongo, Ph.D., who is assisted by Dr. Cooley as Deputy Director. Dr. Kellam, the former director of the program, transferred the directorship to Dr. Ialongo in the spring of 2000, upon Dr. Kellam’s going to emeritus status at JHU and assuming a senior research scientist position at the American Institutes for Research in Washington, D.C. Dr. Kellam remains active in the training program (See Letter of Commitment Appendix C), continuing to mentor trainees and lecturing the trainees on developmental epidemiology, the life course social fields framework, and prevention theory. Moreover, Drs. Kellam and Ialongo continue to collaborate around the 2 RO1s they either PI or Co-PI together.

Dr. Ialongo will continue to be responsible for recruiting applicants, chairing the selection process by the faculty, and periodically reviewing fellow and student progress. He is also responsible for integrating activities with the training grant faculty’s prevention research projects and state and local mental health agencies, which serve as potential research sites for trainees. As Deputy Director, Dr. Cooley will assist Dr. Ialongo in recruiting minority fellows and mentoring them.

The management of the program and the careers’ of the fellows and students is facilitated by an active Prevention Research Training (PRT) Steering Committee composed of the core prevention faculty (Ialongo, Brown, Cooley, Kellam, Muthen, Salkever, and Zeger), who communicate with one another almost continually via research work groups, in the course of joint grant writing activities, seminars, and via formal meetings at least once a month in person or by conference calls. The affiliated faculty members described below participate as mentors if a fellow is recruited with mutual interests. They also advise fellows on an ad hoc basis as needed, through integrating with other training programs, and through teaching courses, for example, Bandeen-Roche’s course in Methods in Biostatistics III & IV.

The core and affiliated faculty meet twice per year to evaluate new candidates and the progress of fellows and students. The work of the PRT Steering Committee and the training director is facilitated by a detailed individualized training plan, prepared in negotiation between each trainee and an individually assigned mentor from the core faculty. It lists academic, other experiences, and research papers and grant drafts to be completed during each year along with milestone markers of accomplishment such as peer reviewed publications and local and national presentations. The plan is reviewed by the faculty advisor on a regular basis and by the Steering Committee twice a year.

Core Program Faculty Percent Effort. As Director, Dr. Ialongo will devote 25% effort to the training program, whereas the remaining core faculty will devote 10% effort. Owing to the design of the training program, wherein trainees work collaboratively in research work groups with the core faculty, the amount of contact trainees will have with the core faculty will be much greater than reflected in core faculty’s percent effort.

2. Program Faculty (See Tables 3 and 4). Biographical sketches of core and affiliated faculty members are included in this application. Brief descriptions of the areas of interest of the faculty and their roles as mentors in the training program are provided below.
Core Faculty

Nicholas S. Ialongo, Ph.D., Program Director, Professor (Mental Health). Dr. Ialongo led the development and evaluation of the Family-School Partnership intervention for the second, or 1993-94, JHU PIRC preventive intervention trial. He is currently PI of 2 RO1s, whose major aims are centered on the evaluation of the longer term preventive intervention impacts of the 1993-94 JHU PIRC trial through high school and 2 years beyond. He is also PI and Director of the NIMH/NIDA funded ACISR, the Center for Prevention and Early Intervention. Dr. Ialongo is also the Director of the JHU Prevention Research Training Program and has served in that role since March 2000. Dr. Ialongo currently co-teaches the department’s seminar in Prevention Research in Mental Health with Drs. Rebok, Brown, Kellam, and a number of our Center for Prevention and Early Intervention investigators (Drs. Hoagwood, Salkever, Slade, and Weist).

Dr. Michele Cooley, Program Deputy Director, Associate Professor (Mental Health). Dr. Cooley is an African-American, clinical child psychologist. Thus far, Dr. Cooley has nearly 20 journal publications, has co-authored book chapters and treatment manuals, and has given approximately 40 professional presentations. Dr. Cooley has served on several committees, panels, and task forces for professional organizations, is an editorial board member of the Journal of Clinical Child and Family Psychology Review and the Journal of Clinical Child Psychology. Her primary research focus is on the prevention of anxiety disorders in child and adolescent populations, particularly among African American children exposed to community violence. She was the PI on an NIMH R21 grant to develop a preventive intervention for elementary school-aged children who have been exposed to community violence. She also was the PI of a NIMH K01 Award whose objective was to expand her research focus from a child clinical to a public mental health perspective and is using data from the JHU PIRC first generation young adult follow-up on exposure to community violence and psychological well-being. Most recently, Dr. Cooley received an RO1 from NIDA to study the epidemiology and risk factors for community violence and its consequences for mental health and drug use in urban youth. Dr. Cooley will continue to provide interested trainees with opportunities to participate in the development of preventive interventions aimed at the sequelae of community violence and the cognitive and physiological factors moderating and/or mediating the impact of community violence on mental health, particularly with respect to the etiology of anxiety disorders. She will also assist Dr. Ialongo in recruiting minority trainees. In addition to mentoring Dr. Lambert—formerly a Child Mental Health Services fellow and now an Assistant Professor in the Department of Psychology at George Washington University and a member of the affiliated training grant faculty (see below)—, Dr. Cooley advised 3 other minority fellows over the last five years—Drs. Jorielle Brown, Rhonda Boyd, and Karren Campbell. Dr. Boyd was a Child Mental Health Services training fellow, who is now an Assistant Professor in the School of Medicine at the University of Pennsylvania, where she received a K01 in 2005. Dr. Jorielle Brown is a health research science administrator with the Substance Abuse Mental Health Services Administration and Dr. Campbell is a Research Scientist with the Pacific Institute for Research and Evaluation.

Sheppard G. Kellam, M.D., Professor Emeritus (Mental Health) and Director of the Center for Integrating Education and Prevention Research in Schools at the American Institutes for Research, conducts research on developmental epidemiology, studies of antecedents and their roles in developmental paths to psychopathology, and mental health preventive
C. Hendricks Brown, Ph.D., Adjunct Professor of Biostatistics, Johns Hopkins University, and Professor, Epidemiology and Biostatistics, University of South Florida, played a lead role in the prevention research carried out as part of the JHU PIRC and was a member of the research team carrying out the Woodlawn developmental epidemiology prevention studies in Chicago. He has advised as well as taught many of the postdoctoral students, including those who held postdoctoral prevention trainee ship at Johns Hopkins and through this application will continue to expand his role in their training. He has also trained over a dozen masters' students in biostatistics at the University of South Florida, a good number of whom used data from the JHU PIRC field trials for their methodology theses. As P.I. and leader of the now nearly 20 years old multi-site Prevention Science and Methods Group (PSMG), an NIMH/NIDA funded grant to develop biostatistical methods and their dissemination for prevention research, he is in a unique position to advise fellows not only on the most effective analytical techniques, but also on their application to the data collected as part of the JHU PIRC's 1st and 2nd generation trials. He has continued to collaborate closely and publish with Drs. Ialongo and Kellam and others at Hopkins since his move from Hopkins to the University of South Florida. In particular, he and Dr. Kellam have served as co-mentor to Dr. Toyinbo (current PDF) and former fellows, Drs. Petras and Indurkhya, both of whom continue to collaborate with Drs. Brown, Kellam, and Ialongo around the analysis of the 1st and 2nd generation JHU PIRC trials. With Drs. Muthen at UCLA and Drs. Zeger and Bandeen-Roche at Hopkins, Dr. Brown will provide leadership for integrating methods development with prevention research training. (See letter of commitment in Appendix C).

Bengt Muthen, Ph.D. (Professor, Graduate School of Education, UCLA) represents a strong part of this training program. His students and fellows have used the JHU PIRC data base in research on latent growth modeling and other aspects of longitudinal data analysis. Dr. Booil Jo, a former post-doctoral fellow of his and Dr. Ialongo's, was and continues to be involved in several research work groups with our fellows and faculty, adding cross-site enrichment to the Hopkins program. Dr. Jo is now an Assistant Professor in the Stanford University School of Medicine and is a Co-Investigator on Dr. Ialongo's Center for Prevention and Early Intervention along with Dr. Muthen. Similarly, Dr. Katherine Masyn, now an Assistant Professor in the College of Human Development at the University of California at Davis, was a post-doctoral fellow of Dr. Muthen's and Ialongo. She continues to collaborate with Dr. Muthen and our current (Drs. Buckley, Reinke, and Valdez) and past fellows (Drs. Lambert, Petras, and Schaeffer). Dr. Muthen has visited JHU annually for the last 6 years leading workshops for trainees on latent variable modeling and presenting at methods conferences held here at JHU.
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(See letter of commitment in Appendix C). He has been available via e-mail and conference call
to the current fellows around the use of latent variable mixture modeling in the analysis of the
JHU PIRC data. His role in the Prevention Science Methodologies Group provides an important
base for recruiting, consulting, and advising of fellows with biostatistical backgrounds as well as
the rest of the fellows who are seeking to use the methodological tools Dr. Muthen and the
PSMG team are developing.

David Salkever, Ph.D., Professor Emeritus, JHU School of Public Health’s Departments of
Health Policy and Management and Mental Health and Professor in the Institute for Social
Policy at the University of Maryland Baltimore County, is an economist with broad research
experience in economic studies of health and mental health services, and in the economic
impacts of health and mental health problems. His participation is an important addition to the
Prevention Research Training Program. Economic analysis of preventive intervention impact is
vital to the emerging prevention science and requires training young economists in prevention
research as well as prevention intervention researchers in economic analysis. Dr. Salkever will
continue to recruit early career economists interested in prevention and serve as an advisor to
fellows pursuing studies in economics and cost-effectiveness analyses of preventive
intervention trials and programs. He currently supervises Dr. Mustafa Karakus, a postdoctoral
fellow funded via the Center for Prevention and Early Intervention’s Methods Core. Dr. Salkever
is directing the cost analyses of both the 1985-87 and 1993-94 JHU PIRC intervention trials and
leads a workshop of post-doctoral trainees in these analyses. He also contributes lectures on
economic analyses to the Prevention Seminar that Drs. Ialongo and Rebok lead in the
department of Mental Health. In addition to his work with Drs. Ialongo and Kellam around the
economic analysis of the JHU PIRC intervention trials, Dr. Salkever’s current research activities
include studies of the cost-effectiveness of home visiting interventions for at-risk infants and
young children. He is also examining long-term economic consequences for children with
mental health problems and cognitive deficits, including those resulting from lead exposure.

Scott Zeger, Ph.D., Professor and Chairman, Department of Biostatistics, Johns Hopkins
School of Public Health, is an internationally known expert on statistical modeling of
longitudinal data. His and Liang’s work on Generalized Estimating Equations is now a major
contribution to the most recent work on prevention trial impact analyses. He is a Co-Director of
the Center for Prevention and Early Intervention and Director of the Center’s Methods Core. Dr.
Zeger has and will continue to provide trainees on-site mentoring around the cutting edge
statistical methods he and his colleagues in the Department of Biostatistics continue to develop.

Affiliated Faculty

Philip J. Leaf, Ph.D., Professor (Mental Health, joint appointment in Psychiatry), is a major
services researcher, sociologist, and epidemiologist who is now Director of a CDC Violence
Prevention Center and Director of the NIMH Child Services Research Training Program. Dr.
Leaf serves as the Director of Research for the Johns Hopkins Child Psychiatry Division and the
Children's Mental Health Center. He is conducting research on the detection and management
of psychiatric disorders in schools and health and social service settings. His role in the
Prevention Research Training Program will be to advise fellows interested in research on the
interface of prevention and services. This interface is equally vital to those with epidemiology
and biostatistics in our vision of the role of epidemiologically based prevention research training.
He will also assist Dr. Ialongo in coordinating academic and research experiences for the post-doctoral fellows.

Karen Bandeen-Roche, Ph.D., Professor, Department of Biostatistics. Dr. Bandeen-Roche will lend her expertise to the training program in the development, implementation, and application of statistical models for problems that include underlying or unobservable processes of interest. Specific examples of such models include mixture models, measurement error models, and random affects models; more generally, the area may be viewed as multivariate, latent variable regression modeling. Dr. Bandeen-Roche will mentor interested fellows around her statistical research on the study of classification and variance structure and multivariate survival analysis. She will also assist fellows around the analysis of data for scientific papers and in preparing the analytic sections of the K-Awards they may prepare as part of their training experience.

George W. Rebok, Ph.D., Professor, Department of Mental Health, holds a joint faculty appointment in the Johns Hopkins School of Medicine. He has an extensive background in life-span developmental psychology, gerontology, cognitive neuropsychology, and preventive interventions as well as in epidemiology and biostatistics. Dr. Rebok co-teaches the Department’s Prevention Seminar along with Drs. Brown, Ialongo, Kellam, and Muthen. Currently, he is the PI of a NIA-funded clinical trial of a preventive cognitive intervention for at-risk older adults living in the community. This trial, known as ACTIVE (for Advanced Cognitive Training for Independent and Vital Elderly), involves over 2,800 older adult participants nationwide and is aimed at improving everyday functional abilities and preventing disability, hospitalization, institutionalization, and mortality. Dr. Rebok developed the memory training intervention for this trial, and is using computerized memory training in another NIA-funded study to prevent memory problems in later life. Dr. Rebok is also one of the Investigators for the NIA-funded Experience Corps program at Johns Hopkins (Dr. Linda Fried, PI), which is a multigenerational, community-based preventive intervention placing teams of older adults in meaningful roles in local schools to improve elementary school children’s classroom behavior and academic achievement. Dr. Rebok will mentor interested fellows around his ACTIVE study and the Experience Corps program.

Sharon Lambert, Ph.D., Assistant Professor, Department of Psychology, George Washington University. Dr. Lambert is a former Child Mental Health Services research fellow and Assistant Scientist in the department of Mental Health. Dr. Lambert was mentored as a post-doc by Dr. Cooley and then by Dr. Ialongo via a minority faculty development supplement from NIMH. Dr. Lambert continues to collaborate with Drs. Ialongo, Muthen and past (Drs. Masyn, McCreary, and Petras) and current fellows (Drs. Valdez) around the analysis of the JHU PIRC 1st and 2nd generation trials. Dr. Lambert has published a series of papers with Drs. Cooley and Ialongo around the risk factors for and sequelae of exposure to violence and is currently working with Drs. Ialongo and Valdez on a set of papers involving early depressed mood and feelings, early and later social adaptation status, and later psychological well-being, including perceived competence and depressive disorders and suicidal behavior. Dr. Lambert is also a member of the Center for Prevention and Early Intervention’s Methods Core. Like Dr. Petras described below, Dr. Lambert mentors the fellows around the use of latent variable modeling of longitudinal data, which she learned from Drs. Muthen and Brown.
Hanno Petras, Ph.D., Assistant Professor, Department of Criminology, University of Maryland, College Park. Dr. Petras is a former fellow and Assistant Scientist in the department of Mental Health. He continues to collaborate with Drs. Brown, Ialongo, and Kellam around the analysis of the JHU PIRC 1st and 2nd generation trials and is a member of the Center for Prevention and Early Intervention’s Methods Core. Dr. Petras is also the lead instructor of a course on longitudinal analysis with latent variables in the department of Mental Health that he co-teaches with former fellows Drs. Jo and Masyn. The course was developed out of the joint work Drs. Petras, Jo and Masyn have done and continue to do with Drs. Brown and Muthen. All of the training program fellows take the course and Drs. Petras, Jo, and Masyn actively mentor the fellows in the use of the methods taught, along with Drs. Brown Muthen.

3. Proposed Training - The training program has used six major mechanisms: (1) research work groups, (2) cross-site collaboration, (3) in-house seminars, (4) mentoring, (5) course-work, and (6) conferences. While retaining the core emphasis on social adaptational status in each social field and psychological/psychiatric measurement, we will continue to expand into the following key areas of: 1) economic analysis; 2) neuropsychological, physiological and genetic assessment; 3) biostatistical methodology; 4) community exposure to toxins such as to violence and to economic deprivation. These are to be addressed by these same mechanisms of training.

Research Work Groups. The basic structure of the training program is built upon participation as a member of one or more small research teams, usually 3 or 4 members including at least one methodologist, on this site or more often at two or more sites, addressing a salient prevention research problem. These are defined by specific research questions and reflect the stages of prevention research. Analyses and writing in relation to a specific question are the foci, and allow the fellow to participate in work on existing data. The Training Program strives to balance the interests’ of the work groups, and the fellows’ need for diverse experiences involving all stages of prevention research. Work groups meet in accord with the nature of their stage of work and the styles of the typically three to five or so members who comprise the group. Membership in diverse work groups is usually the solution, and the skills the trainee fellows bring to the work group easily compensates the non-trainee members for any extra time needed for orientation, for example to the data base.

A short description of our current research work groups follows:

Intervention Impact Work Group: Drs. Ialongo, Kellam, Brown, Muthen, and current and past fellows, Drs. Buckley, Petras (PDF, 99-01), Reinke, and Toyinbo. This work group is studying the immediate and longer-term impacts of the 1985-87 and 1993-94 JHU PIRC intervention trials. Also examined are child, family, peer group, school, and community factors associated with malleability and variation in developmental courses and their malleability through the preventive interventions.

Perceived Competence and Psychological Well-Being Work Group: Drs. Ialongo, Kellam and current and past fellows, Drs. Valdez and Lambert (Child Mental Health Services PDF, 99-01). The focus of this group is on child and adolescent self-perceived competence and whether it mediates the relationship between social adaptational status and psychological well-being and whether the JHU preventive interventions’ impact on psychological well-being is mediated through improved social adaptational status and, in turn, improved self-perceived competence.
Suicidal Ideation and Behavior: Developmental Course and Malleability Work Group: Drs. Ialongo, Kellam and current and past fellows, Drs. Valdez and Lambert (Child Mental Health Services PDF, 99-01). This group studies (a) the relationship among depressive symptoms, low self-perceived academic competence, and later suicidal ideation and behavior, (b) the role of early shy and aggressive behavior, early anxious and depressive symptoms, and concurrent behavior problems and psychological symptoms in the prediction of early adolescents’ suicidal ideation and behavior; and c) the role of the preventive interventions in influencing these relationships.

Neighborhood Environment Work Group: Drs. Cooley, Ialongo & Muthen and current and past fellows, Drs. Buckley, Lambert (Child Mental Health Services PDF, 99-01), Masyn (PDF, 2003-05) and Petras (PDF, 99-01). This group is examining the impact of the neighborhood environment on the first and second-generation JHU PIRC participants in terms of psychological well-being, social adaptational status, substance use, and violence. In addition to examining the role of neighborhood environment on development amongst the control group participants, this group is studying neighborhood as a moderator of the preventive intervention impact.

Economic Analysis and Preventive Trials Work Group: Drs. Salkever, Ialongo, Slade, and current post-doctoral fellows, Drs. Buckley, and Karakus (supported by Center for Prevention and Early Intervention). This work group is developing and applying economic analysis and cost-effectiveness modeling to the Baltimore preventive intervention trials, using data from the 1st and 2nd generation JHU PIRC trials.

Neurocognitive Predictors of Variation in Intervention Response. Members include Drs. Fishbein and colleagues from the Research Triangle Institute and Dr. Ialongo. As described above and consistent with the themes of the NIH Roadmap, this workgroup is examining the neurocognitive prerequisites of response to a preventive intervention. Dr. Fishbein was a PI on a NIDA funded RO1 that generated these data. Dr. Ialongo was a Co-Investigator and a subsample of the JHU PIRC 2nd generation trial constituted the study population. Three papers have come out of this collaboration (Fishbein et al., in press; Fishbein et al., 2006; Paschall et al., 2004) and 3-4 others are in preparation. While none of our current post-doctoral fellows have been involved in this workgroup, it provides another research paper writing opportunity for continuing and new fellows.

Genetic Contributions to Developmental and Intervention Outcomes. As indicated above, NIDA has awarded Dr. Ialongo an administrative supplement to collect DNA from the 2nd generation JHU PIRC trial study population. Moreover, we have a RO1 grant under review to follow-up the 1st generation JHU PIRC trial participants at age 27-28 and to collect DNA from them. Once the DNA are collected from the 2nd generation trial, we will create a workgroup consisting of Drs. Uhl (NIDA Intramural), Neiderhiser (George Washington University Psychiatry), Zandi (Department of Mental Health, Genetic Epidemiologist), Ialongo, Kellam and Brown and fellows focusing on genetic contributions to variation in developmental and intervention outcomes.

Cross-Site Collaboration. The most intensive work across sites currently involves the Prevention Science Methodology Group, with on-going collaborations with its members,
including Drs. Hendricks Brown and Bengt Muthen, involving numerous papers and method projects all of which involve trainees. Drs. Brown and Muthen are currently mentoring Drs. Buckley, Reinke, and Toyinbo around the use of growth mixture models in their analysis of the 1st and 2nd generation JHU PIRC trial data, both with respect to intervention outcomes and development of psychopathology and drug use. Dr. Buckley is the lead author on a recently submitted paper with Drs. Muthen, Petras, Masyn, and Ialongo as junior authors on the role of classroom context in time to first school removal for disciplinary reasons. Dr. Valdez is leading a paper with Drs. Muthen, Lambert and Ialongo as co-authors on using growth mixture modeling to evaluate the impact of exposure to community violence on the developmental course of psychological well-being. Dr. Valdez is also working with those same co-authors on a paper the examining the growth of psychological well-being over the elementary and middle school years and its relationship to suicide attempts. Dr. Reinke is working closely with Dr. Muthen and his graduate student, Rachel Kim, and Drs. Ialongo and Petras around the development of methods that would allow for multilevel latent transition analyses. The substantive focus is on testing the peer contagion hypothesis. More specifically, these faculty and fellows are interested in understanding whether youth are more likely to transition from low to high levels of problem behavior in high versus low aggression classrooms.

Seminar on Prevention Research in Mental Health. Drs. Ialongo and Rebok have developed a seminar in Prevention Research that all the fellows attend and is open to students, fellows, and health professionals within and outside of the university. Drs. Brown, Kellam, Salkever and a number of our Center for Prevention and Early Intervention investigators (Drs. Kimberly Hoagwood, Eric Slade, Mark Weist) contribute to the seminar. The topics include the life-course social fields framework motivating the prevention research carried out by the JHU PIRC and now the Center for Prevention and Early Intervention (Drs. Ialongo, Kellam and Rebok), the design and analysis of intervention trials (Dr. Brown), economic evaluations of intervention trials (Drs. Karakus (current fellow), Salkever & Slade), and organizational issues influencing the adoption, dissemination, implementation, and sustainability of evidence-based preventive and treatment interventions (Drs. Hoagwood and Weist).

Weekly Prevention Research Meeting. In addition to the various research workgroups the fellows participate in, Dr. Ialongo leads a weekly meeting of the fellows, wherein ideas for papers and grants are generated. Moreover, once papers and grants are in progress, the fellows report on their progress and conceptual and methodological issues they have encountered. Core and affiliated faculty participate as needed and assist the fellows with the conceptualization of the research questions along with the methods to answer the questions. The Core and affiliated faculty also help the fellows resolve conceptual and/or methodological issues that they are confronting in their paper and grant writing. The meeting also serves to facilitate fellows learning from one another in the context of their research presentations and collaborations. For example, at a recent meeting, Dr. Reinke presented on her work using latent transition analysis. As part of her presentation, she shared how to conduct the analyses in Mplus. The software package that Dr. Muthen and his wife, Dr. Linda Muthen, have developed for latent variable modeling. This weekly research meeting also serves as a setting for fellows to practice job talks and gather feedback from fellow postdocs and the core and affiliated faculty.

Noon Day Seminar Series. The Department organizes a seminar each Wednesday at the lunch hour advertised and open to the faculty and students of the entire school. In the first 3 quarters the speakers include faculty from within and outside of the university who present on their latest research. Faculty, fellows, and students attend on a regular basis. The fourth
quarter of the Wednesday noon seminar is organized by the Department’s student and fellow’s group. The accepted priority for presentations during the fourth quarter is for students and fellows who are preparing academic presentations in seeking employment. The list of seminar series for this academic year is attached as Appendix D.

**Mentoring.** The major goal in mentoring is that of supporting the fellows in using their special discipline background while integrating concepts and methods across disciplines as required by the emerging prevention science. The faculty are long experienced at this issue, but the problem requires constant introspection and discourse with the fellows as a group and individually. Weekly meetings, seminars, and work groups are all used for these discussions with attempts constantly made to be supportive rather than critical. Cross-site communication, intensive workshops where fellows can meet to work intensively on reporting scientific designs and findings, and collaboration are all very important in this process of learning the way other disciplines are structured conceptually and how they together add vital perspectives to the single disciplines.

Fellows who are already highly trained at the doctoral level in statistical methodology will have two mentors who will direct their training, as was the case with Drs. Jo and Masyn, whose mentors were Drs. Muthen and Ialongo. This is also the case with fellows who have a Ph.D. in economics, such as, Dr. Karakus, who is being mentored by Drs. Salkever and Ialongo. The other fellows have one advisor but participate in a set of research work groups both on-site and across sites. In a research work group, there are ample opportunities for the trainee to learn how to collaborate with prevention scientists, to have direct experience with the types of analyses that are performed, and to play an important role in identifying and solving key analytical problems in prevention research. Because our advisors include such methodologists as Bandeen-Roche, Brown, Muthen, and Zeger, who are P.I.s and/or Co-PIs of NIMH and NIDA programs to develop new statistical methods and designs for mental health prevention and services trials, trainees have a unique opportunity to develop expertise in prevention science methods. Networking the fellows with leaders in prevention science at NIMH and NIDA and at prevention research sites across the country is a major mentoring task.

**Course Work.** The course work for the fellowship draws from the Johns Hopkins University Graduate curriculum in biostatistics, epidemiology, economics and mental health. All fellows are required to register for a total of 16 credit hours of formal course work and/or postdoctoral research units per quarter. Below are core courses that comprise the major opportunities for most fellows in terms of classroom learning. About half the courses are offered in the School of Public Health’s various summer institutes in a condensed time format. Thus, the amount of time the fellows spend in the classroom does not interfere with their scientific paper and grant writing activities.

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>140.621-624</td>
<td>Statistical Methods in Public Health I-IV</td>
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<tr>
<td>140.641</td>
<td>Survival Analysis</td>
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<tr>
<td>140.655</td>
<td>Analysis of Longitudinal Data</td>
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<tr>
<td>140.669</td>
<td>Spatial Analysis and Geographic Information Systems</td>
</tr>
<tr>
<td>313.640-641</td>
<td>Introduction to Health Economics I &amp; II</td>
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<tr>
<td>313.630</td>
<td>Cost-benefit Analysis: Theory &amp; Techniques</td>
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<tr>
<td>313.631</td>
<td>Cost-effectiveness, Cost-utility, and their Applications</td>
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<tr>
<td>340.601</td>
<td>Principles of Epidemiology</td>
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<tr>
<td>330.611</td>
<td>Prevention Research in Mental Health</td>
</tr>
<tr>
<td>330.623</td>
<td>Neuropsychology Of Mental Disorders</td>
</tr>
</tbody>
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330.842 Grant Writing: NIH and Other Funding Sources
330.666 Longitudinal Analysis with Latent Variables
330.845 Design and Analysis of Group-Randomized Trials
330.893 Introduction to Behavioral and Psychiatric Genetics
550.860 Research Ethics

The objective of the biostatistics course sequence is to introduce fellows to biostatistical methodology with an emphasis on teaching techniques of data analysis through lectures and the use of computers. Topics covered include the use of generalized linear models. Specific models that are covered include analysis of variance, multiple regression, logistic regression, survival analysis and log linear models. The course on longitudinal data analysis is of special note. This course addresses the methodological complexities of repeated observations and correlated data as well as techniques for handling missing data. Many of these advanced techniques, such as Generalized Estimating Equations (GEE), were developed by training programs core and affiliated faculty, including Drs. Zeger, Brown, Muthen and Bandeen-Roche. The course on longitudinal analysis is taught through lectures and computer exercises in SAS, Stata, and other statistical packages. Fellows with backgrounds in clinical psychology, sociology, and psychiatry are required to take two or more of these courses depending on their prior statistical training.

As noted above, Drs. Petras, Jo, and Masyn (all former fellows) jointly teach a course entitled Longitudinal Analysis with Latent Variables. This course draws largely on the work of Dr. Muthen and his Mplus software and is oriented to the application of latent growth modeling in prevention research, including growth mixture modeling (Dr. Petras), discrete and continuous time survival (Dr. Masyn), and complier average causal effect analysis (Dr. Jo), which allows for estimation of intervention effects in the presence of variation in the level of intervention implementation. The course examples are drawn largely from the 1st and 2nd generation JHU PIRC data.

Dr. David Murray, a member of the Center for Prevention and Early Intervention’s Methods Core, introduces students to the design and analysis of group-randomized trials (GRTs), which is what our prevention research here in Baltimore has largely consistent of. Dr. Murray presents GRT methods that reflect the state of the science. Dr. Murray covers the two major problems that routinely plague GRTs-extra variation and limited degrees of freedom; discuss analytic approaches to reduce extra variation-modeling time, and regression adjustment for covariates; discuss design approaches available to reduce extra variation-timing of data collection, and spacing of data collection; be familiar with current methods for a priori sample-size calculation in a variety of designs currently employed in group-randomized trials.

The introductory epidemiology course presents principles and methods of epidemiologic investigations of both infectious and noninfectious diseases. The course introduces fellows to terminology that is germane to public health research. Fellows also develop an understanding of etiological factors, modes of transmission, and pathogenesis of disease through lectures and laboratory exercises. All fellows are required to take this course. The sequence on health economics and cost-benefit and cost-effectiveness analysis provides trainees with the tools to evaluate preventive interventions in terms of their costs and economic benefits.

As noted above, the fellows attend Drs. Ialongo and Rebok’s seminar on prevention research in mental health that includes presentations from Drs. Brown, Kellam, Salkever and members of the Center for Prevention and Early Intervention investigative team. For those fellows with little or no knowledge of genetics, Dr. Peter Zandi, a faculty member in the
Ialongo, Nicholas S.

Department of Mental Health, teaches a course that provides an overview of research methods and their application to the study of behavioral and psychiatric genetics. The course begins by briefly introducing necessary concepts in molecular and population genetics. It then surveys study designs and analytic methods used to investigate the genetic contribution to human behavior and its disturbances. The study designs covered will include the following: family, twin and adoption studies to evaluate the extent of a genetic contribution; segregations studies to determine the mode of inheritance; linkage and association studies to map genes; and other epidemiologic designs to elucidate genes by environment interactions. These are illustrated through examples of real studies, which will include data from our 1st and 2nd generation JHU PIRC trials once it is collected and analyzed.

We also encourage fellows with little or no background in neuropsychology to take a course currently taught by Dr. Michele Carlson on the Neuropsychology of Mental Disorders, which was formerly taught by Dr. Cooley. The course examines mental disorders to illustrate neurobiological systems involved in abnormalities of thinking, feeling, and acting. The course is to increase understanding of behavioral disorders, their assessment, neuroanatomical underpinnings, and systemic influences. Students review some of the most pervasive disorders, discussing: clinical and case studies; definitions and diagnostic methods; epidemiologic evidence regarding etiology.

Dr. Latimer, a faculty member in the Department of Mental Health, teaches a course on grant writing that the fellows also attend. The course introduces students to grant writing strategies, with a special focus on NIH applications, including decisions and strategies related to applying for R01s, R03s, Ks and other mechanisms. The course also introduces key application components as well as pitfalls to avoid when writing initial applications. Finally, the course addresses decisions related to responding to Program Announcements versus Request for Applications, variations across NIH institutes, communicating with NIH staff and related issues.

All fellows take one course in research ethics, which covers responsible conduct of research, mentoring, authorship, publication and conflicts of interest.

Postdoctoral Studies in Economics, Cost-Effectiveness and Prevention. The economics concentration for postdoctoral trainees focuses on methods for economic evaluation of prevention interventions. In addition to the prevention science curriculum described above, economics trainees pursue studies and guided research in four principal areas. First, trainees study the general economic literature on cost-benefit and cost-effectiveness studies to deepen their understanding of the economic and conceptual foundations of this literature. Key concepts from welfare economics are stressed, and trainees examine the application of cost-benefit analysis from multiple perspectives (individual, interest group, overall social).

Second, trainees study the most recent literature on cost-utility and cost-effectiveness analysis in the mental health field. Because of its particular relevance to child mental health preventive and clinical interventions, trainees examine the relationships between various tools for assessing the impact of family processes and factors on children’s mental health problems and strategies for applying these tools in a cost-effectiveness framework.

Third, trainees gain first-hand experience in working with public agency data that may be used for assessing public sector cost impacts. The public sectors where these impacts occur and are studied, include education (and special education), family preservation and child welfare, juvenile justice, and corrections. Trainees will become familiar with the use of agency fiscal data and econometric strategies for estimating incremental service costs.

Fourth, trainees actively participate using the 1st and 2nd generation JHU PIRC preventive trials data to model attributable risks of antecedent risk factors to relevant
economic outcomes, the cost or benefit consequences of these outcomes, and the fraction of attributable risks actually prevented by these specific interventions. In this activity, trainees work collaboratively with faculty to integrate developmental modeling from the psychological, child development and sociological literatures with human capital investment models from the human resources economics literature. In addition to learning the substantive content of these literatures, trainees also have the opportunity to study the key econometric, statistical, biostatistical and psychometric tools needed for these integrative modeling efforts.

Conferences. Participation in professional conferences will promote opportunities to disseminate methodological advances and research findings and will facilitate collaborative professional relationships with other prevention researchers. By the end of the second year of the fellowship, we expect that the fellows will have been successful in presenting empirical papers and in establishing collaborative working relationships with other prevention scientists that will continue beyond the postdoctoral training years. The travel budget request is based on the proposed travel plans for the four slots we are requesting to attend the Society for Prevention Meeting each year, the Prevention Science Methods Group Annual Meeting and American Public Health Association Meeting.

4. Training Program Evaluation. In general, we expect postdoctoral trainees to receive two years of support (with the exception of the mid- to senior level position and in the case of tenure track job opportunities that present themselves during the first year of the training program to early career fellows), during which they will: 1) acquire a public health and prevention research orientation and understanding of developmental processes and their role in prevention research, filling in their knowledge of psychopathology, epidemiology, and biostatistics; 2) analyze and publish from their dissertations; and 3) participate in research workgroups in a way that permits them to lead the analysis and publication of at least one research paper per year on prevention, and participating as co-author on at least one other research paper per year. Each trainee is expected to participate in research grant writing and, if feasible, to prepare a research grant as a principal investigator. While the fellows are not eligible for research grants during the fellowship, we expect them to design and prepare research grants at the K01 levels during their fellowship.

We formally evaluate the trainees along with other students and fellows in the department twice a year. Each adviser presents a capsule summary of the progress, problems and goals of the fellow or student to the rest of the department faculty followed by a general discussion. One evaluation is conducted in July to plan for next year's work and a second meeting is held after the first quarter to alert faculty to problems.

Explicit plans developed by students and fellows with their advisors are the standard to monitor achievement of goals. These plans are designed to foster investigation of the various training opportunities available within a flexible and developing career path. Fellows write a plan describing how their career goals will be achieved through their learning experience in the department. New postdoctoral fellows write their plans during the first quarter of each academic year. Continuing fellows write their plans in June. The plan contains general goals to be attained during their entire experience at the Department of Mental Health; specific concrete objectives including specifiable products, so that it can be readily determined if the objectives are met; and methods and strategies for reaching the objectives. The plans include a schedule for the year with projected dates for completion of objectives. Fellows are encouraged to gain theory-building and research methods skills through graduate courses taken with the Arts and Sciences faculty, in psychiatry, or in the neurosciences in sister
departments in the School of Public Health and in the Medical School. Courses at all campuses have been freely used by prevention science fellows.

5. Trainee Candidates (See Tables 5a, 5b, 5c, 6 and 7)

Recruitment. The general recruitment program is built on a number of relationships across institutions through personal contact and letters, and has been additionally promoted through advertising in a variety of professional publications, with specific mention of minorities and women. The Department has advertised for candidates in national journals and professional society publications such as the APA Monitor and the APS Observer, and websites provided by the Society for Prevention Research and the American Statistical Association. In addition, personal letters are sent to chairpersons of departments of psychiatry, economics, biostatistics, and psychology to nominate candidates for our program. We continue to take advantage of our multidisciplinary faculty to recruit qualified candidates. The Department of Mental Health also recruits at the annual meetings of the American Public Health Association, the American Psychiatric Association, the American Psychological Association, the American Psychological Society, the American Sociological Society, the American Academy of Child and Adolescent Psychiatry, the American Statistical Association, and the Society for Prevention Research. Special recruiting procedures have been developed for methodologists interested in prevention, which include the use of appropriate list servers, for example, SEMNET and Multilevel Net. In addition, we use similar procedures for recruiting candidates with economic backgrounds.

The department has an admissions committee to oversee the admissions process. Rating sheets for each applicant are circulated to each member of the admissions committee. Admissions decisions are made collectively at an admissions committee meeting, followed by decisions about funding, which are made by the Directors of the Training Programs in consultation with the entire department.

For the two remaining 2006-07 year slots, we have a strong pool of candidates with backgrounds in statistical methods. The candidates include, one of Dr. Muthen's current graduate students, Karen Nylund, a student of Dr. Andrea Hussong's at the University of North Carolina, Laura Feagans Gould, a student of Dr. David Mackinnon's at Arizona State University, Chondra Lockwood, and Anita Krishnan, a student of Dr. Jeanne Brooks-Gunn at Columbia University.

C. Recruitment of Individuals from Under Represented Racial and Ethnic Groups

History and Achievements (See Table 8). Over the last five years, over 40% of our fellows have been from under represented ethnic minority populations. More specifically, of the 16 fellows we have trained since 2001, 7 have been under represented minority fellows (Drs. Sandra Barrueco (04-05), Jorieile Brown (01-02), Jennifer Brown (02-03), Karren Campbell (03-04), Warren Rhodes (04-05), Peter Toynibo (04-06), and Carmen Valdez (04-06)). Of which, two were Hispanic-American (Drs. Barrueco and Valdez) and 5 were African-Americans. Drs. Sandra Barrueco, Jorieile Brown, and Karren Campbell left the fellowship after one year to capitalize on job offers that included a tenure track Assistant Professor position in the Department of Psychology at Catholic University for Dr. Barrueco, a Research Scientist position with the Pacific Institute for Research & Evaluation for Dr. Campbell, and an Assistant Research
Scientist position at Morgan State University for Dr. Jorielle Brown, which she left last fall after accepting a position as a health scientist administrator with the Substance Abuse Mental Health Services Administration. Dr. Valdez is about to complete the 2nd year of the fellowship and recently accepted a tenure track Assistant Professor position at the University of Wisconsin, Madison, in the Department of Counseling Psychology. Dr. Jennifer Brown is now a Clinical Fellow in the Department of Pediatrics of Maryland and co-directs a non-profit foundation in Baltimore that supports research and intervention with economically-disadvantaged children and families. Dr. Rhodes returned to his position as Professor of Psychology at Morgan State University where he directs the Morgan State Undergraduate Prevention Science Training Program, which is funded by NIH and NIMH and includes Drs. Ialongo and Cooley as training grant faculty who mentor Morgan State University trainees that elect to work on their research with them as part of their required field placement. Dr. Rhodes and his trainees continue to collaborate with Drs. Ialongo, Petras, Green and Lambert around the analyses of the JHU PIRC data. When he completes his fellowship at the end of June, Dr. Toyinbo, a medical doctor by training, has decided to pursue a Ph.D. in Biostatistics at the University of South Florida under the mentorship of Dr. Hendricks Brown, who has been his primary mentor during his fellowship.

As noted above, Dr. Michelle Cooley is a minority faculty member in the department of Mental Health, who plays a significant role in the recruitment of minority candidates and their mentoring as indicated above. Dr. Cooley, along with Dr. Lambert (a former minority fellow and now an affiliated training grant faculty member), are actively participating with trainees in the research workgroups described above.

**Proposed Plans.** In addition to our efforts to locate qualified minority candidates through professional contacts, letters, and advertising, The Johns Hopkins Bloomberg School of Public Health Admissions office regularly sends us applicants from the Minority Student Locator. The application fee is waived for all applicants who apply through the locator. The self-reported backgrounds used are Native American or Alaskan Native, Black or African-American, Mexican American or Chicano, Puerto Rican, and Other Hispanic or Latin American.

In general, the Department of Mental Health, and the Prevention Research Training program, benefit from efforts by the School of Public Health in recruiting minority students and fellows. Although what is described below largely centers on pre-doctoral level recruitment, it serves to demonstrate the School's commitment to the recruitment of under represented ethnic minorities and their success in achieving their academic and research goals. More specifically, the School maintains a Diversity Office to encourage recruitment and academic success by minorities in our student body. In 2000, the Association of Schools of Public Health Diversity Committee (previously called the Minority Council) established minority recruitment goals that were reflective of the US minority population. A new term, URM (underrepresented minority) began to be used at the federal level and put into minority recruitment language. URMs were defined as African Americans, Hispanics/Latinos, Native Americans and Natives of Alaska, and Pacific Islanders. For many years, JHSPH had provided two years of support (tuition and a stipend) to two students annually, targeted for minority students or non-minority students with a demonstrated commitment to minority health issues. Beginning with the 2003-04 academic year, each of the nine departments could nominate two accepted outstanding applicants for this award. Up to eighteen scholarships may be awarded per academic year. For the past three years, the Department of Mental Health has nominated two applicants from under-represented minority groups for these awards, and they have accepted and attended the School. These awards are for two years of study.
The director of the diversity office makes visits to targeted minority serving institutions where she delivers an overview of JHSPH and its offerings in public health. For example, in Academic Year 2004-2005, visits were made to:

Morgan State University, 5th Annual Science Career Workshop (HBCU), September 16, 2004
Virginia Union University Career Fair (HBCU), September 27, 2004
Johns Hopkins University Fall Career Fair, September 30, 2004
Delaware State University (HBCU), October 7, 2004
Morgan State University Career Fair (HBCU), October 13, 2004
University of Maryland, Baltimore County (UMBC) Career Fair, October 14, 2004
Coppin State College (HBCU), October 15, 2004
University of Maryland, Baltimore County (UMBC), Faculty Presentation, October 20, 2004
Society for the Advancement of Chicanos and Native Americans in Science Conference, October 21-24, 2004
Hampton University Career Fair (HBCU), October 26, 2004
Penn State University, Health & Human Development School, October 28-29, 2004
JHU Diversity Leadership Council Conference, November 1, 2004
Second Annual Diversity Day at JHSPH, November 5, 2004
American Public Health Conference, November 6-9, 2004
Annual Biomedical Research Conference for Minority Students, November 10-13, 2004
Tuskegee University (HBCU), November 17 & 18, 2004
University of Maryland, Baltimore County (UMBC), December 1, 2004
Johns Hopkins University Minority PreHealth Conference, February 25-26, 2005
University of Maryland, Baltimore County, Faculty Presentation, February 28, 2005
Association of Public Health Laboratories, March 2-4, 2005
University of Maryland, Baltimore County, Faculty Presentation, March 9, 2005
University of Maryland, Baltimore County, Faculty Presentation, March 11, 2005
Villa Julie College, School Fair, March 17, 2005
Association of Minority Health Professions Schools, March 23-25, 2005
Student National Medical Association (SNMA) Conference, March 24-26, 2005
University of Maryland, Baltimore County, Faculty Presentation, March 30, 2005
National Hispanic Medical Association Conference, March 31-April 3, 2005
Ialongo, Nicholas S.

Johns Hopkins School of Medicine Minority Accepted Applicants Weekend, April, 2005

The Morehouse Public Health Awareness Week Conference, April 2005

University of Maryland, Baltimore County, Faculty Presentation, April 18, 2005

The School holds a Diversity Day to invite students enrolled in special honors programs from academic areas that would naturally feed into public health, and these students would come from the 27 colleges and universities in Maryland. Each department was represented by the Chair or a representative and each reviewed the respective department’s research and degree offerings. A luncheon was provided with a guest speaker and panel.

The Diversity Office works with different student groups to enrich the multicultural environment of the school. National Hispanic Heritage Month and National American Indian Heritage Month were celebrated during the fall 2002, 2003, 2004 and 2005. The Latino Student Group worked with the Student Diversity Office and sponsored a salsa party and seminars. The Native American Circle student group and the Student Diversity Office sponsored a variety of events and seminars during the month of November. The Student Diversity Office worked with the Multicultural Alliance (MISA) student group and the African Public Health Network (APHN) to sponsor Black History Month activities. The old MISA group reorganized to become the Black Student Organization during the spring 2005 and modified in the 2005-06 academic year to become the Black Graduate Student Organization. Many activities are traditionally planned for Black History Month (February).

The School is striving to achieve parity with the under-represented minority groups in the general population. The health disparities are greatest among the US under-represented minority groups. We believe by training more public health professionals from those groups will help alleviate some of those disparities.

D. PLAN FOR INSTRUCTION IN THE RESPONSIBLE CONDUCT OF RESEARCH

All trainees are required to take the JHU Bloomberg School of Public Health’s course in Research Ethics (550.860) designed to inform students as to the responsible conduct of research. Issues of research ethics, academic ethics, data management, data ownership, guidelines of professional conduct, research, fraud, academic misconduct, and conflict of interest are discussed. In addition, the course educates students as to the federal and institutional guidelines related to research using human and animal subjects. Specific topics include case studies of ethical issues involving vulnerable subjects in research, confidentiality, the Institutional Review Board (IRB), and the Animal Care and Use Committee (ACUC). The course offered fulfills the requirement of all research students for a course in responsible conduct of research.

E. PROGRESS REPORT (See Tables 9 & 10)

The training program began slowly in the late 1980’s and evolved as the field of prevention research and its structure has emerged over the last decade. Early on, the fellows recruited into prevention science were harder to find and recruit in our experience. The training was primarily based within the early planning and implementing of the first generation.
of JHU PIRC prevention research trials. The earlier period was marked by the development of new concepts and methods including the nature of controls, for example, whether matching schools or random assignment of children to control or intervention classrooms within intervention schools was more effective. The integration of developmental and epidemiological modeling of risk, the development of epidemiologically applicable multistage measures and sampling, and the design of precisely targeted interventions were all early tasks, as were the problems of developing analytic methods to solve problems of growth trajectories and analyzing impact. The design of prevention trials was itself a matter of experimental consideration. As experience was gained and shared across prevention research sites, the potential for careers in prevention science became more broadly accepted, and now the momentum is much more clearly accelerating. The fellows over the last 5 years were much easier to find and numbers of highly promising future prevention scientists much greater.

As can be seen in Tables 9 and 10, approximately 1/2 of the trainees who came into the program at Levels 0-3 over the last 10 years have gone on to either tenure (Drs. Barrueco, Brodsky, Indurkhya, Jo, Petras, Schaeffer, & Valdez) on research scientist/associate (Buckley, Campbell, track positions in major research universities or not for profit and federal research institutions (Pacific Institute for Research in Evaluation, Westat, and the Department of Education's Institute for Educational Science). About a ¼ of those have been from underrepresented minority populations. Two African-American trainees went on to academic positions with historically black universities (Drs. Mensca-Murray & Van Horn) and a third African-American trainee went on to take a health scientist research administrator position with the Substance Abuse Mental Health Services Administration. Two of our trainees have received NIH funding (Drs. Indurkhya and Jo) as PIs and 4 trainees (Drs. Petras, Rhodes, Schaeffer and Valdez) are preparing NIH grants for submission. Our trainees over the past 10 years have produced over 100 peer reviewed journal publications during and after their fellowships.

Over the last 15 years, cross-site collaborative arrangements, largely via the PSMG and Drs. Brown & Muthen, took on increasing importance, and the trainees are in almost daily if not weekly collaborative communication with Drs. Brown & Muthen and their fellows and pre-docs. In the next five years we will maintain those cross-site applications and expand them when applicable. The emphasis on cross-site collaboration is in keeping with the fact that prevention science increasingly requires multi-site replication studies and shared data.

Over the next 5 years, Drs. Cooley and Lambert will continue to provide expertise in the study of community violence and its impact on the psychological well-being of children. Dr. Salkever will continue to lend expertise in the area of econometric modeling and economic analysis models of prevention over the next 5 years. When the collection of DNA from the 2nd generation JHU PIRC participants is completed in the next year, the future cohorts of trainees will have the opportunity to study the contributions of genes to variation in developmental and intervention outcomes.

Dr. Kellam’s funded NIDA grant should and Dr. Ialongo’s Center for Prevention and Early Intervention should continue to provide the next cohorts of trainees with an opportunity to be part of the team that designs, implements, and evaluates the current and next generation of preventive intervention trials in the Baltimore city public schools. Interested trainees will also receive mentoring from Dr. Kellam around the community-based building necessary for such school-based interventions.
Peer Reviewed Publications of Postdoctoral Fellows Funded Over the Last Ten Years by the Prevention Research Training Grant or Via Supplements

Sandra Barrueco, Ph.D.


Anne E. Brodsky, Ph.D.


Ialongo, Nicholas S.


**Jorielle R. Brown, Ph.D.**


**Louis Brown, Ph.D.**


**Jacqueline A. Buckley, Ph.D.**


**Karren D. M. Campbell, Ph.D.**


Mary Diane Clark, Ph.D.


Katherine DeVet, Ph.D.


Kerry Green


Ron Holtzman, Ph.D.


**Alka Indurkhyya**


**Booil Jo, Ph.D.**


**Katherine E. Masyn, Ph.D.**


**Beth McCreary, Ph.D.**


Ialongo, Nicholas S.


**Amy L. Koenig-McNaught, Ph.D.**


**Rolande Merisca-Murray, Ph.D.**


Bybee, Jane; Zigler, Edward; Berliner, Dana; **Merisca, Rolande** (1996). Guilt, guilt-evoking
Ialongo, Nicholas S.


**Jean Oggins, Ph.D.**


**Hanno Petras, Ph.D.**


Ialongo, Nicholas S.


**Wendy M. Reinke, Ph.D.**


**Reinke, W.M. & Lewis-Palmer, T. (in press).** Improving classroom management through feedback and collaboration in elementary schools. *Principal*


**Warren Rhodes, Ph.D.**


**Cindy Schaeffer, Ph.D.**

**Schaeffer, C. M.; Borduin, C. M. (2005).** Long-Term Follow-Up to a Randomized Clinical Trial of Multisystemic Therapy With Serious and Violent Juvenile Offenders . *Journal of Consulting and Clinical Psychology, 73,* 445-453.


Kristen Leigh Schmidt


Edie Sears, Ph.D.


Peggy Thoits, Ph.D.


Peter Toycinbo, M.D.


Carmen Valdez, Ph.D.


Katherine Wilcox-Doyle, Ph.D.


Ialongo, Nicholas S.


**Yolanda Yan Horn**


**F. HUMAN SUBJECTS (See Table 11)** Responsible scientific conduct

CHR #: .33.92.05.06.A
Prevention Research Training Program
IRB Approval as Research Training Grant, May 11, 1992

Individual research projects involving human subjects will be submitted and reviewed separately.

**G. VERTEBRATE ANIMALS**
NA

**H. Consortium/Contractual Arrangements**
NA

**Literature Cited**


