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Behavioral and Socioemotional Outcomes of the Legacy for Children™ Randomized Control Trial to Promote Healthy Development of Children Living in Poverty, 4 to 6 Years Postintervention

Caroline M. Barry, MPH[*], **Lara R. Robinson, PhD, MPH**[†], **Jennifer W. Kaminski, PhD**[†], **Melissa L. Danielson, MSPH**[†], **Corey L. Jones, MPH**[‡], **Delia L. Lang, PhD, MPH**[*]

[*]Rollins School of Public Health, Emory University, Atlanta, GA

[†]National Center on Birth Defects and Developmental Disabilities, Centers for Disease Control and Prevention, Chamblee, GA

[‡]Booz Allen Hamilton, Atlanta, GA.

Abstract

Objective: The objective of this article was to assess the impact on behavioral and socioemotional development, 4 to 6 years postintervention (depending on the curriculum), of Legacy for Children™, a public health approach to improve child developmental outcomes among families living in poverty.

Methods: Mothers who were recruited prenatally or at the time of childbirth participated in a set of *Legacy* parallel design randomized control trials between 2001 and 2009 in Miami, Florida, or Los Angeles, California. Of the initial 574 mother-child dyads, 364 completed at least 1 behavioral or socioemotional outcome measure at the third-grade follow-up. Intention-to-treat analyses compared *Legacy* and comparison groups on behavioral and socioemotional outcomes.

Results: Children of *Legacy* mothers in Los Angeles were at lower risk for externalizing behaviors and poor adaptive skills than children whose mothers did not participate in the intervention. No significant outcome differences by group assignment were found in Miami.

Conclusion: Group-based positive parenting interventions such as *Legacy* may have a sustained impact on children's behavioral and socioemotional development several years after intervention completion.

Address for reprints: Caroline M. Barry, MPH, Rollins School of Public Health, Emory University, 1518 Clifton Rd, NE, Atlanta, GA 30322; caroline.barry@emory.edu.

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Keywords

public health; prevention; poverty; socioemotional; behavioral; development; parenting; early intervention

Approximately 1 in 5 children in the United States lives in poverty,[1] of whom 41% are raised among families living at or below 200% of the federal poverty level. Childhood poverty is associated with a range of adverse outcomes such as later economic hardship[2,3]; problems with learning, academic performance, and cognition[2,4,5]; health and well-being concerns[6]; and deficits in behavioral and socioemotional development.[2] Growing up in a household facing economic hardship increases the risk of chronic stress and poorer overall physical health.[7] Problems with emotion regulation, social relationships, and behavior[2,7] have also been identified for those who experienced childhood poverty. Given the high prevalence of individuals affected and the long-term health impacts across the life course, the socioemotional and behavioral consequences of early childhood poverty can pose a significant public health problem.

Socioemotional development encompasses a child's feelings and associated self-management and regulation of these emotions and the ability to empathize and interact effectively to build healthy social relationships with others.[8] Behavioral development refers to a child's growing capacity to control their attention and activity.[9] Self-regulation of behavior and attention in childhood has been positively associated with later occupational and academic outcomes,[10] and poor self-regulation may be an indicator of contextual and family risk.[11] Social and emotional skills lay the foundation for a healthy, productive adulthood.[2]

The links between poverty and adverse socioemotional and behavioral outcomes among children are well-documented.[2,12] Children raised in families facing material hardship show more externalizing and internalizing behaviors, including hyperactivity, aggression, social withdrawal, anxious behaviors, and depressive behaviors.[2] Chronic exposure to cumulative stress, such as poverty, adversely affects self-regulation processes essential to coping and adapting to life's demands.[7]

To mitigate the deleterious effects of poverty using a prevention-oriented approach, a number of early childhood interventions have been developed and tested.[12] Early Head Start, home visiting, and other early childhood intervention programs have demonstrated positive impacts for children raised in households at higher risk because of socioeconomic disadvantage.[2,13,14] In line with a life course developmental perspective, intervention effects require measurement over several years to evaluate the impacts on children as children grow and develop.[10] For example, the early childhood intervention, Perry Preschool Project, reported some cognitive impacts that waned over time; however, long-term treatment effects were driven by socioemotional and behavioral outcomes (e.g., externalizing behaviors) observed at ages 7 to 9 years that predicted later criminality, social, and educational outcomes.[15] A National Academies of Science, Engineering, and Medicine report on fostering mental, emotional, and behavioral health[2] indicates that although there is evidence indicating interventions that support parents and parenting can affect behavioral and

socioemotional development of children, more research is needed to understand the long-term impacts of these interventions. As such, examining the sustained behavioral and socioemotional impacts postintervention of a parent-focused prevention program could help inform future prevention strategies that promote child health and development.

One such intervention is Legacy for Children™ (*Legacy*), which was developed by the Centers for Disease Control and Prevention as an evidence-based public health approach to improve child outcomes among families living in poverty.[16] Informed by public health and developmental psychology, *Legacy* is a group-based intervention to promote positive parenting among mothers facing economic hardship. The *Legacy* model is based on 3 mechanisms of change: promoting maternal self-efficacy, supporting sensitive parent-child relationships, and facilitating a sense of community among mothers.[16] From 2001 through 2009, *Legacy* was implemented and evaluated as a set of randomized control trials (RCTs) at 2 intervention sites: Los Angeles (LA) and Miami.[16] The results on children's behavioral and socioemotional development[17] through age 5 years in LA and Miami and cognitive outcomes[18] through third grade in LA indicate that *Legacy* may have a positive impact on children living in poverty. A qualitative evaluation also revealed mothers' positive perceptions of the program and the application of learned parenting skills.[19]

These findings are promising and speak to *Legacy*'s potential effectiveness in several child outcome domains in early childhood; however, intervention effectiveness across behavioral and socioemotional domains over the longer term warrants analysis. Both RCT sites collected additional data on child behavioral and socioemotional outcomes since the publication of the preliminary report in 2013, which can inform our understanding of intervention impact on child outcomes several years after intervention close.[17] Using age-appropriate measures from multiple reporting types (i.e., parent, child, and assessor), this study extends our understanding of child behavioral and socioemotional outcomes by examining data collected 4 (Miami) or 6 (LA) years postintervention.

METHODS

Data were collected from 364 mother-child dyads who completed at least 1 behavioral or socioemotional measure at the third-grade follow-up as part of the *Legacy* randomized control trials (RCTs) between 2001 and 2009 at the Los Angeles (LA) and Miami sites. Figure 1 shows the CONsolidated Standards of Reporting Trials flowchart (previously published),[18] which provides complete information on eligibility and retention through the current assessment time point (n = 375 across all measures at third grade, including those not included in present analyses). To ensure adequate power for detection of meaningful effects at each site, initial sample size was determined based on an effect size of 0.50 for age-appropriate cognitive assessments at intervention close and a conservative 50% participant loss rate.[16]

Intervention

Mothers were eligible for inclusion in the *Legacy* RCT if they (1) were at least 18 years of age, (2) resided within the intervention catchment area, (3) were interested in participating in an intervention delivered in English, (4) intended to raise their child speaking English

as their primary language, (5) had received prenatal care, and (6) reported an income less than 200% of the poverty level as indicated by receipt of Medicaid, food stamps, or qualification for Temporary Assistance for Needy Families. Mothers were excluded if they (1) were expecting a multiple birth or (2) had existing substance abuse or mental health problems. The parallel trial design had a randomization ratio of 3:2 into intervention and comparison groups to protect against group-based attrition.[16] Assessors and participants were naïve to randomization, which was conducted for each site using a computer algorithm at a centralized location.[16]

The 2 intervention sites created their own curricula and implementations based on the *Legacy* philosophy, goals, and core intervention components.[16] Site-specific community and demographic factors, in addition to full-length pilot-testing, influenced curriculum development. For the University of California, Los Angeles (UCLA) curriculum, *Legacy* was offered to mothers from their third trimester of pregnancy through their child's third year of age (5 prenatal sessions followed by 9 blocks of 10 weekly group sessions). Weekly group sessions were approximately 150 minutes long and alternated between mother-only time (to discuss milestones and options for parenting behavior and to emphasize the importance of a mother's role in healthy child development) and mother-child interaction time (to apply learned skills and strengthen positive parenting in a safe, supportive environment). *Legacy* at LA began with 12 groups of mothers recruited during pregnancy from women, infants, and children clinics, but because of attrition, groups were merged to yield 7 groups at intervention close.[16] Additional information on the curriculum design, implementation, and approach can be found elsewhere.[16]

For the University of Miami curriculum, *Legacy* was offered to mothers from child age of approximately 6 weeks through 5 years. Weekly group sessions were 90 minutes, and each session consisted of mother-only time, mother-child interaction time, and community-building time. Community-building activities were intended to foster group cohesion among mothers (e.g., birthday celebrations and local field trips). *Legacy* in Miami began with 12 groups of mothers recruited from 2 hospitals within 3 days of childbirth, but because of attrition, groups were merged to yield 5 groups at intervention close.[16]

Measures of Children's Behavioral and Socioemotional Outcomes

Baseline assessments occurred prenatally in LA and within 6 weeks of childbirth in Miami. Reassessments occurred at both sites when the children were 6, 12, 24, 36, 48, and 60 months old and again when they reached third or fourth grade. At the most recent time point (hereafter called "third grade"), the median child age was 9 years old at each site (UCLA = 111 months and University of Miami = 113 months). Efforts were taken to maximize participant retention, including transportation, child care, contact through phone and mail between sessions, and payment of $100 for mothers' participation at each assessment visit. At third grade, 63% (n = 188) and 56% (n = 176) of mother-child pairs completed at least 1 behavioral or socioemotional assessment in LA and in Miami, respectively. At earlier time points, accommodations were made to administer assessments in Spanish or Haitian-Creole for a subset of children; however, by third grade, all assessments were administered in English. Details on language accommodations are reported elsewhere.[18] For the present

analyses, measures of child behavioral, emotional, and social developmental outcomes are described below. Included measures were developmentally appropriate self-report, maternal report, and standardized child performance tasks to follow up on assessments of socioemotional and behavioral constructs examined in early childhood.[17] To evaluate *Legacy*'s effectiveness as a public health approach to prevent problems in these areas, results from treatment versus comparison groups using an intention-to-treat approach (i.e., data were analyzed according to participants' original group assignment, regardless of participation) are reported.

Behavioral Outcome Measures

We assessed child behavioral functioning and attention-related problems using 2 measures. The full Behavior Assessment System for Children, second edition (BASC-2) parent rating scale was completed by mothers.[20] BASC-2 is a 160-item assessment of multidimensional behavioral functioning for children ages 6 through 11 years.[20] Example items include "acts without thinking" (Externalizing Problems: hyperactivity subscale) and "shares toys or possessions with other children" (Adaptive Skills: Adaptability subscale). Internal consistency for the BASC-2 in this study was 0.91. Children are considered "at-risk" with T-scores ≥60 on clinical scales and ≤40 on adaptive scales.

The Continuous Performance Task (CPT) is a computer program that assesses sustained and selective attention of the child directly by prompting them to press a button when shown a target stimulus (the letter X). The child must resist responding when shown other stimuli (other letters). Scoring is based on detectability (i.e., responding when appropriate, a reflection of attentional capacity), hit reaction time (i.e., speed and reaction time consistency), omissions (i.e., failing to respond when necessary, a reflection of distractibility), commissions (i.e., responding when unprompted, a reflection of impulsivity), and perseverations (i.e., reaction times less than 100 ms, which indicate slow or repeated responses to previous stimuli or random or anticipatory responses, given normal expectations for human processing and reaction time). T-scores ≥60 for all variables indicate elevated risk for attention problems.[21]

Emotional Outcome Measures

Each mother completed the Emotion Regulation Checklist (ERC), an assessment of their child's emotional expression and self-awareness, empathy, flexibility, anger regulation, and mood changes.[22,23] ERC was developed for assessment of children ages 6 through 12 years and has 3 subscales (Emotion Regulation, Lability/Negativity, and Inappropriate Affect) with 24 total items on which parents rate their child using a 4-point Likert scale (1 = never, 2 = sometimes, 3 = often, and 4 = almost always).[22,23] More appropriate affect is indicated by higher scores on the Emotion Regulation subscale and lower scores on the Lability/Negativity and Inappropriate Affect subscales. Internal consistency for the full ERC in this study was 0.71.

Social Outcome Measures

Children reported on their feelings of empathy toward others using the Children's Empathy Questionnaire (CEQ). CEQ is an 11-item reduced version of a measure originally designed

to assess empathic attitudes in youth.[24] Sample items include "When I'm mean to someone, I usually feel bad about it later," and "When I see someone who's happy, I get happy too." Respondents rate each item using a 3-point Likert scale (1 = no, 2 = maybe, and 3 = yes) to best describe their feelings. Possible scores range from 11 to 33, with higher scores indicating higher empathy. The internal consistency for CEQ in this study was 0.72.

To report social behaviors at school, children completed a scale for Peer Social Support and Bullying (PSSB) with 18 items from 3 subscales.[25] Children rated each item using a 5-point Likert scale (1 = never, 2 = hardly ever, 3 = sometimes, 4 = most of the time, and 5 = always) to best describe their social experiences at school. Mean scores range from 1 to 5, with higher scores on each subscale indicating higher levels of the respective construct.[25] Internal consistencies for subscales of PSSB in this study were 0.82 (Social Support), 0.72 (Perceived Victimization), and 0.74 (Engagement in Bullying).

Statistical Analyses

We used SPSS, Version 26.0 (*IBM SPSS Statistics for Macintosh* [computer program]. Version 26.0. Armonk, NY, IBM Corp, 2019) for statistical analyses. First, we conducted univariate analyses for overall and site-specific demographic data and descriptive statistics for outcome assessments. Then, we recoded assessment scores to dichotomous outcomes according to recommended cutoffs[20,21] and completed frequency analyses. Next, we conducted site-stratified (LA and Miami) bivariate analyses to compare outcomes between intervention and comparison groups. Site data were analyzed separately, given differences in curriculum and duration (and thus, differences in length of time between the end of the intervention and this assessment).[16] We compared raw outcome scores by group status (intervention vs comparison) with t tests for continuous measures and χ^2 tests for measures with clinical cutoffs using a conservative intention-to-treat approach.

Then, we conducted regression analyses to predict outcomes based on the intervention group. We conducted multivariable logistic regressions to predict behavioral and socioemotional functioning using clinical cutoff points of the BASC-2 and CPT based on group status, reflecting the odds of meeting criteria for behavioral or socioemotional problems in intervention versus comparison groups. We conducted multiple linear regressions to predict outcomes on measures with continuous scores (ERC, CEQ, and PSSB) based on group status. The results are presented for unadjusted analyses. To allow for comparison with similar interventions, we calculated Cohen's d for continuous outcomes and effect sizes analogous to Cohen's d using Chinn's[26] method to convert odds ratios.

RESULTS

Demographics

Table 1 shows demographic data collected at baseline and mothers' intelligence quotient collected at child age 6 months, stratified by site, for the sample of mothers with children with at least 1 behavioral or socioemotional outcome measure completed at third grade. Full sample baseline demographic data have been reported previously.[16] No significant differences were found between intervention and comparison groups at baseline

or third grade for demographic variables. No statistically significant differences in baseline demographic variables were detected between mothers who completed at least 1 behavioral or socioemotional measure and those who completed none (data not shown).

For the third-grade sample, mothers' mean age at the time of their child's birth was 23.3 years (SD = 4.6) in Miami and 25.1 years (SD = 5.5) in Los Angeles (LA). Many mothers reported very low income (58.7% and 48.7% of mothers in Miami and LA, respectively, reported incomes less than $20,000 at baseline). Most mothers were women of color. In Miami, 71.8% of the sample were non-Hispanic Black, and 18.1% were Haitian. In LA, the sample was approximately split between Hispanic and non-Hispanic Black mothers. Most mothers' highest level of education was high school or GED (63.6% in Miami and 59.2% in LA), and most mothers were not working (78.1% in Miami and 69.5% in LA) at baseline. English was the primary language spoken at home for 66.3% of mothers in Miami and 49.4% of mothers in LA.

Bivariate Analyses

In LA, fewer *Legacy* mothers than comparison mothers reported externalizing problems (11.9% vs 26.5%), χ^2 (1, n = 169) = 5.93, $p = 0.02$, and risk for adaptive skills problems (11.9% vs 27.9%), χ^2 (1, n = 169) = 7.00, $p = 0.01$, among their children at third grade (see Table S1, Supplemental Digital Content 1, http://links.lww.com/JDBP/A301). In Miami, however, χ^2 tests revealed no significant group differences. No statistically significant mean differences were detected on any of the continuous outcomes in Miami (see Table S2, Supplemental Digital Content 2, http://links.lww.com/JDBP/A301).

Regression Analyses

Table 2 shows odds ratios for outcome measures with clinical cutoffs based on group assignment. *Legacy* children in LA had significantly better outcome scores on 2 composite measures of the Behavior Assessment System for Children, second edition: Externalizing and Adaptive Skills. The unadjusted odds (95% confidence interval) of meeting clinical criteria for concern for Externalizing and lack of Adaptive Skills were 0.38 (0.17–0.84) and 0.35 (0.16–0.78) times lower, respectively, among children whose mothers were assigned to *Legacy* than among children whose mothers were assigned to the comparison group. Effect sizes for these outcomes were −0.53 (Externalizing) and −0.58 (Adaptive Skills).

Table 3 shows outcome score models on continuous measures without clinical cutoffs based on group assignment. In LA, *Legacy* children's scores on the Children's Empathy Questionnaire were 1.30 units higher than the comparison group's scores (F[1, 172] = 3.85, $p = 0.05$) and explained 2% of the variance in outcome scores around the mean, with Cohen's d effect size of 0.30. The remaining unadjusted beta coefficients for these outcomes were nonsignificant across sites.

DISCUSSION

To better understand long-term effects of a parent-focused early childhood intervention, we analyzed behavioral and socioemotional outcomes of children whose mothers participated in Legacy for Children™, a public health program to promote healthy development of

young children living in poverty through positive parenting. Overall, the results showed that previously observed behavioral and socioemotional effects[17] of *Legacy* were partially sustained in children through third grade at the Los Angeles (LA) site, indicating that the intervention may be effective in reducing such problems over the long-term; however, differences in intervention effects between sites may be worth probing in future research.

In LA, 15% fewer children of mothers assigned to *Legacy* had parent-reported clinically elevated externalizing behaviors than children of comparison mothers, and 16% fewer children of mothers assigned to *Legacy* in LA reported clinically lower adaptive skills than children of comparison mothers. In addition, children of mothers participating in *Legacy* reported approximately one-third of SD higher empathy scores than mothers in the comparison group 6 years postintervention. These results in LA align with earlier findings at 2 years postintervention in LA and at immediate postintervention in Miami, which indicated lower parent-reported likelihood of hyperactivity and increased social competence among the children of *Legacy* mothers,[17] respectively. This study extends these findings by also including child report of socioemotional and behavioral outcomes several years postintervention. Furthermore, the small-to-medium intervention effect sizes for behavioral and socioemotional outcomes in this study are comparable with or larger than the small effect sizes reported by other early childhood intervention models, such as home visiting, early education, and parent behavioral training.[13,17] Future research to identify the effective program components and mediators of program effects could clarify which key intervention elements affect behavioral and socioemotional outcomes over time.[2]

Economic research indicates that children's behavioral regulation and socioemotional skills (e.g., persistence and interpersonal skills), especially for economically disadvantaged youth, are predictive of future wages, schooling decisions, employment, and antisocial and health risk behaviors.[3,15] As such, sustained reductions in externalizing behaviors and increases in adaptive behaviors from public health interventions for healthy child development could translate to individual-, family-, and societal-level benefits. An early childhood intervention conducted in Jamaica with infants who experienced stunted growth suggests that promoting positive maternal-child play interactions in early childhood can have long-term impacts on hyperactivity at 17 years old[27] and then later antisocial behaviors (e.g., fighting and violent crimes) at age 22 years.[5] Research has also indicated that early cognitive gains for the most disadvantaged participants in the Perry Preschool program were associated with gains in academic motivation that maintained cognitive outcomes over time, whereas reductions in externalizing behaviors in school age predicted adult health risk behaviors and criminality.[15,28] As both cognitive and socioemotional and behavioral outcomes were exhibited in LA over time, similar relationships may also exist with *Legacy* program outcomes.

Despite positive behavioral outcomes among *Legacy* children in LA, no significant differences were found between treatment groups in Miami, although intervention impacts in behavioral and socioemotional concerns were found at intervention close in Miami.[17] From this investigation, we cannot draw conclusions about those different patterns of outcomes. Differences across sites in *Legacy* model implementation, curriculum, and duration are confounded by sample characteristics.[17] For example, although both sites recruited mothers

in low-income households, mothers in Miami were less resourced than those in LA.[16] Previous research has documented that the variation in risk conditions (e.g., degree of socioeconomic disadvantage) across early childhood interventions targeting poverty can affect intervention outcomes.[28] In addition, given the different racial and ethnic breakdown between sites, the experiences of racial or ethnic discrimination may also have been different over time. Compounded with socioeconomic differences (e.g., younger maternal age, lower education levels, and full-time employment in Miami),[18] layers of intersectional disadvantage may play a role in intervention effects and could contribute to differences in patterns of child outcomes across sites reported in this study; however, these relations could not be directly examined with the data collected. Furthermore, the developmentally appropriate socioemotional and behavioral measures at third grade differed slightly from the early childhood measures; therefore, the third-grade measures may simply be tapping into different aspects of socioemotional and behavioral development than previously used measures.

If *Legacy* alone is not sufficient to affect children's socioemotional and behavioral outcomes for the more socioeconomically disadvantaged Miami participants, *Legacy* may need to be supported by additional approaches to overcome inequalities because of social determinants of health. For families facing poverty, economic security policies such as the Earned Income Tax Credit, Supplemental Security Income, and the Supplemental Nutrition Assistance Program address socioeconomic risk factors and can affect long-term child health, educational, and well-being outcomes.[2] International research on multifaceted antipoverty support programs (e.g., programs that include cash transfers, skill building, and health care supports) suggests that these economic programs can directly improve adult mental health.[29] Socioeconomic factors can affect health and well-being through a range of pathways and biological mechanisms; therefore, multifaceted solutions that include individual-, community-, and policy-level interventions may be able to address different needs and resources within multiple contexts.[30] Medical settings such as primary care and pediatric facilities may be promising sites for integrating delivery of parenting interventions, particularly for children at elevated risk because of sociodemographic factors.[31]

This study is not without limitations. As previously mentioned, implementation and site differences may be confounded,[18] and third-grade and 5-year assessment measures differed. Other limitations of this study include attrition over time and impact on generalizability of findings. By third grade, 37% and 44% of original participants in LA and Miami, respectively, were missing. Our conservative, intention-to-treat analyses did not account for intervention participation or dropout. Diminished sample size with attrition may have affected statistical power. In addition, the generalizability of findings extends only to those who completed at least 1 third-grade assessment. Although 34% of mothers in Miami and 51% of mothers in LA reported primarily speaking a language other than English at home, generalizability is limited to families with mothers who are comfortable participating in an intervention delivered in English. Research on *Legacy* enhanced and adapted for Spanish-speakers (*Legacy Spanish*) is underway.[32,33] Mixed-method findings indicate that *Legacy Spanish* was associated with higher participant satisfaction and social support than the English implementation[32] and maternal report of positive parenting changes[33]; forth-coming research on *Legacy Spanish* program outcomes may provide additional information on

for whom and under what conditions the intervention works. Furthermore, we are limited in our understanding of different patterns of child outcomes by site. Additional research could examine whether measured site differences (i.e., sociodemographic characteristics) and implementation differences (i.e., curriculum length) may have contributed to observed differences in child outcomes. Although this study adds to the evidence base of *Legacy*'s longer-term effectiveness for children growing up in poverty, future analysis could probe how *Legacy* works and for whom it works best.

Despite these limitations, *Legacy* used a rigorous design and implementation to improve developmental outcomes for children born into poverty. The intervention is focused on fostering self-efficacy—and strengthened sense of community and parent-child relationships—among mothers facing adversity, informed by public health and developmental psychology.[16] *Legacy* was tested using a set of randomized control trials to rule out potential confounding variables. The implementation process has consisted of continuous quality improvement, monitoring with established tools, and assessments of fidelity.[18] Furthermore, *Legacy* was intended to be broadly disseminated if effective; as such, implementation factors were included to facilitate dissemination and implementation in community-based settings.[18] Finally, this study extended earlier socioemotional findings[17] by including child report and computer assessment in addition to parent-report measures of child socioemotional and behavioral outcomes.

Improving socioemotional and behavioral skills among children facing adversity, such as reductions in externalizing behaviors and improvements in adaptive skills and empathy exhibited in this study, can have long-term health and well-being impacts.[3] Research such as this study can help address the gap in evidence on longer-term effects of parent-focused interventions to promote socioemotional and behavioral development in children.[2] The findings from this study add to the growing body of literature on *Legacy* as a public health approach to promote healthy child development, which may have site-specific sustained impacts on behavior and empathy through third grade. However, some socioemotional and behavioral impacts on children's developmental trajectories that have been documented in earlier analyses of *Legacy*[17] seem to fade with time. The impacts of early childhood poverty are multifaceted,[2,4–7] and multilevel efforts, inclusive of income security programs,[2] may have the potential to address social determinants of health and support sustained health and well-being outcomes for children who experience poverty.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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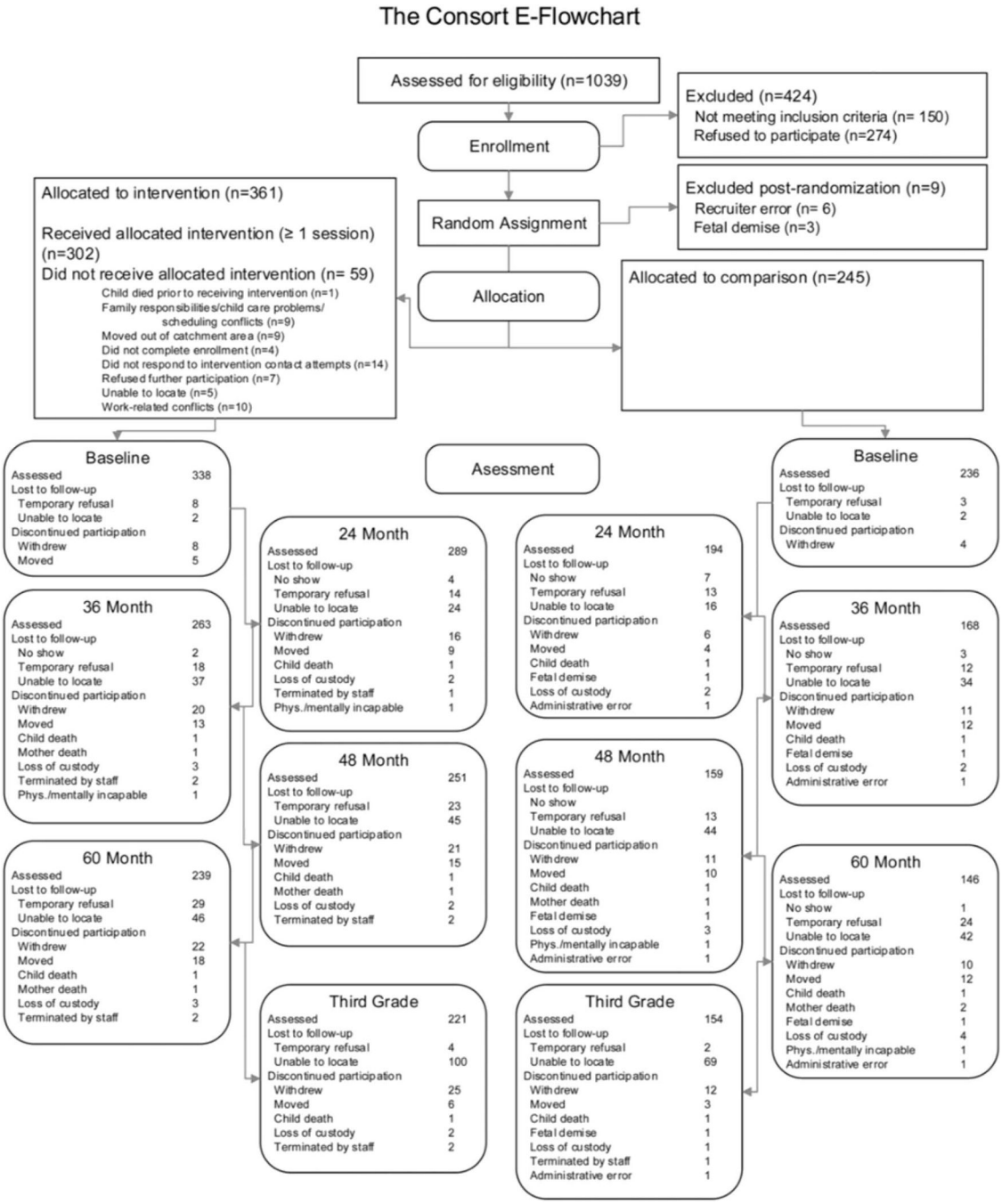

Figure 1.

CONsolidated Standards of Reporting Trials attrition flowchart through third-grade assessment of the Legacy for Children™ intervention, 2001 to 2009, Los Angeles, California, and Miami, Florida. Previously published in *Journal of Developmental & Behavioral Pediatrics* (Perou et al[18]), included with permission. A total of 375 dyads were assessed at the third-grade time point; however, only 364 dyads had completed at least 1 behavioral or socioemotional measure for inclusion in the present analyses.

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Table 1.

Baseline Demographics of Legacy for Children™ Mothers With Children Who Have at Least 1 Behavioral or Socioemotional Outcome Assessment at Third Grade (n = 364); Los Angeles, California (6 Years Postintervention) and Miami, FL (4 Years Postintervention)

	Miami (n = 188)			Los Angeles (n = 176)		
	n or M	**% or SD**	**Difference by Group (*p*)[a]**	**n or M**	**% or SD**	**Difference by Group (*p*)[a]**
Intervention group			–			–
Intervention	111	59.0		106	60.2	
Comparison	77	41.0		70	39.8	
Child's sex			0.54			0.08[b]
Boy	93	49.5		88	50.3	
Girl	95	50.5		87	49.7	
Maternal age at birth	23.3	4.6	0.65	25.1	5.5	0.71
Maternal IQ	80.1	13.9	0.83	82.8	12.9	0.37
Race/ethnicity			0.95			0.14
Hispanic	14	7.4		80	45.5	
Non-Hispanic Black	135	71.8		83	47.2	
Haitian	34	18.1		0	0.0	
White/other	5	2.6		13	7.4	
Education			0.41			0.50
Less than high school diploma	45	24.1		40	23.0	
High school diploma or GED	119	63.6		103	59.2	
Vocational/technical school or associate's degree	21	11.2		24	13.8	
College degree or higher	2	1.1		7	4.0	
Income level			0.27			0.32
<$20,000	101	58.7		77	48.7	
$20,000–$29,999	34	19.8		43	27.2	
$30,000–$39,999	20	11.6		18	11.4	
$40,000–$49,999	12	7.0		10	6.3	
$50,000+	5	2.9		10	6.3	
Language primarily spoken at home			1.00			0.56

	Miami (n = 188)			Los Angeles (n = 176)		
	n or M	**% or SD**	**Difference by Group (*p*)[a]**	**n or M**	**% or SD**	**Difference by Group (*p*)[a]**
English	124	66.3		86	49.4	
Other language	63	33.7		88	50.6	
Employment status			0.58			0.54
Full-time	24	12.8		16	9.2	
Part-time	17	9.1		37	21.3	
Not working	146	78.1		121	69.5	

Demographics assessed at baseline; maternal IQ assessed at child age 6 months using the Kaufman Brief Intelligence Test.

[a] *p* values indicate results of significance testing between intervention and comparison groups on each variable at third grade (i.e., independent *t*-tests and χ^2 tests).

[b] Denotes 0.05 < *p* value < 0.10.

GED, General Educational Development test; IQ, intelligence quotient.

Table 2.

Logistic Regression Models Predicting Third-Grade Adverse Behavioral and Socioemotional Outcomes With Clinical Cutoffs Based on Group Assignment to Legacy for Children™ Intervention; Los Angeles, CA (6 Years Postintervention) and Miami, FL (4 Years Postintervention)

	Miami			Los Angeles		
	OR	**95% CI**	**Effect Size**	**OR**	**95% CI**	**Effect Size**
BASC-2						
Externalizing	0.88	0.36–2.12	−0.07	**0.38**	**0.17–0.84**	−0.53
Internalizing	1.26	0.52–3.03	0.13	0.81	0.36–1.87	−0.12
Behavioral Symptoms Index	0.77	0.33–1.78	−0.14	0.49	0.23–1.03	−0.39
Lack of Adaptive Skills	0.82	0.39–1.72	−0.11	**0.35**	**0.16–0.78**	−0.58
Continuous Performance Task						
ADHD Confidence Index	1.51	0.73–3.12	0.23	1.05	0.54–2.05	0.03

Effect sizes (analogous to Cohen's d) were calculated using Chinn's simple method for converting odds ratios.[26] Bold denotes p value ≤ 0.05. ADHD, attention-deficit/hyperactivity disorder; BASC-2, Behavior Assessment System for Children, Second Edition; CI, confidence interval; OR, odds ratio.

Table 3.

Linear Regression Models Predicting Third-Grade Behavioral and Socioemotional Outcomes Based on Assignment to Legacy for Children™ Intervention; Los Angeles, CA (6 Years Postintervention) and Miami, FL (4 Years Postintervention)

	Miami			Los Angeles		
	Unadjusted Beta (SE)	***p***	**Cohen's d**	**Unadjusted Beta (SE)**	***p***	**Cohen's d**
Emotion Regulation Checklist						
Lability/Negativity	−0.56 (0.32)	0.09	−0.26	−0.27 (0.33)	0.43	−0.13
Inappropriate Affect	0.17 (0.25)	0.50	0.10	−0.25 (0.27)	0.36	−0.01
Emotion Regulation	0.36 (0.39)	0.37	0.14	−0.05 (0.41)	0.90	−0.02
Children's Empathy Questionnaire	−0.47 (0.58)	0.41	−0.12	1.30 (0.67)	**0.05** [a]	0.30
Peer Social Support and Bullying						
Social Support from Peers	−0.09 (0.11)	0.43	−0.12	0.10 (0.12)	0.39	0.15
Perceived Victimization	0.04 (0.14)	0.75	0.05	−0.01 (0.14)	0.95	−0.01
Engagement in Bullying	0.05 (0.09)	0.55	0.09	−0.05 (0.06)	0.40	−0.13

Analysis for Emotion Regulation Checklist is based on 1998 scoring criteria.[22–23] Bold denotes *p* value ≤ 0.05. T-scores are reported for Children's Empathy Questionnaire.

[a]denotes *p* value ≤ 0.05.