Working Paper
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Adopting ACEs Screening and Assessment in in Child Serving Systems

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This paper presents issues, early findings, and lessons learned from a group of studies currently underway in Washington State to address screening and assessment strategies for population level efforts to address trauma. Our experience is focused principally in describing risk and developmental trajectories in children and adolescents. This paper will be updated periodically as we continue to learn more.

Manuscripts are in process for each of the studies in this working paper but presently the studies are unpublished. Also, please note that we share several interim findings from active research studies. We share this information because of the compelling nature of some of the initial findings and the expressed desire from colleagues to learn about how we have addressed data collection as well as the initial findings. Please recall that preliminary findings may change as we complete the active studies.

Background. Our unit at Washington State University, the WSU Area Health Education Center, has for the past seven years been developing strategies for trauma-informed interventions in universal child-serving systems. In public health terms, we are interested in population level surveillance and delivery of a continuum of services for children exposed to trauma and their families. The scope of adversity and resulting trauma is too great to expect tertiary behavioral health and special education systems to manage alone.

We are interested in four systems that complement tertiary treatment systems. Each system is significant because it engages the vast majority of children and families in the United States and other developed nations at some time in the lives of children. The three service systems we believe merit serious engagement include early learning and K-12 education, primary health care, and youth development (e.g., Boys and Girls Clubs, after school programs, community center programs). While public health in the United States does not have the reach that education, health care, and youth development have, we include public health as the fourth focus of partnership because of the scope of potential services and public health's mission to improve population health.

We use the following terms to address elements of the work.
- Adverse childhood experiences (ACEs) refer to inherently disruptive experiences in childhood that produce significant and potentially damaging level of stress and associated physical changes.
- Trauma refers to the physiological and psychological responses and adaption that result from adversity.
- Complex trauma refers to both exposure to multiple adverse experiences and the persisting effects of physiological, psychological, and relationship adaptations as

individuals cope with adversity. A hallmark of complex trauma is exposure to adversity often very early in life with resulting risks to optimal development.

- Trauma-sensitive actions involve a basic knowledge of trauma and early adoption of this knowledge in considering need and responsibility in working with children and families.
- Trauma-informed practice involves the specific use of knowledge about trauma and its expression to modify supports and relationships with children to improve developmental success.
- Trauma-focused practice involves supports and interventions specifically intended to address trauma symptoms that result in functional impairment of individuals.

To date, our work has focused on early learning and K-12 education to develop trauma-sensitive, trauma-informed, and trauma focused services. We have begun preliminary work in primary care. Our education systems work has included public health service partners in school-based service delivery. In our work, we are focused on trauma-informed systems development through professional development as well as phased intervention efforts including universal responses in classrooms, parent engagement, and trauma-informed school-based interventions. While beyond the scope of this paper, we place equal emphasis on mitigation of trauma effects and the promotion of social emotional development for all children. Briefly, within a Response to Intervention model (analogous to the common three tier public health model), our intervention work introduces trauma-informed classroom changes in association with evidence-based social emotional learning practices, development of trauma-informed decision-making for children who are evidencing behavior and performance deficits requiring additional supports, and use of brief individual and small group trauma focused interventions.

Current funders of our trauma intervention work include US Department of Justice and the Bill and Melinda Gates Foundation. Funded programs that have helped fund elements of the adversity screening and assessment work include the US Administration of Children and Families and Washington State Department of Health.

Lessons Emerging from the Work. Several issues have emerged in our efforts to date addressing screening and assessment of adversity. The order of the following questions does not imply prioritization nor is this an exhaustive set of issues. These questions point to lessons from the four studies we have completed or are actively conducting. The details of the four studies follow this summary. The four studies are:
- Spokane Elementary School ACE Study (completed)
- Readiness to Learn ACE study (completed)
- Impact of recent adversity on home visiting services outcomes (interim results in an active study).
- ACE screening in Head Start children and caregivers (preliminary results in an active study)

Our foundational lesson is that screening and assessment have to be meaningful to the mission and context of the system adopting these practices. If the resulting knowledge does not drive practice improvement in meaningful ways, then the fact of adversity is not helpful information. As a result, screening and assessment are tools within broader discussion of organizational change and practice change. The 'soft skills' of leadership and staff engagement, organizational

development and decision-making, working with resistance, and partnership are integral to the success of these efforts. This lesson aligns fully with the recommendations from Implementation Science and the practical lessons of innovation diffusion. These issues are beyond the scope of this working paper but essential to overall success of this work.

1. How critical are the specific questions and methods in our ACE assessment and screening activities? Our experience suggests that addressing the core domains of adversity and capturing the dose of ACE exposure is more important than the specific questions we ask. This is not to suggest that survey construction and clarity of questions are not important. Rather, our initial experience suggests that cumulative exposure in the core set of domains may be so robust that a range of well-designed strategies and questions may produce equivalent results. Precision in assessment and a restricted focus on specific trauma details may not be needed to capture the core issue of significant and multiple risks.

We suggest that the core domains are disruptions in core caregiver relationships (divorce, death, illness; reduced caregiver capacity (due to behavioral health problems, child maltreatment; family and community violence; and safety (homelessness, basic material needs). We also recommend that addressing adversity in children has a significant developmental component that needs to be addressed. Two examples illustrate this point. Homelessness and homeless risk are profound development disruptions not addressed in the adults ACEs research. Access to basic resources (adequate clothing, hygiene, food) constitutes a persistent source of stress and stigma for many children that are often treated as issues distinct from adversity. We advise that homelessness and basic needs are examples of developmentally significant stressors that enhance our ability to understand common immediate sources of significant stress in the lives of children when addressing ACEs.

2. How do we safely ask about adversity when working with children? Direct assessment of ACE exposure in children can involve real and perceived safety and ethical risks. Comparable implementation risks are not nearly as pronounced in addressing adversity in adults. These risks include mandated child maltreatment reporting, disruption of professional service relationships, and concerns about burden that interfere with core service goals. These safety and implementation issues are arguably more pronounced when ACE and trauma questions are introduced in non-treatment professional relationships and relationships where the social contract for services has not routinely included direct attention to these issues.

Detailed questions appropriate for adults will result in increased mandated child maltreatment reporting. We are encountering frequent mandated reporting demands when we ask more direct questions. Several lessons seem to be emerging from this challenge:
- Staff engagement, buy-in, and training are critical needs for adoption of screening. Staff engagement becomes more critical as direct questions involving potentially actionable information are to be included.
- Informed consent has to be treated as a central development task and parents need to fully understand the implications if they answer affirmatively to some questions.
- The increased risk with more detailed questions needs to be justified by our need to know. Our initial experience suggests that outside of formal treatment and research settings, justification of the risk is difficult to defend.

- Our experience suggests (see the initial Head Start study findings) we can avoid specific triggering questions but still can produce productive ACE dose exposure that is predictive of overall risk.

A 'need to know/consent to share' decision tree can help clarify the sensitivity and scope of information required. For example, in our Head Start outcomes study, we collect very detailed child maltreatment history and risk information once individuals are being engaged for services but the screening questions that lead to eligibility for the interventions are more general and do not include any actionable information.

3. Can we rely on voluntary completion or is universal screening indicated? Our experience is that caregivers will voluntarily complete ACE screens if they feel informed about the rationale for the questions, have a clear sense of potential benefit, and believe their information will be handled safely. Our experience introducing voluntary 'universal' screening in Head Start indicated cooperation rates in excess of 75% of caregivers.

While ACE exposure questions are not inherently distressing, the act of sharing this information may be. Particularly in service relationships like education, health care, and youth supports, issues of shame, stigma, and perceived threat about potential use of information all have to be considered and addressed in building screening systems. Given the fundamental goal is improving support to families and their children, we believe that voluntary participation is the most trauma-informed approach to consider.

In addition, we recommend that the intimate partner violence advocacy and research literatures offer key lessons that support the central role of voluntary disclosure. You never take control and choice away from a person exposed to trauma unless the duty to protect children requires you do so. We need to consider the act of discussing adversity as an empowerment process and base our professional decisions on how we conduct ourselves accordingly.

4. Can we use 'sentinel surveillance' and existing system data effectively to establish adversity and trauma risk? A distinctive feature of many universal service systems is that relationships are long term and knowledge about children and families is cumulative. Particularly in making the case for system change, our experience suggests (see the Spokane elementary school study and the Readiness to Learn study) that sentinel reports and use of systems' data can make a compelling case for ACE risk and impact. Particularly when the task is mobilizing leadership and systems to consider trauma-informed change, we think sentinel strategies and use of existing data to document adversity are lower cost and impactful ways to document need.

Our initial experience indicates that existing assessment information can often be 'retrofitted' to address adversity without introducing significant new assessment demands. The potential value of this approach is reduction of cost and burden in complex systems. The challenge is that as we move to individual assessment and intervention planning, existing knowledge and specificity may be insufficient to guide effective interventions at a given point in time. Again, we think that a decision tree in terms of what information, when, and for what purpose is the most constructive way to build effective ACEs and trauma screening and assessment practices. We strongly

support the goal of explicitly tying assessment information to action plans with realistic expectations about how information improves practice and care.

6. How do we assess for resilience assets as the companion to ACE exposure? We are not presently doing resilience screening/assessment but believe this has to be the companion activity to develop. It may be sufficient to screen first for risk but as we move to assessment and service planning we have to assess the resources and assets children and families have. Without this balanced emphasis on assets and resilience, we risk introducing a new discussion on pathology without an emphasis on growth and renewal. We include this here as challenge to ourselves to keep this balanced approach in focus.

Study 1: Spokane Elementary School ACE Study

Adverse Childhood Experience and Developmental Risk in Elementary Schoolchildren[1]

Questions: How common are significant adverse events in elementary schoolchildren? Do adverse events correlate with academic problems and health status in children?

Participants: Elementary school staff reporting on students enrolled in public elementary schools (Grades K-6) in Spokane WA. One hundred and seventy-nine teachers with a second review by building level administrators reported the status of 2,101 children in ten schools.

Method: Using a 'sentinel' reporting method with data reflecting information in school records or factual professional knowledge, teachers and building administrators completed reports of known concerns regarding academic, health, and adverse event exposure. Parent disclosure of information was treated as a factual statement.

In participating buildings, fifty percent of the enrolled students were randomly selected for staff review. Using a common reporting form and variable definitions, the research team trained school staff to report what was known and not to report opinion or suspicions. Reports were made as Yes/No responses. No identifying information regarding students was collected. Student descriptive information included grade, gender, race, Free and Reduced Meal eligibility (a poverty indicator), and Special Education enrollment. A copy of the data collection tool is attached.

Academic problems included: (1) currently not meeting grade level expectations in one or more core subject areas; (2) current attendance problems that interfere with academic progress; and (3) current school behavior concerns that interfere with academic progress.

Health concerns included: seizure disorders, speech/language disorders, autism spectrum disorders, asthma, diabetes, obesity, food allergies, serious dental problems, other chronic health conditions identified by the school staff, and a pattern of student-reported poor health.

Modeled on the Anda Felitti Adverse Childhood Experiences (ACE) scale, an adverse experiences score was calculated based on lifetime and past year exposure to ten concerns. Additional items (community violence, physical disability, homelessness) were included to describe adverse experiences and specific child maltreatment questions were replaced with a general question regarding CPS involvement of any kind. Adverse events included lifetime and past 12 month occurrence of: CPS referral or placement, homeless or highly mobile (McKinney-Vento Act eligible), parents' divorce or separation, death of a primary caregiver, family member

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incarceration, family member physical disability, family member mental illness, family member substance abuse, child witness of domestic violence, and child exposed to community violence. Severe basic need concerns (clothing, food, hygiene) were reported but not included in the calculation of adverse event exposure for predicting child adjustment.

Results: Students were 78% White. Fifty-five percent of students were Free and Reduced Meal eligible. Thirteen percent of students were in Special Education. Staff identified 35% of students with academic problems, 13% with attendance problems, and 27% of students with school behavior problems. Staff identified 21% of children as having chronic health concerns. Specific chronic health conditions occurred infrequently (<3% of sample) with the exception of speech/language problems (8%) and frequent reports of poor health (9%).

Staff identified 45% of the students who experienced one or more adverse events in their lives. Twelve percent of students experienced three or more adverse events. The following tables present rates of exposure to specific adverse events in the child's lifetime and in the past 12 months.

Percent of Students by Adverse Event Exposure Types Lifetime and Past 12 Months

	Lifetime	Past 12 months
Parents Divorced/Separated	36%	6%
Residential Instability	9%	6%
Domestic Violence Witness	9%	5%
CPS Involved	9%	4%
Jailed Family Member	9%	4%
Substance Abuse in Family Member	7%	3%
Basic Needs	7%	4%
Mental Health Disorder in Family Member	5%	3%
Physical Disability in Family Member	3%	1%
Community Violence Exposure	3%	1%
Parent/Caregiver Death	2%	1%

Percent of Students by Number of Adverse Event Exposure Types Lifetime and Past 12 Months

	Lifetime ACE Exposure	Past 12 Month ACE Exposure
None	54%	81%
One	23%	12%
Two	11%	4%
Three	5%	2%
Four	3%	1%
Five	2%	0%
More than Five	1%	0%

The number of adverse events correlates significantly with Free and Reduced Meal eligibility (r=.35 lifetime ACEs, r=.24 past 12 months ACEs) but were not related to gender, race (White or Students of Color), grade level, or Special Education status.
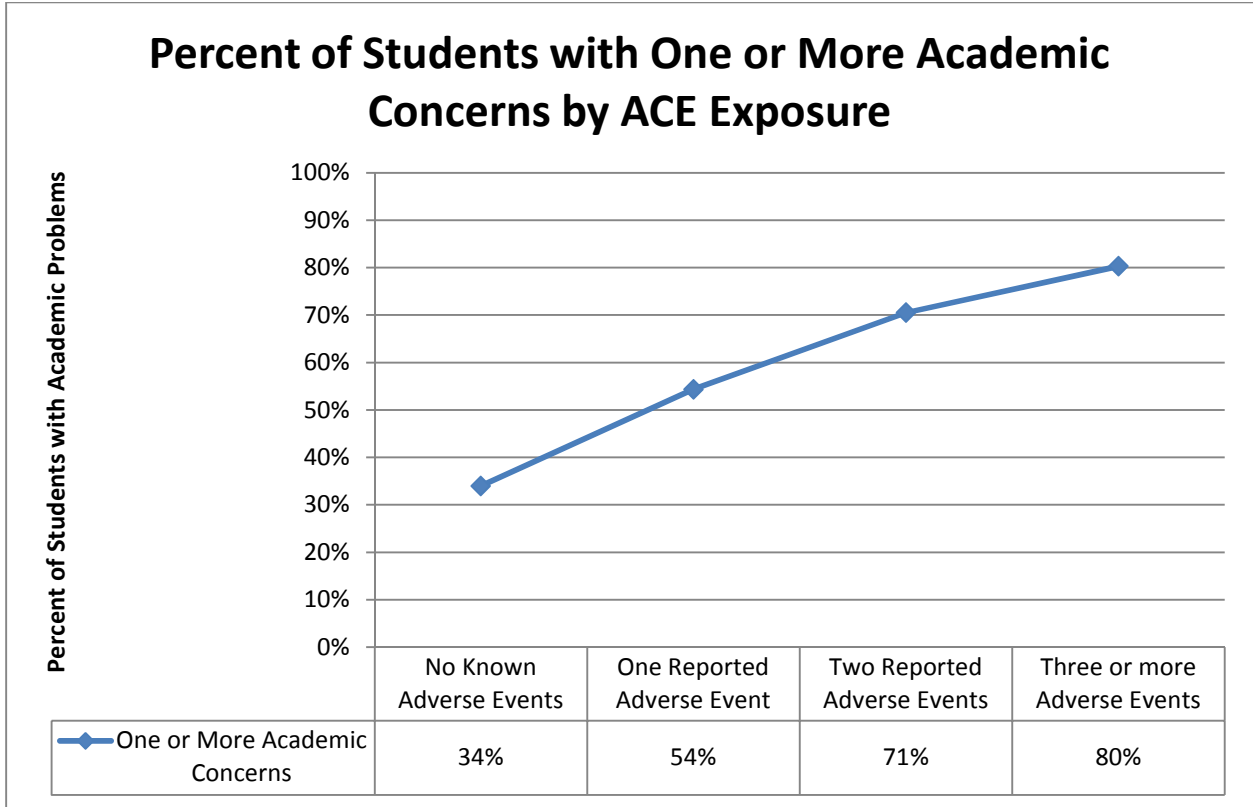
We grouped adverse events as none, one, two, and three or more adverse events. We used Special Education status, students' grade level, race, Free and Reduced Meals, teachers, school building, and gender as control variables in generalized estimating equation analyses. ACE exposure significantly predicts academic risks and chronic health problems after controlling for these other factors. Odds ratios demonstrate a linear dose effect with increasing ACE exposure

Odds Ratios for Child Development Problems Compared to No Known Lifetime ACEs

	Academic Failure	Severe Attendance Problems	Severe School Behavior Concerns	Frequent Reported Poor Health
Three or More ACEs	2.9	4.9	6.0	3.9
Two ACEs	2.5	2.9	4.2	2.4
One ACE	1.5	2.1	2.2	2.3

*ACE level of exposure in the past 12 months provided comparable risk predictions

For academic and health risk, the level of ACE exposure was the principal predictor of attendance and behavior problems. For academic failure, ACE exposure was the second most powerful predictor of child adjustment following knowing if the child was in Special Education classes. The relationship between ACE exposure and health was restricted to frequently reported poor health. For this health indicator, ACE dose was the sole significant predictor of risk. The following chart demonstrates the linear relationship between the occurrence of one or more school problems (academic, attendance, and behavior) and the dose of ACE identified for the students.

Percent of Students with One or More Academic Concerns by ACE Exposure

	No Known Adverse Events	One Reported Adverse Event	Two Reported Adverse Events	Three or more Adverse Events
One or More Academic Concerns	34%	54%	71%	80%

Y-axis: Percent of Students with Academic Problems

Conclusion: These results confirm adult studies that adverse event exposure is a common experience in life. The results also support adult research linking adverse events with social and health risks. Significant exposure to adverse events is commonplace with one-in-five young children exposed to two or more significant stressors. We believe this study used a very conservative ACE reporting strategy. Developmental risks resulting from ACEs in the general population are measurable early in childhood and are associated with health status and with academic success as principal developmental tasks of childhood.

The results support the relevance of adverse events as a focus for school-based risk reduction efforts. Indeed, these results suggest that attending to ACE exposure in children may be the most powerful predictor of risk for schools to address compared to other common school risk indicators.

Limitations: This is a single community study and replication in other communities is needed. Spokane has very low rates of ethnic and cultural diversity and as a result these findings may not reflect student need and impact in more diverse communities. The nature of ACE reporting also is likely to significantly under-represent actual ACE exposure.

Study 2: Readiness to Learn Adversity Study[2]

Questions: How common are significant adverse events in at-risk children served through the Washington State Readiness to Learn program?
Do adverse events correlate with academic and social emotional adjustment in this population of children?

Readiness to Learn (RTL) is state-funded program in which local schools and community partners develop child and family support services for students at risk of academic failure because of non-academic barriers. The program has been in operation for 20 years and in 2010-2011 was comprised of 28 local consortia serving 91 school districts across the state. Washington State University's Area Health Education Center developed a common evaluation system to document need, services, and outcomes across these programs.

Participants: Participants included a pool of 6,152 children enrolled in RTL from early learning programs through Grade 12 with information reported in the state RTL evaluation database for the 2010-2011 program year. From this pool, needs assessment data was sufficiently complete to include 5,443 students in this study.

Method: In the RTL program evaluation, 25 areas of child and family needs are potentially reported as well as the principal reasons for referral to the program. In calculating adverse childhood experiences (ACEs), we restricted information from the needs assessment and 'reasons for referral' reports to address social and familial issues known to result in risk of persistent stress children. Full annual evaluation reports presenting the methodology in greater detailed are available at http://www.k12.wa.us/ReadinessToLearn/Resources.aspx.

RTL service staff are responsible for collection and reporting of data. Annual trainings are conducted in definition of the items and minimum data collection expectations. The strong local control of the RTL programs means that across the consortia there are significant variations in the emphasis placed on data completion, interpretation of assessment, and effectiveness in eliciting information is an inherent element of RTL data reporting.

The RTL needs assessment was not specifically developed as a screener for ACEs. The result is that several characteristics of children's experiences of adversity are not included in this analysis. Using the RTL needs data, the ACE scale items include the following eight issues: any identified food, clothing, or housing concern as a basic need; reported legal challenges in the family; concern about substance abuse in the family; family violence (domestic violence); parenting support needs; any report of abuse, neglect, or a CPS referral during the year; homeless risk; and parenting resources (single parent or child living other than with his or her biological parent). Each item was coded as '1' if reported and '0' if not reported. We then summed these items to produce an RTL ACE score. Using Anda and Felitti's original work as a reference, questions we did not address include death of a parent, incarceration of a family member, and the more detailed questions addressing child maltreatment type.

Three principal adjustment measures assessed in the RTL evaluation are reported in this study and reflect baseline information for one academic year: teacher ratings of students' grade level on nine math and reading competencies (Grade Level Expectation Mastery, GLEs), social emotional adjustment assessed by the Strengths and Difficulties Questionnaire (SDQ), and school attendance.

Academic information is reported for the marking period prior to program entry for the academic year and then for the final marking period in the academic year. SDQs are completed by teachers, parents, and older students at the beginning and end of the academic year. GLE teacher ratings are collected at the program entry/beginning of the program year and at the end of the program year. Student demographics and other information such as enrollment in other program such as special education were included as control variables in analyses.

ACE scores were entered into hierarchical regression analyses and GLM ANCOVA analyses to examine change from baseline to outcome information.

Results: Results are organized in terms of ACE scores' relationship to initial risk of academic and adjustment problems at the start of the program year. The impact of adversity on program outcomes is beyond the scope of this summary but is addressed in detailed in the full 2010-2012 evaluation report available on line. In brief, level of adversity was found to be a major moderator of program service benefits.

Half of the RTL enrolled students are identified with two or more ACEs. Nineteen percent of the students have no identified ACEs. RTL students with no ACEs primarily are enrolled in RTL because of academic failure with no associated adverse experiences. Academic performance was the sole RTL need for 80 percent of students who had no reported ACEs. For the majority of RTL enrolled students, students enter the program as a result of multiple academic, social, behavior, and family needs.

ACEs Groups Reported for RTL Enrolled Students

	Total N=5,443
No Reported ACEs N=1,040	19%
One ACE N=1,756	32%
Two ACEs N=1,196	22%
Three ACEs N=778	14%
Four or More ACEs N=673	12%

In order to assess the impact of ACE exposure on RTL outcomes, we conducted regression analyses where we controlled for gender, grade level, new or returning students, Special Education status, FRM enrollment, and race (white compared to students of color). We examined the predictive power of knowing ACE level for the dichotomous (yes/no) report of RTL student

academic failure, poor attendance, school behavior concerns, and other behavioral health concerns.

We found that ACE level was a powerful predictor for attendance, school behavior problems, and overall behavioral health problems. As ACEs increase, the odds that attendance problems and behavioral health problems occur rise progressively with increasing ACEs. With four or more ACEs, attendance problems are five times more likely. For behavioral health problems, the odds increase by more than six times. In students with the four or more ACEs, academic failure is twice as likely and school behavior problems are three times as likely.

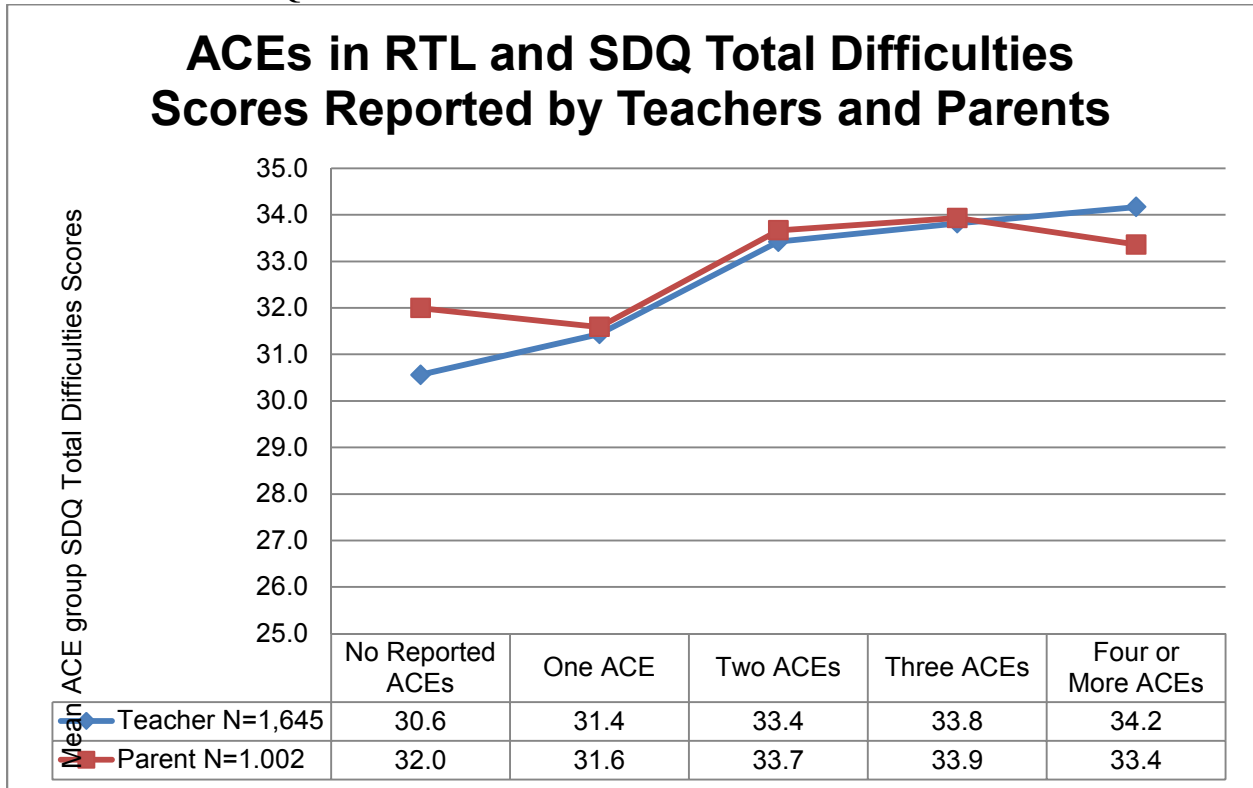**Odds Ratios for School and Behavioral Referral Problems with Increasing ACEs in the RTL Population**

	Poor Attendance	School Behavior	Behavioral Health Problems
Four or More ACES N=663	5.3	3.1	6.5
Three ACEs N=756	3.0	1.5	2.0
Two ACEs N=1,141	2.5	1.6	1.8
One ACE N=1,612	1.6	1.2	1.2
No Reported ACES N=1,020	1.0	1.0	1.0

We also examined the relationship of ACEs in RTL students on our outcome measures.
- There is a clear dose effect for ACEs on teacher and parent SDQ Total Difficulties scores. As ACEs increase, level of social-emotional distress increases.
- Confirming the finding above regarding attendance problems, there is a clear dose effect for ACEs on school attendance in the marking period prior to RTL supports in this academic year. As ACEs increase, the rates of attendance drop significantly.
- In high school students, as ACEs increase, GLE mastery is significantly lower. We did not find this pattern in Grade K–8.

The following figures summarize the significant effects for ACEs on adjustment, attendance, and academic progress.

ACEs in RTL and SDQ Total Difficulties Scores

ACEs in RTL and SDQ Total Difficulties Scores Reported by Teachers and Parents

	No Reported ACEs	One ACE	Two ACEs	Three ACEs	Four or More ACEs
Teacher N=1,645	30.6	31.4	33.4	33.8	34.2
Parent N=1.002	32.0	31.6	33.7	33.9	33.4

Teacher: F (4,1627) = 12.1, p<.001
Parent: F (4,984) = 4.0, p<.003

ACEs and Percent Initial Attendance

ACEs and Percent Initial Attendance in Grades K–12

	No Reported ACEs N=578	One ACE N=800	Two ACEs N=537	Three ACEs N=409	Four or More ACEs N=383
◆ Percent Initial Attendance K-12	91%	90%	88%	88%	85%
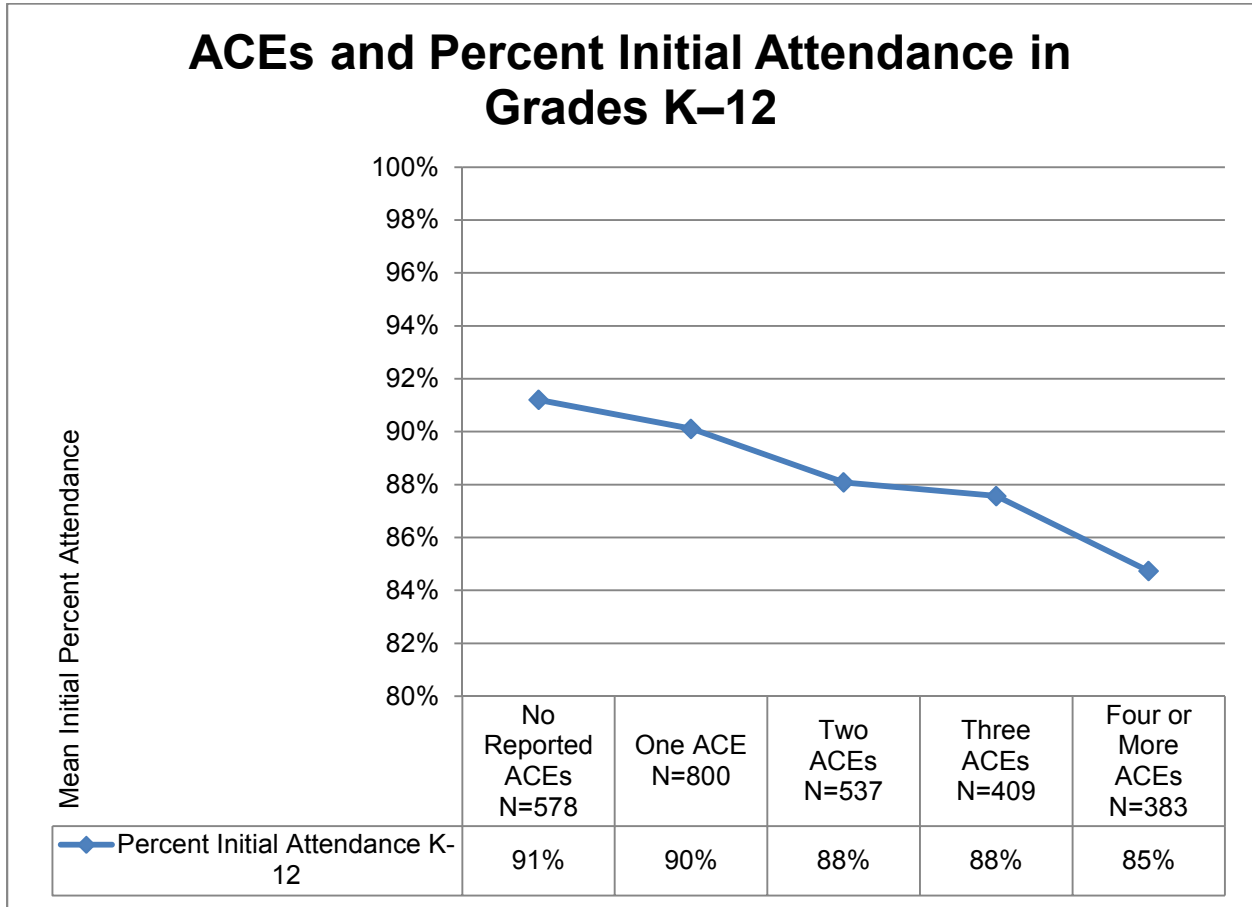
Main Effect: $F_{(4, 2689)} = 16.6$, $p < .001$

ACEs and Percent Initial Attendance by Grade Group

Percent Attendance Initial Grades K–12 N=2,707

	No Reported ACEs	One ACE	Two ACEs	Three ACEs	Four or More ACEs

Categories along x-axis:
Grades K-5 N=329, Grades 6-8 N=142, Grades 9-12 N=107 (No Reported ACEs); Grades K-5 N=500, Grades 6-8 N=177, Grades 9-12 N=123 (One ACE); Grades K-5 N=326, Grades 6-8 N=102, Grades 9-12 N=109 (Two ACEs); Grades K-5 N=321, Grades 6-8 N=97, Grades 9-12 N=81 (Three ACEs); Grades K-5 N=277, Grades 6-8 N=84, Grades 9-12 N=72 (Four or More ACEs)

ACEs X Grade Interaction: $F_{(8, 2689)} = 2.5$, $p < .01$

ACEs and Teacher Initial Grade Level Expectation Mastery

ACEs and Teacher Initial Grade Level Expectation Mastery in Grades 9–12

	No Reported ACEs N=108	One ACE N=110	Two ACEs N=109	Three or More ACEs N=144
Teacher Initial GLE Grades 9-12	6.0	5.6	5.3	4.6

Y-axis: Mean GLEs Mastered (scale 0.0 to 9.0)
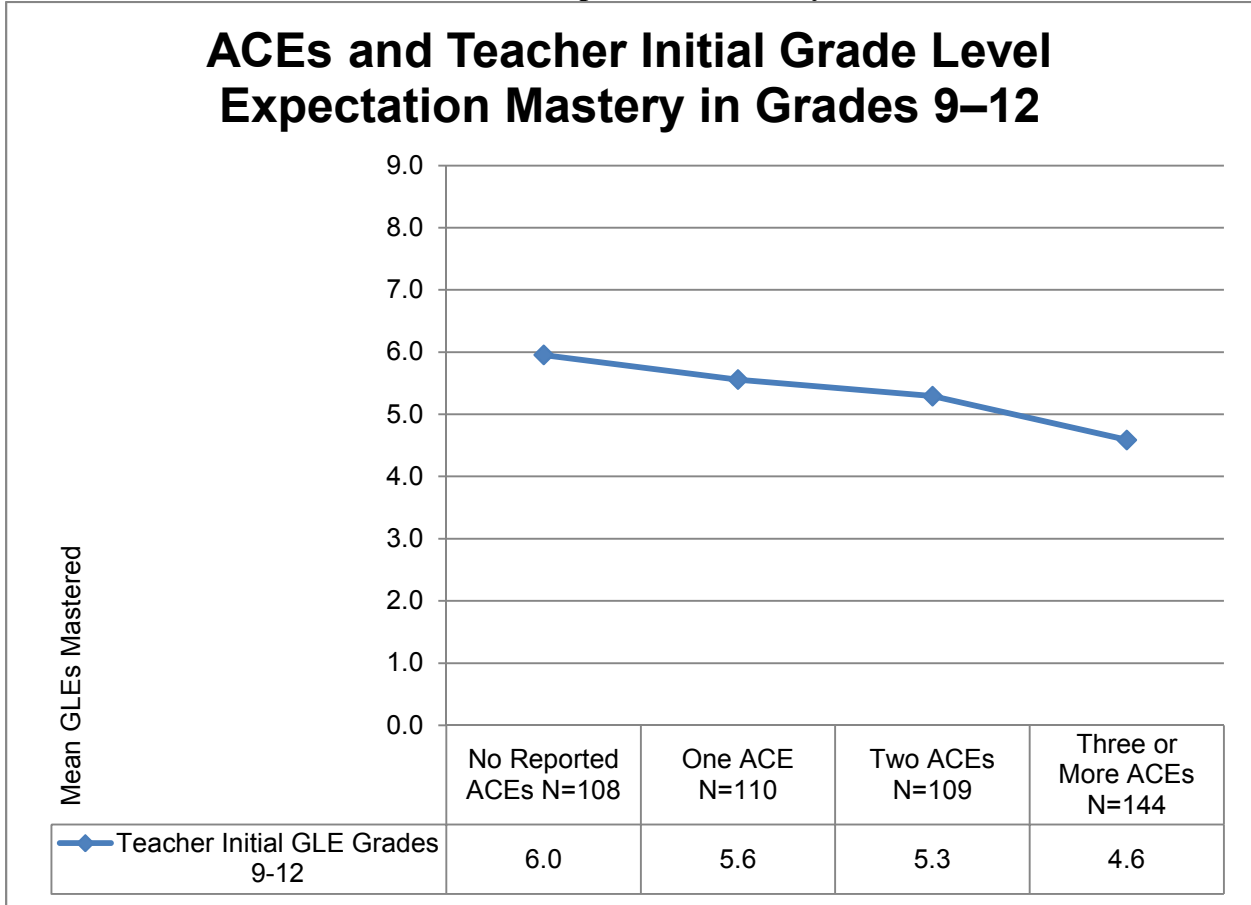
$F(3,464) = 2.9$, $p<.03$

Conclusion: The RTL study demonstrates that needs assessment information can be adapted to provide ACE score results that are highly predictive of risk in a large sample of school age children. Using a distinct methodology, these findings confirm the findings in the Spokane ACEs Elementary School study presented previously. Increasing ACE exposure is associated with academic and social emotional adjustment problems during childhood and indicates direct risks to long term social adjustment.

The risk of ACE exposure is immediate, significant, and directly affects the success not only of individual children but of educational systems. The RTL population is by definition a high risk population but even within this high risk group ACEs appear to be predictive of differential levels of risk.

Limitations: While complete data in this analysis is available on large numbers of students across a variety of communities, staff practices and data completion vary significantly. There is a structural constraint that we will have the most complete data for students who remain in RTL services longer. As a result, there may be some bias introduced because of selective retention in the program.

Study 3: Adversity as a Moderator of Home Visiting Outcomes[3]

Question: What is the effect of adversity on program outcomes in a sample of young mothers receiving Nurse Family Partnership services?

Funded by the US Administration for Children and Families, WSU's Area Health Education Center is conducting a randomized control trial of parenting and relationship enhancements to Nurse Family Partnership (NFP). Enrollment in the study is closed, and this longitudinal study will be completed in early 2014. This study is referred to as Summer's Project in memory of a three year old girl murdered by her parents.

Baseline findings in this study of 209 mothers (92 couples, 117 single mothers) demonstrate significant rates of behavioral needs, social disruption, and violence exposure in both mothers and their male partners. This report provides interim findings for the effects of adversity in the year prior to NFP enrollment on program outcomes six and 12 months postpartum. This is a longitudinal study with follow-up through 24 months postpartum. Presently, data collection is largely complete for six months postpartum and significant but not complete data is available for 12 months postpartum.

We did not design the study to specifically address ACE exposure but did include questions that allowed for report of adversity in the year prior to enrolling in NFP. We also report home visiting nurses report of ACE exposure in a random sample of 71 mothers from the study sample.

Participants: 209 mothers enrolled in NFP in Spokane WA were assessed using baseline history interviews and a battery of standardized assessments conducted by a research team independent from the nurse home visitors.

Method: Research interviews are conducted at baseline and then at three month intervals until 24 months after the birth of the child whose pregnancy resulted in the mother's enrollment in NFP. A battery of validated assessments is administered in independent home interviews conducted by professional data collection staff from Washington State University.

Independent interviews are conducted with the enrolled mothers and fathers. This summary focuses on findings with the enrolled mothers.

Results: Because of the commonplace nature of risk in the Summer's Project participants, we examined if the cumulative effects of these risks added information above the utility of each specific risk dimension. We refer to this as 'cumulative adversity'. To calculate the adversity scale, we counted the presence or absence in the 12 months prior to NFP enrollment a behavioral health concern (self-report of mental health need and/or alcohol treatment need), social vulnerability (self-report of housing risk and/or legal need), and violence risks at baseline (based on the Conflict Tactics Scale). We found that multiple adverse events are common for both men and women with roughly 40% of both participants reporting two or more adverse circumstances at baseline.
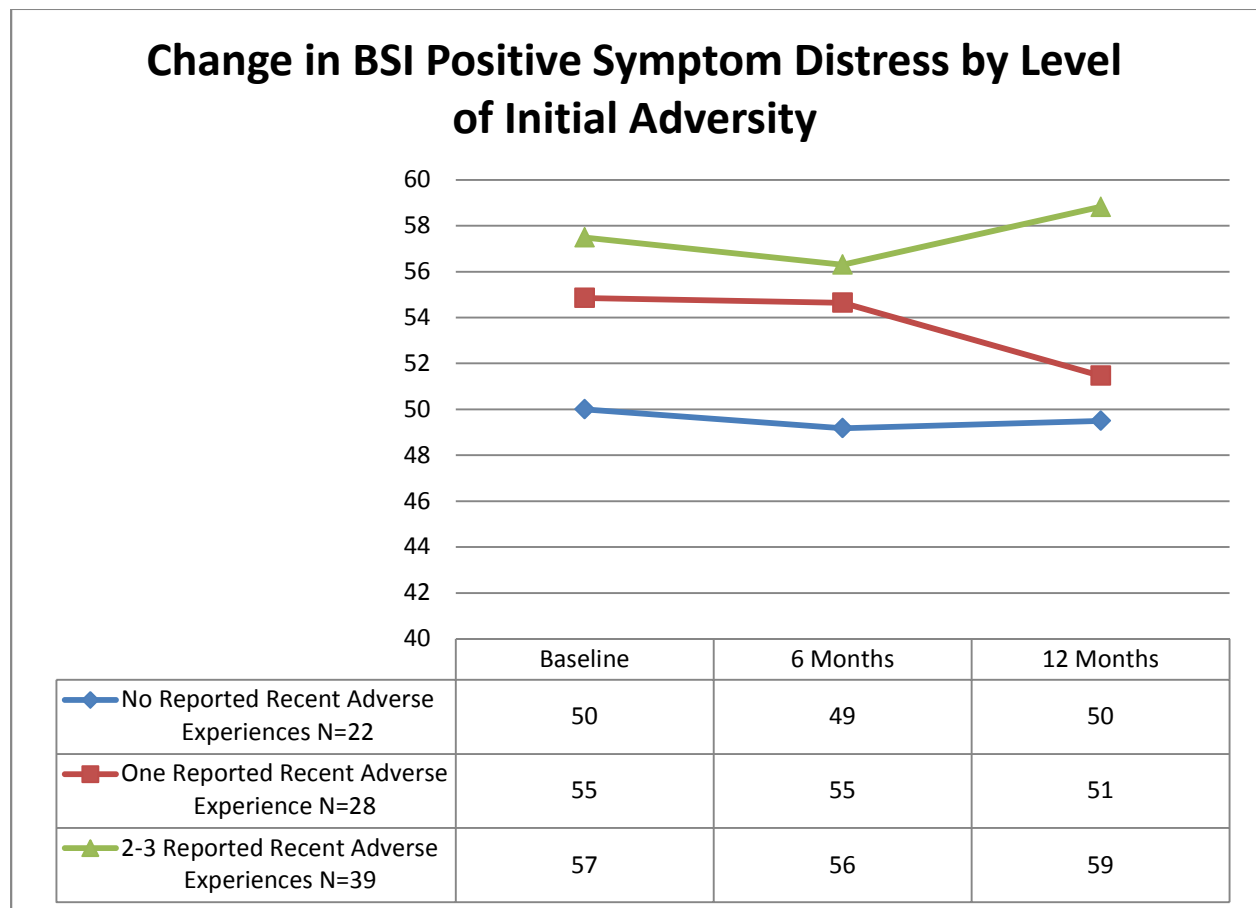
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[3] Author: Christopher Blodgett
Interim findings in an active research study.

Adversity Groups in Summer's Project Clients

Adversity Groups	Mothers at Baseline	Fathers at Baseline
No Socio-behavioral Risks	25%	21%
One Risk	34%	38%
2-3 Risks	41%	41%

We do find that cumulative adversity is associated with baseline risk and change in maternal adjustment at six and 12 months after the birth of the child. Adversity level is associated with level of adjustment on all our study measures.

On the Brief Symptom Inventory, mothers' level of emotional distress increases with increasing levels of adversity on *all* the scales. This is not unexpected because behavioral health need is one of the contributing conditions to adversity scale. The following chart presents the findings for the Positive Symptom Distress summary measure as an example.

Change in BSI Positive Symptom Distress by Level of Initial Adversity

	Baseline	6 Months	12 Months
No Reported Recent Adverse Experiences N=22	50	49	50
One Reported Recent Adverse Experience N=28	55	55	51
2-3 Reported Recent Adverse Experiences N=39	57	56	59

Main Effect: $F(2, 86) = 8.4$, $p<.001$
Change over time: $F(2, 86) = 3.0$, $p<.05$

On the HOME Inventory scales, increasing adversity is associated with lower HOME scores on multiple scales at 6 months (Learning Materials, Involvement, Total Score).

HOME Scale Scores at 6 Months Postpartum Across Adversity Groups

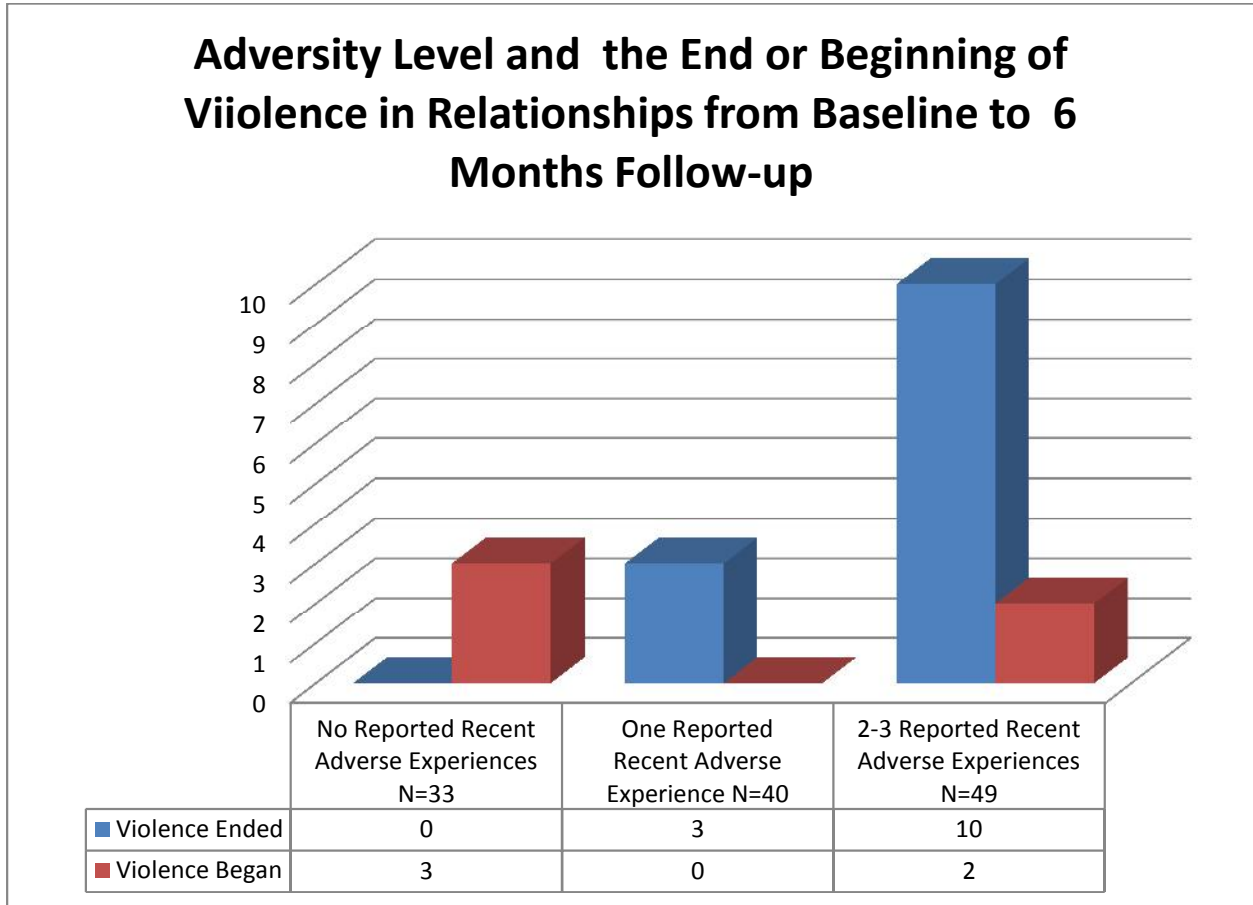|	Learning Materials	Involvement	Total Score
No Reported Recent Adverse Experiences N=27	7.6	4.8	36.1
One Reported Recent Adverse Experience N=31	6.4	4.0	33.9
2-3 Reported Recent Adverse Experiences N=43	6.5	3.7	33.0

All results are significant at p<.01

On the Parenting Stress Index, mothers' parenting stress increases with increasing baseline adversity.

Adversity Groups and PSI Scale Scores at 6 Months Post-Partum

	No Reported Recent Adverse Experiences N=32	One Reported Recent Adverse Experience N=39	2-3 Reported Recent Adverse Experiences N=51
Parenting Difficulty	39	60	61
Total Stress	31	45	52
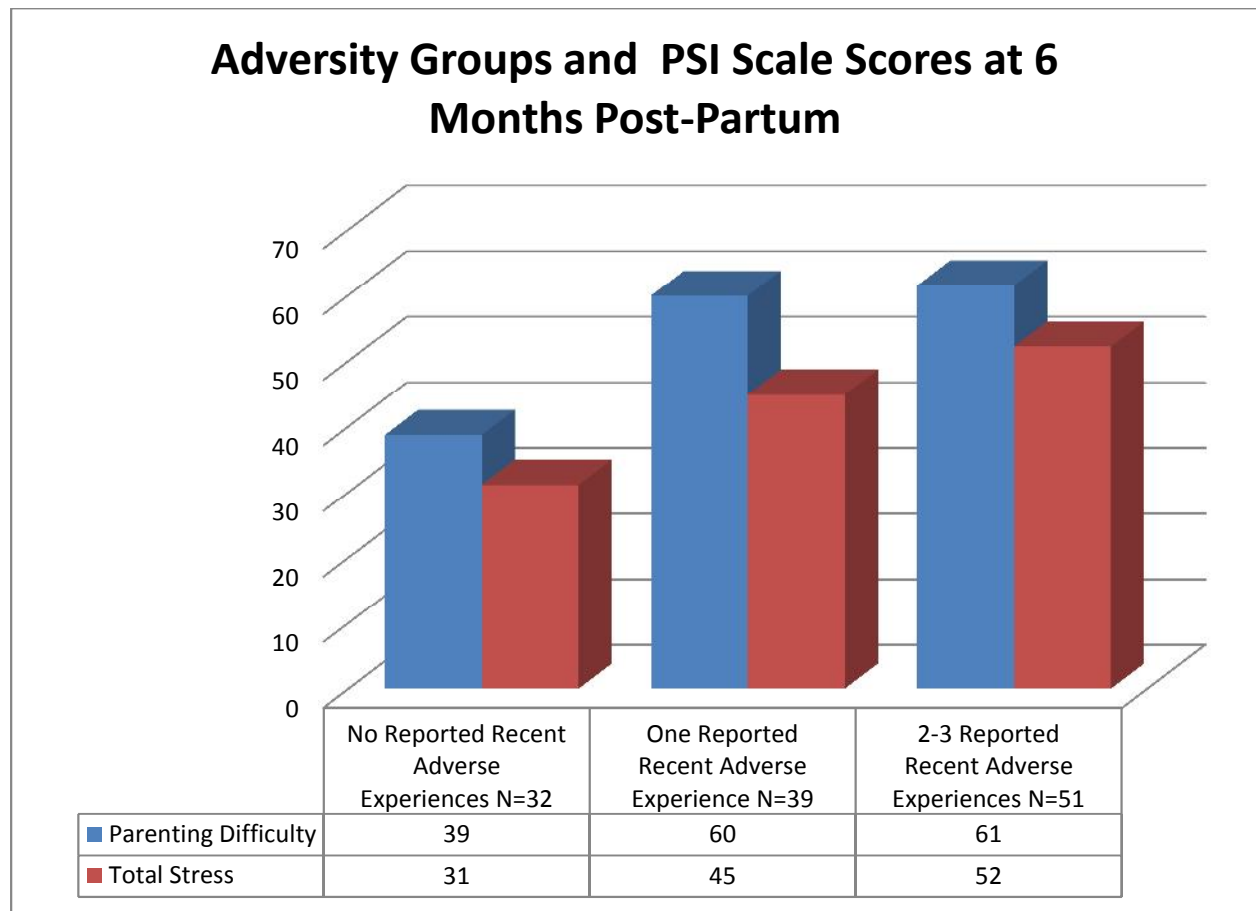
$F(2, 119)$, 6.7 for PD (p<.002 and 5.2 for Total Stress (p<.007)

On the Conflict Tactics Scale, we find large initial gains in reduced verbal aggression by the mother to her partner at 6 months follow-up but that initial findings at 12 months do not suggest this is a persisting change. Overall, as adversity increases, mothers' use of verbal aggression in relationships also increases significantly.

We do find that in the highest adversity group that violence in relationships ended significantly at 6 months postpartum compared to baseline experiences.

Adversity Level and the End or Beginning of Viiolence in Relationships from Baseline to 6 Months Follow-up

	No Reported Recent Adverse Experiences N=33	One Reported Recent Adverse Experience N=40	2-3 Reported Recent Adverse Experiences N=49
Violence Ended	0	3	10
Violence Began	3	0	2

Wilcoxon Signed Ranks for 2-3 Recent Adverse Experiences, z = 2.3, p<.02
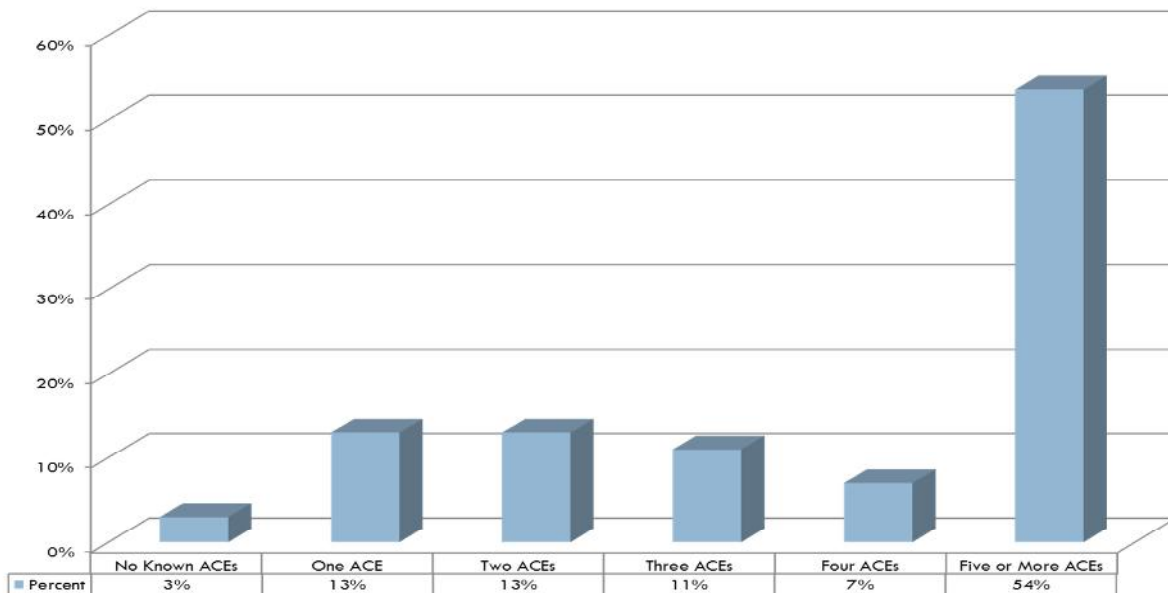
In summary, while the three types of adversity individually are significant influences on adjustment for men and women in the study, we find that the cumulative adversity level is associated with large baseline differences and is a powerful predictor of progress in families enrolled in NFP services.

ACEs pilot study in Summer's Project. Because of the observed scope of adversity in the NFP clients, we conducted a pilot study using the NFP nurses to randomly report on known adverse childhood experiences in a randomly selected set of enrolled mothers. This sentinel design was modeled on the elementary school study summarized above as Study 1 although the specific ACE questions were adapted from the Head Start study reported in the next section of this paper. As in the previous study, nurses were instructed to report only what they factually knew about their clients.

Percent Exposure by Type of ACE

Adverse Childhood Experience Questions (Questions were completed by the nurse reporting their factual knowledge of the enrolled mother's experiences). The questions are phrased from the perspective of the parent although reported by the nurse.	Percent of NFP Mothers
Did a parent or other adult in household often or very often -- swear at you, insult you, put you down, or humiliate you? Or act in a way that made you afraid that you might be physically hurt?	54%
Did your family ever have any type of contact with Child Protective Services?	45%
Were you ever homeless?	35%
Did you often or very often feel that no one in your family loved you or thought you were important or special, or Your family didn't look out for each other, feel close to each other or support each other?	46%
Were you parents ever separated or divorced?	86%
Was your mother or stepmother: often or very often pushed grabbed, slapped, or had something thrown at her? Or Sometimes, often, or very often kicked, bitten, hit with a fist, or hit with something hard? Or ever repeatedly hit at least a few minutes or threatened with a gun or knife?	34%
Did you live with anyone who was a problem drinker or alcoholic or used street drugs?	63%
Was a household member depressed or mentally ill, or did a household member attempt suicide?	69%
Did a household member go to prison?	32%

Percent of Known ACEs in a Random Sample of Spokane NFP Mothers (N=71)

	No Known ACEs	One ACE	Two ACEs	Three ACEs	Four ACEs	Five or More ACEs
Percent	3%	13%	13%	11%	7%	54%

This pilot study confirms - based on nurse knowledge - that ACEs and not just recent adversity are pervasive concerns in this population of mothers enrolled in Nurse Family Partnership.

Conclusions: Baseline results from this large independent study of Nurse Family Partnership indicate that mothers entering this well-recognized home visiting program experience high levels of adversity. Further, increasing levels of adversity in the year prior to program entry indicate greater levels of need at baseline and differential responses to NFP services. With the exception of possible reductions in relationship violence, mothers with higher levels of adversity are highly symptomatic and may not show gains in mental health adjustment and parenting stress. The reduction in relationship violence is a surprising change but the results are too early to support any firm conclusions. We believe that these initial findings strongly support further investigation of adversity and ACEs as major moderators of home visiting care conceptualization.

Limitations: While this is one of the largest independent studies of NFP conducted to date, the results reflect the experience in one program and one community. Also, only baseline findings are complete and the interim results for follow-up findings may change as we complete data collection and follow mothers for longer periods of time.

Study 4: ACE Screening in Head Start[4]

Questions: What is the nature of ACEs exposure in Head Start caregivers and children? Are ACEs associated with developmental and programmatic outcomes in Head Start?

Funded as part of the US Department of Justice's Safe Start Initiative, WSU's Area Health Education Center is conducting a trauma-informed systems change effort in Spokane WA's Head Start program including the introduction of parent support interventions delivered by Head Start staff for children with high ACE scores. Two interventions, the Attachment, Self-Regulation, and Competence Framework and the Circle of Security parent education intervention are being compared with trauma-sensitive Head Start practices in a randomized control group study.

As part of the Safe Start project, we have introduced voluntary screening of ACEs in both the primary caregiver and the family's youngest enrolled child. The screening study is a distinct effort in its own right to introduce comprehensive screening for ACEs in Head Start and test its value but screening results also are used to determine eligibility for the intervention study.

Screening began in March 2012 after a six month consensus and design process with Head Start staff and leadership. This summary presents initial results for the period March 2012 to early June 2012. Screening is an ongoing activity with an anticipated 300-450 additional family screens each year.

Participants: One hundred and twelve parents from a pool of approximately 500 enrolled families voluntarily consented to complete the screening addressing ACE exposure in their youngest enrolled child and in the caregiver's own childhood. Children enrolled in Head Start range in age from 3-5 years old (60% female, 40% male). Twenty percent of the pool of potential participants was excluded because of family crisis status, foster care placements, and language limitations for the caregiver. Among eligible caregivers contacted, the voluntary completion rate was 76%.

Method: Voluntary caregivers were interviewed by their assigned social service Head Start staff. Caregivers were first asked to report on ACE exposure for their youngest enrolled child and then to report on their own childhood experiences. Screening results were then linked to routinely collected Head Start assessment and demographic datasets.
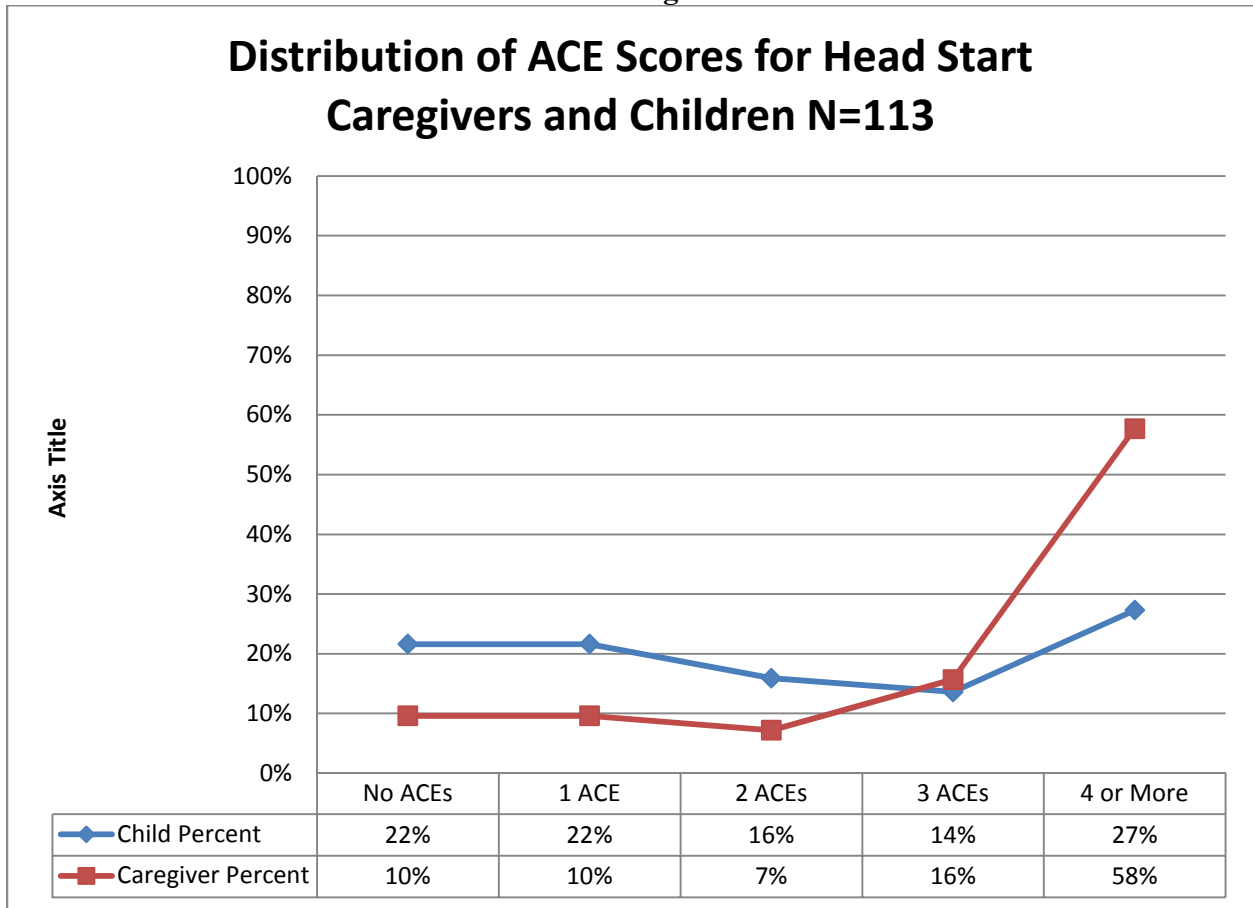
Screening questions included a modified version of the original Anda and Felitti ACE screener. The screening protocol and questions are attached. The questions regarding child maltreatment were modified to reflect CPS involvement. Homelessness was added as an item.

Results: The Mean ACE score for caregivers is 4.0 on a 0-9 scale. The Mean Ace Score for children is 2.5 on a 0-9 scale. The following chart presents the adult and child percentages for the nine items. Child ACE and Caregiver ACE scores are moderately correlated (r=0.30, p<.05). The

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[4] Author: Christopher Blodgett and Angel Griffith
Interim findings in an active research study.

distribution of caregiver ACE scores are highly positively skewed with 58% of parents report four or more ACEs in their own childhood.

Distribution of ACE Scores for Head Start Caregivers and Children

Distribution of ACE Scores for Head Start Caregivers and Children N=113

Axis Title

	No ACEs	1 ACE	2 ACEs	3 ACEs	4 or More
Child Percent	22%	22%	16%	14%	27%
Caregiver Percent	10%	10%	7%	16%	58%

Percent Affirmative Response for Specific ACE questions by Caregivers and Children

Spokane Head Start: Specific Child and Caregiver ACE Exposure Items
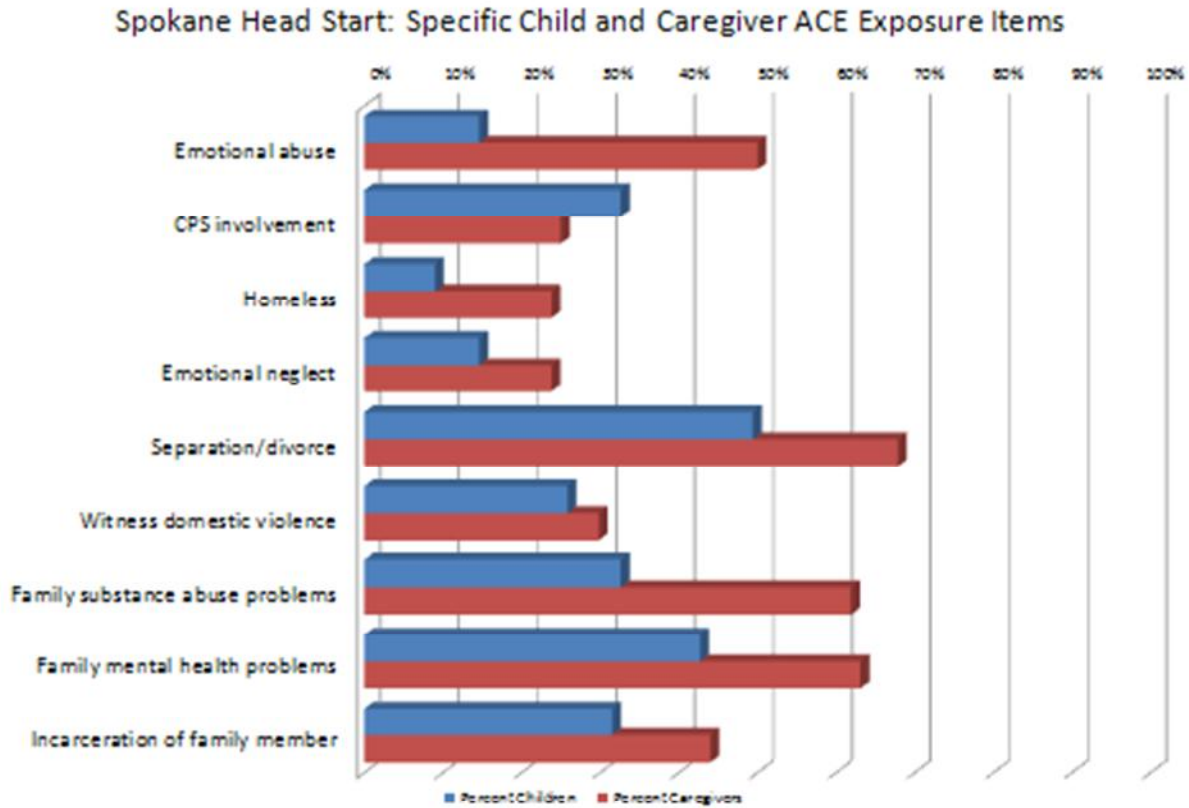
Increasing child ACE scores were found to result in increased reports of social emotional developmental delays based on beginning the academic year caregiver report using the Devereux Early Childhood Assessment (DECA) Initiative (F (3, 100) = 5.40, p<.002) and Total Score (F (3, 100) = 3.1, p<.03).

ACE Exposure Groups and Mean Caregiver Initial DECA Scores
N=104

	Initiative	Self Control	Attachment	Total Protective Factors	Behavior Concern
5 or more ACEs	47	46	45	45	65
3-4 ACEs	54	54	52	53	58
1-2 ACEs	54	53	54	53	57
No ACEs	50	53	55	51	55
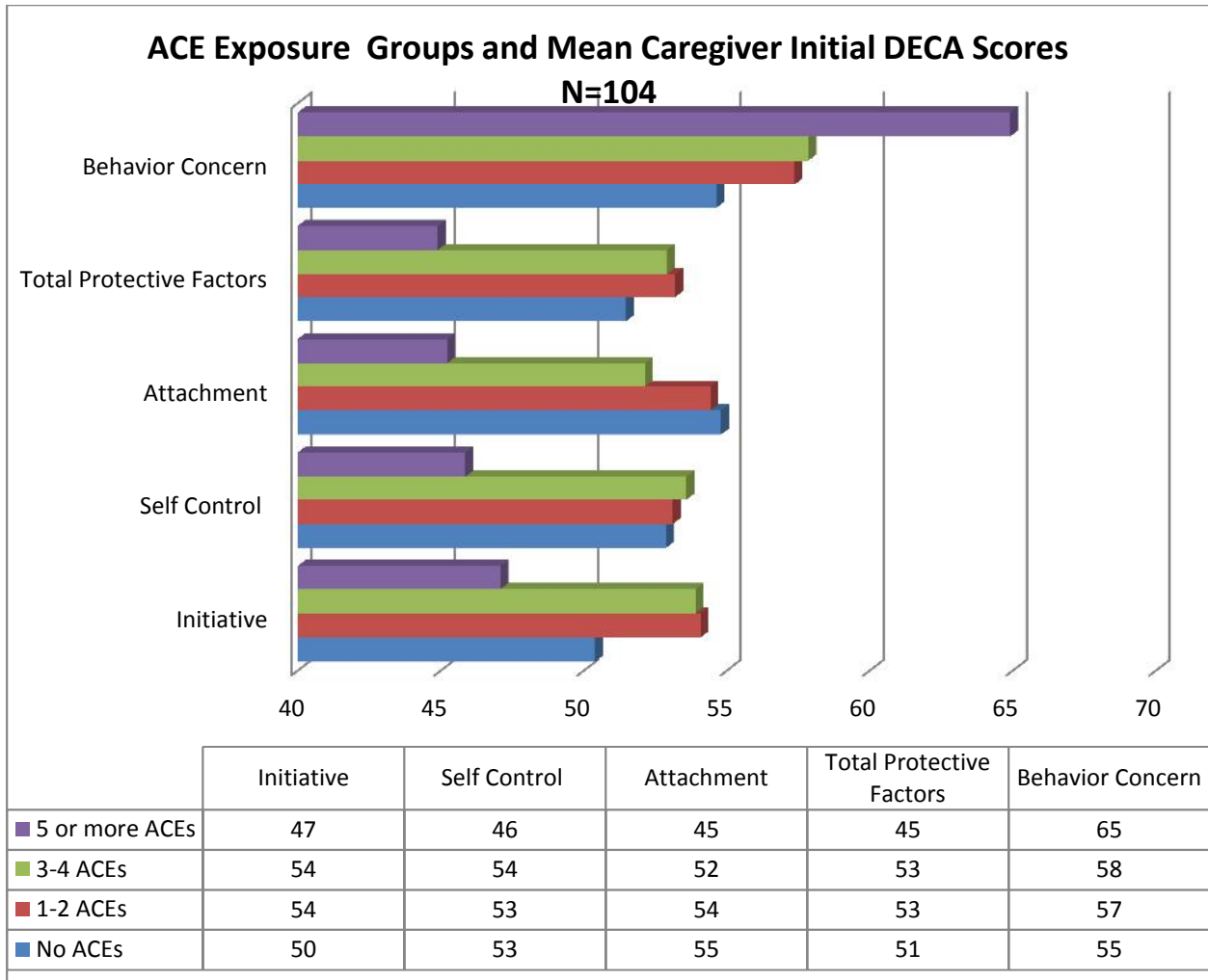
Conclusion: These preliminary findings document that in this low income general population of families with young children, adversity for both the caregiver and the children is commonplace. Preliminary evidence also indicates that increasing ACE scores are associated with lower reported social emotional development as children enter Head Start.

The initial success of this screening activity demonstrates that voluntary ACE screening in Head Start is a feasible and productive strategy for documenting risk and the relevance of trauma interventions in Head Start.

Limitations: These results represent initial results in a four year study.

Interim Conclusions.
While we consider our work to still be early in its development, the evidence underscores the pervasive scope and impact of adversity not just in treatment populations but in what we often consider to be the services that define us as productive and creative communities. In typical early learning and K-12 educational settings, our findings demonstrate that adversity and its expression in traumatic stress responses directly affects the success of entire systems.

These findings provide a justification for universal systems addressing the pervasive effects of trauma in our culture as critical to their developmental goals. Promoting public health informed professional development and service strategies in universal systems complements specialty treatment services. This expanded public health-informed approach may be the critical addition if we expect to change the pervasive social consequences of adversity and trauma in the United States.