

# The Child-Parent Center Education Program & Midlife Physical and Mental Health



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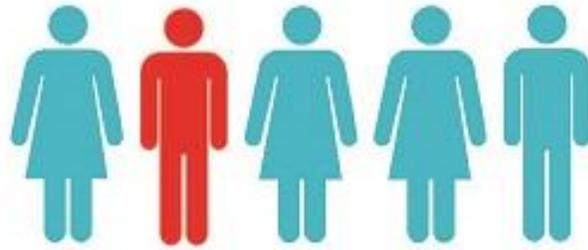
# Introduction

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**116.4 million, or 46%**

of US adults are estimated to have hypertension. These are findings related to the new 2017 Hypertension Clinical Practice Guidelines.



On average,  
**1 in 5 adults, or 22.5%**

of American adults, reported achieving adequate leisure-time aerobic and muscle-strengthening activities to meet the physical activity guidelines, based on 2016 data.



**1 in 6 males and 1 in 7 females**

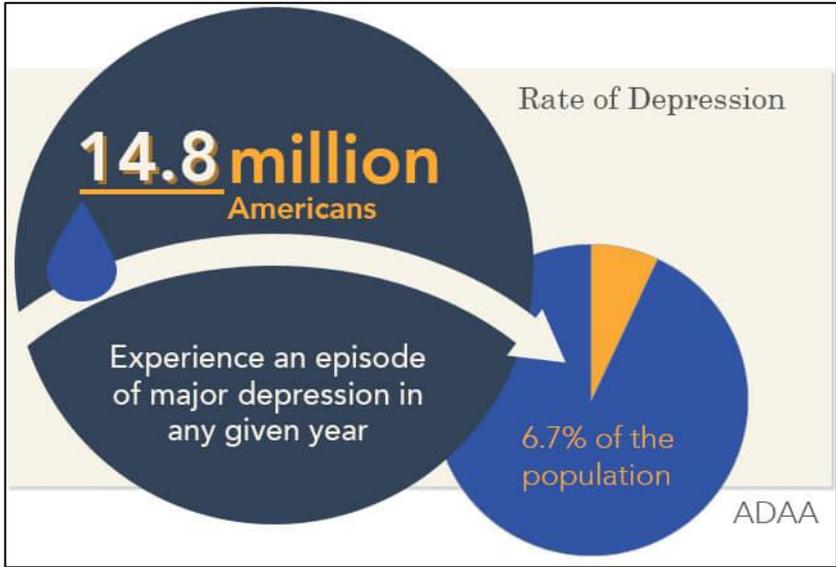
in the United States are current smokers, based on 2016 data.

**By 2035, more than 130 million adults, or 45.1% of the US population,**

are projected to have some form of CVD. Total costs of CVD are expected to reach \$1.1 trillion in 2035, with direct medical costs projected to reach \$748.7 billion and indirect costs estimated to reach \$368 billion.



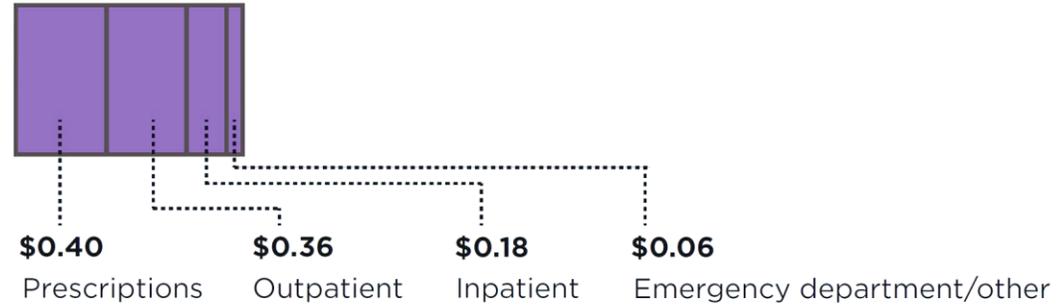
Graphic from the American Heart Association (2019)  
<https://www.heart.org/en/news/2019/01/31/cardiovascular-diseases-affect-nearly-half-of-american-adults-statistics-show>



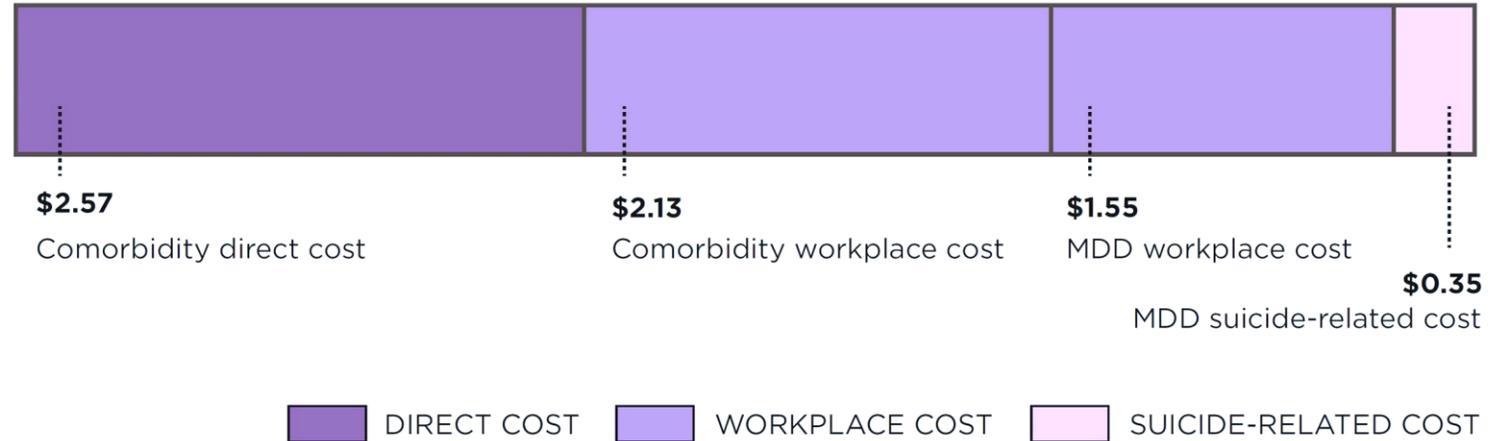
Graphic from: <https://americanaddictioncenters.org/treating-depression-substance-abuse>

## ADDITIONAL COSTS OF INDIVIDUALS WITH MAJOR DEPRESSIVE DISORDER IN 2010

**\$1.00** SPENT ON MDD DIRECT COSTS

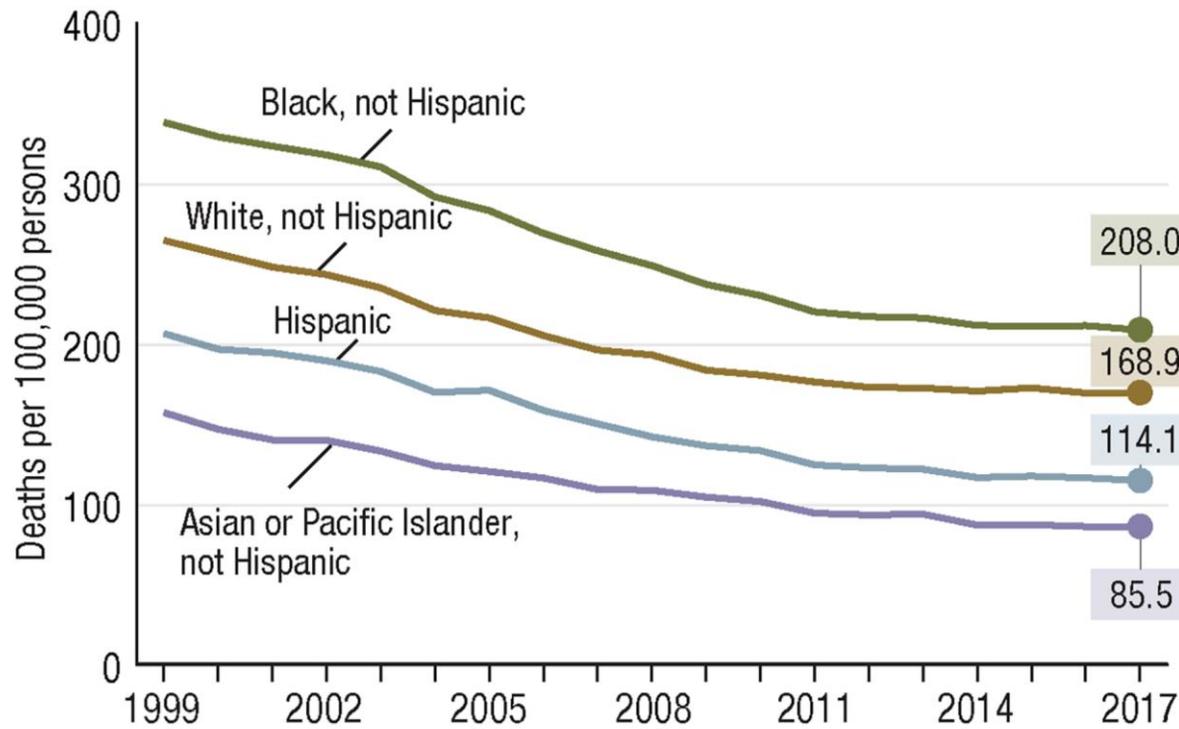


**\$6.60** ADDITIONAL COSTS FOR EVERY DOLLAR SPENT ON MDD DIRECT COST



Graphic from: <https://www.analysisgroup.com/the-growing-economic-burden-of-depression-in-the-united-states/>

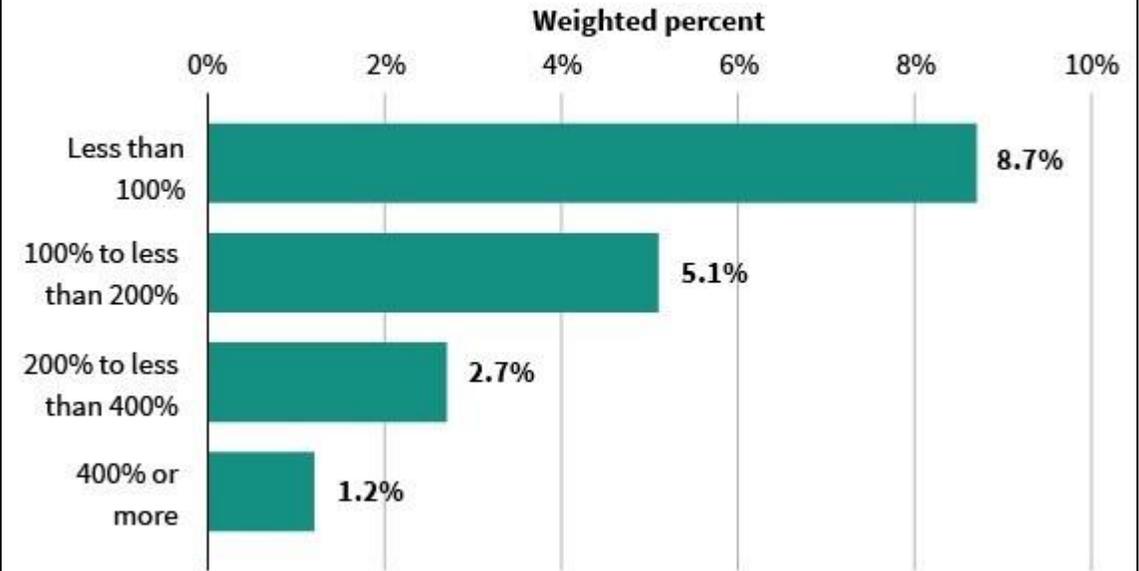
## Age-adjusted death rates for heart disease, by race and Hispanic origin: 1999–2017



Graphic from: <https://www.cdc.gov/nchs/hus/spotlight/2019-heart-disease-disparities.htm>

## Inequality and mental health

Adults with “serious psychological distress,” by income relative to federal poverty level



Sources: CDC/NCHS, National Health Interview Survey, 2009-13

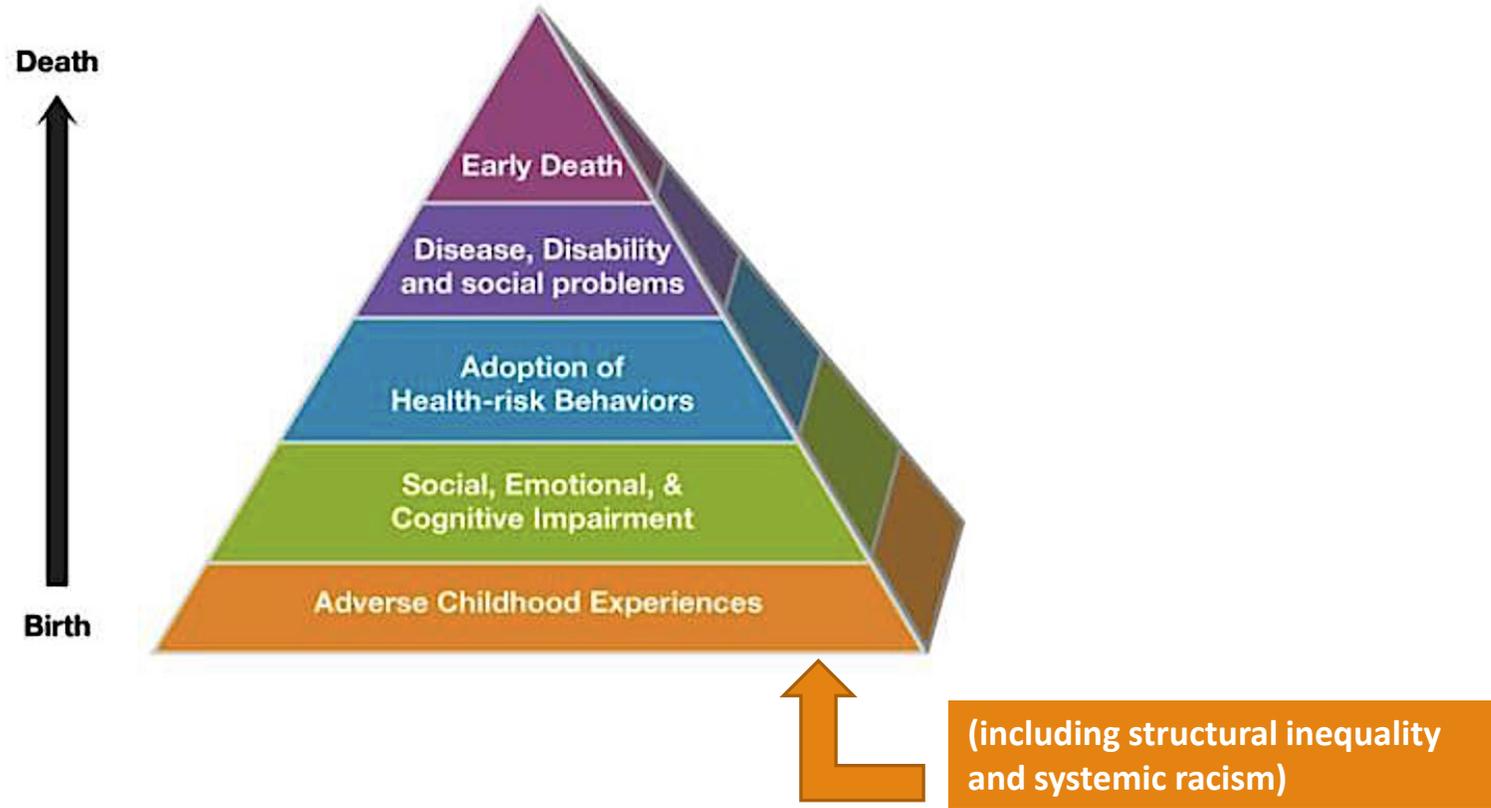
THE HUFFINGTON POST

Graphic from: [https://www.huffpost.com/entry/mental-health-coverage\\_n\\_7456106](https://www.huffpost.com/entry/mental-health-coverage_n_7456106)

- Research has also demonstrated significant **health disparities** in the U.S. – underscoring a need for tailored preventive interventions.

# Health disparities begin in the first years of life.

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Graphic from: <https://thriveglobal.com/stories/aces-adverse-childhood-experiences-score/>

# Early childhood education (ECE) programs

- i.e., the Child-Parent Center (CPC) program (Reynolds, 2000); Project Head Start; Perry Preschool program.
- Provide comprehensive academic and social support services to low-income families.
- Historically, many studies have focused on ECE programs' effects on academic outcomes.
- Impacts on broader health and wellbeing have been understudied.

## Success in Early Intervention

The Chicago Child-Parent Centers

Arthur J. Reynolds



Edward Zigler

# Present Study Hypotheses

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In a low-income, predominately African American sample, participation in CPC preschool and follow-on would be associated with:

- significantly lower rates of depression,
- higher overall psychological wellbeing,
- and better physical health outcomes in adulthood (age 35-37).



# Method

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# Chicago Longitudinal Study



- Prospective study of 1,539 individuals that began in 1985.
  - 92.9% African American, 7.1% Hispanic.
  - All from high-poverty school districts in the South Side of Chicago.
  - 989 CPC preschool; 550 comparison group.

**Age 35-37: 1,107 participants (76.5% of the original, living sample) completed another survey.**

- Very similar demographics to original sample.
- Slight underrepresentation of males (45.6% vs. 49.6%) and participants who did not complete high school (55.3% vs. 59.3%)



# Mental Health at 35-37 – Brief Symptom Inventory (BSI)

Q103. The next set of questions asks about how you feel.

| During the LAST MONTH, have you felt...?        |     | IF YES, how often have you felt this way during the last month? <i>(Please circle one number for each item)</i> |                  |                    |                   |                            |                    |
|---|-----|---|------------------|--------------------|-------------------|----------------------------|--------------------|
| <i>(Please circle one number for each item)</i> | Yes | No  | Almost every day | A few times a week | About once a week | Two or three times a month | About once a month |
| a. Depressed                                    | 1   | 2   | 1                | 2                  | 3                 | 4                          | 5                  |
| b. Hopeless                                     | 1   | 2   | 1                | 2                  | 3                 | 4                          | 5                  |
| c. Lonely                                       | 1   | 2   | 1                | 2                  | 3                 | 4                          | 5                  |
| d. Life isn't worth living                      | 1   | 2   | 1                | 2                  | 3                 | 4                          | 5                  |
| e. Very sad                                     | 1   | 2   | 1                | 2                  | 3                 | 4                          | 5                  |

- Dichotomous code indicating the frequent presence of one or more of these symptoms (Derogatis & Lynn, 2000; Shrout & Yager, 1989):
  - **Almost every day:** feeling depressed, lonely, or very sad
  - **A few times per week or more:** feeling hopeless
  - **2-3 times a month:** feeling like life is not worth living

# Mental Health at 35-37 – Ryff Scales of Psychological Well-being

Q29. How much do you agree or disagree with the following statements:

| <i>(Please circle one BEST answer for each)</i>  | Agree strongly | Agree somewhat | Agree a little | Disagree a little | Disagree somewhat | Disagree strongly |
|--|----------------|----------------|----------------|-------------------|-------------------|-------------------|
| a. I like most parts of my personality.  | 1              | 2              | 3              | 4                 | 5                 | 6                 |
| b. When I look at the story of my life, I am pleased with how things have turned out so far. | 1              | 2              | 3              | 4                 | 5                 | 6                 |
| c. Some people wander aimlessly through life but I am not one of them.                       | 1              | 2              | 3              | 4                 | 5                 | 6                 |
| d. The demands of everyday life often get me down.   | 1              | 2              | 3              | 4                 | 5                 | 6                 |
| e. In many ways, I feel disappointed about my achievements in life.                          | 1              | 2              | 3              | 4                 | 5                 | 6                 |

- **Total score** (sum of ratings; high score = high PW)
  - **18 items** covering environmental mastery, perceived autonomy, personal growth, positive relations with others, purpose in life, self-acceptance (Ryff & Keyes, 1995).

# Physical health outcomes at age 35-37

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- Participants reported on a variety of health measures including height, weight, diabetes diagnosis, blood pressure, and cholesterol.
- **Framingham Risk Score (FRS)**; higher = unhealthier) – an indicator of cardiovascular health.
  - Age, sex, blood pressure, BMI, smoking status, whether or not blood pressure is being treated, and diabetes are entered into the model.
- We also computed a **Body Mass Index (BMI)** and identified if participants were obese ( $BMI \geq 30$ ) or not.



# Findings

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# Mental health – descriptive statistics

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|             | 1+ significant depression symptoms on BSI | Continuous score - Ryff Psychological Wellbeing |
|-------------|---|---|
| Full sample | 12.4%                                     | Mean: 92.79 ( <i>SD</i> 10.97)                  |
| Males       | 15.5%                                     | Mean: 92.13 ( <i>SD</i> 11.22)                  |
| Females     | 9.8%                                      | Mean: 91.72 ( <i>SD</i> 11.34)                  |

Overall, CPC participation was not significantly related to any depressive outcomes at age 35-37. However, CPC preschool was associated with higher psychological wellbeing ( $\beta = 0.12^{***}$ ).

|                                 | 1+ significant depression symptoms on BSI – Exp( $\beta$ ) | Continuous score - Ryff Psychological Wellbeing - $\beta$ |
|---------------------------------|--|---|
| Males                           | 1.73**   | -0.09**   |
| Black                           | 1.64   | 0.01  |
| Low birthweight                 | 0.77   | -0.02   |
| % birth census tract in poverty | 1.40   | -0.03   |
| <b>CPC preschool</b>            | <b>1.07</b>  | <b>0.12***</b>  |
| <b>CPC follow-on</b>            | <b>1.18</b>  | <b>-0.04</b>  |
| ACEs ages 0-5                   | 1.25   | -0.07*  |
| Sociodemographic risk, ages 0-3 | 1.18**   | -0.11***  |

# Physical health – descriptive statistics

|             | Continuous BMI score          | Obese (dichotomous) | Diabetes (dichotomous) | Continuous Framingham risk     |
|-------------|-------------------------------|---------------------|------------------------|--------------------------------|
| Full sample | Mean: 25.18 ( <i>SD</i> 5.50) | 45%                 | 3%                     | Mean: 19.67 ( <i>SD</i> 11.13) |
| Males       | Mean: 25.07 ( <i>SD</i> 4.83) | 39%                 | 3%                     | Mean: 24.2 ( <i>SD</i> 11.15)  |
| Females     | Mean: 25.27 ( <i>SD</i> 6.04) | 51%                 | 4%                     | Mean: 15.7 ( <i>SD</i> 9.49)   |

In-press at *JAMA Pediatrics*:

CPC preschool was also associated with lower BMI at age 35-37 BMI (adjusted difference,  $-1.0\%$ ;  $p = .04$ ; standardized difference,  $-0.15$ )..

Table. Means, Rates, and Inverse Propensity Score Weighting-Adjusted Differences in Body Mass Index (BMI)<sup>a</sup> Outcomes at Age 37 Years for Child-Parent Center (CPC) Participants and Comparison Group Participants in the Chicago Longitudinal Study<sup>b</sup>

| Outcome                  | %             |          | %                    |          | Adjusted difference, percentage points | P value | Standardized difference | Reduction in BMI category relative to comparison group, % |
|--------------------------|---------------|----------|----------------------|----------|--|---------|-------------------------|---|
|                          | CPC (n = 689) |          | Comparison (n = 353) |          |  |         |                         |   |
|                          | Unadjusted    | Adjusted | Unadjusted           | Adjusted |  |         |                         |   |
| Total sample (n = 1042)  |               |          |                      |          |  |         |                         |   |
| BMI, mean                | 30.2          | 30.0     | 30.8                 | 31.0     | -1.0                                   | .04     | -0.15                   | 3.2   |
| Obesity                  |               |          |                      |          |  |         |                         |   |
| Any ( $\geq 30.0$ )      | 44.0          | 43.4     | 46.7                 | 47.9     | -4.5                                   | .13     | -0.13                   | 9.4   |
| Moderate ( $\geq 35.0$ ) | 19.3          | 18.8     | 21.3                 | 22.9     | -4.1                                   | .09     | -0.14                   | 17.9  |
| Severe ( $\geq 40.0$ )   | 8.6           | 8.0      | 8.5                  | 9.7      | -1.7                                   | .32     | -0.13                   | 17.5  |

## Additional analyses:

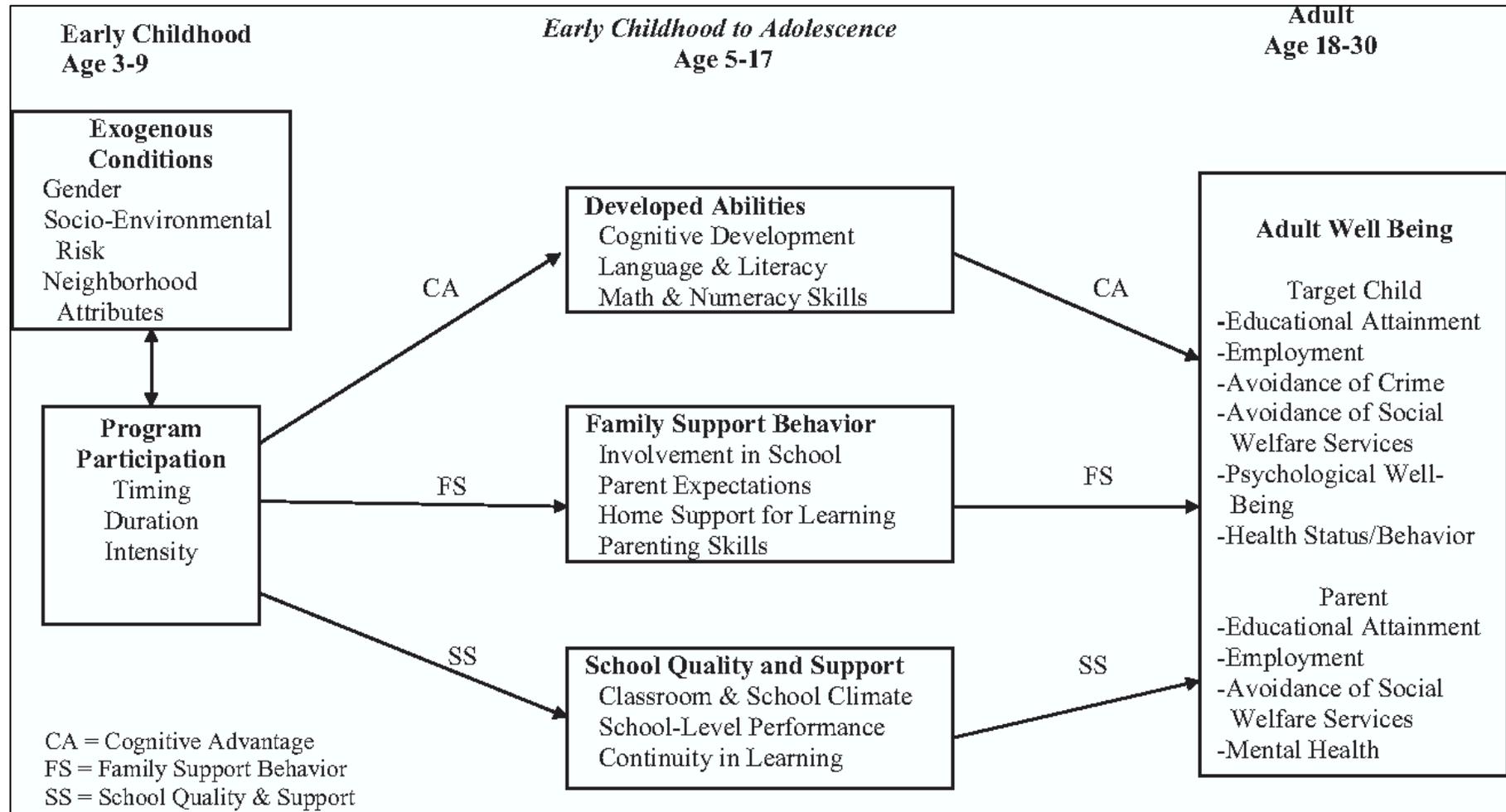
CPC preschool was associated with lower rates of diabetes ( $\text{Exp}(\beta) = 0.37^*$ ) and a lower Framingham risk score ( $\beta = -2.33^{**}$ ) at age 35-37.

|                                    | Diabetes<br>(dichotomous) -<br>$\text{Exp}(\beta)$ | Continuous<br>Framingham risk - $\beta$ |
|------------------------------------|--|---|
| Males                              | 0.64   | 8.75***                                 |
| Black                              | 0.91   | 0.84                                    |
| Low birthweight                    | 0.54   | -0.65                                   |
| % birth census tract<br>in poverty | 2.64   | 1.60                                    |
| <b>CPC preschool</b>               | <b>0.37*</b>                                       | <b>-2.33**</b>                          |
| <b>CPC follow-on</b>               | 1.06   | 0.58                                    |
| ACEs ages 0-5                      | 0.88   | 0.32                                    |
| Sociodemographic<br>risk, ages 0-3 | -1.10  | 0.50*                                   |

# Discussion

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- **CPC preschool was associated with:**
  - **better psychological wellbeing,**
  - **lower BMI,**
  - **lower rates of diabetes, and**
  - **lower Framingham cardiovascular risk score at age 35-37.**



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## AIMS OF THE CPC PROGRAM

“Reach the child and parent early, develop language skills and **self-confidence**, and to demonstrate that **these children, if given a chance, can meet successfully all the demands** of today’s technological, urban society” (Sullivan, 1971).

## DEFINITION OF PSYCHOLOGICAL WELLBEING

A multi-dimensional construct which includes includes “**positive evaluations** of oneself and one’s past life...a sense of **continued growth and development** as a person...the belief that one’s life is **purposeful and meaningful**...the capacity to **manage effectively** one’s life and surrounding world...and a sense of **self-determination**” (Ryff & Keyes, 1995).

- **CPC was not significantly related to depressive symptoms at age 35-37.**
  - Stands in contrast to previous finding that CPC was related to lower rates of depressive symptoms at age 22-24.
  - May reflect:
    - potential stigma around mental health reporting;
    - changing risk/protective factors for depression over time;
    - ongoing stressors and inequities in participants' adult lives.



# Future Directions

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## RESEARCH

- Need more large, longitudinal studies of ECE participants.
- Continue examining the interplay between academic/occupational outcomes and broader health/wellbeing.
- Investigate potential disparities and subgroup effects.
- Investigate mechanisms that link early intervention to long-term outcomes.

## PRACTICE/POLICY

- Increase access to high-quality ECE programs.
- Strengthen health and social services within ECE programs (including referrals).
- Multigenerational interventions like CPC are likely to have the greatest impact on long-term physical and mental health.



Thank you!

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