# Longitudinal Studies in Child Abuse and Neglect

# Grant # 90-CA-1678

# Final Report to the Office of Child Abuse and Neglect

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**The Final Funding Cycle of the LONGSCAN Coordinating Center**

**September 30, 2005 – September 29, 2012**


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## EXECUTIVE SUMMARY

The LONGSCAN (Longitudinal Studies in Child Abuse and Neglect) Consortium has completed 22 years. This report summarizes progress made in the last seven (2005-2012). The study continues to be one of the most remarkable child maltreatment studies ever undertaken. During the last six years the oldest children reached their 25th birthdays while the youngest children are now eligible for the 18 year-old interview.

The age 14, 16, and 18 interviews were developed in the previous grant period (2000-2005). Each of these interviews were developed for confidential administration with computer programming needed to accommodate site specific differences in which children might have to be reported to authorities, or their caregivers notified for concerns about mental health. In addition, the Coordinating Center has developed and fielded the data retrieval processes for these instruments. Data are retrieved quarterly from each of the sites, cleaned, checked, and discrepancies sent back to the sites for adjudication. This interactive process has been continuous throughout all seven years. Administration manuals and data dictionaries for each of the interview protocols have been developed. These materials have been put on the study website for LONGSCAN investigators and others ( http://www.unc.edu/depts/sph/longscan/ ). Datasets have been made available to all site investigators twice a year in the normal conduct of business; and as requested by individual investigators when needed. The Coordinating Center has also organized and directed a minimum of three meetings of the LONGSCAN sites each year. Over the past seven years, the Coordinating Center has deposited data with the National Data Archive on Child Abuse and Neglect (NDACAN) on three separate occasions, and has worked with a number of investigators across the country who are using these data for analyses of their own.

In addition to providing support and statistical resources for each of the LONGSCAN study sites, the Coordinating Center has helped coordinate the writing of papers at all of the sites and performed or verified the statistical analyses for the majority of LONGSCAN papers. Abstracts of papers and of data analyses led by members of the Coordinating Center are featured below in this report.

Overall, data collection for LONGSCAN was not quite complete when funding ended, with multiple data points for each of the study subjects, and the data are of very good quality. The pace of publication for LONGSCAN has been increasing as the data have accumulated, and many of the original questions that generated the study are now addressed. LONGSCAN findings have attracted the attention of the practice and policy-making community, as witnessed by the formal presentations by the LONGSCAN PIs for Casey Family Programs on June 23, 2011, and funding from the Doris Duke Charitable Foundation for the *Science to Practice* project.

# I. BACKGROUND

## A. Introduction, History, and Organization

In response to an initiative by the National Center on Child Abuse and Neglect (NCCAN), the LONGSCAN Consortium was put together between 1989 and 1991 to conduct a multi-site longitudinal investigation of young children identified as maltreated or at risk for maltreatment. This consortium consisted of five independent longitudinal studies designed to explore the antecedents and consequences of maltreatment. The studies were conducted in four primarily urban sites (Baltimore, Chicago, Seattle, and San Diego) and one statewide site that included urban, suburban, and rural communities (North Carolina). The studies were linked through a coordinating center (The University of North Carolina at Chapel Hill) and an agreement to share objectives, measures, data collection strategies, data management, and governance. LONGSCAN was a multidisciplinary collaboration with investigators who are recognized as leaders in child maltreatment research from pediatric medicine, public health, sociology, social work, psychology and biostatistics. This report discusses the activities of the LONGSCAN Coordinating Center for years 16-21 of the project covering September 30, 2005, through September 29, 2012.

LONGSCAN was a set of prospective cohort studies which began with children at age four or younger who were followed at regularly scheduled intervals (ages 4, 6, 8, 10, 12, 14, 16, and 18 years) with extensive face-to-face interviews with the primary caregiver and the child/youth at every data point except age 10, when telephone interviews with the primary caregiver were conducted. Data were also collected from periodic review of Child Protective Services case narratives, Central Registry records, and written teacher reports. At each odd numbered age (5, 7, 9, etc.) there were annual telephone interviews to enhance sample retention and track service utilization, life events, and child behavior problems. The project was designed using ecological-developmental theory (Bronfenbrenner, 1979; 1993). As well, LONGSCAN embraced social development theory as a complementary paradigm for understanding the impact of child maltreatment (Catalano & Hawkins, 1996).

Thorough maltreatment histories are collected from child self-report, parent report, state central registries, and periodic review of case narratives within Child Protective Services records. In an effort to both enhance definitions within the field of child maltreatment, ensure comparability with other large data sets, and to ensure accurate coding of each child's actual maltreatment experience as well as the legally documented maltreatment experience, CPS case narrative records were coded, using official CPS allegations and substantiations, and recoded using a revised version of Barnett, Manly and Cicchetti's (1991) and National Incidence Study (NISII) definitions. The Modified Maltreatment Classification System (MMCS) is available on the LONGSCAN website ( http://www.unc.edu/depts/sph/longscan/ ).

LONGSCAN's accomplishments include its governance and publications agreements; committee and topic-specific workgroups comprised of members from each of the five sites; data development, collection, and management protocols; and a history of successful collaboration among investigators. In the first five years of the project, 1435 children were enrolled across the five sites, and baseline data were collected for all participants. When some of the enrolled children's caregivers failed to complete the face to face interview at either age 4 or age 6 years, the final count of enrolled subjects dropped to 1354. During the second five years, extensive follow-up measurement tools were developed, and comprehensive follow-up data were collected

for each child. Age 12 data collection, including child self-report of maltreatment, was completed with the oldest participants at the NC, Seattle, San Diego, and Baltimore sites. The age range of our youth participants is broad, with the oldest currently being 27 years old with the youngest still turning 18. During the final seven years covered by this report, face-to-face interviews at age 18 were fielded, as well as annual contact interviews (telephone follow-ups) at age 17. Also during this funding phase LONGSCAN investigators published 57 peer-reviewed articles (plus another four in 2013 and a fifth in press) using LONGSCAN data and six articles are currently in press as funding ends. These research activities will be discussed in more detail as part of this final report.

Throughout this report the names of our LONGSCAN sites will be used as follows:

Baltimore (BA, EA, or East/Eastern)
Chicago (CH, MW, or Midwest/Midwestern)
North Carolina (NC, SO, or South/Southern)
San Diego (SD, SW, or Southwest/Southwestern)
Seattle (SE, NW, or Northwest/Northwestern)

**B. Consortium Structure**

Participation in a multi-site consortium meant that both the Coordinating Center (CC) and the sites have had to negotiate issues related to decreased autonomy in the conceptualization and implementation of individual research studies, and increased time necessary to communicate about and make cross-site decisions regarding common data collection and data analysis and publication protocols. The CC, as the consortium component with the clearest mandate to protect the integrity of the common data set, navigated between competing site needs to help define the most appropriate compromises. The time required for successful coordination of large-scale, collaborative longitudinal research with investigators from varied disciplines was an on-going challenge for the CC. The coordination and staff time necessary to ensure consistency of methods with multiple data points running concurrently across five sites was extensive. The CC investigators dedicated themselves to development and implementation issues over the 22 years, and will continue until the age 18 data become available to the public.

LONGSCAN investigators continue to comprise a cohesive team under new funding support from NIDA, successfully maximizing each member's expertise, trusting members to advocate for site-specific needs, and willing to relinquish autonomous decision-making for the good of the consortium. Fundamental to this process was the development of a Governance Agreement (previously included in the first phase final report and up-dated as recently as 06/24/11) and a Publications Policy (finalized 12/17/98 and previously included in the second phase final report dated and last updated on 06/10/09). Both of these important documents outline and commit investigators to the mutual expectations of consortium participants, including: common goals, measurement, data collection and data handling procedures; group review of proposed publications; opportunity for cross-site collaboration in analyses and dissemination activities; protocols for review and replication of analyses. These agreements will continue to guide common expectations throughout the NIDA-funded follow-up of LONGSCAN subjects.

It was the CC's task to facilitate site adherence to the tasks and timelines necessary to develop each age-specific interview. One of the most challenging aspects of coordinating LONGSCAN was ensuring continuous and timely cross-site participation in all decision-making related to

conceptualization and implementation of the study, and dissemination of study results. For example, age-specific interviews needed to be ready for fielding by the site with the oldest participants four years prior to field entry at the site with the youngest participants. Once interviews were fielded, changes were sometimes requested. It was the CC's responsibility to negotiate these changes to ensure that revisions to protocol content and administration procedures were minimized from the first to last administration across all five sites. This was accomplished through standardized training of coordinators and interviewers; development, maintenance and dissemination of thorough documentation regarding coding, data collection and handling protocols; and as-needed inter-rater reliability checks of data coding procedures. The Audio-Computer Assisted Self Interview (A-CASI) methodology used for all youth respondent interviews starting with Age 12 assured the highest standard for uniformity of data collection across sites. LONGSCAN utilized state-of-the-art interview technology to facilitate ethical and valid data collection procedures.

Thus, through a variety of means and activities, the CC provided leadership and organization to the overarching structure of the consortium. Activities conducted by the CC involve the areas of measurement development and implementation; oversight of data collection, development and maintenance of age-specific data entry systems; assurance of data quality; data processing and distribution; deposit of cross-site data in the National Data Archive on Child Abuse and Neglect (NDACAN); data analyses and manuscript preparation; production and dissemination of research briefs; grant preparation and submission; and tracking of dissemination progress. The CC was also responsible for coordination of communications among members of the consortium, budget development, maintaining contact with sites to monitor progress and provide assistance, training staff in data collection and handling procedures, leading and facilitating the work of cross-site consortium committees, and coordination of consortium-wide meetings. Although the LONGSCAN website (http://www.unc.edu/depts/sph/longscan/ ) was initiated during the second phase of LONGSCAN, during the final seven years the website has been expanded, made more user-friendly, and continues to be widely used by consortium investigators as well as other researchers and child maltreatment professionals around the world. The LONGSCAN website includes both public and internal (i.e., password protected) pages that include information about the study as well as project generated materials (e.g., measure manuals, data dictionaries, works in progress, LONGSCAN policies, etc.). In addition, the internal website houses documentation specific to the design, implementation, and maintenance of the LONGSCAN database management systems, as well as materials necessary for statistical computing.

The CC assumed responsibility for providing training, documentation, and on-going oversight of measurement to assure uniformity across sites for each age-specific interview. The development of new interview protocols involved identifying and researching existing measurement options and developing new instrumentation when necessary, submitting proposals to the CC-led Measures and Executive Committees for approval. Then, once approved, the CC acquired the instruments and/or the documentation necessary for programming the instruments into the data entry system. The CC piloted proposed and new measures and A-CASI/CASI protocols and oversaw piloting at the five sites. The CC also bore responsibility for thorough documentation of the measurement protocols and dissemination of the documents to sites, and to the NDACAN. Background information on the selection and development of measures, scoring protocols, scored data files for use at the sites, scoring manuals, codebooks, and measures manuals that

were distributed to sites and the NDACAN were developed and/or maintained by the CC. The production of the measures manuals involved describing each measure, including both the original authors' version and the measure as implemented by LONGSCAN, generating descriptive statistics, reliability and validity analyses, and summarizing these in the manual. The final Measures Manuals (ages 16 and 18) are being completed for use in the summer 2014 NDACAN summer institute.

### C. Objectives as Stated in the 2005 continuation grant application

*Cross-site Objectives.* The goal of the CC was to initiate and coordinate five separate but overlapping longitudinal studies of the antecedents and consequences of child maltreatment, and the impact of societal intervention with specific reference to outcomes in elementary school years, early adolescence, and late adolescence.

The Phase 4 consortium-wide objectives for LONGSCAN during 2005 through 2012 included:
1) Facilitate cross-site examination of risk or protective factors and child development using the pooled samples, and conduct replications of analyses performed by sites to test the generalizability of conclusions;
2) Complete analyses that will use child/adolescent outcomes to refine definitions of maltreatment;
3) Conduct further analyses of the psychological impact of the different forms of maltreatment;
4) Continue data collection and handling for existing interviews at child ages 12, 14, 16, & 18 years;
5) Complete documentation (including measures manuals, data dictionaries, and website files) for all interview protocols;
6) Archive all data from LONGSCAN at the National Child Abuse & Neglect Data Archive;
7) Nurture new researchers in the field of child maltreatment through the support of post-doctoral programs and other mechanisms; and
8) Complete a minimum of five Coordinating Center-led papers each year addressing major findings of LONGSCAN while collaborating on other scientific papers being led by the individual LONGSCAN sites.

## II. METHODOLOGY

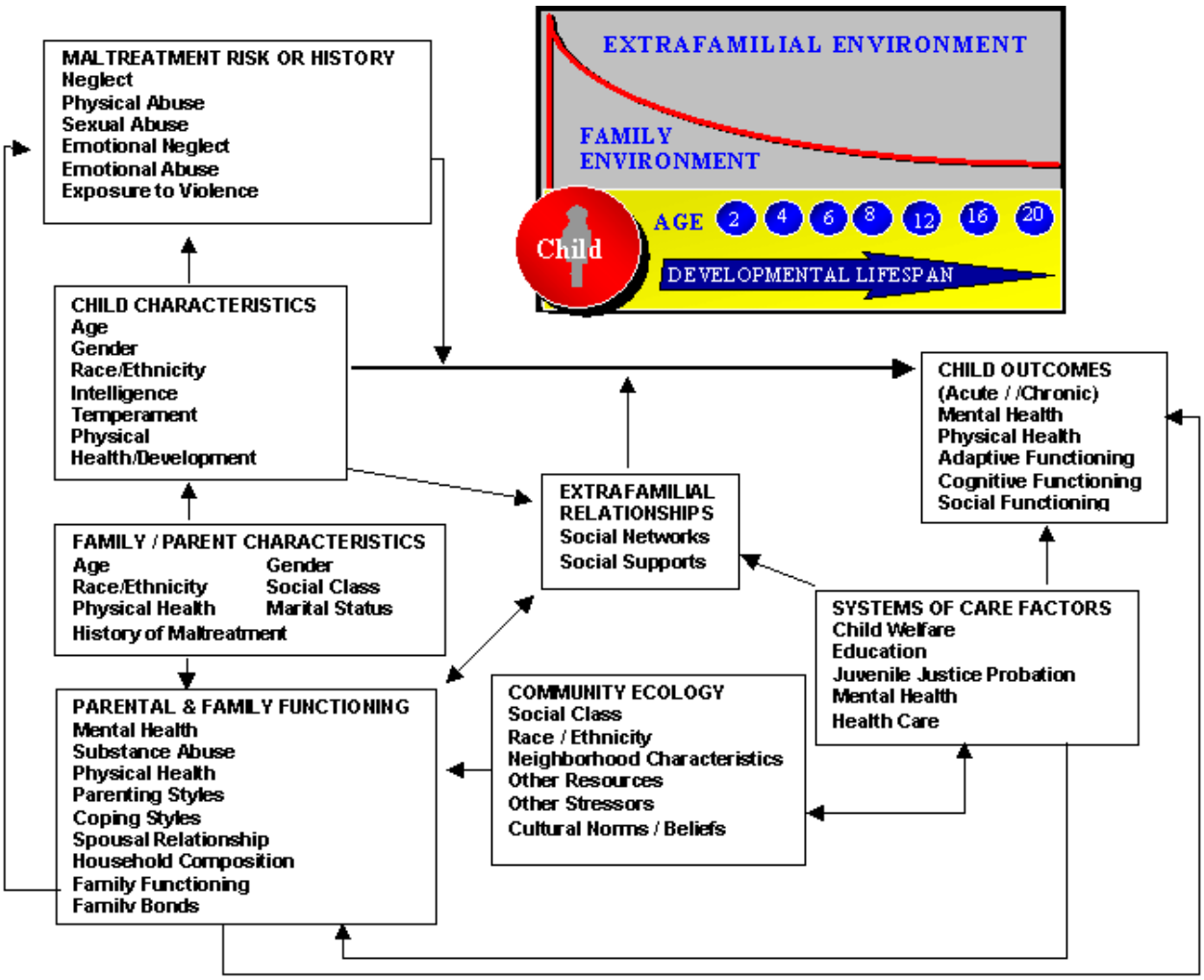
### A. Ecological-Developmental Theory

According to ecological theory, a child develops within a series of multiple, nested social systems beginning with direct interaction with the family and extending through indirect influence from the community, society, and cultural traditions (Bronfenbrenner, 1979; 1993). Much of the research on child development has focused either on the child or the child's proximal environment - the mother - and the corresponding daily activities, roles, expectations, and interpersonal relationships within the family. However, development is also influenced by children's interactions with other caregivers or in other settings (e.g., child care). At broader levels, development may be influenced by systems that do not directly affect the child, including events that influence the family's financial, emotional, or physical status. For example, poverty is frequently linked to maltreatment both through specific parental behavior and through the general neglect that society extends to many children and families (American Humane Association, 1983).

In a similar fashion, religious, cultural, and community-level influences may have an impact on children's opportunities for development-enhancing experiences. A child is not a static entity within his/her ecological milieu but interacts with and influences his/her surroundings. As such, social development is another concept that must be incorporated into maltreatment research (Aber & Zigler, 1981; National Research Council, 1993).

Social development theory (Catalano & Hawkins, 1996) hypothesizes that interaction with others, skills for interaction and involvement, perceived rewards for interaction and involvement with others, attachment and commitment to others, and beliefs in the values of others mediate the influences of individual and social factors on child outcomes. This model uses multiple biological, psychological and social factors at multiple levels in different social domains, that is, within the family, school, peer group and community to predict child outcomes (Catalano & Hawkins, 1996). A child's social ecology changes over time, from complete dependence upon caregivers in infancy to the complex and multiple interactions an adolescent has with family, peers, school and the larger community. With this broadening social ecology also comes an increased ability in the child to shape his or her environment. LONGSCAN's Conceptual Model of Child Development appears in Figure 1.

**Figure 1. LONGSCAN's Conceptual Model of Child Development**




Children's' responses to maltreatment and to intervention vary by age, developmental level, and maltreatment context. For example, Rutter (1983) argues that out-of-home placement can be particularly stressful for children between 6 months and 4 years of age. Before 6 months, children may not have developed attachments and therefore may not experience separation anxiety, while beyond 4 years they may be able to understand the situation and use verbal exchanges or play to deal with their feelings. Many investigators in the field of maltreatment have incorporated developmental level into their research, rather than considering children of all ages as a generic group (Black, Dubowitz, & Harrington, 1994; McGee & Wolfe, 1991; Dodge, Pettit, & Bates, 1994).

## B. Sites and Samples

Samples differ by site and were carefully chosen to vary by levels of exposure to maltreatment, ranging from those with a substantiated early history of abuse and subsequent foster care placement in San Diego, to those in Seattle who have all been reported to DSS but may or may not have been substantiated, to participants in Baltimore, Chicago, and North Carolina, some of whom had no known history of abuse. All children in LONGSCAN were being followed from

the earliest years of life into late adolescence regardless of movements into or out of foster care or other placements. With varying levels of risk and exposure the LONGSCAN sample provides the opportunity for a unique prospective look at maltreatment, or recurring maltreatment, as it occurs across the lifespan.

Salient features of the samples are displayed in Table 1 and are described below. At the most extreme level, the San Diego site focuses exclusively on children who, at a very young age, were removed from their homes and placed into foster care because of substantiated maltreatment. Many of these children had been reunited with their family of origin prior to their entrance into LONGSCAN at age 4.

**Table 1. Brief Description of the LONGSCAN Samples**

| | **Baltimore (n = 282)** | **Chicago (n = 245)** | **North Carolina (n = 243)** | **San Diego (n = 330)** | **Seattle (n = 254)** | **Total (n = 1354)** |
|---|---|---|---|---|---|---|
| *Cohort Birth Year* | 1988-91 | 1991-94 | 1986-87 | 1989-91 | 1988-94 | 1986-94 |
| *Race (%)* | | | | | | |
| African American | 92.9 | 53.5 | 63.0 | 37.6 | 20.5 | 53.3 |
| White | 5.0 | 13.1 | 35.8 | 28.5 | 50.0 | 26.2 |
| Hispanic | 0.4 | 13.9 | 0.0 | 16.7 | 2.8 | 7.2 |
| Mixed | 1.1 | 17.1 | 1.2 | 15.8 | 24.0 | 11.9 |
| Other | 0.7 | 2.4 | 0.0 | 1.5 | 2.8 | 1.5 |
| *Gender (%)* | | | | | | |
| Male | 52.1 | 46.9 | 45.3 | 47.3 | 50.8 | 48.5 |
| Female | 47.9 | 53.1 | 54.7 | 52.7 | 49.2 | 51.5 |
| *Maltreatment Status at Recruitment* (%)* | | | | | | |
| Reported | 24.1 | 60.8 | 34.2 | 100 | 100 | 65.3 |
| At Risk | 36.5 | -- | 56.8 | -- | -- | 17.8 |
| Control | 39.4 | 39.2 | 9.0 | -- | -- | 16.9 |

* The sample of children varies systematically within site with regard to risk status and exposure to maltreatment.

At the Seattle site, all children had been reported to CPS and were believed to be at moderate risk for subsequent maltreatment prior to recruitment. This sample was divided into two groups: those with substantiated reports of maltreatment, and those whose reports were not substantiated.

At the Chicago site, about two-thirds of the sample of very young infants was recruited from families reported to CPS, with half of those receiving comprehensive services and half receiving only CPS intervention. The other third of the sample is comprised of neighborhood controls.

The North Carolina and Baltimore sites were at the lesser extreme. The North Carolina sample was originally recruited at birth based upon eligibility for the statewide "High Priority Infant Identification and Tracking Program". A subset of children from the previous North Carolina study were recruited at age 4 for LONGSCAN, and the sample was selected from the original by

matching non-reported children to reported children at a 2:1 ratio. Thus, at the time of recruitment into LONGSCAN, one-third of the North Carolina sample had been reported. The Baltimore sample includes low-income children recruited into an earlier study from primary health care clinics, independent of their involvement with CPS.

The decision to enroll existing cohorts shortened the time to results in the study and saved considerable money. However, it also resulted in a sample that was not representative of all U.S. children and was spread across an eight year age span as new cohorts were established by the five local sites. Nevertheless, our broad sample provides us with the chance to examine the impact of a range of services provided to maltreated and at-risk children, among them standard CPS care versus comprehensive services in Chicago, a range of foster care in San Diego, and risk assessment in CPS decision making in Seattle.

During the early years of LONGSCAN, the original N of the cross-site sample was reported as 1435. Because three of the five sites initially recruited participants younger than Age 4, some of the participants initially considered to be in the cross-site sample were found not to have completed the baseline interview protocol at Age 4 or Age 6. In September, 2002, the Executive Committee voted to define the cross-site LONGSCAN sample to include only those participants who had data for an Age 4 or an Age 6 interview. This decision resulted in the cross-site sample changing from 1435 to 1354 as participants at the San Diego, Chicago, North Carolina and Seattle sites were dropped because they had not completed the LONGSCAN cross-site protocol at either Age 4 or Age 6. Data from the dropped participants may still be used in site-specific analyses at those four sites. Specific analyses were conducted to examine the effects of this decision on some key variables for the total sample, as well as by site. (See Appendix C.) At the time of that analysis, October 2002, all sites, with the exception of the Chicago site, had completed all age 8 interviews. Attrition was examined by interview. Specifically, age 4 variables were examined for the group present at 4 but not at 6 and the group present at 4 and 6. Age 6 variables were examined for the group present at 6 but not 8 and the group present at 6 and 8. Finally, variables closest to the age 8 interview were examined for the group that was present at 'baseline' but not at age 8, and the group present at 'baseline' and age 8. Please note that for these analyses, baseline refers to an age 4 or 6 interview. Chicago data are not represented in the 6 to 8 analyses or the baseline to 8 analyses.

The variables examined included Gender, Race, Family Income, Parent Education, CBCL, Vineland, Functional Social Support of the Caregiver, and Maternal Depression. Chi-Square analyses and t-tests were conducted. These variables are often used to quantify the demographic characteristics of the sample and include some key outcome variables typically used in analyses. Overall, only one significant finding was detected with regard to the total sample. Specifically, the group present at baseline and at visit 8 had higher family incomes compared to the sample present at baseline but not at age 8. Attrition does not appear to be a big concern with regard to the total sample. Some within site differences were detected and are described in Table 2. The Gender, Maternal Depression, and Vineland Screener variables were not significantly affected by attrition.

### C. Statistical Considerations

The LONGSCAN database is complex and challenging since it consists of repeated measures on the same individuals and the cohorts come from five distinct purposive convenience samples across a spectrum of risk for maltreatment. The repeated measurements, as with all longitudinal studies, leads to correlated data resulting in the violation of the assumption of independent observations required for most statistical analyses. Also, as with all longitudinal data, there is attrition, missing data at one or more time points for some respondents, and censored information. The data are also irregularly timed because of the span in ages of the children (8 years), variation in the age at enrollment in the study, and variation in the children's ages at each interview and the intervals between interviews. In addition, as the participants age, the instruments to measure particular constructs must change over time to accommodate developmental phases. Furthermore, the sampling procedures for the cohorts were complex and varied across sites. These complexities make the dataset uniquely challenging and interesting from a statistical perspective.

**D. Age 18 Measurement Development**

The Coordinating Center, Measures Committee and Principal Investigators developed extensive face-to-face interviews for youth aged 18 and their caregivers during the previous project period. Key outcomes include health status, pregnancy and parenting, health risk (including substance use) and health promotion behaviors, school status, employment status, peer and romantic relationships, delinquency and prosocial behavior and involvement, criminal justice involvement, and mental health status. Both interviews collected extensive self-report of lifetime maltreatment history. At age 18, mental health status was assessed using the Young Adult Diagnostic Interview Schedule for Children, computerized voice version (YA-DISC), as well as the Trauma Symptom Inventory. The majority of these measures are implemented using a project-developed A-CASI system.

Interviews were developed to capture key age-specific youth outcomes and risk and protective factors at each level of the developmental-ecological model. Preference was given in the measures selection process to measures used longitudinally within the LONGSCAN project and to proven standardized instrumentation. Measurement was developed or adapted for LONGSCAN use when existing measurement did not meet the needs of the project. Appendix A lists all measures used at each age-related data-collection contact. The numbers of face-to-face interviews collected during this funding period are presented in Table 2, and annual contact interviews (ACI's) collected are presented in Table 3.

**Table 2. Frequency of face-to-face interviews collected during this funding period**

| | Child Interview | | | | | | Caregiver Interview | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Yr 1 | Yr 2 | Yr 3 | Yr 4 | Yr 5 | Yr 6 | Yr 1 | Yr 2 | Yr 3 | Yr 4 | Yr5 | Yr 6 |
| Visit 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Visit 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Visit 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Visit 12 | 22 | 13 | 1 | 1 | 0 | 0 | 33 | 20 | 1 | 0 | 0 | 0 |
| Visit 14 | 121 | 65 | 43 | 14 | 1 | 0 | 144 | 70 | 42 | 15 | 0 | 0 |
| Visit 16 | 102 | 178 | 156 | 52 | 43 | 17 | 109 | 189 | 167 | 51 | 43 | 17 |
| Visit 18 | 55 | 96 | 142 | 242 | 169 | 45 | 30 | 35 | 89 | 153 | 128 | 43 |
| Total | 300 | 352 | 342 | 309 | 213 | 62 | 316 | 314 | 299 | 219 | 171 | 60 |

**Table 3. Frequency of annual telephone contact interviews collected during the period 2006-2011**

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|
| Visit 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Visit 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Visit 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| Visit 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| Visit 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| Visit 9 | 0 | 0 | 0 | 0 | 0 | 0 |
| Visit 10 | 1 | 0 | 0 | 0 | 0 | 0 |
| Visit 11 | 13 | 1 | 0 | 0 | 0 | 0 |
| Visit 13 | 36 | 48 | 17 | 0 | 0 | 0 |
| Visit 15 | 109 | 106 | 58 | 37 | 17 | 1 |
| Visit 17 | 66 | 40 | 85 | 88 | 54 | 31 |
| Total | 225 | 195 | 160 | 125 | 71 | 32 |

*Official CPS Maltreatment History.* The review and coding of Child Protective Services (CPS) maltreatment narratives was completed on a regular basis and included data abstracted from county level files. Trained abstractors coded relevant information onto the maltreatment data collection form. Each form contained data from a single referral to CPS and the related set of findings. During this funding period, an additional 162 CPS reports were added to the cross-site LONGSCAN database. Seattle had 68 new CPS reports while the San Diego site had 67, Chicago had 25, and Baltimore and North Carolina each had one new CPS report. Table 4 provides the frequencies of allegation or substantiations for the LONGSCAN baseline sample,

by maltreatment subtype and time frame for when the allegation/substantiation of abuse occurred.

**Table 4. Frequency of LONGSCAN participants with a record including an allegation or substantiation for specific maltreatment types (N = 1354)**

| | Birth – 4 | Age 4 – 6 | Age 6 – 8 | Age 8 – 12 | Age 12 – 14 | Age 14 – 16 | Age 16 – 18 |
|---|---|---|---|---|---|---|---|
| *Allegations* | | | | | | | |
| Any Record | 754 (55.7) | 303 (22.4) | 272 (20.1) | 353 (26.1) | 172(12.7) | 156 (11.5) | 100 (7.4) |
| Physical Abuse | 267 (19.7) | 109 (8.1) | 112 (8.3) | 163 (12.0) | 82 (6.1) | 62 (4.6) | 32 (2.4) |
| Sexual Abuse | 91 (6.7) | 55 (4.1) | 38 (2.8) | 68 (5.0) | 23 (1.7) | 36 (2.7) | 21 (1.6) |
| Neglect | 637 (47.1) | 207 (15.3) | 173 (12.8) | 227 (16.8) | 90 (6.6) | 77 (5.7) | 48 (3.6) |
| Emotional | 287 (21.2) | 93 (6.9) | 101 (7.5) | 147 (10.9) | 67 (4.9) | 63 (4.6) | 26 (1.9) |
| Moral/Legal | 68 (5.0) | 17 (1.3) | 20 (1.5) | 33 (2.4) | 12 (0.9) | 22 (1.6) | 16 (1.2) |
| Educational | 0 (0.0) | 20 (1.5) | 32 (2.4) | 38 (2.8) | 18 (1.3) | 14 (1.0) | 2 (0.1) |
| Drugs/Alcohol | 392 (28.9) | 115 (8.5) | 112 (8.1) | 149 (11.0) | 51 (3.8) | 51 (3.8) | 32 (2.4) |
| *Substantiations* | | | | | | | |
| Any Record | 562 (41.5) | 128 (9.4) | 98 (7.2) | 139 (10.3) | 32 (2.4) | 35 (2.6) | 1 (1.6) |
| Physical Abuse | 104 (7.7) | 30 (2.2) | 32 (2.4) | 36 (2.7) | 11 (0.8) | 11 (0.8) | 3 (0.2) |
| Sexual Abuse | 37 (2.7) | 17 (1.3) | 13 (1.0) | 16 (1.2) | 2 (0.1) | 6 (0.4) | 5 (0.4) |
| Neglect | 437 (32.3) | 92 (6.8) | 60 (4.4) | 84 (6.2) | 15 (1.1) | 16 (1.2) | 6 (0.4) |
| Emotional | 145 (107) | 29 (2.1) | 27 (2.0) | 46 (3.4) | 8 (0.6) | 10 (0.7) | 7 (0.5) |
| Moral/Legal | 23 (1.7) | 6 (0.4) | 4 (0.3) | 8 (0.6) | 0 (0.0) | 0 (0.0) | 3 (0.2) |
| Educational | 2 (0.1) | 6 (0.4) | 9 (0.7) | 11 (0.8) | 1 (0.1) | 1 (0.1) | 2 (0.1) |
| Drugs/Alcohol | 241 (17.8) | 31 (2.3) | 33 (2.4) | 49 (3.6) | 11 (0.8) | 6 (0.4) | 4 (0.3) |

Note. Maltreatment was categorized with the Modified Maltreatment Coding System (English et al., 1997).

*Age 18 Self-Report of Abuse.* At the age 18 interview, adolescents were asked twelve behavioral stem items on their experiences of physically abusive or harsh physical behaviors by parents or guardians, since birth. Positive endorsements triggered follow-up items assessing frequency of occurrence, perpetrator, and injury outcomes. An additional set of follow-up items was included to assess the adolescent's feelings of self-attribution or responsibility for physical abuse perpetrated by specific perpetrators (i.e., biological parent), and the level of impact the abuse has had on the adolescent. Table 5 below provides the frequency of adolescents who reportedly experience one or more acts of physical abuse over their lifetime. Roughly 43% of adolescents reported some form of physical abuse by a parent or guardian between birth and age 18 (largest portion of abuse occurring in the 6-12 year time frame). More information about this measure can be found on the 5$^{th}$ volume of the LONGSCAN measure manuals (Knight et al., 2011).

**Table 5. Frequencies of Child Self-report of Physical Abuse at the Age 18 Interview**

| *Child Self-report of Physical Abuse* | | Time Frame for when Physical Abuse Occurred | | | | |
|---|---|---|---|---|---|---|
| | | < = 5 yrs old | 6 - 12 yrs old | 13-16 yrs old | >=17yrs old | Ever (0-18 yrs) |
| | N | %Abused (n) | %Abused (n) | %Abused (n) | %Abused (n) | %Abused (n) |
| *Overall* | 798 | 9.9 (79) | 21.6 (172) | 13.9 (111) | 4.6 (37) | 42.9 (342) |
| *Child's Gender* | | | | | | |
| Male | 358 | 10.3 (37) | 22.1 (79) | 16.2 (58) | 6.4 (23) | 43.0 (154) |
| Female | 440 | 9.6 (42) | 21.1 (93) | 12.1 (53) | 3.2 (14) | 42.7 (188) |
| *Child's Race* | | | | | | |
| White | 206 | 12.6 (26) | 24.3 (50) | 14.1 (29) | 5.3 (11) | 45.2 (93) |
| African American | 453 | 7.7 (35) | 19.6 (89) | 13.5 (61) | 4.2 (19) | 40.6 (184) |
| Other | 138 | 13.0 (18) | 23.9 (33) | 15.2 (21) | 5.1 (7) | 47.1 (65) |
| *Site* | | | | | | |
| Baltimore | 197 | 4.6 (9) | 15.2 (30) | 11.7 (23) | 2.5 (5) | 33.5 (66) |
| Chicago | 81 | 6.2 (5) | 16.1 (13) | 11.1 (9) | 4.9 (4) | 37.0 (30) |
| North Carolina | 159 | 11.3 (18) | 24.5 (39) | 17.6 (28) | 6.3 (10) | 45.9 (73) |
| San Diego | 185 | 15.7 (29) | 25.9 (48) | 15.1 (28) | 7.0 (13) | 51.9 (96) |
| Seattle | 176 | 10.2 (18) | 23.9 (42) | 13.1 (23) | 2.8 (5) | 43.7 (77) |

At the age 18 interview, adolescents were asked eleven behavioral stem items on their experiences of sexual abuse by their parents or guardians, since birth. Four of these items have gender-specific wording for boys or girls. After an adolescent has completed all appropriate stem items, follow-up items assess the frequency of occurrence, perpetrator(s), and items assessing the adolescent's feelings of self-attribution or responsibility for sexual abuse perpetrated by specific perpetrators (e.g., biological father), and the level of impact s/he feels the sexual abuse has caused. Table 6 below provides the frequency of adolescents who reportedly experience one or more acts of sexual abuse over their lifetime. Seven percent of adolescents reported some form of sexual abuse by a parent or guardian between birth and age 18. Since birth, girls reported more sexual abuse (11%) than boys (4%), with a majority of the sexual abuse occurring early in life (i.e., <= 5 yrs old). For more information about this age 18 sexual abuse measure, see the 5$^{th}$ volume of the LONGSCAN measure manuals (Knight et al., 2011).

**Table 6. Frequencies of Child Self-report of Sexual Abuse at the Age 18 Interview**

| | | Time Frame for when Sexual Abuse Occurred | | | | |
|---|---|---|---|---|---|---|
| | | < = 5 yrs old | 6 - 12 yrs old | 13-16 yrs old | >=17yrs old | Ever (0-18 yrs) |
| Sexual Abuse | N | %Abused (n) | %Abused (n) | %Abused (n) | %Abused (n) | %Abused (n) |
| *Overall* | 792 | 3.0 (24) | 3.3 (26) | 2.4 (19) | 1.4 (11) | 7.4 (59) |
| *Child's Gender* | | | | | | |
| Male | 357 | 1.1 (4) | 1.1 (4) | 1.1 (4) | 1.1 (4) | 3.6 (13) |
| Female | 435 | 4.6 (20) | 5.1 (22) | 3.4 (15) | 1.6 (7) | 10.6 (46) |
| *Child's Race* | | | | | | |
| White | 204 | 3.9 (8) | 4.9 (10) | 2.9 (6) | 1.5 (3) | 8.8 (18) |
| African American | 450 | 1.6 (7) | 2.0 (9) | 2.0 (9) | 1.6 (7) | 5.8 (26) |
| Other | 137 | 6.6 (9) | 5.1 (7) | 2.9 (4) | 0.7 (1) | 10.9 (15) |
| *Site* | | | | | | |
| Baltimore | 197 | 1.5 (3) | 1.5 (3) | 2.5 (5) | 1.0 (2) | 4.6 (9) |
| Chicago | 80 | 1.2 (1) | 2.5 (2) | 0.0 (0) | 0.0 (0) | 3.7 (3) |
| North Carolina | 259 | 1.9 (3) | 3.1 (5) | 4.4 (7) | 2.5 (4) | 9.4 (15) |
| San Diego | 183 | 4.9 (9) | 2.7 (5) | 2.2 (4) | 1.6 (3) | 7.6 (14) |
| Seattle | 173 | 4.6 (8) | 6.4 (11) | 1.7 (3) | 1.2 (2) | 10.4 (18) |

At the age 18 interview, adolescents were asked twelve behavioral stem items on their experiences of psychological abuse by their parents or guardians, since birth. Positive endorsements triggered follow-up items assessing frequency of occurrence, perpetrator(s), and items assessing the adolescent's feelings of self attribution or responsibility for psychological abuse perpetrated by specific perpetrators (e.g., biological mother), and the level of impact s/he feels the psychological abuse has caused. Table 7 below provides the frequency of adolescents who reportedly experience one or more acts of psychological abuse over their lifetime. Thirty-eight percent of adolescents reported some form of psychological abuse by a parent or guardian between birth and age 18. Since birth, girls reported slightly more psychological abuse (40%) than boys (36%). For more information about this measure, see the 5th volume of the LONGSCAN measure manuals (Knight et al., 2011).

**Table 7. Frequencies of Child Self-report of Psychological Abuse at the Age 18 Interview**

| | | Time Frame for when Psychological Abuse Occurred | | | | |
|---|---|---|---|---|---|---|
| Psychological Abuse | N | < = 5 yrs old %Abused (n) | 6 - 12 yrs old %Abused (n) | 13-16 yrs old %Abused (n) | >=17yrs old %Abused (n) | Ever (0-18 yrs) %Abused (n) |
| *Overall* | 791 | 7.2 (57) | 13.3 (105) | 19.1 (151) | 15.4 (122) | 37.9 (300) |
| *Child's Gender* | | | | | | |
| Male | 355 | 5.1 (18) | 9.9 (35) | 14.6 (52) | 14.6 (52) | 35.5 (126) |
| Female | 436 | 8.9 (39) | 16.1 (70) | 22.7 (99) | 16.1 (70) | 39.9 (174) |
| *Child's Race* | | | | | | |
| White | 205 | 10.2 (21) | 17.6 (36) | 21.5 (44) | 22.9 (47) | 48.3 (99) |
| African American | 448 | 5.4 (24) | 11.2 (50) | 16.7 (75) | 10.3 (46) | 31.0 (139) |
| Other | 137 | 8.8 (12) | 13.9 (19) | 23.4 (32) | 21.2 (29) | 45.3 (62) |
| *Site* | | | | | | |
| Baltimore | 195 | 2.1 (4) | 8.7 (17) | 17.4 (34) | 8.2 (16) | 26.7 (52) |
| Chicago | 80 | 6.2 (5) | 7.5 (6) | 10.0 (8) | 11.2 (9) | 25.0 (20) |
| North Carolina | 158 | 11.4 (18) | 13.9 (22) | 21.5 (34) | 17.1 (27) | 40.5 (64) |
| San Diego | 184 | 9.8 (18) | 18.5 (34) | 22.3 (41) | 20.1 (37) | 47.3 (87) |
| Seattle | 174 | 6.9 (12) | 14.9 (26) | 19.5 (34) | 18.9 (33) | 44.2 (77) |

*Age 18 Self-Report of Neglect.* The self-report measure of neglect presents a special problem. Unlike the three kinds of abuse above, which can be said to occur as discrete incidents, neglect occurs over time and along a continuum. The neglect scales that we have developed so far, using age 12 and 14 data, are continuous measures. For research purposes, therefore, it is not possible to define clear-cut categories of "neglect" and "non-neglect." The work to apply the scales to the age 16 and 18 interviews is ongoing. In conclusion, we have measured self-reported neglect and have developed three scales for different types of neglect with solid psychometrics, but these are continuous, ranging from excellent to grossly inadequate care, and do not lend themselves to presentation in a table. See Dubowitz et al., 2011, for more information. (See Appendix D.)

## E. Training

The Coordinating Center conducted on-going training in LONGSCAN data collection protocols, monitors quality control across sites, and coordinates data collection. Individual interview protocols, including A-CASI or audio computer-assisted interviews, paper and pencil forms, data entry and management systems were all developed and maintained by the CC. Coordinating Center staff also provided cross-site training in all LONGSCAN instrumentation and developed training and documentation specific to each data collection point. Centralized training of project coordinators was conducted at the CC for each major data collection point. Technical assistance including initial certifications of reliability for site interviewers for complex instrumentation, reliability assessments to prevent drift in coding, and final determinations of reliability for any instrument with complex coding (such as the coding of CPS narrative records) were provided on an on-going basis. Inter-rater reliability of LONGSCAN instruments have been assessed periodically and have been found to be robust. The results of a recent cross-site assessment of the consistency of coding maltreatment records are discussed in Section 3 of this report.

Training meetings included interviewers, coordinators, and data management staff from each site and the CC. These interactions provided a continual venue for cross-site checking of standardized data collection and handling procedures, and allowed for a coordinated response to questions regarding data collection and handling which arose after field entry. MMCS training outside of the Consortium are included below.

*Training Meetings held between 2005 and 2009 include:*

| | |
|---|---|
| November 2005 | Modified Maltreatment Classification System (MMCS) Training for Eve G. Spratt, MD, Medical University of South Carolina for her Research Project titled "Neurodevelopmental Biology in Preschool Children" |
| February 2006 | MMCS Training for the EA Site |
| November 2006 | Age 16 Interview Administration Training for the MW Site |
| October 2007 | MMCS Training for Hilary Hodgdon, MA, Temple University for her dissertation research titled: The Effects of Childhood Physical, Sexual, Emotional Abuse and Neglect on Delinquent Behavior in a Sample of Serious Juvenile Defenders funded by OJJDP |
| February 2008 | MMCS Training for the SO Site |
| August 2008 | MMCS Training for the EA Site |
| October 2008 | Age 18 Interview Administration Training for the MW Site |
| October 2008 | Analyzing Development Trajectories – Proc Traj Statistical Analysis Workshop for LONGSCAN investigators and others from UNC-CH and Duke University |
| February 2009 | MMCS Training for the SO Site |
| October 2009 | MMCS Training for the SO Site |

The LONGSCAN Coordinating Center also provided training for faculty, doctoral and post-doctoral graduate students, and other researchers working in the field of child maltreatment research. Training initiatives completed in the final years of LONGSCAN included:

*Career Development Award:*

**Jones, Deborah J., PhD, Professor of Psychology[1]**
**Mentored Public Health Research Scientist Development Award (K01 PS000795):**
**Trajectories of HIV/AIDS Risk Behaviors among Maltreated Youth**
***Awarded to, UNC-Chapel Hill***
***Mentors: Desmond Runyan, M.D., Dr.P.H., Seth Kalichman, Ph.D., & Daniel Nagin, Ph.D.***

The aims of this K01 Award were threefold. First, this K01 provided the opportunity to learn new quantitative methods and to apply these methods to the examination of LONGSCAN data with the aim of identifying trajectories of child maltreatment and the link between trajectories of youth violence exposure and HIV/AIDS risk behaviors, and contextual moderators of these

[1] Dr. Jones was an Assistant Professor at the time the K01 was awarded.

behaviors. These findings, as well as training in program development also afforded by the K01, were used to develop a family focused prevention program targeting the prevention of risky behaviors in youth with maltreatment histories. The program development process included the guidance of mentors, including Dr. Desmond Runyan, as well as leading researchers, clinicians who specialize in child maltreatment, and families of youth with maltreatment histories. The program was piloted with 3 children and their primary caregivers. Families reported very high levels of satisfaction with the program, and increases in knowledge associated with the targeted skill developments areas. Finally, the K01 afforded the opportunity to seek continued external funding for this line of work. Two proposals have been submitted to NIMH and the William T. Grant Foundation; although unsuccessful thus far, the reviews have provided guidance and positive feedback.

It is important to note that this K01 and the accomplishments associated with the aforementioned aims would not have been possible without the support and guidance of the Injury Prevention Research Center (IPRC) at UNC-Chapel Hill and the LONGSCAN Project Principal Investigators and staff. Perhaps most importantly, the IPRC faculty, including LONGSCAN's Dr. Desmond Runyan, sponsored a K01 grant writing group for junior faculty. The K01 had been rigorously reviewed by three senior faculty members numerous times and revised accordingly before it was submitted to the CDC, Given this extensive guidance and feedback, the K01 was funded on its first submission. In addition, as noted above, the first aim of the K01 focused on analysis of the LONGSCAN data. Attending the LONGSCAN multi-site meetings, as well as the LONGSCAN Coordinating Center, bi-weekly writing group meetings, provided unparalleled complementary training in the maltreatment literature and associated methods. Finally, the opportunity to collaborate with the LONGSCAN team has allowed Dr. Jones to heighten the visibility of the products of the work supported by the K01, both with publications in top-tier child psychology journals, as well as presentations at national conferences.

Peer-reviewed Publications:

**Jones, D.J.,** Lewis, T., Litrownik, A., Thompson, R., Proctor, L., Isbell, P., Dubowitz, H., English, D., Jones, B., Nagin, D., & Runyan, D. (2012). Linking childhood sexual abuse and early adolescent risk behavior: the intervening role of internalizing and externalizing problems. *Journal of Abnormal Child Psychology, 41,* 139-150.

**Jones, D.J.,** Runyan, D., Lewis, T., Litrownik, A., Black, M., Wiley, T., English, D., Proctor, L., Jones, B.L., & Nagin, D. (2010). Trajectories of childhood sexual abuse and early adolescent hiv/aids risk behaviors: the role of other maltreatment, witnessed violence, and child gender. *Journal of Clinical Child and Adolescent Psychology, 39,* 667-680.

Peer-reviewed Presentations:

**Jones, D.J.** The Link between Child Maltreatment and the Initiation of Risky Behavior. Carolina Consortium on Human Development. Center for Developmental Science (April 2012).

**Jones, D.J.,** Runyan, D., & Lewis, T. (April, 2009). Trajectories of Violence Exposure and Risky Behaviors among High-Risk Adolescents. Developmental Trajectories of Risk and Protective Factors among High Risk Youth: Findings from LONGSCAN (Chair D.J. Jones).

Paper presented as part of the symposium at the annual meeting of the Society for Research on Child Development. Denver, CO.

**Jones, D.J.,** the LONGSCAN Writing Group, Jones, B.J., & Nagin, D. (March, 2009). Trajectories of Violence Exposure and Youth Risk Behavior. Poster presented at the Society for the Advancement of Violence and Injury Research (SAVIR). Atlanta, GA.

McKee, L.G., & **Jones, D.J.** (2011, November). LIGHTHOUSE: Addressing the Role of Maltreatment in the Prevention of Adolescent Substance Use and Early Sexual Activity. Paper presented as part of the Symposium Dissemination Efforts in Behaviorally Focused HIV Prevention Among High-Risk Youth: From Bench to Desktop to Africa and Beyond (Chair: Carla Kmett Danielson; Discussant: Lisa Marsch) to the annual meeting of Association for Behavioral and Cognitive Therapies. Toronto, Canada.

*Post-doctoral Training:*

**Block, Stephanie D., PhD**
**Postdoctoral Fellow with the UNC Center for Developmental Science, 2008 – 2011**
***(Funded by LONGSCAN for 2008 –2009 academic year)***

During her postdoctoral fellowship with Dr. Desmond Runyan, Dr. Block was involved in several projects related to child maltreatment and prevention. The rich longitudinal dataset from LONGSCAN allowed her to pursue a number of hypotheses related to child maltreatment. By better understanding the factors and fundamental causes (e.g., socioeconomic status) of adolescent maladjustment, researchers can explain potential health disparities and implement intervention and policy to better protect children. The presentation of the results of this study was accepted as part of symposium Dr. Block organized for the 2011 Society for Research in Child Development conference. She also had the opportunity to collaborate on several LONGSCAN papers examining topics including maltreatment and adolescent smoking, witnessed violence and future expectations, and child self-report of abuse.

2009: Attended National Data Archive on Child Abuse and Neglect Summer Institute for the Analysis of LONGSCAN Data
2009: Awarded NIH Loan Repayment Program

<u>Peer Reviewed Papers:</u>
Thompson, R., Wiley, T., Lewis, T., Dubowitz, H., Litrownik, A., English, D., Isbell, T., & **Block, S.D.** (2012). Links between traumatic experiences and expectations about the future in high risk youth. *Psychological Trauma: Theory, Research, Practice, and Policy. 4*(3), 293-302.

Lewis, T., Kotch, J., Wiley, T. R., Litrownik, A., English, D.J., Thompson, R., Zolotor, A.J., **Block, S.D.,** & Dubowitz, H. (2011). Internalizing problems: A potential pathway from child maltreatment to adolescent smoking. *Journal of Adolescent Health, 48,* 247-252. doi:10.1016/j.j.adohealth.2010.07.004

<u>Peer Reviewed Presentations</u>:

**Block, S.D.,** Christ, S. L., Runyan, D., Litrownik, A. J., Wiley, T., Dubowitz, H., Black, M., Proctor, L., Isbell, P., English, D. (March, 2011). *Social support correlates of internalizing and externalizing trajectories among at-risk adolescents*. S. D. Block. Maltreated Children in Adolescence: Lessons from LONGSCAN. Paper accepted for presentation at the Society for Research in Child Development Biennial Meeting, Montreal, Canada.

**Block, S.D.** (September, 2010). *Children at risk: Factors affecting trajectories of resilience.* Paper presented at the International Society for the Prevention of Child Abuse and Neglect. Honolulu, Hawaii.

Manuscript *In Press*:
Villodas, M.T., Litrownik, A.J., Roesch, S. C., Jones, D., **Block, S.D.,** Dubowitz, H., English, D., & Thompson, R. (2011). Developmental transitions in presentations of externalizing problems among boys and girls at-risk for child maltreatment. *Development & Psychopathology*.

*Doctoral Training:*

**Shanahan, Meghan E. PhD dissertation.**
**The University of North Carolina at Chapel Hill; 2010. Publication Number: UMI3418611**
***The within poverty differences in the occurrence and developmental outcomes of physical neglect.***

The purpose of this research was to examine the within poverty differences in the risk factors for physical neglect, as well as isolate the impact of physical neglect on the developmental trajectories of impoverished children. A secondary data analysis of data from the Longitudinal Studies on Child Abuse and Neglect were used to address these goals. The first paper of this dissertation examined the within poverty differences in the occurrence of physical neglect. Logistic regression analyses revealed that poor children whose caregivers have depression are more likely to experience physical neglect than impoverished children whose caregivers do not have depression ($p < .01$). Poor children whose caregivers have a history of physical and sexual abuse were more likely to experience physical neglect than poor children whose caregivers did not have a history of child abuse ($p < .01$). Impoverished children living in lower quality neighborhoods were more likely to experience physical neglect than poor children who live in higher quality neighborhoods ($p < .05$). The second paper of this dissertation examined the influence of physical neglect on the developmental trajectories of impoverished children. Three developmental outcomes were examined using Latent Curve Modeling: academic performance, internalizing behaviors, and externalizing behaviors. Impoverished children who were physically neglected had worse academic performance at age eight than poor children who did not experience physical neglect ($p = .000$). The academic performance of physically neglected children increased at a higher rate over time than the academic performance of children who were not physically neglected in this impoverished sample ($p = 0.054$). Living in a higher quality neighborhood was academically protective for impoverished children, whether they experienced physical neglect or not ($p < .05$). Physical neglect did not have an impact on the trajectories of internalizing or externalizing behaviors in this sample of poor children; however, other within poverty differences were identified. Poor children whose caregivers had depression were more likely to display internalizing ($p < .05$) and externalizing problems ($p<.01$) at age eight than poor

children whose caregivers did not have depression. Policy and practice implications of the findings are discussed.

The LONGSCAN project contributed to Dr. Shanahan's training though her use of data from three LONGSCAN sites for her dissertation research. She participated in the 2009 National Data Archive on Child Abuse and Neglect Summer Research Institute which focused on LONGSCAN. As such, all of the participants used LONGSCAN data to address their research questions. The LONGSCAN investigators were available to consult regarding fellow's specific projects and research. Working with LONGSCAN data provided Dr. Shanahan with the opportunity to learn how to analyze longitudinal data and to experience analyzing a large dataset. She gained an appreciation of the intricacies of child maltreatment data. Three LONGSCAN investigators served on my doctoral committee were integral in developing many of the skills Dr. Shanahan learned from her experience with LONGSCAN data and with the LONGSCAN investigators skills that are applicable when approaching child maltreatment issues in her current position.

**Margolis, Benyamin. PhD dissertation. (UMI Publication #3428381)**
**The University of North Carolina at Chapel Hill; 2010.**
***Exploring the relationship between childhood neglect and violence in a sample of high-risk early adolescents: Findings from a longitudinal study***

Youth violence rates have increased more than adult rates since 2004 and are consistently higher than the rates of adults. Child maltreatment is a key risk factor for violent behavior in youth. Although neglect is the most prevalent form of childhood maltreatment, its contribution to development of violence is unclear, as is the potential mediating role of social bonds. This dissertation assessed the relationship between childhood neglect before age 8 and the development of early adolescent violence (EAV) by age 14, and examined whether social bonds, defined according to Social Control Theory (SCT), mediated this relationship. Data came from interviews of children (n = 352) from two samples of the LONGSCAN (Longitudinal Studies of Child Abuse and Neglect) Consortium who completed the Conduct Disorder module of the Diagnostic Interview Schedule for Children-Version IV (DISC). The outcome was self-reported perpetration of serious violence in the previous 12 months. Additional data came from the child's caregivers and social service agency records. Data were analyzed to examine differences between violent and non-violent youths based on exposure to maltreatment. Negative binomial regression models assessed the neglect-EAV relationship by examining incidence rate ratios (IRR). Specific indirect effects were examined to determine whether the four SCT constructs (attachment, commitment, belief, involvement) mediated the neglect-EAV relationship. Only 11% (n = 38) reported engagement in any EAV, but nearly twice as many females (n = 2 4) than males (n = 14) reported EAV. The relationship between neglect and EAV was not significant (IRR = 1.04). Social bonds did not mediate the neglect-EAV relationship, although weaker commitment (B = -0.413; p <.05) and attachment (B = -0.385; p < 0.05) predicted higher EAV rates. There was, however, a significant effect of peer criminality on the rate of EAV. Though limited by lack of statistical power, this study demonstrated that social bonds are influential on the perpetration of violence in early teens. Social bonds, however, do not appear to mediate the neglect-EAV relationship. Further testing of this conceptual framework and exploration of sex

differences are warranted. Efforts to facilitate strong attachments to caregivers, prosocial peers, and institutions are worth considering as preventive strategies.

LONGSCAN was invaluable to Dr. Benyamin Margolis for many reasons. For one, it facilitated the achievement of his doctoral degree from UNC-Chapel Hill. Basic LONGSCAN resources such as data, support of the data coordinating center, faculty time, and the like enabled him to complete his dissertation. Dr. Margolis was awarded a SOPHE/CDC Injury Prevention Fellowship as a doctoral student to further his dissertation work, is currently working on publishing his dissertation research, and has also been able to present findings from his dissertation research at two professional conferences (one while a student, the other afterwards). Moreover, Dr. Margolis has been published twice in peer-reviewed journals for his work on cross-site LONGSCAN projects, and has been the co-author of a poster presented at PAS and of three abstracts presented at other conferences. He is a primary author on two LONGSCAN papers currently under development and is a contributor to three other manuscripts in various stages of completion. Dr. Margolis spent more than 3.5 years employed by the North Carolina site, working with distinction in a variety of roles, including as the interim project director. In a number of conversations since he graduated, Dr. Margolis has mentioned how the experience he gained while working for the NC LONGSCAN site was instrumental in qualifying him for his current job as a Health Scientist with the Research and Demonstration Branch of the Maternal and Child Health Bureau at Health Resources and Services Administration (HRSA). In fact, the depth and breadth of his experience with a complex research project such as ours was specifically mentioned by his supervisor when he was hired.

*Other Training:*

**National Data Archive on Child Abuse and Neglect (NDACAN) Summer Research Institute June 8-12, 2009**
Each year, the National Data Archive on Child Abuse and Neglect (NDACAN) sponsors a week-long Summer Research Institute at Cornell University in Ithaca, New York. Secondary analysis of the LONGSCAN archived data was the focus of the 2009 Summer Research Institute. Participants were from a wide variety of disciplines and were selected on a competitive basis. The primary goals of the Institute were to increase utilization of the LONGSCAN archived data and to facilitate a medium-term secondary analysis project while providing participants an opportunity for networking and collaborating with each other. During the Institute there were presentations by LONGSCAN investigators (made available through the NDACAN website and available on the LONGSCAN website), including discussions about the study's research methodology, statistical approaches, secondary analysis results, and data management. Additionally, computing labs were made available to the participants for hands-on work with the LONGSCAN archived datasets. Instruction was provided by the NDACAN staff, members of the Cornell faculty, and by the LONGSCAN investigators and staff. The expectation is that each participant's work would result in a conference paper, journal article, or other publication.

**Analyzing Development Trajectories – PROC TRAJ Statistical Analysis Workshop**
In October, 2008, Drs. Daniel Nagin and Bobby Jones led a campus wide PROC TRAJ training workshop in Chapel Hill, sponsored by LONGSCAN. The seminar included a hands-on tutorial on the usefulness of PROC TRAJ on longitudinal data. PROC TRAJ is a SAS procedure that fits

a group-based model to longitudinal data. Everyone in attendance received materials (i.e., syntax and output), to which they would be able to refer to later.

### F. Human Subjects

All LONGSCAN investigators and staff were scrupulously trained in human research subject data confidentiality and data protection issues. All interview protocols were approved by local site IRBs as well as by the IRB of the Coordinating Center. All LONGSCAN consents and assents fully informed parents and participants that new incidents of maltreatment would be reported as necessary. The decision whether to report to CPS was determined through careful data review by site LONGSCAN investigators.

To help protect participant confidentiality, the CC developed customized A-CASI modules for each site to accommodate site-specific human subject protocols. CPS reporting and clinical response protocols vary by necessity across sites. The CC developed site-specific "flagged-item" report protocols, which alerted the interviewer if specific items were endorsed. The content of the report generated for interviewer review varies. At some sites, the report contained actual data, while at others; it simply alerted the interviewer that a child indicated a need or a request for follow-up.

Individual site consent, assent, and related human subjects protocols were approved by local IRBs. All site-specific consent and assent forms discussed the safeguards and limitations provided by the Certificate of Confidentiality granted by the National Institutes of Mental Health, in keeping with the NIMH stipulations accompanying the Certificate. The Certificate of Confidentiality, while not assumed to override state reporting laws, was assumed to protect all LONGSCAN data at the CC from third party subpoena. The Principal Investigator(s) and the University of North Carolina at Chapel Hill made every attempt to protect the data from third party review for purposes other than qualified research. Data were stripped of all identifying information prior to being sent to the CC.

## III. DATA MANAGEMENT, DOCUMENTATION, AND TRANSFER

Data management, processing, documentation, and distribution of data to the sites were conducted for LONGSCAN by the Collaborative Studies Coordinating Center (CSCC), a unit within the Department of Biostatistics at the University of North Carolina at Chapel Hill. The CSCC coordinates a number of multi-center public health and medical studies and provides statistical, data management, quality assurance, and study management services to a number of national, international, and multi-site studies. Data entry software and data management systems have been developed and centrally maintained by the CSCC for LONGSCAN since its inception. Statistical programming, Data Management System (DMS) development, and the coordination and distribution of data retrievals were jointly coordinated by the CC and the CSCC ensuring seamless management of the technical aspects of LONGSCAN.

### A. Data Management Systems

The Data Management System group of the LONGSCAN study was responsible for the development and implementation of the data collection and data management software that allow sites to collect the Face-to-Face (FTF) and Annual Contact Interviews (ACI). Portions of these

interviews were Audio -Computer Assisted Self Interview (A-CASI) systems, allowing participants a greater degree of privacy when responding to sensitive questions and addresses literacy issues. The Age 18 interview also included the YA-DISC, which required extensive programming to make this product compatible and integrated with the LONGSCAN interview system. Additionally a number of site-specific measures were incorporated into the interview systems, the programming for which allowed these measures to be administered only for the appropriate site. Finally, the data management system (DMS) group programed site-specific reports for each FTF interview, flagging participants who reported issues which required counseling referrals or immediate intervention based on responses to particular measures or a combination of responses across multiple measures.

The DMS group provided ongoing user service to all of the LONGSCAN sites. This group was responsible for updating the DMS and the technical portion of the LONGSCAN data collection efforts with the most up to date software and technology. This group also completed programming efforts to allow sites to send data via a secure email transfer system, automated backup systems, and allowed sites to apply updates to the DMS via the secure website.

The Statistical Computing Group of the CSCC was responsible for data retrievals and cross-site distribution of the pooled LONGSCAN data. Data were retrieved four times a year and distributed twice a year. At each retrieval, extensive reports were run to check for key missing data points, inconsistent data within measures, and out of range values. This group also programed the scoring for many of the LONGSCAN measures, and provided analysis datasets and conducts analyses as requested by investigators. Retrieval procedures, changes in retrieval code, analysis datasets, and all programming activities are well documented. All code developed for analysis datasets and statistical analyses was saved permanently for documentation to allow analyses to be rerun as children at sites age into analyses or as new and corrected data become available.

**B. Data Documentation**

Given the extensive amount of data collected and important project activities conducted throughout the course of the LONGSCAN study, documentation of project activities and products detailing the variables and data collected were essential. During the 2005-12 grant period, Data Dictionaries for FTF and ACI interviews collected from baseline to Age 14 were developed and/or updated and made available via the LONGSCAN website, and ages 16 and 18 are in process. Data Dictionaries were also developed for datasets comprised of derived variables from other LONGSCAN measures. All of this documentation has been made available to project investigators and affiliated LONGSCAN users via the LONGSCAN website. In addition, tables detailing analysis datasets, scored measures, and derived variable datasets were updated regularly during the project period. Key information from retrievals, such as interview counts, age distribution of subjects, sample characteristics by time point, and site specific error reports were posted on the website at each retrieval.

*Documentation created and distributed in years 2006-2012[2]:*
Updates to Data Dictionaries: Ages 0-18
Data Dictionary: Maltreatment Data 0-18

[2] Ages 16 and 18 continue to be developed.

Measure Manuals: Age 12-14
Measure Manuals: Ages 16 and 18 (on-going)

### C. Providing Consortium datasets to the National Data Archive on Child Abuse and Neglect (NDACAN)

In May, 2006, the item level and scored data for applicable measures administered at the age 8 FTF Interview and the Annual Contact Interviews (ACI) at ages 9-11 were archived with NDACAN. In April, 2009, data from the age 12 FTF interview were archived; and in October, 2010, data from the age 13 ACI and age 14 FTF interviews were archived. In December, 2011, data from the age 16 FTF and the age 15 & 17 ACI were archived with NDACAN. Data from the age 16 and age 18 FTF interviews were archived with NDACAN in Dec. 2013.

All names of people and places, as well as any other direct identifiers, were removed from the data prior to distribution to the Archive. Additionally, all dates collected via LONGSCAN measures, including any dates of birth, were recoded at the CC prior to being sent to the archive. Site locations were identified only as South, East, Northwest, Midwest and Southwest to further protect participant confidentiality. The subject identifiers consist of a 2-letter identifier for the site plus a five-digit number, and cannot be traced back to an individual participant.

The following items accompanied the datasets to the Archive: a comprehensive data dictionary, copies of the data collection instruments, the LONGSCAN project description, a bibliography of reports, articles and other publications related to the datasets.

As of September, 2012, a total of 182 users had been granted access to the archived LONGSCAN data. These users make up diverse backgrounds of interests and affiliations including professionals from social work, pediatric research, epidemiology, medical schools, criminal justice, child and family policy, and economics.

## IV. FINDINGS AND DISCUSSION

### A. Completion Rates of the LONGSCAN Sample

Table 8 below depicts the interview completion rates for each of the sites and LONGSCAN sample overall. At the completion of the 2006-2012 grant funding period, CH is the only site still collecting age 18 interviews. After the baseline interview, 41% of participants had complete data for all of the remaining 5 interviews (i.e., ages 8, 12, 14, 16, and 18), while an additional 52% had at least one or more follow-up interviews. There were only a total of 99 participants (7.3%) who dropped out of the study permanently (i.e., no data after baseline) and 13 child participants (0.8%) who died.

**Table 8. Completion Rates by Site and Overall**

| | BA | CH* | NC | SD | SE | Total |
|---|---|---|---|---|---|---|
| Baseline N | 282 | 245 | 243 | 330 | 254 | 1354 |
| Age 8 | 237 (84.0%) | 216 (88.2%) | 190 (78.2%) | 274 (83.0%) | 223 (87.8%) | 1140 (84.2%) |
| Age 12 | 190 (67.4%) | 181 (73.9%) | 177 (72.8%) | 236 (71.5%) | 192 (75.6%) | 976 (72.1%) |
| Age 14 | 197 (69.8%) | 187 (76.3%) | 176 (72.4%) | 216 (65.4%) | 185 (72.8%) | 961 (71.0%) |
| Age 16 | 162 (57.4%) | 194 (79.2%) | 130 (53.5%) | 219 (66.4%) | 190 (74.8%) | 895 (66.1%) |
| Age 18 | 215 (76.2%) | 129 (52.6%)* | 174 (71.6%) | 228 (69.1%) | 186 (73.2%) | 932 (69.0%) |
| *Completion rates below are based on baseline N's…* | | | | | | |
| Completers | 111 (39.0%) | 94 (38.5%) | 101 (41.6%) | 120 (36.4%) | 126 (49.6%) | 552 (40.8%) |
| Partials | 158 (56.0%) | 132 (53.9%) | 113 (46.5%) | 189 (57.3%) | 111 (43.7%) | 703 (51.9%) |
| Dropouts | 13 (5.0%) | 19 (8.6%) | 29 (11.9%) | 21 (6.3%) | 17 (6.7%) | 99 (7.3%) |
| Deaths † | 3 (1.0%) | 2 (0.8%) | 2 (0.8%) | 4 (1.2%) | 0 (0.0%) | 11 (0.8%) |

Notes. Baseline refers to those participants who had either an age 4 or age 6 interview.
*Completers* = participants with a baseline interview (age 4 or 6) and face to face interviews at ages 8, 12, 14, 16, and 18.
*Partials* = participants who have a baseline interview and *one or more* face to face interviews (but not all 5) at ages 8 and above. Partials do not include those participants considered as 'completers'.
*Dropouts* = participants with a baseline interview, but no follow interviews for ages 8 and above.
* Data collection is still in progress for the CH site at age 18.
† Participants who died were not removed from the partials or dropout Ns.

## B. Manuscripts and Analyses in Progress

**Block, S., Runyan, D., Dubowitz, H., English, D., Litrownik, A., Isbell, P., Wiley, T., Black, M., & Proctor, L. Individual, family, and community influences on adolescent maladjustment in a high risk sample.**
This study (N = 1,136) evaluates a model examining the effects of social support on adolescent maladjustment as measured by growth trajectories in the internalizing (withdrawal and anxiety/depression) and externalizing (delinquency and aggression) behavioral domains. The adolescents of LONGSCAN represent youth who were born into varying degrees of risk (e.g., maternal age, poverty status, parental drug use, previous child protective service report). Results indicate that additional negative childhood experiences increase risk for maladjustment, particularly in delinquency and depression. Certain social support variables, including positive change in neighborhood, increases in religiosity, participating in groups, and adult support, are significantly ($p < .05$) associated with positive changes over time (ages 12-16 years). Results have implications for future interventions.

**Dubowitz, H., Metzger, R., Thompson, R., Proctor, L., English, D.J., Arria, A., Black, M.M., & Shanahan, M. Early maltreatment and the user of illicit drugs in adolescence.**
Despite some research in this area, the evidence is not yet clear on the role of childhood maltreatment in the prediction of adolescent illicit substance use. Widom and her colleagues have focused on the prediction of adult substance use and found influences by both gender and specific-substance factors. Lansford, Dodge, Pettit and Bates (2010) reported that physical abuse

before age 5 predicted female substance use, but no maltreatment relationship was observed for males. Huang et al. (2011), using the National Longitudinal Study of Adolescent Health, found that self-reported abuse was predictive of illicit drug use into adulthood. Neglect increased this effect for females. Fergusson, Boden & Harwood (2008) reported a 25-year prospective study of developmental factors predicting illicit substance use. They found that several early life experiences, included abuse, were associated with illicit drug use. The current project will describe the relationship between the experience of maltreatment before age 12 and the use of illicit drugs in adolescence. These analyses will be considered in the context of caregiver, familial and peer drug use, caregiver personal factors, and demographic characteristics.

**Kotch, J.B., Zolotor, A.J., Dubowitz, H., English, D., Litrownik, A.J., Thompson, R., Lewis, T., Wiley, T., Block, S. Physically or sexually abused children who also experience emotional abuse are more likely to smoke than child victims of physical or sexual abuse alone**.

In analyzing data for the paper, "Internalizing Problems: A Potential Pathway from Child Maltreatment to Adolescent Smoking," an incidental finding was that emotional maltreatment, in combination with other forms of maltreatment, was the strongest predictor of smoking in the last 30 days than any other maltreatment type of combination of types. The maltreatment histories prior to age 12 of 522 subjects were used to predict self-reported smoking in the past 30 days at age 16. Although neither emotional abuse nor physical victimization (physical plus sexual abuse), by themselves, were predictive of smoking in the past 30 days, in controlled analyses emotional abuse in combination with physical victimization was predictive. In controlled regressions without peer smoking in the model, emotional abuse plus physical victimization prior to age 12 was strongly predictive of age 16 smoking ($p = .002$). Even with peer smoking in the model, emotional abuse and physical victimization combined predicted age 16 smoking in the past 30 days ($p = .03$).

**Lewis, T., Smith, J.B., Dubowitz, H., Wiley, T., English, D., Litrownik, A.J., Isbell, P., & Mrug, S. Stability of Trauma Symptom Checklist (TSC) scores in a high risk sample.**

The purpose of the current study is to examine the association among types and timing of maltreatment and trauma symptoms over time. Data are drawn from the Longitudinal Studies in Child Abuse and Neglect (LONGSCAN). Child participants completed the Trauma Symptom Checklist (TSC-C) at ages 8, 12, 16 and 18. Official reports to Child Protective Services (CPS) from birth through age 18 are included. Preliminary analyses using trajectory modeling with age 16 as the end point indicate four distinct patters of trauma symptoms over time: 1) high at ages 8 and 12 with a decline at age 16 (n = 25, 4%), 2) low at ages 8 and 12 with a steep incline at age 16 (n = 28, 5%), 3) high at age 8 with a rapid decline at age 12 (n = 150, 26%), and 4) low at all three time points (n = 384, 65%). Predictors of trajectory groups include child gender, ethnicity, self-reported victimization and CPS reports made between ages 0-8, 8-12, and 12-16. These analyses further suggest a significant effect of gender, self-report of late physical victimization, self-report of early and late psychological abuse, and CPS referrals for abuse between ages 8 and 12.

**Proctor, L., Lewis, T., Dubowitz, H., Thompson, R., Isbell, P., Litrownik, A.J., English, D.J., & Arria, A. Child maltreatment and age of substance use initiation.**

Early initiation of substance use is a risk factor for progression to drug abuse and related risk behaviors, and has been linked longitudinally to physical abuse. With few exceptions, however, there is a paucity of longitudinal research examining both the type and timing of risk factors that predict initiation. Two competing hypotheses have been posited with regard to the timing of maltreatment, risk, and protection. The first posits that events and factors occurring in a child's first years of life exert a particularly strong effect on subsequent outcomes. Consistent with this perspective, Dodge has tested a dynamic cascade model of the development of early-onset drug use that supports the primacy of early influences. In contrast, the second hypothesis posits the importance of contemporaneous or recent experiences in the prediction of youth behavior. This alternative hypothesis is based on life-course perspectives that emphasize proximal causes of behavior, as well as recent findings regarding the adolescent brain's vulnerability to stress and risk taking. Consistent with this perspective, some researchers have found stronger effects for maltreatment during adolescence than during childhood only. However, these studies have not specifically examined age at first use as a dependent variable. We will take a closer look at type and timing of maltreatment and related risk factors specifically as they relate to age at first use of tobacco, alcohol, and marijuana and age at first intoxication. Results will provide critical information for prevention of early initiation of substance use and the negative sequelae associated with it.

**Runyan, D.K., Jones D.J., Smith, J., Kotch J.B., Knight E.D., Dubowitz, H., Thompson, R., A. Litrownik, A., English, D. The relative contributions of different violence exposures on young children.**

Children in LONGSCAN, in addition to frequently being the victims of more than one form of child maltreatment, have indicated high rates of exposure to domestic violence and community violence. Each of these types of exposures can have a dramatic impact on child functioning. Initial examination of the data (ages 4 through age 12) suggest that children (and family) report more violence exposure (e.g., adults yelling in the home, fighting, threatening, and/or using a gun) than is reported on social service reports. During these preliminary analyses, we also found that children reported high levels of exposure to violence in the community (e.g., gang fighting, witnessing of physical attacks, etc.). These initial findings made us wonder about the impact of these additional forms of violence and whether they were causing difficulties for the children over time, above and beyond the child's abuse history. Thus, this analysis will extend the current parameters of the preliminary findings by adding data (at ages 14, 16, & age 18) to better understand the differential effects that these alternative forms of violence exposure have on child functioning over the child's entire lifetime (birth through 18).

**Runyan, D.K., et al. The longitudinal patterns of maltreatment: The epidemiology of maltreatment in a high-risk sample.**

This analysis will include a longitudinal description of the reports and substantiations of maltreatment, looking specifically for patterns in recurrence and movement from unsubstantiation to substantiation (and vice versa). We will develop a longitudinal 'tree' (similar to the one shown in Appendix E) that describes the patterns of occurrence while capturing how many unsubstantiated reports are later substantiated, how many children recur, and the time to recurrence (up through the age 18 interview). Survival analysis will be used to look at time to recurrence, by type of first report, and by substantiation versus not substantiated case status.

Other research questions include:

a) Does any specific form of maltreatment increase the risk of subsequent reports;
b) Do child who are recurrently maltreated switch or do they stay with the same predominant form of maltreatment;
c) What characterizes the children who were reported early and were never reported again; and
d) What are the characteristics of the children who are at the highest rates of recurrent maltreated?

**Theodore, A., Cox, C., Thompson, R., Margolis, B., English, D., Villodas, M., Dubowitz, H., & Coyne-Beasley, T. Self-reported neglect, delinquency and substance use in early adolescence.**

This study examined delinquent behavior and substance use associated with self-reported experiences of neglect in a population of 12 year olds at-risk for maltreatment, reported for maltreatment or both. This study included 743 children from the LONGSCAN sample, who completed the 12-year-old interviews and had complete data on exposure and outcome variables. Self-reported neglect experienced during elementary school and in the past year was assessed using an overall scale and three subscales of a modified version of the Multidimensional Neglectful Behavior Scale. Delinquent behavior and substance use reported by adolescents. Forty-five percent of the youth in this sample reported experiences of neglect. Emotional neglect was associated with an increased likelihood of delinquent behavior (OR= 1.51, 95% CI {1.03-2.21}), and overall neglect was associated with an increased likelihood of substance use (OR=2.56, 95% CI {1.23-5.23}). Neglect during the previous year predicted these outcomes more strongly than did neglect during elementary school. Early adolescents who reported experiencing neglect were more likely to report participation in delinquent activities and substance use (especially tobacco and marijuana). Future research should address how the severity, developmental timing, and sub-types of neglect may affect other high-risk behaviors during early adolescence.

**Thompson, R., Dubowitz, H, Neilson, E.C., Margolis, B., Litrownik, A.J., English, D.J., Lewis, T., & Proctor, L. Predictors of sexual risk behavior at age 18.**

The proposed analyses will examine several key questions as related to the Aims of the NIDA grant, using age 18 data as an early proxy for "young adulthood." Specifically, we will test the independent and combined effects of child maltreatment and drug use on sexual risk behavior including those related to HIV/AIDS. We will describe patterns of co-occurrence in early adulthood of substance use and sexual risk behavior and test predictive models that examine how CM, related risk factors (trauma symptoms), and drug use contribute to sexual risk behavior. Although the literature is replete with examples of the negative impact of both CM and youth drug use, little is known regarding their interactive effects on subsequent outcomes in early adulthood.

**C. Manuscript under review**

**Kotch, J.B., Smith, J., Margolis, B., Black, M.M., English, D., Thompson, R., Lee, L.-C., Taneja, G., & Bangdiwala, S.I. Does social capital protect against the adverse behavioral outcomes of child neglect? *Child Abuse Review.***

Social capital is "…those features of social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit." (Putnam 1995) The purpose if this study is to determine whether informal social control (ISC) and/or social cohesion & trust (SCT), two domains of social capital, reduce aggression & delinquency in a longitudinal cohort of maltreated 14, 16, and 18 year olds. Maltreatment reports were obtained from Departments of Social Services, and subjects' self-reported abuse was obtained at age 12. Generalized Estimating Equations (GEE) were used to investigate the impact of ISC, SCT, and caregiver depression at ages 12, 14, and 16 years on externalizing behaviors (Achenbach, 1991), smoking, and alcohol use among 18 year olds who had been neglected prior to age 12. In models controlling for child age and gender, maltreatment types other than neglect, maternal education, and study site, social cohesion and trust significantly reduced the impact of caregiver depression on externalizing behavior ($p$=0.02) and alcohol use ($p$=0.03) among the study's 915 neglected children at age 18. This moderating effect was not seen among non-neglected 18 year old children.

**D. Manuscripts in Press**

**Villodas, M.T., Litrownik, A.J., Thompson, R., Jones, D.J., Roesch, S.C., Hussey, J.M., Block, S.D., English, D.J., & Dubowitz, H. (*in press*). Developmental transitions in presentations of externalizing problems among boys and girls at-risk for child maltreatment. *Development and Psychopathology.***
The present study examined the impact of children's maltreatment experiences on the emergence of externalizing problem presentations among children during different developmental periods. The sample included 788 youth and their caregivers who participated in a multi-site, prospective study of youth at-risk for maltreatment. Externalizing problems were assessed at ages 4, 8, 12, and symptoms and diagnoses of ADHD, ODD and CD were assessed at age 14 during interviews with youth and caregivers. Information about maltreatment allegations was coded from official records. Latent Transition Analysis identified three groups of youth with similar presentations of externalizing problems (Well Adjusted", "Hyperactive/Oppositional", and "Aggressive/Rule-Breaking") and transitions between groups from ages 4, 8, and 12. A "Defiant/Deceitful" group also emerged at age 12. Girls were generally more likely to present as Well Adjusted than boys. Children with recent physical abuse allegations had an increased risk for Aggressive/Rule-Breaking presentations during the preschool and preadolescent years, while children with sexual abuse or neglect allegations had lower probabilities of having Well Adjusted presentations during middle childhood. These findings indicate that persistently severe aggressive conduct problems, which are related to the most concerning outcomes, and can be identified early, particularly among neglected, and physically and sexually abused children.

**E. Abstracts of LONGSCAN Manuscripts Most Cited in Refereed Articles, 2007-2012** *(for a complete list of publications see Appendix D)*

**2012**

**Thompson, R., Proctor, L.J., English, D.J., et al. 2012. Suicidal ideation in adolescence: Examining the role of recent adverse experiences. *Journal of Adolescence, 35*(1), 175-186.** *9 cites*

Although there is a well-known link between adverse experiences and suicidal ideation, there has been little study of the effects of recent adverse experiences on suicidal ideation in teenagers. This study examined the association between recent adverse experiences and suicidal ideation in a sample of 740 at-risk 16-year-old youth in the LONGSCAN studies, as well as potential mediators. 8.9% of the youth reported suicidal ideation. Recent adverse experiences, as a class, were associated with suicidal ideation; both recent physical abuse and recent psychological maltreatment were uniquely associated with suicidal ideation. The links between recent adverse experiences and suicidal ideation were significantly mediated by psychological distress. There were also significant main effect associations between both internalizing behavioral problems and low positive achievement expectations and suicidal ideation. Recent adverse experiences are important in understanding suicidal ideation in high risk youth

## 2011

**Lewis, T., Kotch, J., Wiley, T., Litrownik, A.J., English, D., et al. (2011). Internalizing problems: A potential pathway from child maltreatment to adolescent smoking.** ***Journal of Adolescent Health, 48,*** **247-252.** *8 cites*

This study examined the association between childhood maltreatment and adolescent smoking and the extent to which internalizing behavioral problems mediate this hypothesized link. LONGSCAN data from 522 youth at ages 12, 14, and 16 and from their caregivers were examined. Official Child Protective Services (CPS) reports of maltreatment and self-reported abusive experiences of children aged 12 were also examined for this study. Internalizing behavioral problems were reported by caregivers for the adolescents at age 14. Cigarette use was self-reported by adolescents at age 16. A significantly higher proportion of maltreated youth (19%) reported having smoked in the last 30 days compared with non-maltreated youth (7%). A history of childhood maltreatment predicted smoking at the age of 16. Maltreatment history was associated with internalizing problems at the age of 14, and internalizing problems were associated with smoking. Finally, internalizing behaviors partially mediated the link between childhood maltreatment by the age of 12 years and adolescent smoking at 16. Internalizing problems are one mediating pathway by which adolescents with a history of childhood maltreatment may initiate smoking behavior during mid-adolescence. Given the elevated rate of smoking among maltreated adolescents, it is important to identify potential pathways to better guide prevention strategies. These finding suggest that youth with a history of maltreatment should be identified as a high-risk group, and that efforts to identify and address internalizing problems in this population may be an important area of intervention to reduce smoking among adolescents.

**MacKenzie, M.J., Kotch, J.B., & Lee, L.-C. (2011). Toward a cumulative ecological risk model for the etiology of child maltreatment.** ***Children and Youth Services Review, 33*****(9), 1638-1647.** *10 cites*

The purpose of this paper was to study the relationship between adverse childhood exposures and poor health, illness, and somatic complaints at age 12. Of the participating child-caregiver dyads, 805 completed an interview when the child was age 4 or age 6, as well as interviews at age 8 and 12. The relationships between 8 categories of childhood adversity (psychological maltreatment, physical abuse, sexual abuse, child neglect, caregiver's substance/alcohol use, caregiver's depressive symptoms, caregiver's being treated violently, and criminal behavior in the

household) and child health at age 12 were analyzed. The impact of adversity in the first 6 years of life and adversity in the second 6 years of life on child health were compared. Only 10% of the children had experienced no adversity, while more than 20% had experienced 5 or more types of childhood adversity. At age 12, 37% of the children sampled had some health complaint. Exposure to 5 or more adversities, particularly exposure in the second 6 years of life, was significantly associated with increased risks of any health complaint (odds ratio [OR] 2.24, 95% confidence interval [95% CI] 1.02–4.96), an illness requiring a doctor (OR 3.69, 95% CI 1.02–15.1), and caregivers' reports of child's somatic complaints (OR 3.37, 95% CI 1.14–1.0). There was no association between adverse exposures and self-rated poor health or self-rated somatic complaints.

## 2010

**Jones, D.J., Runyan, D.K., Lewis, T., Litrownik, A.J., Black, M.M., Wiley, T., English, D.J., Proctor, L.J., Jones, B.L., & Nagin, D.S. (2010). Trajectories of childhood sexual abuse and early adolescent HIV/AIDS risk behaviors: The role of other maltreatment, witnessed violence, and child gender. *Journal of Clinical Child and Adolescent Psychology, 39*(5), 667-680.** *17 cites*

Childhood sexual abuse (CSA) has been associated with risky behaviors associated with contraction of sexually transmiitted diseases, including HIV/AIDS; however, much of this work is retrospective and focuses on women. The current study examined the link between trajectories of CSA over the course of childhood (2 to 12 y.o.) and HIV/AIDS risk behavior at age 14 (i.e., sexual intercourse & alcohol use) among youth ($n$ = 844; 48.8% boys) from the Longitudinal Studies in Child Abuse and Neglect (LONGSCAN). Analyses revealed a link between a history of CSA over the course of childhoood and the development of risky behavior at age 14, considered a particularly vulnerable developmental period for risk behavior to occur. In addition, history of physical and emotional abuse over the course of childhood, but not neglect or witnessed violence, contributed to risky behavior over and above the role of CSA. The pattern of findings were the same for both girls and boys. Findings advance the literature beyond retrospective studies of adults and cross-sectional studies of youth to highlight a causal pathway from specific subtypes of maltreatment to early initiation of risky behaviors. Youth may benefit from programs that target the link between maltreatment and risk behavior and findings suggest girls, as well as boys who have been previously relatively excluded from this work, may benefit from such prevention efforts.

**Nooner, K.B., Litrownik, A.J., Thompson, R., Margolis, B., English, D.J., Knight, E.D., Everson, M.D., Roesch, S. (2010). Youth self-report of physical and sexual abuse: A latent class analysis. *Child Abuse & Neglect, 34*(3), 146–154.** *12 cites*

The purpose of this study was to determine if meaningful groups of at-risk pre-adolescent youth could be identified based on their self-report of physical and sexual abuse histories. Youth participating in LONGSCAN were interviewed using an audio-computer assisted self-interview (A-CASI) when they were approximately 12 years of age to obtain information about their perceived experiences of physical (18 items) and sexual (12 items) abuse. A total of 795 youth completed the age 12 interview and had their CPS records reviewed during the period from birth to the time of their age 12 interview. A latent variable modeling approach was used to generate profiles of youth based on their endorsements of the physical and sexual abuse items. These

profiles were then compared to CPS reports of physical or sexual abuse to determine their validity. The analysis identified 4 interpretable classes or groups of pre-adolescent youth: (1) no physical or sexual abuse; (2) high physical abuse/low sexual abuse; (3) no physical abuse/moderate sexual abuse; and (4) high physical and sexual abuse. Follow-up analyses indicated that the odds of a CPS report for Classes 2, 3, and 4 compared to Class 1 were significantly greater (2.21, 2.55, and 5.10, respectively). It is suggested that this methodological approach may be most useful in future efforts to identify the antecedents and consequences of maltreatment.

**van Tilburg, M.A.L., Runyan, D.K., Zolotor, A.J., Graham, J.C., Dubowitz, H., Litrownik, A.J., Flaherty, E., Chitkara, D.K., & Whitehead, W.E. (2010). Unexplained gastrointestinal symptoms after abuse in a prospective study of children at risk for abuse and neglect.** ***Annals of Family Medicine, 8*****(2), 134-140.** *14 cites*

Unexplained gastrointestinal symptoms are more common in adults who recall abuse as a child; however limited data are available on children. The aim of this study was to investigate the association of childhood maltreatment and early development of gastrointestinal symptoms and whether this was mediated by psychological distress. Data were obtained from the Longitudinal Studies in Child Abuse and Neglect LONGSCAN) study. Lifetime CPS allegations of sexual abuse were associated with abdominal pain at age 12. Sexual abuse preceded or coincided with abdominal pain in 91% of cases. Youth recall of ever having been psychologically, physically or sexually abused was significantly associated with both abdominal pain and nausea/vomiting. When adjusting for psychological distress most effects became insignificant except for the relation between physical abuse and nausea vomiting. This has been the first longitudinal study to show that youth who have been maltreated are at increased risk for unexplained gastrointestinal symptoms and this relation is partially mediated by psychological distress. These findings are relevant to the clinical care for children who present with unexplained gastrointestinal symptoms.

**Yonas, M.A., Lewis, T., Hussey, J.M., Thompson, R., Newton, R., English, D., & Dubowitz, H. (2010). Perceptions of neighborhood collective efficacy moderate the impact of maltreatment on aggression.** ***Child Maltreatment, 15*****(1), 37-47.** *11 cites*

This study examined the moderating influence of positive neighborhood factors such as social cohesion and informal social control (collective efficacy), on the relationship between child maltreatment and aggressive behavior at age 12. Caregiver (N = 861) and youth (N = 823) dyads were interviewed when youth were aged 12 as part of LONGSCAN. Caregivers and youth provided reports of youth externalizing behaviors while caregivers provided perceptions of collective efficacy. Child Protective Services records and youth's self-report of abuse experiences provided information on history of maltreatment. Multivariate analyses examined the moderating effect of collective efficacy on the influence of child abuse and neglect on youth externalizing behaviors. Neighborhood factors did moderate the association between earlier neglect and aggression at age 12, such that youth who experienced neglect, but not abuse, had lower externalizing scores in neighborhoods with higher levels of collective efficacy. Neighborhood-level factors such as collective efficacy should be considered as protective in preventing externalizing behaviors for youth who have experienced maltreatment.

## 2009

**Black, M.M., Oberlander, S.E., Lewis, T., Knight, E.D., Zolotor, A.J., Litrownik, A.J., Thompson, R., Dubowitz, H., & English, D.J. (2009). Sexual intercourse among adolescents maltreated before age 12: a prospective investigation. *Pediatrics, 124,* 941-949.** *15 cites*
The purpose of this study was to examine whether child maltreatment (physical, emotional, and sexual abuse, and neglect) predicts adolescent sexual intercourse; whether associations between maltreatment and sexual intercourse are explained by children's emotional distress, and whether relations among maltreatment, emotional distress, and sexual intercourse differ according to gender. Participants ranged from at-risk to substantiated maltreatment. Maltreatment history was assessed through Child Protective Service records and youth self-report at age 12. Youth reported emotional distress by using the Trauma Symptom Checklist at the age of 12 years and sexual intercourse at ages 14 and 16. Logistic and multiple regressions, adjusting for gender, race, and site, were used to test whether maltreatment predicts sexual intercourse, the explanatory effects of emotional distress, and gender differences. At ages 14 and 16, maltreatment rates were 79% and 81%, respectively, and sexual initiation rates were 21% and 51%. Maltreatment (all types) significantly predicted sexual intercourse. Maltreated youth reported significantly more emotional distress than non-maltreated youth; emotional distress mediated the relationship between maltreatment and intercourse by 14, but not 16. At 14, boys reported higher rates of sexual intercourse than girls and the association between physical abuse and sexual intercourse was not significant for boys.

**Flaherty, E.G., Thompson, R., Litrownik, A.J., Zolotor, A.J., Dubowitz, H., Runyan, D.K., English, D.J., & Everson, M.D. (2009). Adverse childhood exposures and reported child health at age 12. *Academic Pediatrics, 9(3),* 150-156.** *24 cites*
The purpose of this paper was to study the relationship between adverse childhood exposures and poor health, illness, and somatic complaints at age 12. Of the participating child-caregiver dyads, 805 completed an interview when the child was age 4 or age 6, as well as interviews at age 8 and 12. The relationships between 8 categories of childhood adversity (psychological maltreatment, physical abuse, sexual abuse, child neglect, caregiver's substance/alcohol use, caregiver's depressive symptoms, caregiver's being treated violently, and criminal behavior in the household) and child health at age 12 were analyzed. The impact of adversity in the first 6 years of life and adversity in the second 6 years of life on child health were compared. Only 10% of the children had experienced no adversity, while more than 20% had experienced 5 or more types of childhood adversity. At age 12, 37% of the children sampled had some health complaint. Exposure to 5 or more adversities, particularly exposure in the second 6 years of life, was significantly associated with increased risks of any health complaint (odds ratio [OR] 2.24, 95% confidence interval [95% CI] 1.02–4.96), an illness requiring a doctor (OR 3.69, 95% CI 1.02–15.1), and caregivers' reports of child's somatic complaints (OR 3.37, 95% CI 1.14–1.0). There was no association between adverse exposures and self-rated poor health or self-rated somatic complaints.

## 2008

**Everson, M.D., Smith, J.B., Hussey, J.M., English, D., Litrownik, A.J., Dubowitz, H., Thompson, R., Knight, E.D., & Runyan, D. (2008). Concordance between adolescent**

**reports of childhood abuse and Child Protective Service determinations in an at-risk sample of young adolescents. *Child Maltreatment, 13*(1), 14-26.** *32 cites*
This study examined the concordance between adolescent reports of abuse and abuse determinations from Child Protective Service (CPS) agencies. It also compared the utility of adolescent reports of abuse, relative to CPS determinations in predicting adolescent psychological adjustment. The sample included 350 early adolescents from the LONGSCAN sample, ages 12 to 13 years, who were initially identified prior to age 2 years as being at elevated risk of maltreatment. An Audio-Computer Assisted Self Interview (A-CASI) was used to assess lifetime experiences of physical, sexual, and psychological abuse. The A-CASI interview elicited prevalence rates of abuse 4 to 6 times higher than those found in CPS records. However, 20 of 45 adolescents with CPS determinations of abuse failed to report abuse during the study interview. Adolescent psychological adjustment was more strongly associated with self-reports than with CPS determinations. The implications of these findings were discussed for validity of adolescent self-reports of childhood abuse and for the ongoing debate about disclosure patterns among victims of child sexual abuse.

**Kotch, J.B., Lewis, T., Hussey, J.M., English, D., Thompson, R., Litrownik, A., et al. (2008). The importance of early neglect for childhood aggression. *Pediatrics, 121*, 725-31.** *43 cites*
Early childhood neglect, the most prevalent type of childhood maltreatment, may be an important but largely overlooked predictor of childhood aggression. In this paper, the association between early childhood neglect (birth to age 2) and later childhood aggression at ages 4, 6, and 8 years is compared to aggression's associations with early childhood abuse and later abuse and neglect. A prospective cohort of 1,323 predominantly at-risk children was followed from birth to age 8 years recruited from four U.S. cities and one Southern state. Maltreatment was determined by review of local child protective service records. Hierarchical linear modeling was utilized to predict aggressive behavior scores as reported by the child's primary caregiver at ages 4, 6, and 8 years. Only early neglect significantly predicted aggression scores ($\underline{t} = 2.67$, $\underline{p} < .001$). Early abuse, later abuse, and later neglect were not significantly predictive in a controlled model with all four predictors. This longitudinal study suggests that child neglect in the first two years of life may be a more important precursor of childhood aggression than later neglect or physical abuse at any age.

## 2007

**Black, M.M., Dubowitz, H., Krishnakumar, A, & Starr, R.H., Jr. (2007). Early intervention and recovery among children with failure to thrive: follow-up at age 8. *Pediatrics*, 120(1), 59-69.** *33 cites.*
The purpose of this study was to examine the impact of a randomized, controlled trial of home visiting among infants with failure to thrive on growth, academic/cognitive performance, and home/classroom behavior at age 8. Infants with failure to thrive ($N = 130$) or adequate growth ($N = 119$) were recruited from pediatric primary care clinics serving low-income, urban communities. Evaluation included anthropometries, Bayley scales, maternal anthropometries, demographics, negative affect, IQ, and the Home Observation for Measurement of the Environment scale. Infants with failure to thrive were treated in an interdisciplinary growth and nutrition clinic and randomized into clinical-intervention-plus-home-intervention or clinical-care-only groups. At age 8, the evaluation included anthropometries, the Wechsler Intelligence

Scale for Children III, and the Wide Range Achievement Test, Revised. Mothers completed the Child Behavior Checklist and teachers completed the Teacher Report Form. Multivariate analyses of variance were used to examine differences in growth, cognitive/academic performance, and home/school behavior. Children in the adequate-growth group were significantly taller, heavier, and had better arithmetic scores than the clinical-intervention-only group, with the clinical-intervention-plus-home-intervention group intermediate. Children in the clinical-intervention-plus-home-intervention group had fewer teacher-reported internalizing problems and better work habits than the clinical-intervention-only group. Home visiting attenuated some of the negative effects of early failure to thrive, possibly by promoting maternal sensitivity and helping children build strong work habits that enabled them to benefit from school.

**Lewis, T., Leeb, R., Kotch, J., Smith, J., Thompson, R., Black, M.M., Pelaez-Merrick, M., Briggs, E., & Coyne-Beasley, T. (2007). Maltreatment history and weapon carrying among early adolescents. *Child Maltreatment, 12*(3), 259-268.** *10 cites*
This study examined the role of maltreatment in weapon carrying among 12-year-old youth (N = 797) interviewed as part of LONGSCAN. Participants reported their physical and sexual abuse history and provided responses to items assessing perceived need for a weapon and weapon carrying. There were no gender differences in rates of self-reported physical or sexual abuse. Males were more likely than females to report weapon carrying and perceived need for a weapon. A mediation analysis was conducted to examine the mediating effect of perceived need for a weapon on the association between abuse and weapon carrying. Results indicated that perceived need for a weapon fully mediated the effect of physical abuse and partially mediated the effect of sexual abuse. Results are discussed in the context of self-protection theory.

**2006**

**Flaherty, E.G., Thompson, R., Litrownik, A.J., et al. (2006). Effect of early childhood adversity on child health. *Archives of Pediatrics & Adolescent Medicine, 160(*12) 1232-1238.** *51 cites*

The purpose of this study was to examine the effect of child abuse and other household dysfunction on child health outcomes. One thousand forty-one children at high risk for child abuse and neglect were included in the study sample. Caregivers were interviewed at child ages 4 and 6 years. Associations between 7 adverse exposures (3 categories of child abuse [physical abuse, sexual abuse, and psychological maltreatment] and 4 categories of household dysfunction [caregiver problem drinking, caregiver depression, caregiver treated violently, and criminal behavior in the household]) derived from data collected when the child was 4 years old and indexes of child physical health at age 6 years (caregiver overall assessment of child health and reports of illness requiring medical attention) were determined. Two thirds of the sample were determined to have experienced at least 1 adverse exposure. One adverse exposure almost doubled the risk of overall poor health (odds ratio, 1.89; 95% confidence interval, 1.02-3.48), and 4 adverse exposures or more almost tripled the risk of illness requiring medical attention (odds ratio, 2.83; 95% confidence interval, 1.10-7.31). Adverse environmental exposures, including child abuse and other household dysfunction, are associated with poor child health even at an early age, although our data do not support a dose-response relationship.

**Lau, A.S., Litrownik, A.J., Newton, R.R., et al. (2006). Factors affecting the link between physical discipline and child externalizing problems in Black and White families. *Journal of Community Psychology 34*(1), 89-103.** *18 cites*
Contextual factors that may affect the impact of physical discipline on later child behavior problems among high-risk Black and White families were examined along with race, parental warmth, and early child problems as potential moderators of the discipline–behavior problem link. The sample included 442 White and Black children and their caregivers interviewed at ages 4, 6, and 8 years. Results indicated that physical discipline operated similarly across the groups, leading to increased externalizing problems only when children demonstrated behavioral problems early on. However, while warm parental attitudes protected against later problems among White children, these attitudes exacerbated early problems in Black children. These findings suggest both racial variability and generalizability in the effects of parenting on child adjustment.

## V. SUPPLEMENTARY GRANTS/FUNDING

To the extent that the work scope of LONGSCAN has grown beyond the available support from ACF, we have supplemented the basic project with other grants to support additional analyses and data collection. Applications to other agencies for supplemental funding have and will continue to support expanded efforts in data collection, analyses, and administrative support. These sources are described below.

**Identifying Protective Factors that Reduce Violence among Maltreated Youth**
*Lewis, T -- Principal Investigator, Runyan D.K. and English D., Co-Investigators*
*Funded by the Eunice Kennedy Shriver National Institute of Child Health and Development (NICHD) Awarded to the University of North Carolina Injury Prevention Research Center, with a subcontract to the University of Alabama at Birmingham,*
The primary objective of this grant was to assess risk and promotive factors among maltreated youth that contribute to or protect against engagement in violence and aggression during adolescents. Data were part of a large parent study and used to examine the specific study objectives. With an N of > 800 participants, analyses were conducted to examine (a) time specific outcomes at ages 12, 14, and 16, (b) trajectories of outcomes over the three time points, and (c) to identify factors related to desistence of violence and aggression for those who demonstrated engagement in such activities at earlier time points. Risk factors included exposure to violence, history of child victimization, and early aggressive behaviors. Promotive factors varied over time but focused on multiple levels of the social ecological domain. Results indicated that risk factors and promotive factors were fairly stable in this high-risk group of adolescents. Candidate promotive factors with the most promising compensatory effects were parental monitoring and parent-child interaction. Other factors had time point specific influences (such as commitment to academic achievement). Manuscripts are currently in preparation to disseminate the findings from this grant.

**From Science to Practice: LONGSCAN Findings That Can Change Child Welfare**
*Knight, E.D., PI, and the LONGSCAN Investigators, Co-PIs*

*Awarded to the Injury Prevention Research Center of UNC-Chapel Hill by the Doris Duke Charitable Foundation (DDCF)*
DDCF, the Children's Bureau and the LONGSCAN Investigators recognized the need for the many research findings from LONGSCAN to reach a broader audience than the scientific community - including professionals who work to help families and children, policy makers who make budget decisions or pass laws affecting families and children, advocates for children and families, and communities and parents throughout the United States. The Doris Duke Charitable Foundation met this need by funding *From Science to Practice*. *From Science to Practice* provides each LONGSCAN site with support to convene a meeting to discuss its most important findings with a broad range of key stakeholders, who may include representatives from Public Health, DSS, the legal system, mental health, child advocacy organizations such as Prevent Child Abuse, and adults who were either in the LONGSCAN study as children or were involved with child protective services as children. Each group will develop a set of policy and practice recommendations based on the LONGSCAN findings discussed. These findings will be disseminated regionally, and will be synthesized for use at a sixth meeting to be convened in Washington DC in 2013.

**Adolescent pregnancy, intimate partner violence, and poor birth outcomes: Consequences of childhood victimization?**
*Black, M – PI; Knight, E and Lewis, T – Co-investigators*
*Funded by grants from the U.S. Department of Health and Human Services, Administration on Children and Families, Office on Child Abuse and Neglect, and funds from the National Center for Injury Prevention and Control of Centers for Disease Control to the University of North Carolina Injury Prevention Research Center.*
The LONGSCAN study (Longitudinal Studies in Child Abuse and Neglect) provides one of the largest, most comprehensive prospective studies on child maltreatment. This study, led by Maureen M. Black, PhD, uses an existing sample of adolescents from LONGSCAN to assess the link between childhood victimization and early initiation of sexual activity, early pregnancy, victimization during pregnancy, and pregnancy outcomes. The specific aims of this study are to: 1) examine whether exposure to maltreatment or witnessing family violence or community violence are risk factors for becoming pregnant or making someone pregnant as an adolescent; 2) identify how modifiable risk and protective factors at the individual, family, and neighborhood level are associated with becoming pregnant or making someone pregnant as an adolescent; 3) examine, among females who have been pregnant, or males who have impregnated a partner, whether maltreatment and/or witnessed violence as a child or adolescent increases the likelihood of IPV during pregnancy; and 4) examine, among females who have been pregnant, whether negative maternal health behaviors related to pregnancy and birth outcomes are worse for adolescent mothers with a history of maltreatment and/or witnessed violence exposure relative to females who have not.

**Brain Function and Stress Reactivity in Trauma-exposed Young Adults**
*Kotch, J -- PI*
*Awarded to the Department of Maternal and Child Health of the UNC Gillings School of Global Public Health by NCTraCS Institute (home of UNC-CH's Clinical and Translational Science Awards)*

Dr. Kotch obtained intramural funding from UNC's NCTraCS program to conduct s pilot study comparing brain function in LONGSCAN alumni and matched controls. A total of 13 participants were recruited for the project, 6 LONGSCAN and 6 community-based controls. The data collected from 1 participant who had initially been screened and recruited as a control were later disqualified upon disclosure of adverse childhood experience of violence. Of the 6 LONGSCAN cases, 3 witnessed interpersonal violence in the home and 3 experienced violence victimization. Functional Magnetic Resonance Imaging (*f*MRI) and neurocognitive data were collected from each participant and utilized to examine the effects of victimization on brain development and function. Differences in brain reaction to emotional stimuli were assessed with *f*MRI scans. Each participant had an anatomical scan and was then exposed to a series of stimuli that flashed on a screen directly behind his/her head, viewed through mirrored glass. Stimuli included targets (circles of varying sizes and colors) and standards (squares of varying sizes and colors), which were interspersed with photographic images of emotionally aversive and neutral distractors. The emotional distracters consisted of pictures selected primarily from the International Affective Picture System (IAPS) and included unpleasant images of human violence, mutilation, sadness, and disease. Neutral distracters consisted of pictures of ordinary activities. Subjects were required to remain alert and to press a button with the right index finger upon detecting a target (circle).

Linear analysis of the *f*MRI data revealed significant differences in brain activity between cases and controls in reaction to the visual stimuli. Contrasts between each of the four kinds of stimuli, neutral, standard, target and aversive, were analyzed. For example, differences in the activity of specific regions of interest (ROIs) of the brains of subjects exposed to the neutral stimuli on the one hand and to the aversive stimuli on the other were aggregated separately for LONGSCAN cases and the matched controls. Then these differences in brain activity for cases and controls were compared. For each of the three ROIs, the differences in brain activity between the cases and controls were significant, in some cases remarkably so. P-values for the differences in case vs. control responses to contrasting neutral and aversive stimuli for the bilateral dorsolateral prefrontal cortex (diPFC), the ventral prefrontal cortex (vPFC), and the posterior middle frontal gyrus (PMF) ranged from .0006 to .002.

Anatomical analysis of the MRI data also revealed significant differences in the size of the ROIs. Both white matter and gray matter were smaller in size among cases than among controls ($\underline{p} < 0.01$). Affected white matter regions were the corpus callosum, mid-frontal gyrus, precentral gyrus, and the mid-temporal gyrus. Affected gray matter regions were the medial superior frontal gyrus, the precentral gyrus, and the fusiform gyrus. Analysis utilizing the RAVENS methodology similarly found significant differences ($\underline{p} < 0.01$) in the sizes of the medial superior frontal gyrus, the posterior cingulum, the corpus callosum, the precentral gyrus, the amygdala, and the fusiform gyrus.

Finally, each participant was assessed for executive functioning with the Connor's Continuous Performance Test II (CPT II) and underwent a selection of neurocognitive assessments from the Delis-Kaplan Executive Function System (D-KEFS) and the Wechsler Adult Intelligence Scale (WAIS). Analyses revealed that for nearly all D-KEFS and WAIS assessments, all cases (witnesses and victims) had significantly ($p \leq 0.05$) poorer performance than controls. On the D-KEFS Tower Test, witnesses exhibited poorer performance than either controls or cases who had

experienced violence. CPT-II variability was also greater for witnesses than for controls ($p$ = 0.052), although no significant difference was found between those who experienced violence and their controls. These differences were then correlated with the *f*MRI results. Performance on the CPT II, D-KEFS Tower Test, WAIS Digit Span Forward and WAIS Digit Span Backward assessments was significantly associated with activation and/or deactivation in each of the ROIs during the *f*MRI session. Sample sizes were too small to examine differences between cases and controls for each neurocognitive assessment.

**Neurodevelopmental Trajectories of Risk and Resiliency in the Third Decade of Life and Their Relationship to Psychopathology and Drug Use**

*Fishbein D – Principal Investigator, Kotch J – Co-Investigator*

*Funded by the Grand Challenge in Translational Medicine intramural grant competition of RTI International*

The primary goal of this study is to examine the neurobiological consequences of childhood maltreatment, in particular its impact on brain circuits implicated in decision making and emotional regulation, using functional, structural, and white matter magnetic resonance imaging (MRI). A secondary aim of the present study is to examine whether markers of psychological resiliency are associated with selective protective effects on frontal-limbic neural circuits implicated in decision making and emotion regulation. Subjects performed 1 run of the Hariri task emotional face matching task (Limbic activator), and 8 runs of a visual emotional oddball task (Frontal/limbic activator). Functional images were processed from 14 subjects with a history of maltreatment and 6 controls using the FMRIB Software Library. The main contrasts were between subjects and controls and between subjects based on resiliency score. Resilience, defined on behavioral/emotional, social, and developmental/academic domains, was examined at ages 4, 6, and 18. To prevent any one domain from disproportionately affecting the resilience score, binary indicators from the three domains were created where a score of zero indicated lack of resilience and a score of one indicated resilience. A sum score was computed across domains and ages. The bottom half of the sample (sum scores 0 to 4) were considered not resilient while children with scores 5-8 were considered resilient.

The results indicate that childhood maltreatment selectively impacts the ability to activate frontal cortical networks critical for decision making and executive function. Control subjects showed significantly larger activation in response to visual oddball target stimuli in dorsolateral prefrontal and anterior cingulate. During processing of emotional distractors, controls engaged ventral frontal emotional attention regions to a significantly greater extent than maltreated subjects. In contrast, maltreated subjects showed significantly greater activation in visual and limbic regions relative to controls. Taken together these results suggest a significant blunting of prefrontal activation and engagement in maltreated subjects, and a sensitization of limbic regions to negative affective information. Comparison of subjects who were rated as resilient versus non-resilient revealed a significantly larger activation of prefrontal executive circuits in "resilient" subjects, and a significant correlation between resilience scores and prefrontal/anterior cingulate activation during both the Hariri task and the visual emotional oddball task. Resilience scores in maltreated subjects also strongly correlated with activation in ventral visual and limbic regions during emotional distractor processing.

**Drug Use Trajectories and the Transition to Adulthood Among Maltreated Youth.**

*Dubowitz, H. – PI, Proctor, L. and the LONGSCAN PIs – Co-Investigators*
*Awarded to the University of Maryland School of Medicine by the National Institute of Drug Abuse of the National Institutes of Health, USDHHS.*
The goal of the proposed project is to contribute to the prevention of three interrelated, harmful and costly behaviors that peak in early adulthood: drug abuse, HIV/AIDS-related sexual risk behaviors, and intimate partner violence (IPV). The project builds on the 20-year multisite prospective Longitudinal Studies of Child Abuse and Neglect (LONGSCAN). LONGSCAN includes structured interviews with high-risk youth and their primary caregivers every two years from age 4 through 18, and regular review of Child Protective Services records with detailed coding of child and adolescent maltreatment (CM). The proposed study aims to add a wave of data collection when participants are between 22 and 25 years old. The specific aims are to: 1) examine the impact of CM and related risk factors on age of drug use onset, trajectories of use, and Substance Use Disorders (SUD); 2) test the independent and combined effects of CM, related risk factors, and drug use on HIV/AIDS-related sexual risk behavior and IPV; 3) test the independent and combined effects of CM, drug use, related risk factors, and mutable protective factors on early adult resilience across multiple domains; and 4) test innovative models of the long-term patterns of neglectful parenting and their impact on drug outcomes, sexual risk behavior and IPV. Neglect is by far the most prevalent form of CM and the most strongly associated with parental drug abuse, yet also the most understudied regarding its long-term course and effects on drug use. Predictive models will include tests of potential moderation by three risk factors (violence exposure, maternal depression, and parental, family, and peer drug use) and three protective factors (maternal emotional support, positive father involvement, and caregiver stability). Hypotheses for each aim will be tested using general growth mixture models, structural equation models, latent class models, and tests of model invariance. By analyzing rich multi-informant data across 14 years of childhood and adolescence to predict the development of early adult SUD, sexual risk behavior, IPV, and resilience in a high-risk sample, the proposed project will substantially enhance the empirical foundation for developing interventions and policies targeting drug abuse and related health risk behaviors.

## VI. References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## APPENDICES

### Appendix A: Longitudinal Measures Table: Ages 0-3 through Age 18.

| Variable/Domain | Measure (Author, Date) | Longitudinal Data Points & Sources[1] | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0-3 | 4 | 6 | 8 | 12 | 14 | 16 | 18 |
| *Child/Youth Characteristics* | | | | | | | | | |
| Demographics | Project developed | P | P | P | P | P | P | YP | Y |
| Birth weight/prematurity | Project developed | P | P | | | | | | |
| Separation from caregiver/first year of life | Project developed | P | P | | | | | | |
| Day care utilization | Project developed | P | P | | | | | | |
| Social competence | Child Behavior Checklist (CBCL: Achenbach, 1991a)<br>Youth Self-report (YSR: Achenbach, 1991b) | P | P | P | P | P<br>Y | P | P | <br>Y |
| Heath/handicapping conditions/injury | Project developed | P | P | P | P | PY | PY | PY | PY |
| Temperament | Infant Characteristics Questionnaire (Bates et al., 1979) | P | P | | | | | | |
| Developmental status & adaptive behavior | Battelle Developmental Invent. Screener (Newborg et al., 1988)<br>Vineland Screener (Sparrow, 1993) | PC | PC | <br>P | <br>P | <br>P | | | |
| Independent living skills | Ansell Casey Life Skills Assessment (2004) | | | | | | | | Y |
| Cognitive functioning | PPVT-R (Dunn & Dunn, 1981)<br>WPPSI (Wechsler, 1989)<br>WRAT3 (Wilkinson, 1993) | C | C | <br>C | | <br><br>Y | | <br><br>Y | |
| Pubertal development | Project developed | | | | | Y | Y | | |
| Ethnic identity | Multigroup Ethnic Identity Measure (Phinney, 1992) | | | | | Y | | | |
| Employment | Project developed | | | | | P | | Y | PY |
| Behavior problems | CBCL, YSR, Teacher Report Form (TRF: Achenbach, 1991c, 1995) | P | P | P<br>T | P<br>T | PTY | PT | P | PY Y |
| *Risk behaviors:*<br>1. Tobacco, drugs & alcohol, including drug carrying & sales | Adapted: Youth Risk Behavior & Monitoring the Future Surveys<br>Diagnostic Interview Schedule for Children (DISC: NIMH, 1998) substance abuse/dependency modules | | | | | Y | Y<br><br>Y | Y | Y |
| 2. Delinquent & violent behavior | Adapted from Huizinga et al., 1991 & 1993 & Project developed | | | | | Y | | Y | YP |
| 3. Sexual experiences & risk behaviors | Project developed | | | | | Y | Y | Y | Y |
| 4. Suicidality | Trauma Symptom Checklist (TSC: Briere, 1996)<br>Trauma Symptoms Inventory (TSI: Briere, 1995)<br>Project developed<br>DISC: Mood Disorders Module | | | | C | Y | Y<br><br>Y<br>Y | Y | <br>Y<br>Y |
| 5. Other health risk behaviors: inactive lifestyle, weight control, run away, etc. | Project developed<br>DISC: Eating disorders module | | | | | | | Y | Y<br>Y |
| Affective symptoms | PRESS (Martini et al., 1990)<br>TSC, TSI<br>CBCL | | C<br><br>P | | <br>C<br>P | <br>Y<br>P | | <br>Y<br>P | <br>Y |

| Variable/Domain | Measure (Author, Date) | Longitudinal Data Points & Sources[1] | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0-3 | 4 | 6 | 8 | 12 | 14 | 16 | 18 |
| | YSR | | | | | Y | | | Y |
| Psychopathology | DISC: Anxiety disorders, mood disorders, disruptive behavior disorders, alcohol & substance abuse, schizophrenia modules | | | | | | Y<br>P | | Y |
| Child sexual behavior | Child Sexual Behavior Inventory (Freidrich, 1997) | | | | P | | | | |
| Parental relationship and expectations | Adapted from ADD Health Study (Resnick et al., 1997) | | | | | PY | PY | PY | |
| Peer relationships | Teacher Estimation of Peer Status (Lemerise & Dodge, 1990)<br>Loneliness & Social Dissatisfaction Scale (Asher et al., 1984)<br>Project Developed<br>Network of Relationships (NRI: Furman & Buhrmester, 1985) | | | T<br>C | T | T<br><br>Y | T<br><br>Y | <br><br><br>Y | <br><br><br>Y |
| Social problem solving | Behavioral Intent Scale (Slaby & Guerra, 1989) | | | | C | | | | |
| Perceived competence | Pictorial Scale of Perceived Competence (Harter & Pike, 1984) | | | C | | | | | |
| Resilience factors; Future orientation | Project developed | | | | | Y | Y | Y | Y |
| Exposure to alcohol & drugs, risk behaviors of family & friends | Project developed<br>Adapted from CHAMPS[2] (Black et al., 1999) | | | | C | <br>Y | <br>Y | <br>Y | |
| School orientation & problems | Project developed | | | | T | YT | YT | YT | |
| Academic achievement | TRF & CBCL<br>Youth Self-report<br>Project developed | | | PT | PT | PT<br>Y | PT | PT | <br>Y<br>PY |
| Delinquency & criminal/judicial involvement (inc. detention/jail) | Project developed (from CHAMPS, Black et al., 1999)<br>Project developed (adapted from Huizinga et al., 1991 &1993) | | | | | Y | | <br>Y | <br>PY |
| Exposure to/witnessed violence<br>Witnessed violence/home & community | Things I've Seen & Heard (Richters & Martinez, 1993)<br>Project developed | | | C<br>P | C<br>P | <br>P | <br>PY | <br>PY | |
| Life events | Project developed | P | P | P | P | P | P | PY | Y |
| Parent report of child sexual abuse | Project developed | | | | P | P | | | |
| Child self-report of abuse & assault: physical, psychological & sexual | Project developed for Age 12<br>(AIP Project, Everson & Knight, 2000) for Age 16<br>Project developed for Age 18 | | | | | Y | | Y | <br><br>Y |
| Youth self-report of neglect | About My Parents (adapted from Straus, 1996a)<br>Project developed | | | | | Y | Y | <br>Y | Y<br>Y |
| Sibling/peer/dating /community violence<br>Victimization | Project developed<br>Juvenile Victimization Questionnaire (Hamby et al, 2004) | | | | | Y | | Y | <br>Y |
| Lifetime CPS history | On-going review of CPS case narratives & state central registry | | | | | | | | |
| Parenthood: pregnancy/pregnancy involvement; parenting; interpersonal violence during pregnancy; health behaviors during pregnancy, birth outcome | Adapted from PRAMS (Pregnancy Risk Assessment Monitoring System, Centers for Disease Control, 1998) | | | | | | Y | Y | Y |
| Attitudes towards parenting | Adult –Adolescent Parenting Inventory (Bavolek, 1984) | | | | | | | | Y |
| Coping style/strategies | Adolescent-Coping Orientation for Problem Experiences | | | | | | | | Y |

| Variable/Domain | Measure (Author, Date) | Longitudinal Data Points & Sources[1] | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0-3 | 4 | 6 | 8 | 12 | 14 | 16 | 18 |
| | (Patterson & McCubbin, 1987; McCubbin & Thompson, 1987) | | | | | | | | |
| Self Esteem | Rosenberg Self Esteem Scale (Rosenberg, 1965 ) | | | | | | | | Y |
| Lifetime stability/residence, caregiver | Project developed | | | | | | | | Y |
| **Caregiver Characteristics** | | | | | | | | | |
| Demographics | Project developed | P | P | P | P | P | P | P | |
| Physical health | Project developed | P | P | P | P | P | P | P | |
| Caregiver history of loss & victimization | Project developed | P | P | P | | | | | |
| Attitudes towards parenting | Adult-Adolescent Parenting Inventory (Bavolek, 1984) | P | P | | | | | | |
| Attitudes towards deviance | Attitudes towards Deviance (Huizinga, 1991) | | | | | | | P | |
| Tobacco, alcohol & drug use | CAGE (Mayfield et al., 1974)<br>Adapted from CHAMPS | P | P | | <br>P | | P | | |
| Mental health | CES-D (Radloff, 1977)<br>Health Opinion Survey (Macmillan, 1957)<br>Brief Symptom Inventory (Derogatis, 1993) | P<br>P | P<br>P | P | <br><br>P | P | P | P | |
| Caregiver religious/org. affiliation | Project developed | | | | | P | P | P | |
| Future expectations for child/youth | Project developed | | | | | PY | PY | PY | |
| **Family Microsystem** | | | | | | | | | |
| Family/household composition | Project developed | P | P | P | P | P | P | PY | PY |
| Family income, supports, welfare reform | Project developed | P | P | P | P | P | P | PY | Y |
| Hunger & poverty | Poverty Measure (Wehler, Scott & Anderson, 1992) | | | | | P | P | P | |
| Service utilization | Project developed | P | P | P | P | P | P | PY | PY |
| Family satisfaction | FAPGAR (Smilkstein et al., 1978) | P | P | | | | | | |
| Family functioning | Self-Report Family Inventory (Beavers et al., 1985) | | | P | P | P | P | P | |
| Daily stressors | Everyday Stressors Inventory (Hall, 1985) | | | P | | | | P | |
| Quality of spouse/partner relationship | Autonomy & Relatedness Inventory (Schaefer & Edgerton, 1982) | P | P | | | | | | |
| Domestic violence, interpersonal violence | Conflict Tactics Scales (Straus, 1979 & 1996)<br>Project developed | | | P | P<br>P | P | P | P<br>P | |
| Use of physical discipline | Conflict Tactics Scales (Straus 1979, 1996b) | P | P | P | P | P | P | P | |
| Quality of parents' relationship with youth | Father-Child Relationship & Mother-Child Relationship (adapted from ADD Health, Resnick, et al., 1997) | | | | | PY | PY | PY | |
| Parent involvement/support re: school | Project developed | | | T | T | T | T | | |
| Father's involvement in parenting | Project developed & Father Child Relationship | | | P | P | PY | PY | PY | |
| Future expectations for child | Project developed | | | | | | P | P | |
| Home environment | Project developed interviewer ratings | I | I | I | I | I | I | I | |
| Household rules & routines | Family Routines Scale (Jensen, 1983) | | | | | PY | PY | | |
| Parental monitoring of youth | Parental Monitoring (Patterson & Stouthamer-Loeber, 1984)<br>Project developed | | | | | PY<br>PY | PY<br>PY | P | |
| Accessibility of guns in home | Project developed | | | | | | Y | | |

| Variable/Domain | Measure (Author, Date) | Longitudinal Data Points & Sources[1] | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0-3 | 4 | 6 | 8 | 12 | 14 | 16 | 18 |
| Drugs, alcohol use in family/household | Project developed; partially adapted from CHAMPS (Black et al, 1999) | | | | | Y | Y | Y | |
| **Macrosystem** | | | | | | | | | |
| Unemployment, income, welfare reform | Project developed | P | P | P | P | P | P | P | Y |
| Neighborhood characteristics | Project developed | P | P | P | P | P | P | P | |
| 200 Geo code variables | 1990 Census | | | | | | | | |
| Social support of caregiver | Duke-UNC Functional Soc Suprt Quest. (Broadhead et al., 1988)<br>Social Provisions Scale (Cutrona & Russell, 1987) | P | P | P | <br>P | <br>P | <br>P | P | |
| Social support of child/youth | Inventory of Supportive Figures (Hunter & Everson, 1990)<br>My Family & Friends (Reid et al., 1989)<br>Project developed | | | C | <br>C | | | <br><br>Y | <br><br>Y |
| School safety | Project developed | | | T | T | | | | |
| Risk behaviors of family and friends | Project developed; partially adapted from CHAMPS (Black et al, 1999) | | | | | Y | Y | Y | Y |
| Ethnic minority status | Project developed<br>Multigroup Ethnic Identity (Phinney, 1992) | P | P | P | | P<br>Y | P | Y | Y |
| *Other* | | | | | | | | | |
| Social desirability: caregiver & child | SDRS-5 (Hays et al., 1989)<br>Revised Children's Manifest Anxiety Scale (Reynolds & Reynolds, 1994) | | | | P<br>C | P<br>Y | | | |

Notes. [1]P=parent/caregiver respondent
C= child respondent
Y= youth respondent
T = teacher
I= interviewer
[2]CHAMPS=Computerized Health Assessment using Multimedia Processing Systems

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**Appendix B: LONGSCAN Age 18 Interviews: Orders of Administration.**

**Age 18 Youth Interview: Order of Administration**
Age 18 Interview Cover (CICC)
Young Adult Demographics (YDEB)
YA Report of Household Composition (YHCA)
Peer Relationships (NRIB)
Married Peer Relationships (MPRA)
Record of Height & Weight Measurements (AWHA)
YA Report of Social Competence from the Youth Self-Report (YSCA)

*(A-CASI format begins)*
A-CASI Practice Form (CAPA)
Behavior Problem Checklist from the Youth Self-Report (YBPA)
Attitudes Toward Parenting (APIA)
Stability of Caregiver & Residence (STBA)
Health Status (AHSB)
Health Risk Behaviors (HRBA)
Trauma Symptom Inventory (TSIA)
Service Utilization (YSUA)
Welfare Reform (AWRA)
Sexual Experiences/Parenting Status (ASEC) - *If triggered, the appropriate Adolescent Parenting Form will be administered next:*
- Female Adolescent Parent (FAPA)
- Adolescent Father (AFFA)
- Pregnant Adolescent Female (PAFA)

Neglect in the last year (YNEA)
Retrospective Report of Neglect (YRNA)
Physical Abuse (LPAA)
Psychological Abuse (PALA)
Sexual Abuse (SALA)
Non-parental Victimization (JVQA)
Delinquent and Violent Behavior (DELA)
Criminal Justice Involvement (CJIA)
Tobacco, Alcohol, & Drugs Use (TADA)
Life/Self-sufficiency Skills (SKIA)
Quality of Relationship with Parents (QRPB)
Supportive Adults (YSSB)
Community Connectedness (RCIA)
Self esteem (SEMA)
Coping Style (COPA)

*(A-CASI format ends)*

Site-specific Flagged Item Probes (FIPB)
Additional Depression Assessment being administered only at the CH Site (DEQA)
Interviewer Ratings of Youth Interview (IRCE)

**Age 18 Caregiver Telephone Interview: Order of Administration**

*Domains covered in the interview:*

Youth Fatality Data
Youth's Living Situation
Youth's Household Composition
Youth's Educational Status
Youth's Employment Status
Youth's Marital and Parenting Status
Youth's Health Status
Youth's Criminal Justice Involvement
Youth Characteristics and Social Relationships
Caregiver's thoughts about what have been the best and worst events in their child's life to date
What motivated them to continue participation in the study?

**Appendix C: Description of Within-Site Attrition Analyses.**

| *Variables Assessed* | *Comparing participants present at 4 and 6 to those present only at 4* | *Comparing participants present at 6 and 8 to those present only at 6* | *Comparing participants present at 4 or 6 and 8 to those present at 4 or 6 only* |
|---|---|---|---|
| Gender | No difference for any site | No difference for any site | No difference for any site |
| Race | Fewer Whites (versus Non-Whites) and greater number of African American (versus Non-African American) in the CH non-attritted group. | No difference for any site | No difference for any site |
| Family Income | No difference for any site | No difference for any site | The SD attritted group had lower family incomes than the SE non-attritted group. |
| Parent Education | No difference for any site | The SE attritted group had higher levels of parent education than the SE non-attritted group. The NC attritted group had higher levels of parent education than the NC non-attritted group. | The SE attritted group had higher levels of parent education than the SE non-attritted group |
| CBCL Scores | No difference for any site | The NC attritted group had higher Externalizing scores than the NC non-attritted group. | The NC attritted group had higher Externalizing and Total scores than the NC non-attritted group |
| Vineland Screener | No difference for any site | No difference for any site | No difference for any site |
| Maternal Depression | No difference for any site or total sample | No difference for any site or total sample | No difference for any site |
| Functional Social Support | No difference for any site | The NC attritted group had higher functional support scores than the NC non-attritted group. | The NC attritted group had higher functional support scores than the NC non-attritted group. |
| Site Differences | No difference with regard to number of participants attritted. | The SE site had fewer drop-outs than any other site. | The SE site had fewer drop-outs than any other site. The NC site had a more drop-outs than any other site |

**Appendix D: LONGSCAN Publications and Dissertations 2006-2013.**

**In press**

Villodas, M.T., Litrownik, A.J., Thompson, R., Jones, D.J., Roesch, S.C., Hussey, J.M., Block, S.D., English, D.J., & Dubowitz, H. (*in press*). Developmental transitions in presentations of externalizing problems among boys and girls at-risk for child maltreatment. *Development and Psychopathology.*

**2013**

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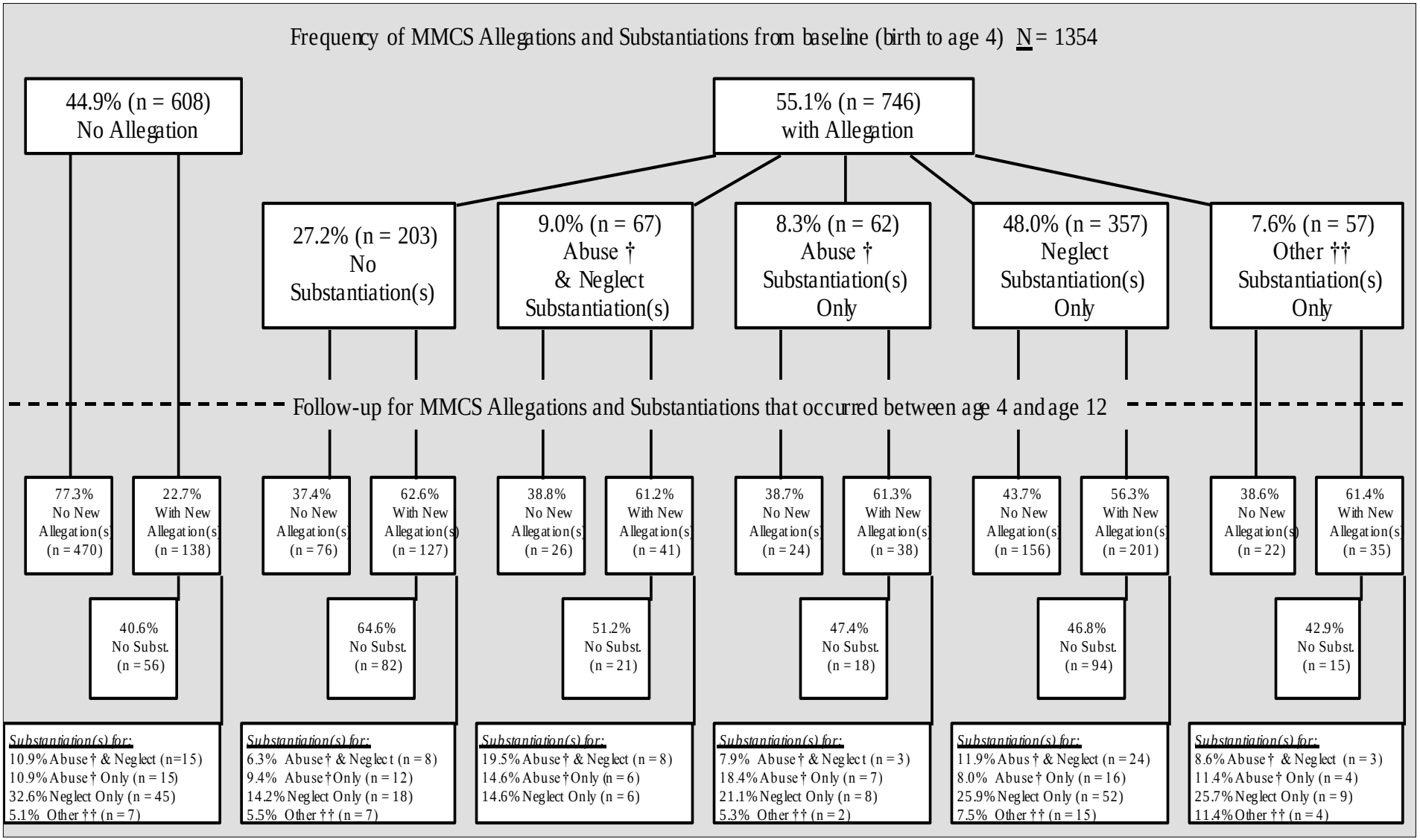
Appendix E: Epidemiology of LONGSCAN Participant' Maltreatment Histories (allegation and subsequent substantiations)




Notes. Source: data from 0603 retrieval and is only based on data through the age 12 interview.

† "Abuse" refers to physical and/or sexual abuse.

†† "Other" refers to emotional, educational, moral/legal, and/or drug/alcohol abuse.