



Improving the Life Chances of Disadvantaged Mothers and Children with Home- Visiting by Nurses

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Baltimore, 1970

High-Risk Neighborhoods

- No sources of healthy food
- Unemployment
- No decent housing
- Unsafe play areas
- Crime



Nurse Family Partnership

- Prenatal and infancy home visiting by nurses
- Focused on low-income mothers with no previous live births
- Clarity in goals, objectives, and methods
- Activates and supports parents' instincts to protect their children
- Strengths-based





NURSE FAMILY PARTNERSHIP'S THREE GOALS

- 1. Improve pregnancy outcomes**
- 2. Improve child health and development**
- 3. Improve parents' health and economic self-sufficiency**

TRIALS OF PROGRAM

Elmira, NY 1977



N = 400

- Low-income whites
- Semi-rural

Memphis, TN 1987



N = 1,138 and N=743

- Low-income blacks
- Urban

Denver, CO 1994



N = 735

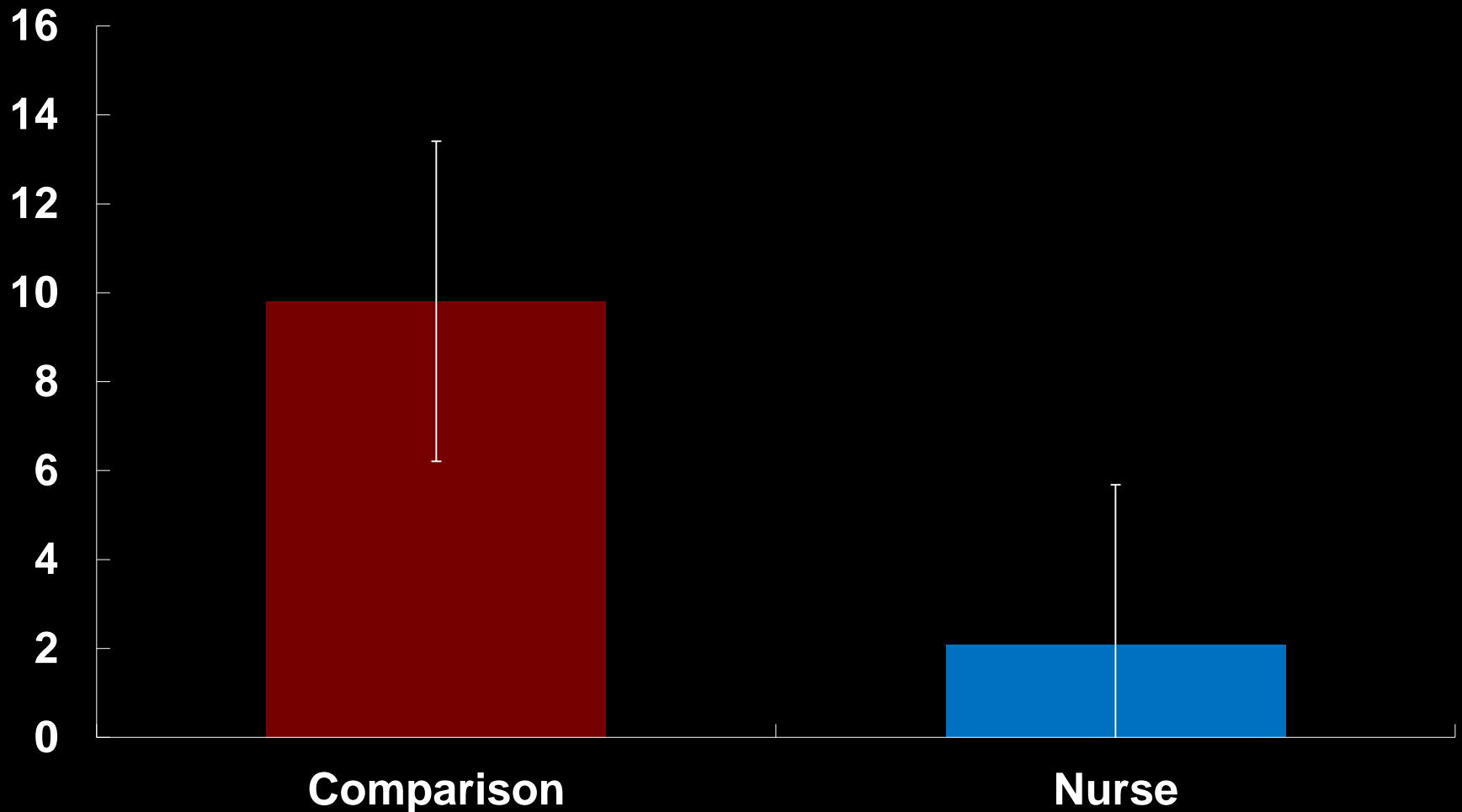
- Large portion of Latino families
- Nurse versus paraprofessional visitors

Consistent Results Across Trials

- Prenatal health
- Children's injuries
- Children's language and school readiness (low resource mothers)
- Children's behavioral problems
- Children's depression/anxiety
- Children's substance use
- Maternal Impairment due to substance use
- Short inter-birth intervals
- Maternal employment
- Welfare & food stamp use



Percentage of Smokers with Preterm Delivery (<37 weeks) - Elmira

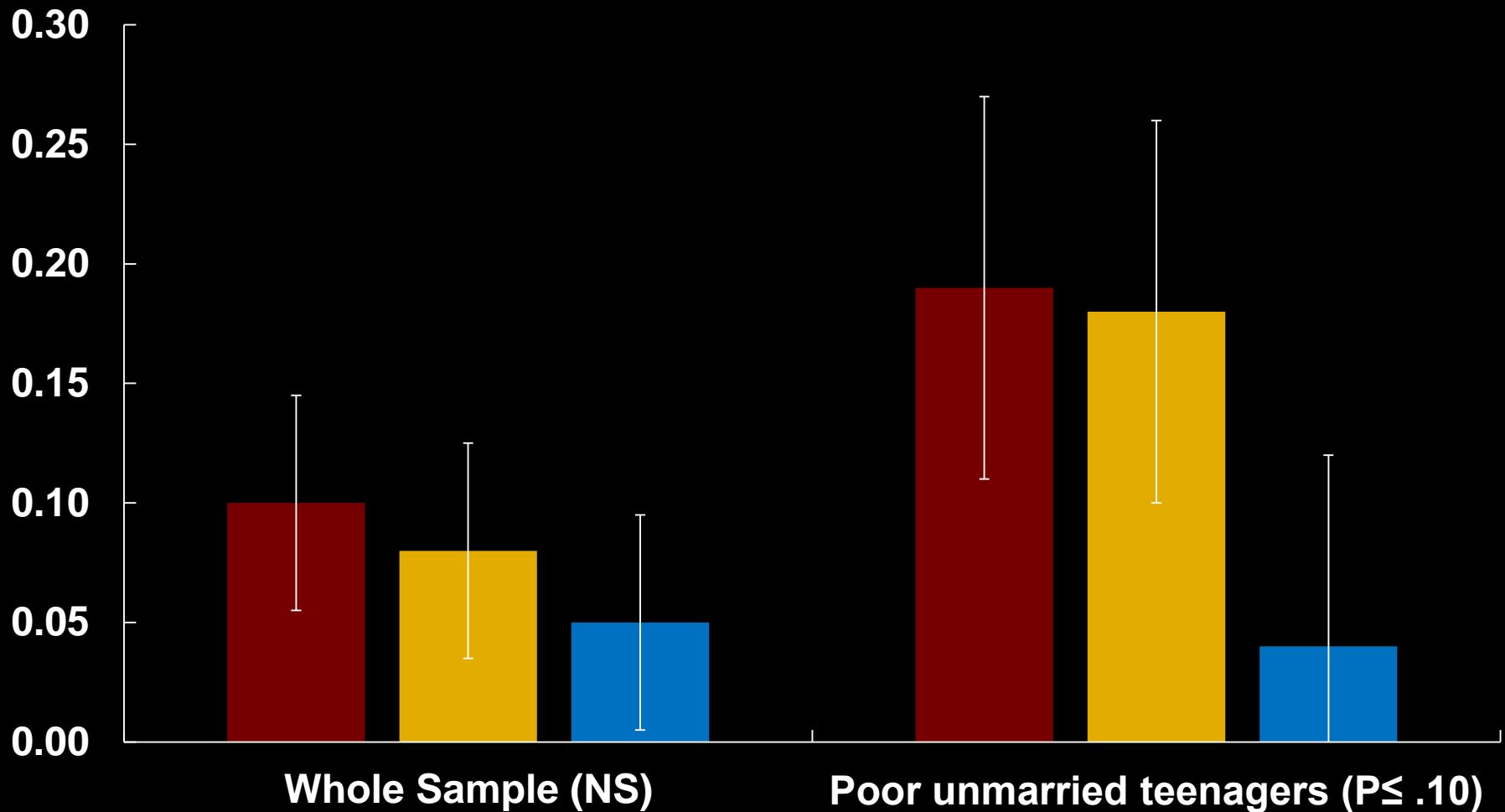


p < .05

Pediatrics. 1986; 77; 16-28

Elmira Trial: Abuse/Neglect through Child Age 2

Control Nurse: P Nurse: P&I



Note: P-values for nurse P&I vs control comparison

% Abuse / Neglect

100
60
50
40
30
20
10
0

**Simultaneous Region of Treatment
Differences ($p < .10$)**

Comparison

Nurse

9

10

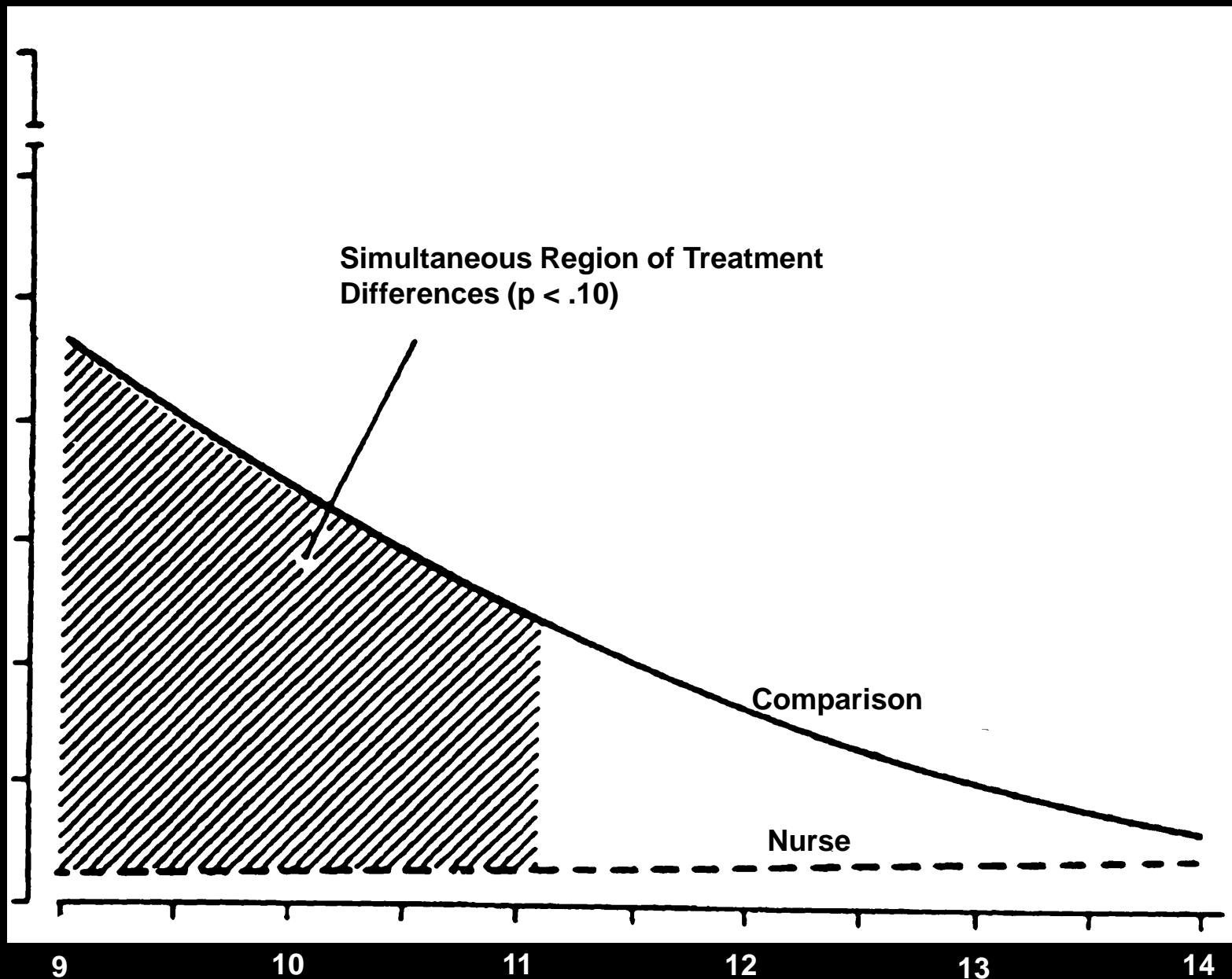
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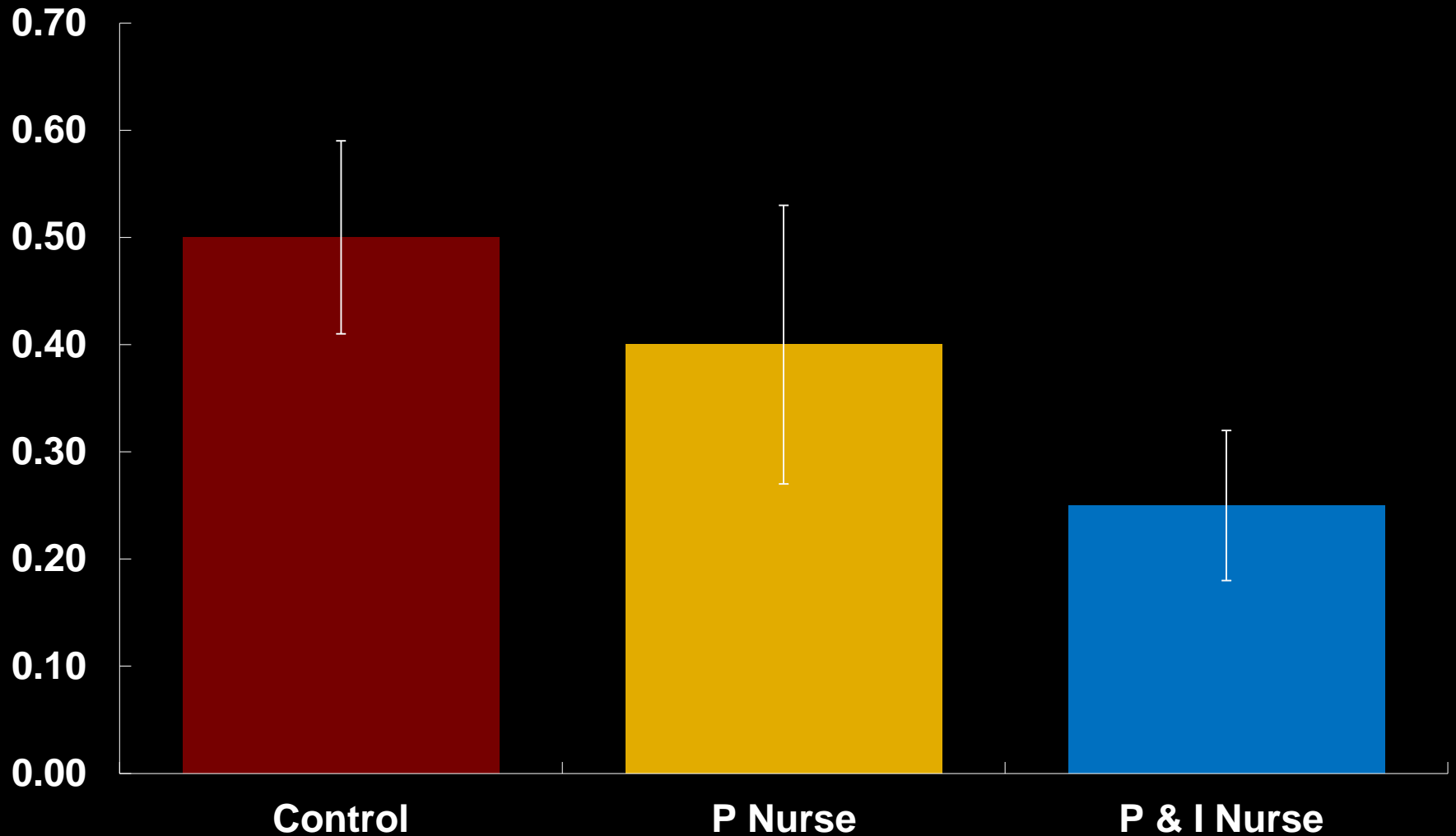
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Maternal Sense of Control



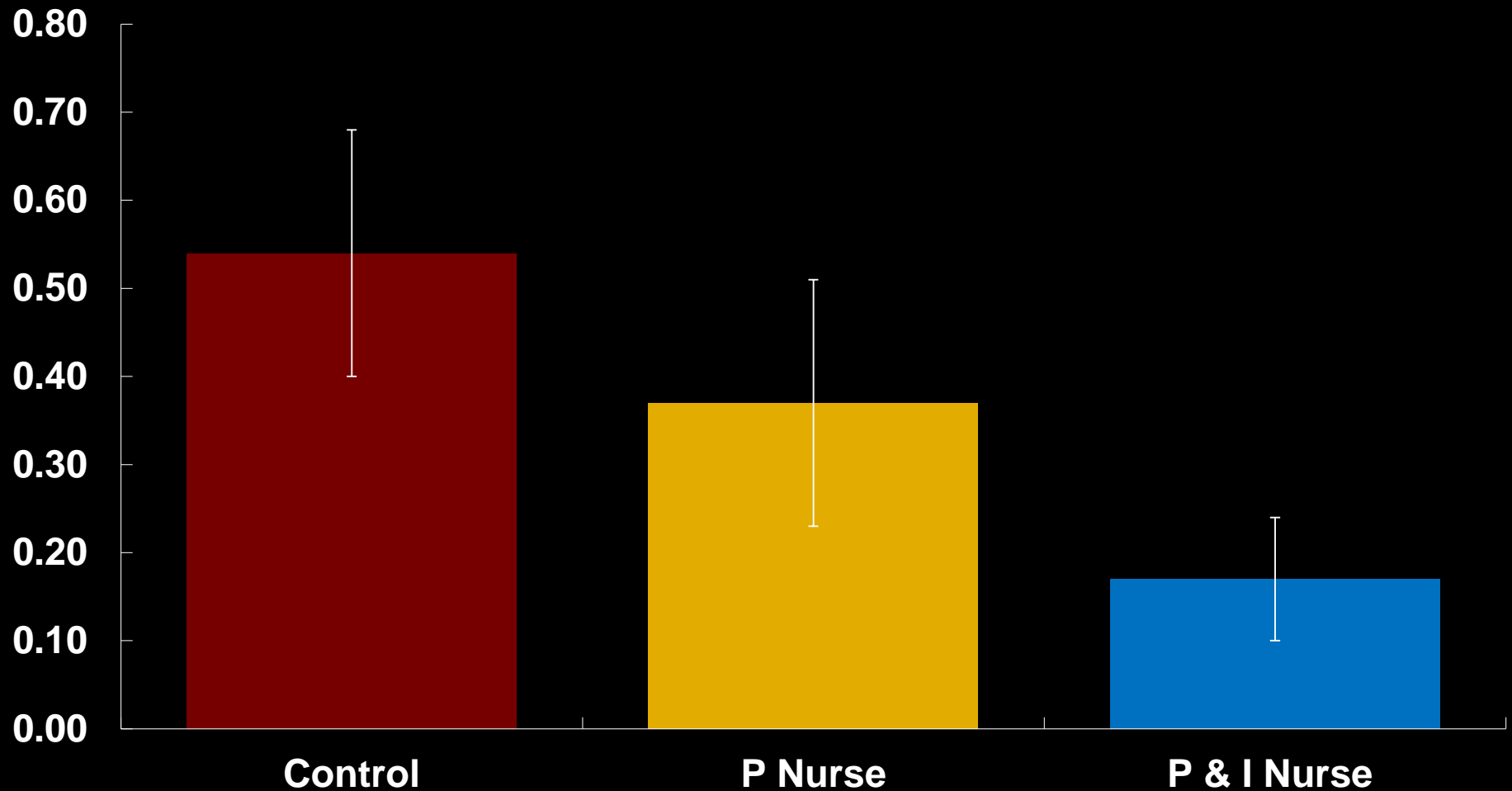
Indicated Cases of Child Abuse and Neglect 0 to 15 Years - Elmira



***P= .03**

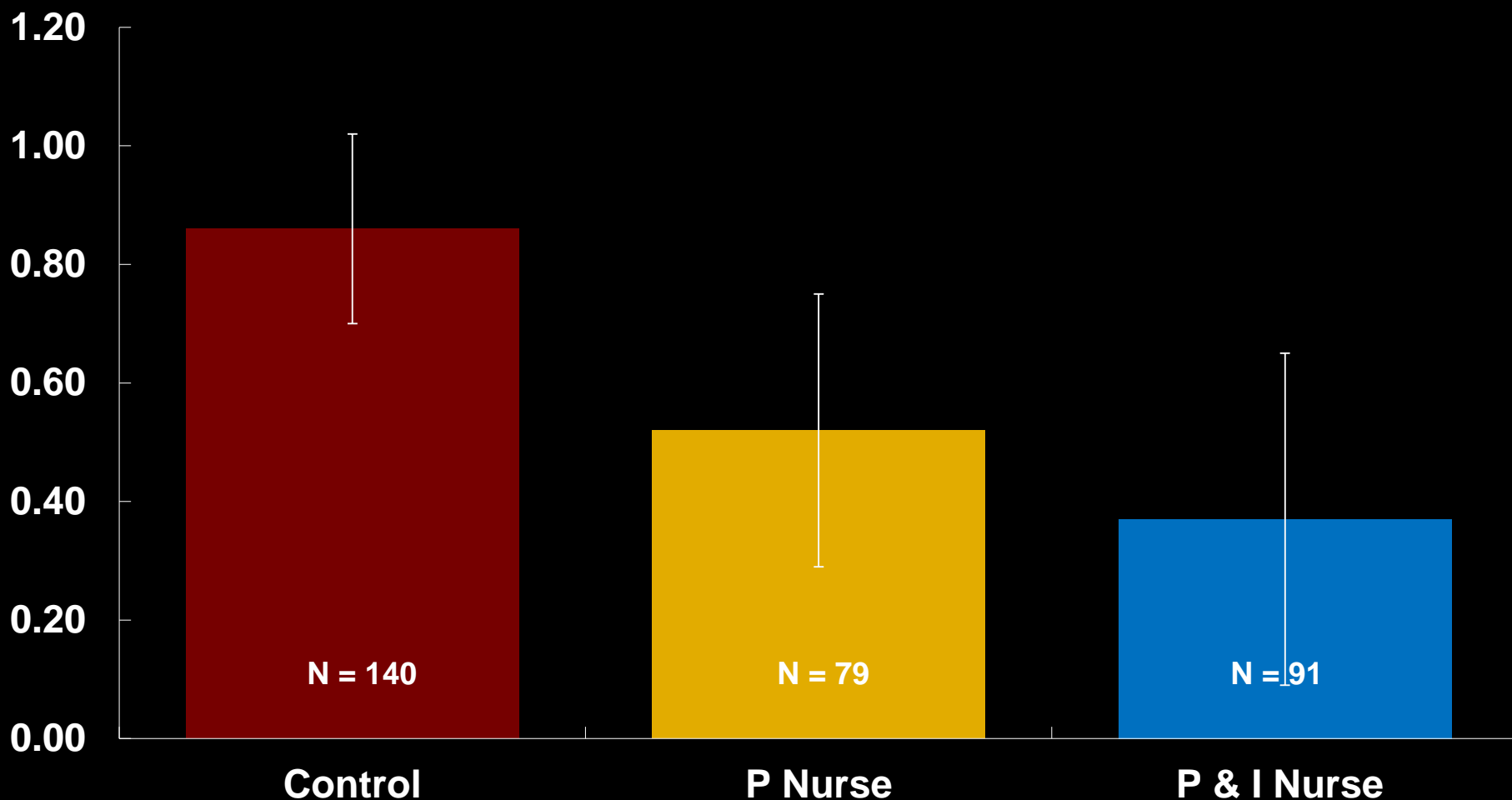
JAMA, 1997;278:637-643

Self-Reported Arrests among Poor Unmarried Mothers 0 to 15 Years - Elmira



***P= .01**

Number of Arrests Lifetime Elmira Youth Age 19



IRR = 0.43 CI = (0.23 – 0.80)

Arch Pediatr Adolesc Med. 2010; 164 (1): 9-15

Memphis Design

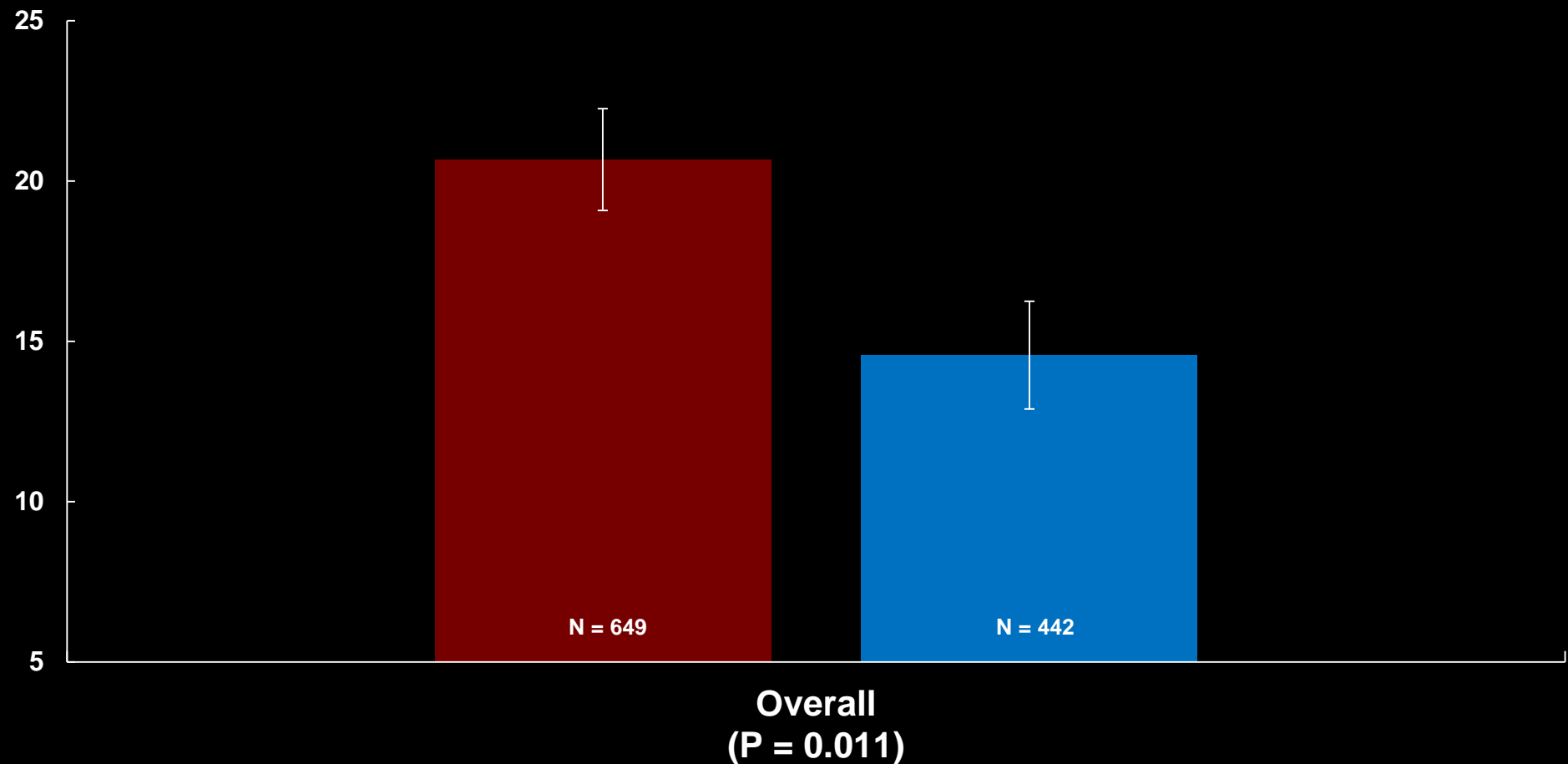
- **Urban Setting**
- **Sample** (N = 1138 for prenatal and N = 742 for postnatal)
 - **92% African American**
 - **98% Unmarried**
 - **85% < Federal Poverty Index**
 - **64% < 19 years at intake**
 - **2.4 SD above national mean for neighborhood adversity**
 - **Retained >80% of mothers and youth for 18-year follow-up**

Treatment Conditions - Memphis

Services	Treatment 1 N=166	Treatment 2 N=514	Treatment 3 N=230	Treatment 4 N=228
Transportation for prenatal care	X	X	X	X
Screening and referral for children		X		X
Prenatal/postpartum home visiting			X	X
Infant and toddler home visiting				X

Pregnancy-Induced Hypertension - Mothers

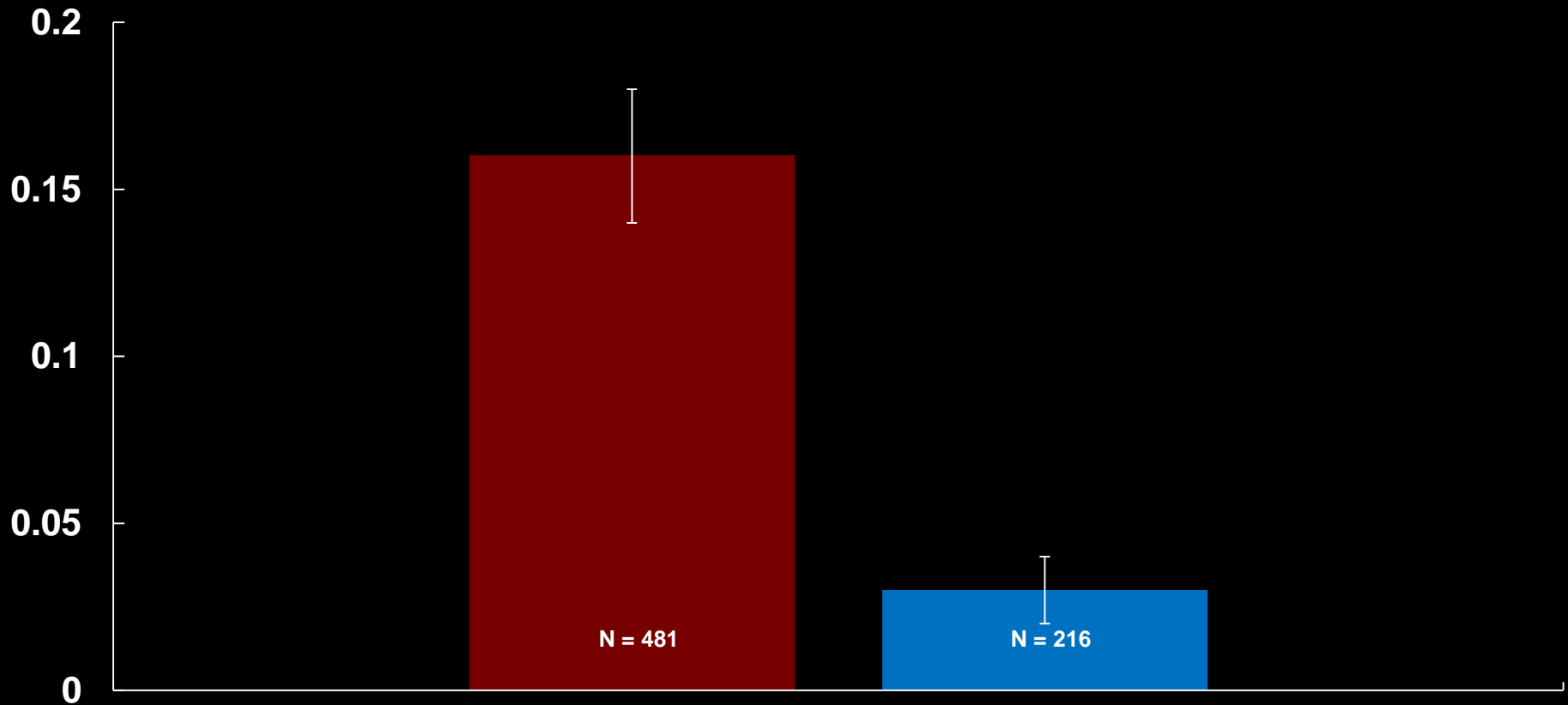
■ Control ■ Nurse Visited



JAMA 1997; 278: 644-652

Number of Days Hospitalized for Injuries/Ingestions (0-24 months) Memphis

■ Control ■ Nurse Visited



P<.01

JAMA 1997; 278: 644-652.

Diagnosis for Hospitalization in which Injuries and Ingestions Were Detected Nurse-Visited (n=204)

	<u>Age (in months)</u>	<u>Length of Stay</u>
▪ Burns (1 ^o & 2 ^o to face)	12.0	2
▪ Coin Ingestion	12.1	1
▪ Ingestion of Iron Medication	20.4	4

Diagnosis for Hospitalization in which Injuries and Ingestions Were Detected - Comparison (n=453)

	<u>Age (in months)</u>	<u>Length of Stay</u>
▪ Head Trauma	2.4	1
▪ Fractured Fibula/Congenital Syphilis	2.4	12
▪ Strangulated Hernia with Delay in Seeking Care/ Burns (1 ^o to lips)	3.5	15
▪ Bilateral Subdural Hematoma	4.9	19
▪ Fractured Skull	5.2	5
▪ Bilateral Subdural Hematoma (Unresolved)/ Aseptic Meningitis - 2nd hospitalization	5.3	4
▪ Fractured Skull	7.8	3
▪ Coin Ingestion	10.9	2
▪ Child Abuse Neglect Suspected	14.6	2
▪ Fractured Tibia	14.8	2
▪ Burns (2 ^o face/neck)	15.1	5
▪ Burns (2 ^o & 3 ^o bilateral leg)	19.6	4
▪ Gastroenteritis/Head Trauma	20.0	3
▪ Burns (splinting/grafting) - 2nd hospitalization	20.1	6
▪ Finger Injury/Osteomyelitis	23.0	6

No. Days Hospitalized with Injuries/Ingestions

3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0

60

70

80

90

100

110

120

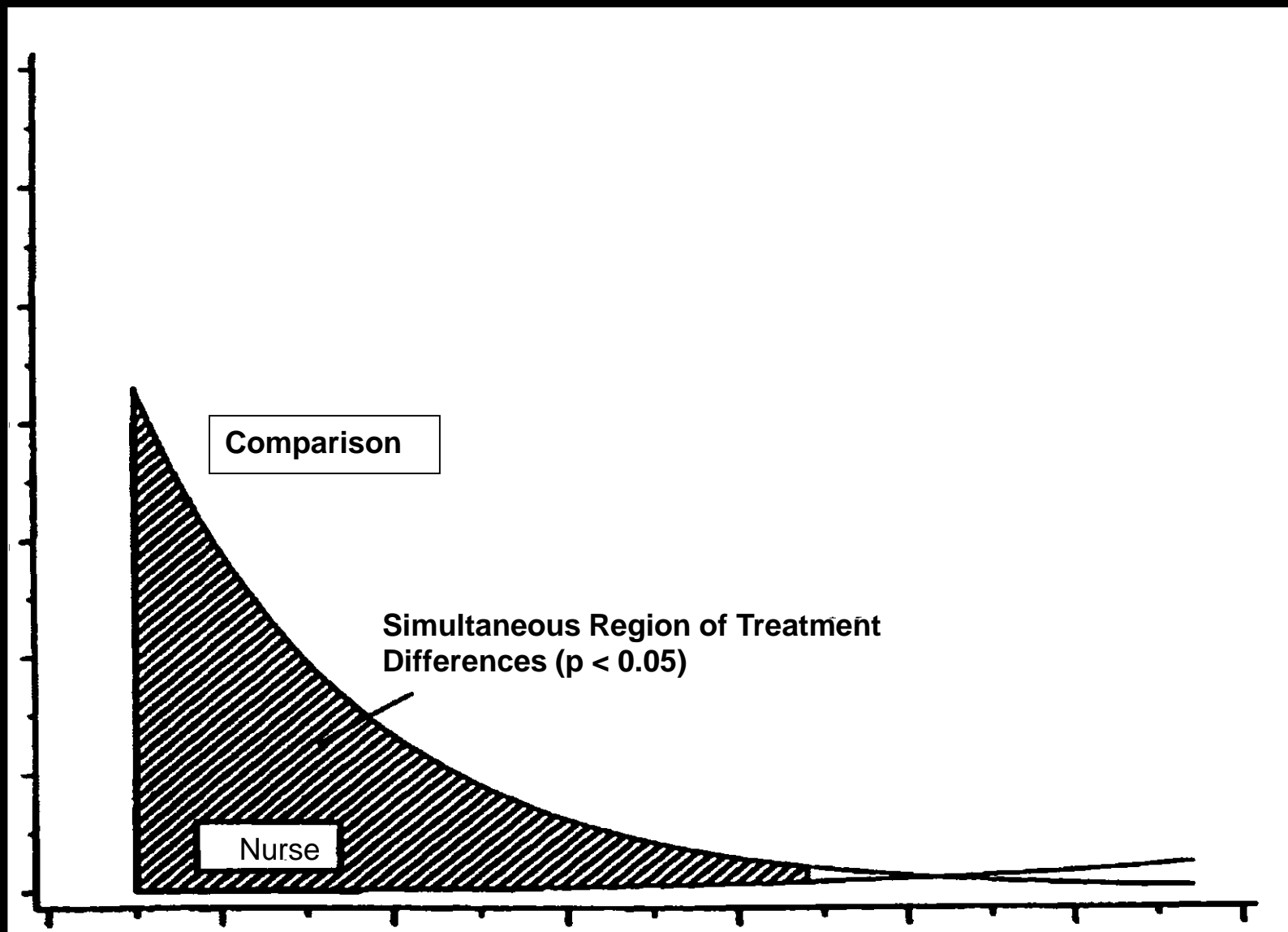
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Comparison

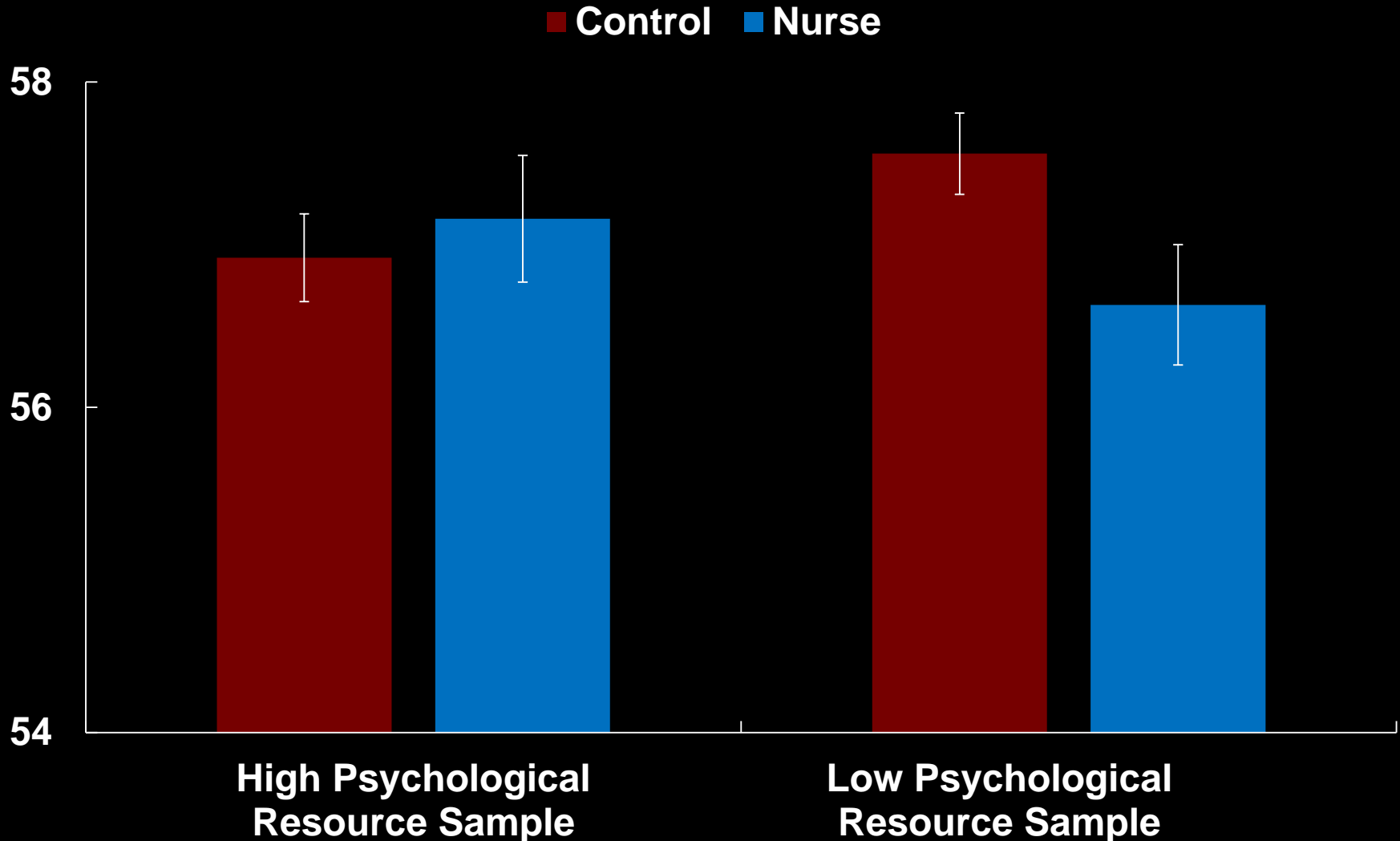
Simultaneous Region of Treatment
Differences ($p < 0.05$)

Nurse

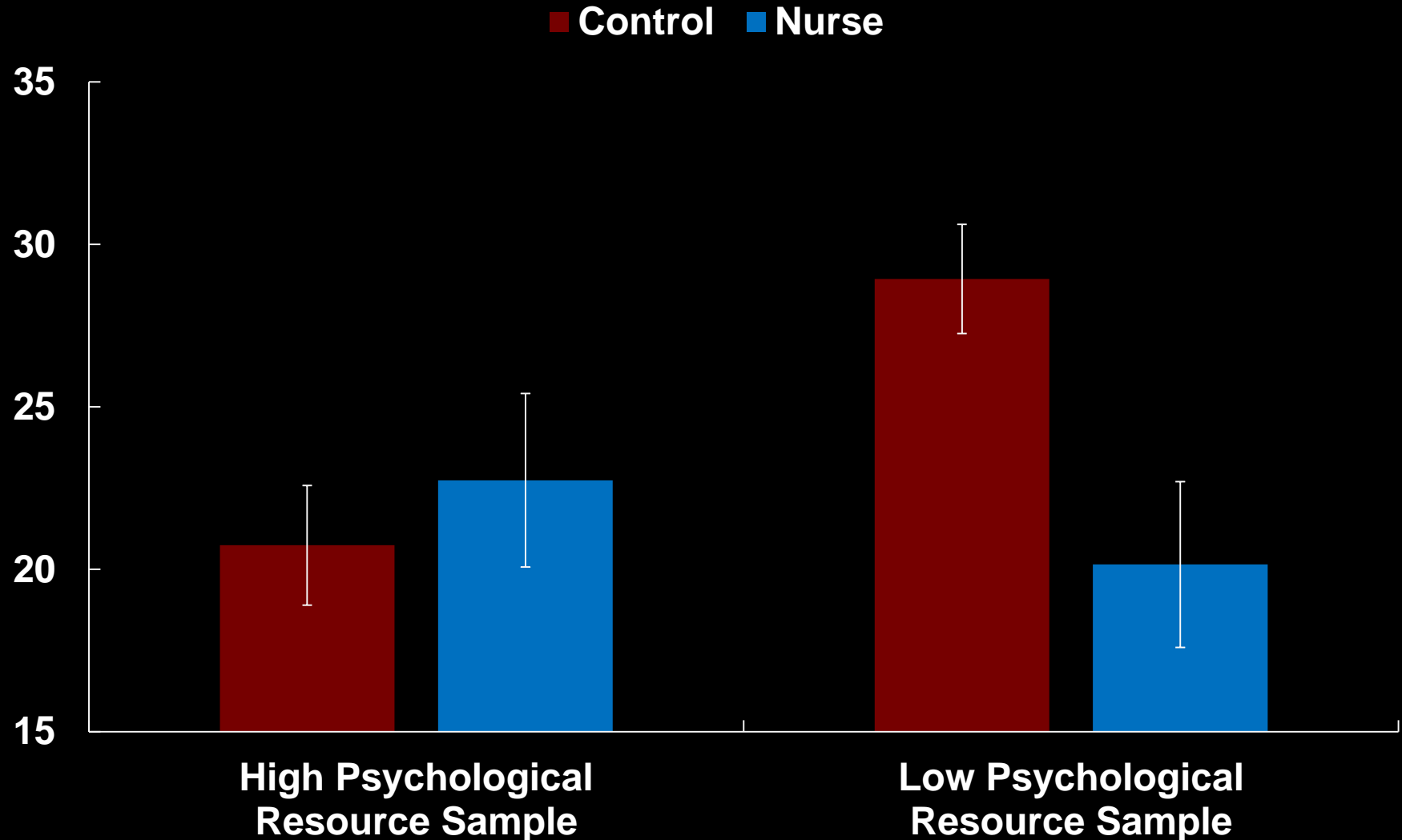
Mothers' Psychological Resources



Dysregulated Aggression Responses to Story Stems - Memphis Age 6

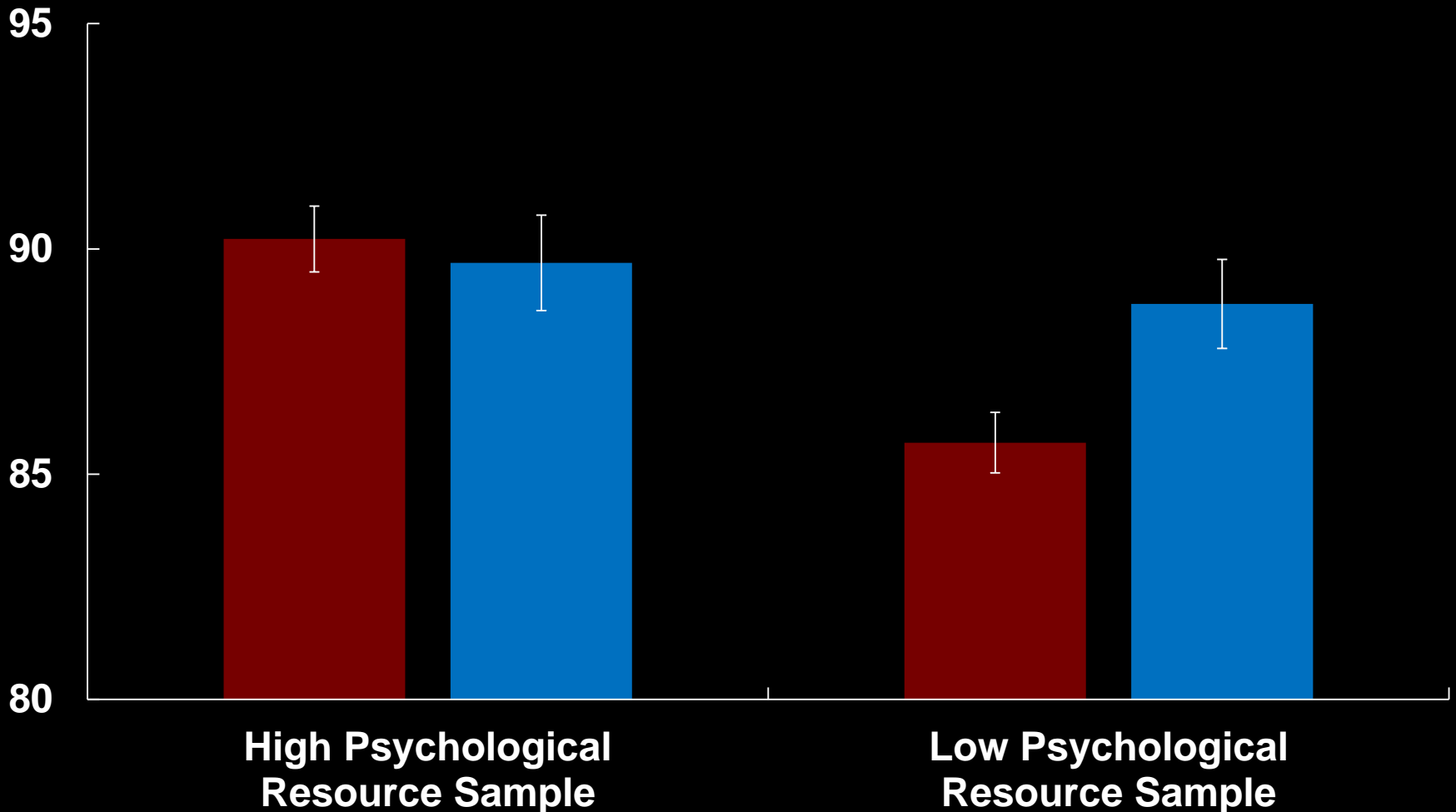


Percent Incoherent Responses to Stories Story Stems - Memphis Age 6

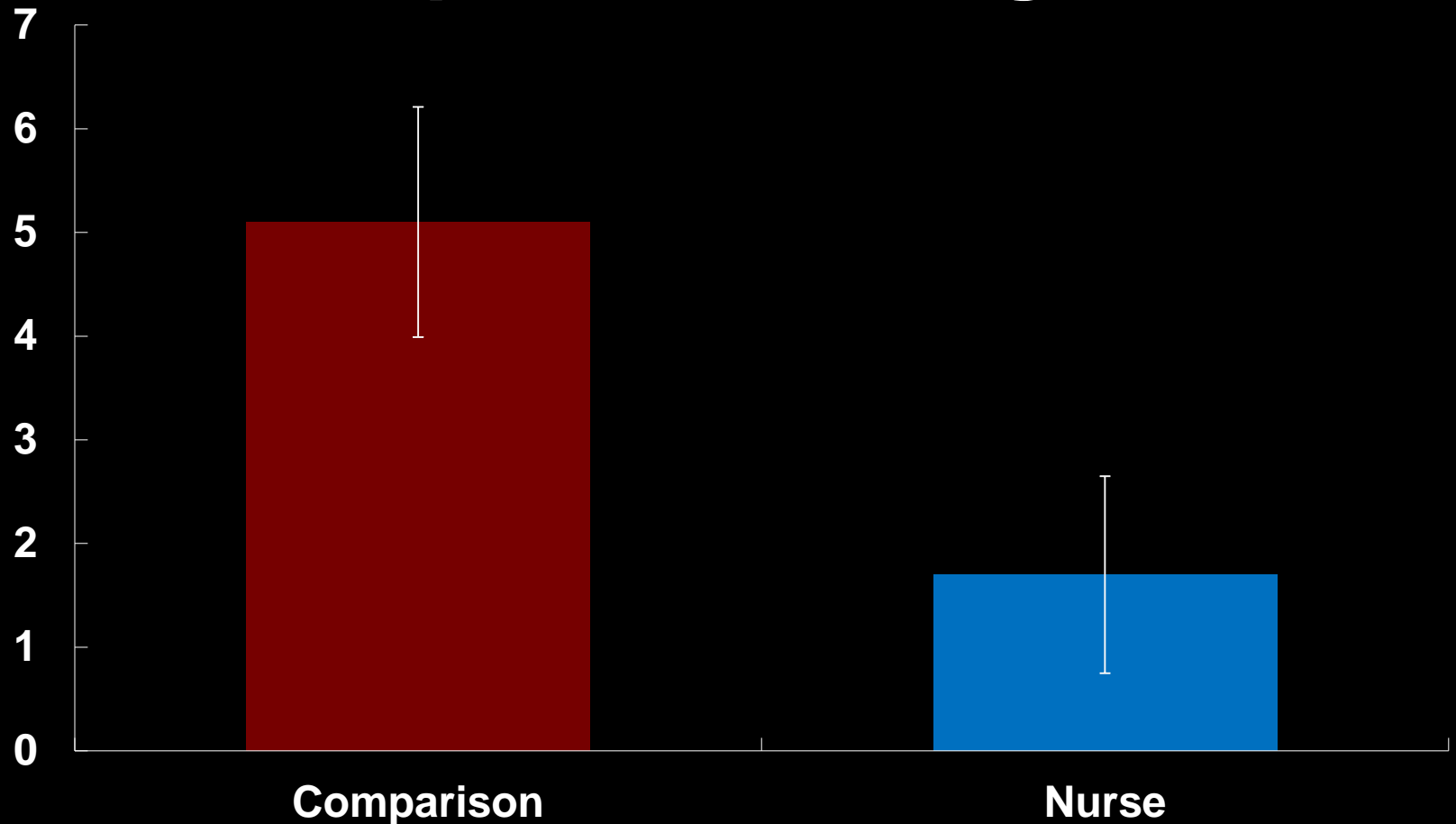


Memphis Trial: Math and Reading PIAT (Age 12)

■ Control ■ Nurse



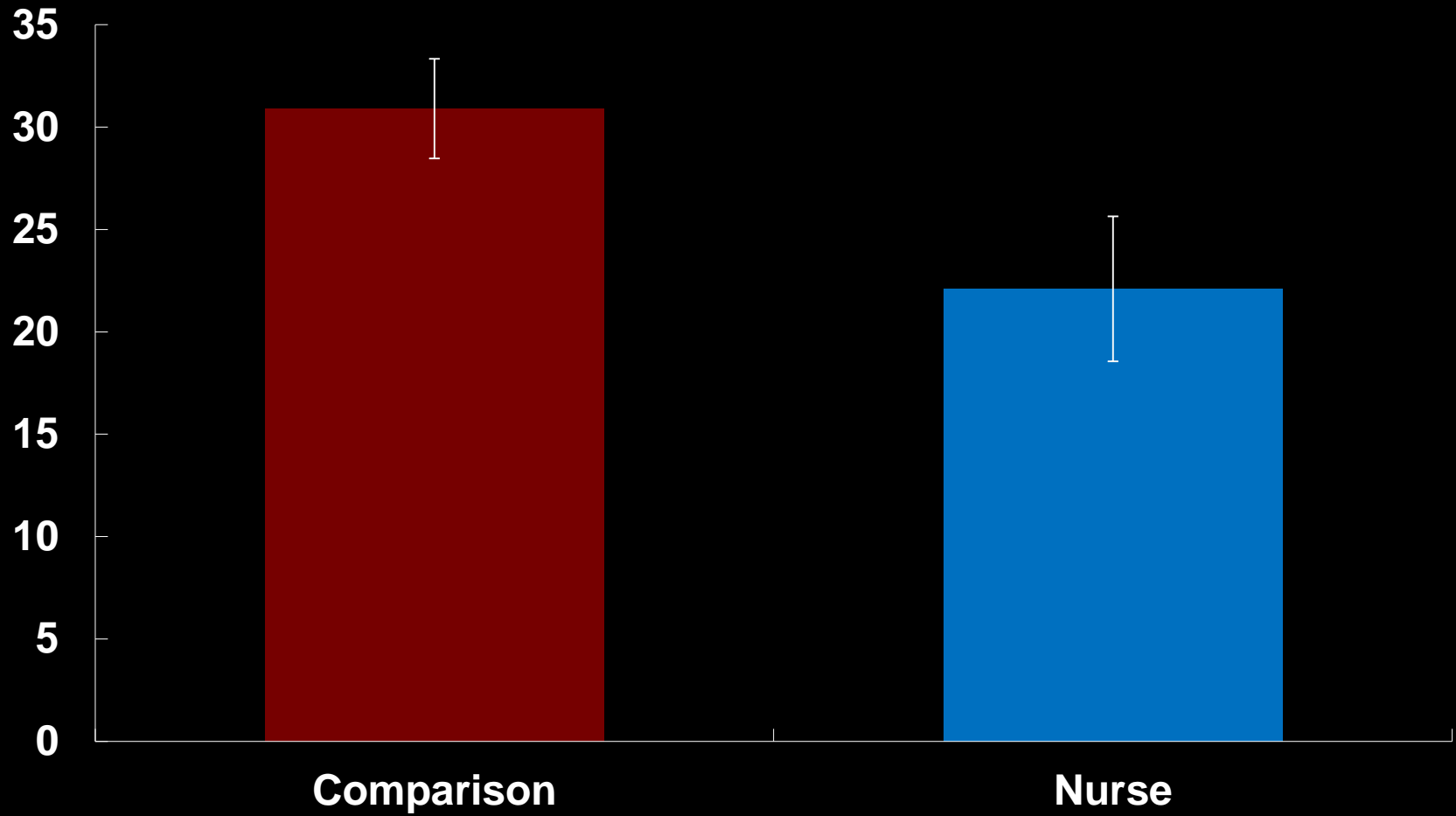
Percent of Children Who Used Tobacco, Alcohol, or Marijuana (Last 30 Days) Memphis – Child Age 12



P = .04 OR = 0.31

Arch Pediatr Adoles Med, 164(5) 412-418

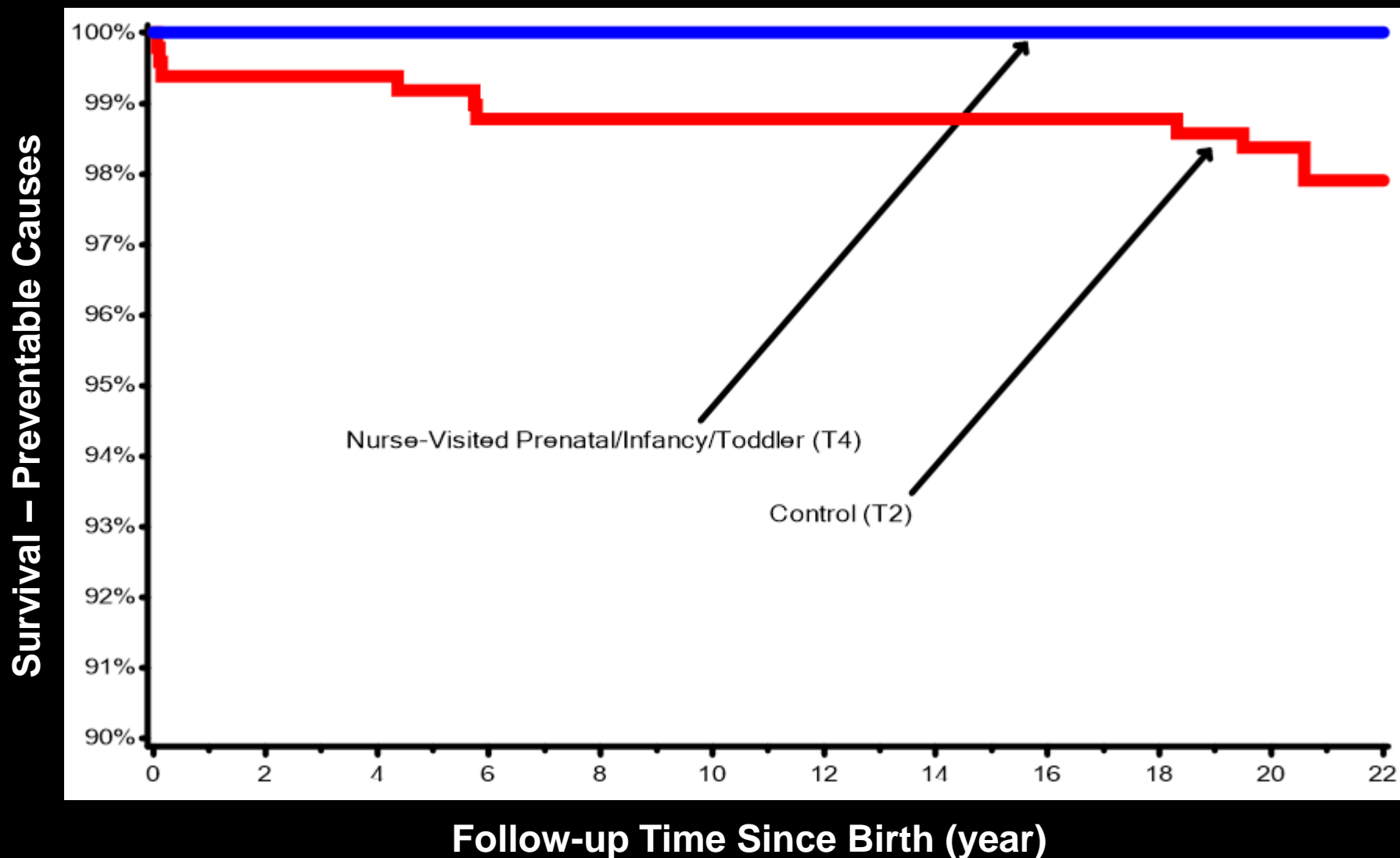
Percent of Children with Internalizing Disorders – Child Age 12



P = .04 OR = 0.63

Arch Pediatr Adoles Med, 164(5) 412-418

Survival Plots for Intervention and Control Children - Preventable Causes of Death*



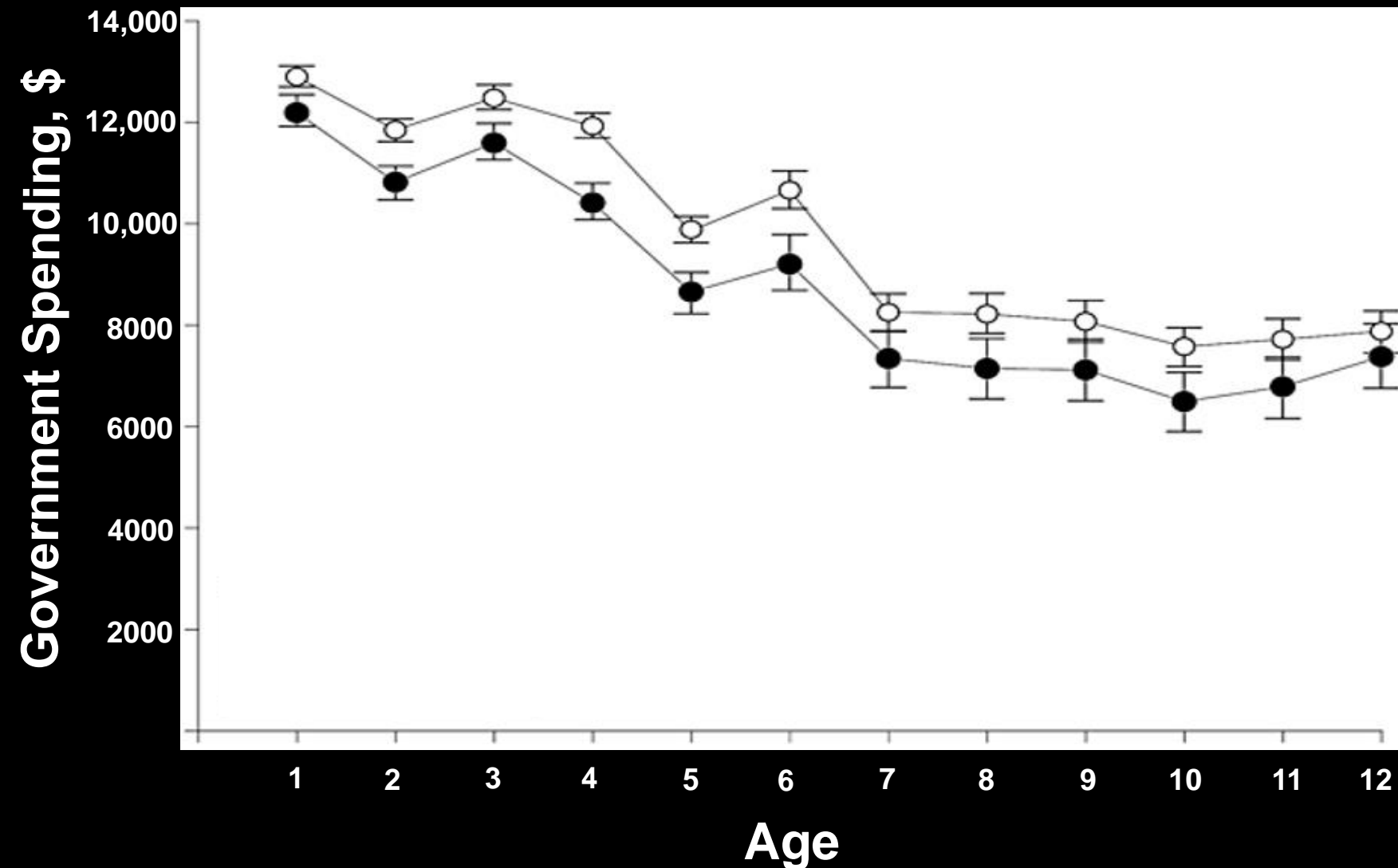
* Sudden Infant Death Syndrome, injury, homicide

(T2 vs. T4 $p=.02$)

JAMAPEDIATRICS.2014.472.pages E1-E7.July 7, 2014

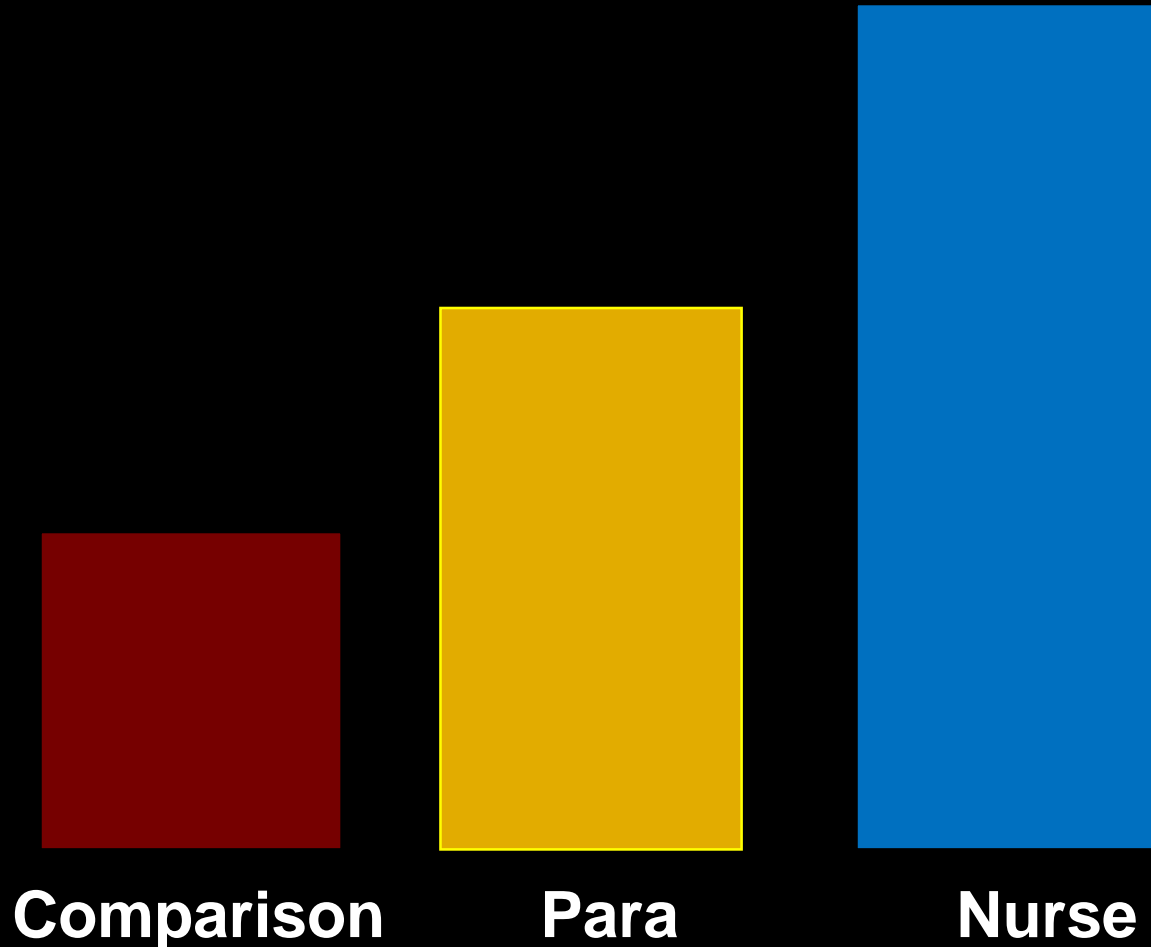
Total Discounted Government Spending (2006 US dollars) after Birth of First Child for Food Stamps, Medicaid, & AFDC/TANF

○ Control ● Nurse Visited

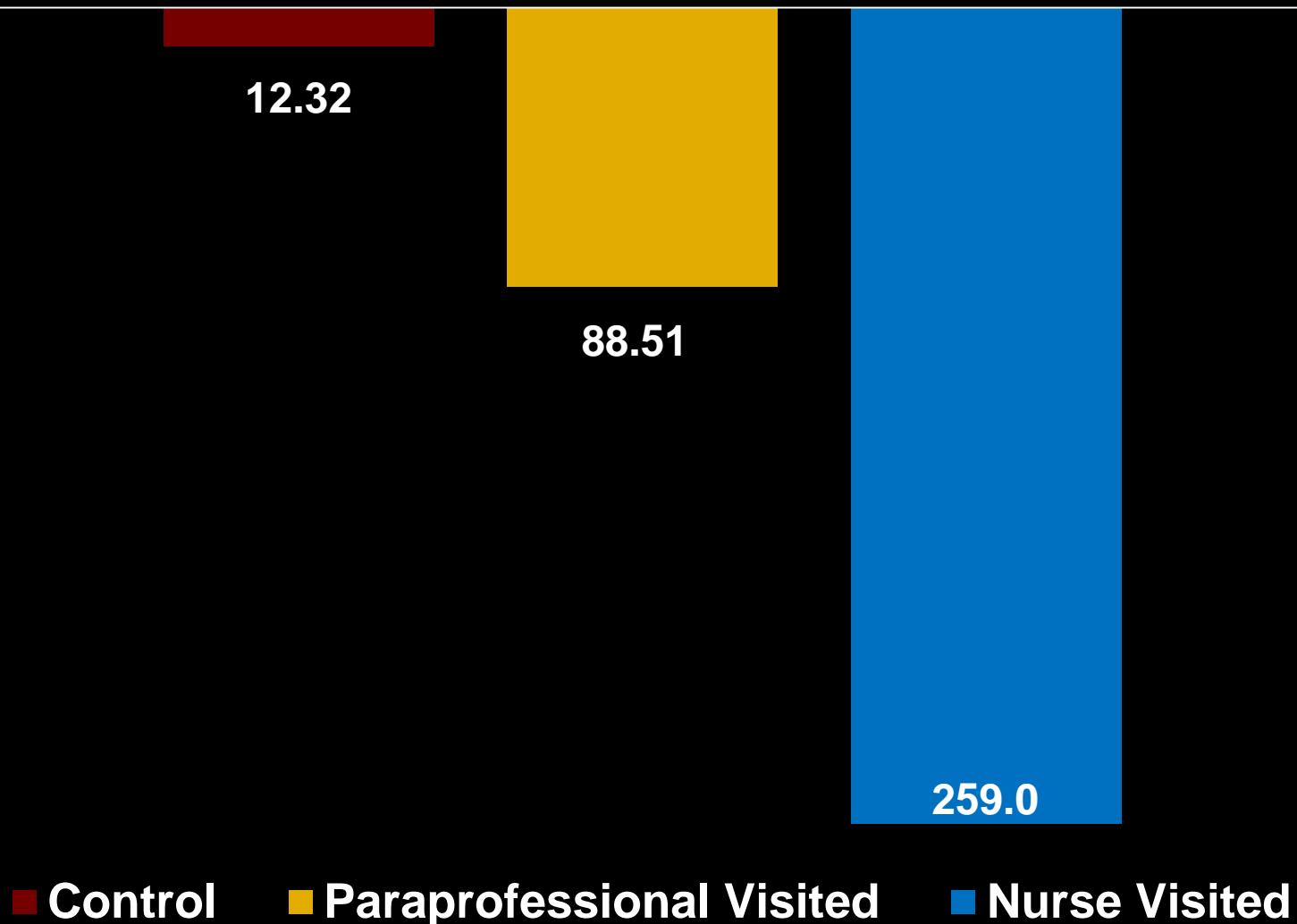


Pattern of Denver Program Effects

Maternal
and
Child
Functioning



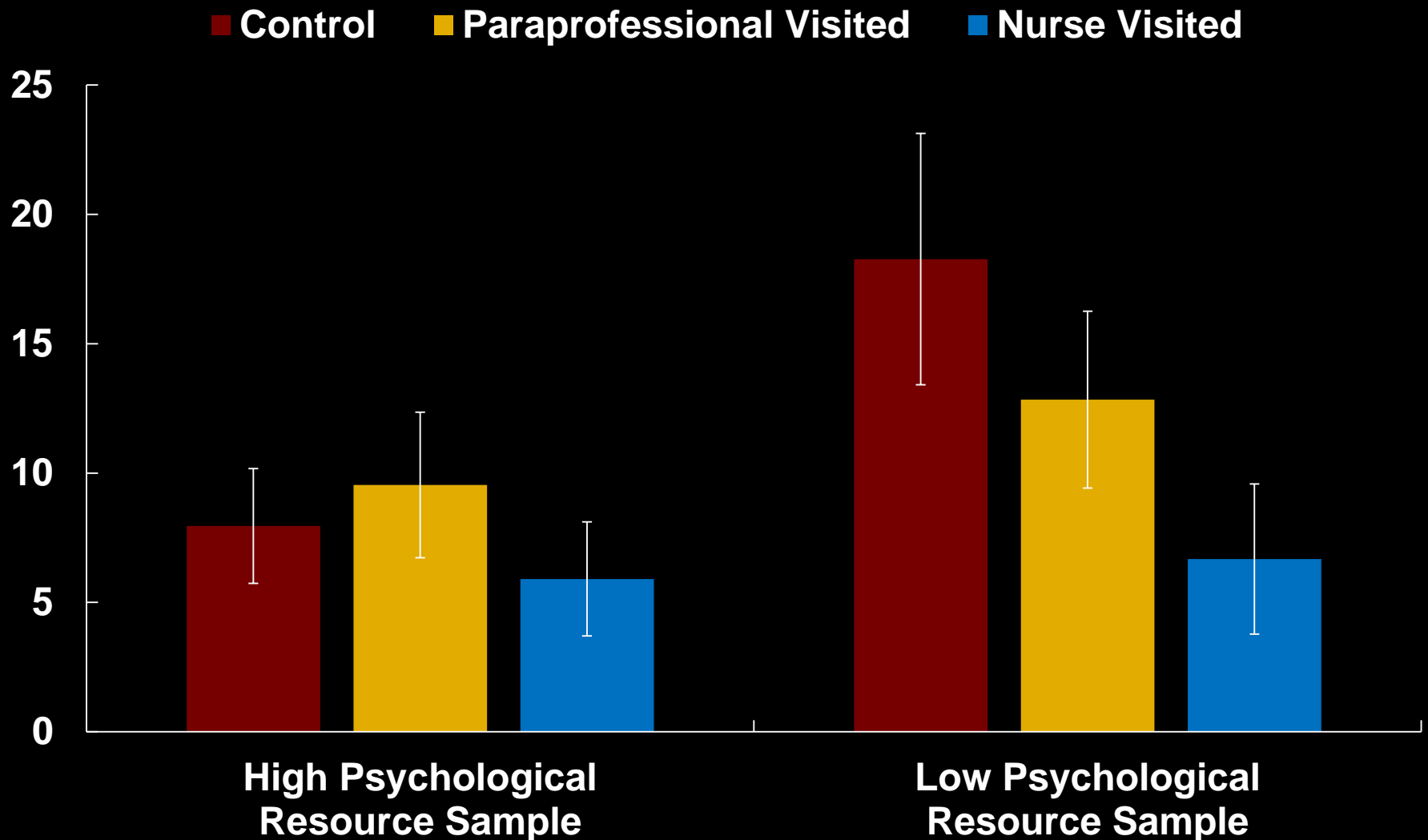
Changes in Urine Cotinine from Baseline to 36 weeks of Pregnancy (ng/mL) - Denver



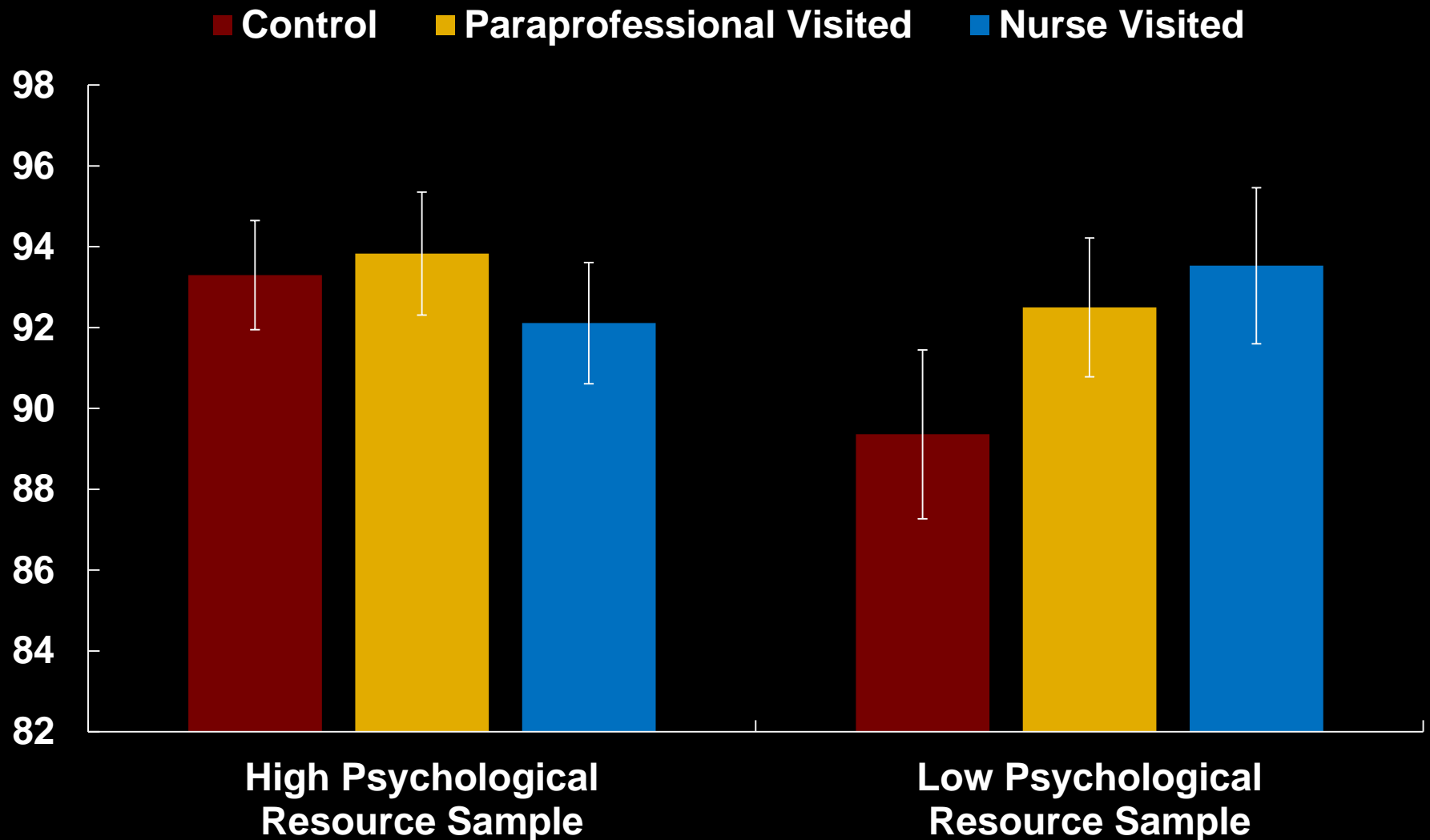
P-values: p vs c = NS

n vs c <.05

Denver Trial: Language Delay (21 months)

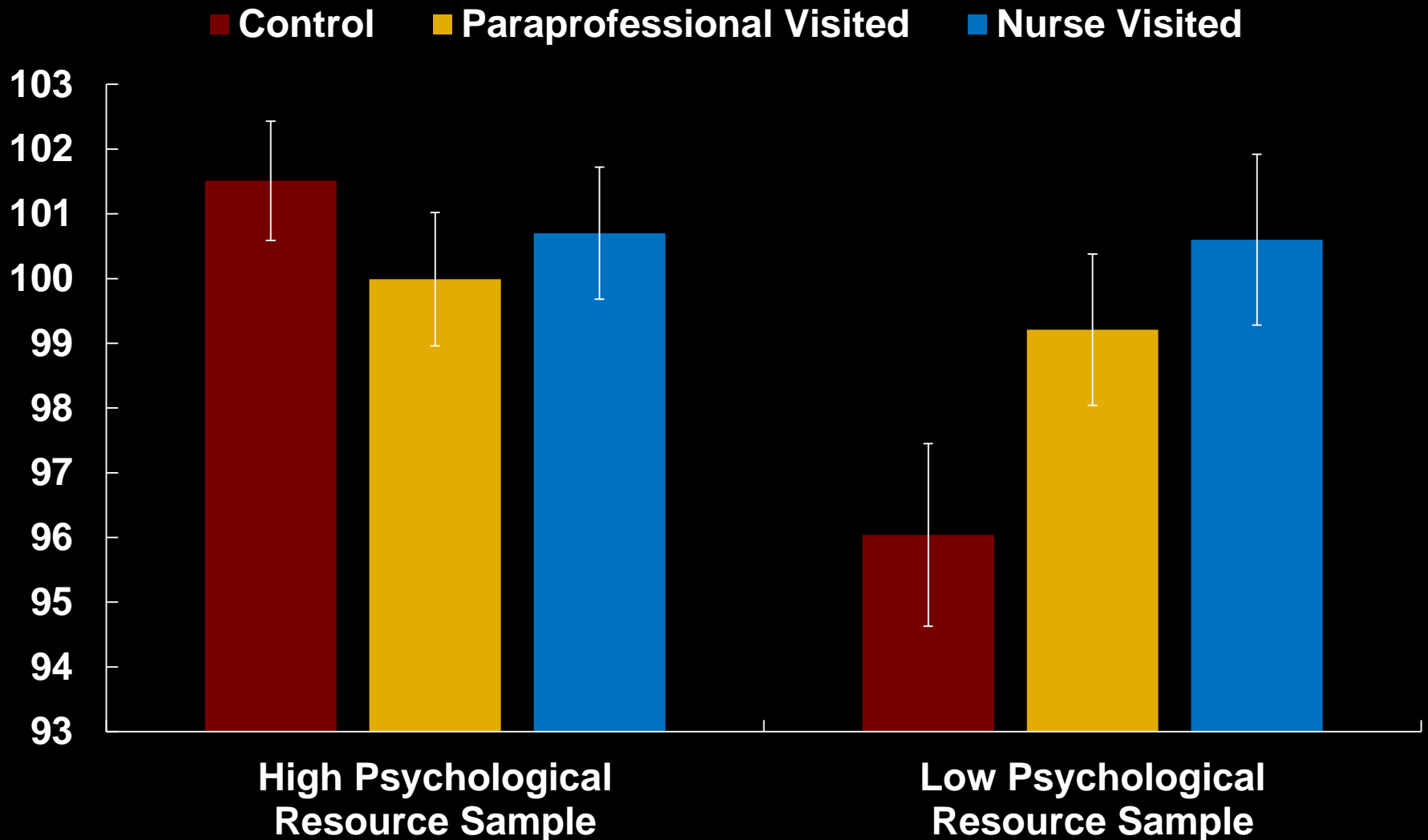


Denver Trial: Total Language Score – PLS (Age 4)

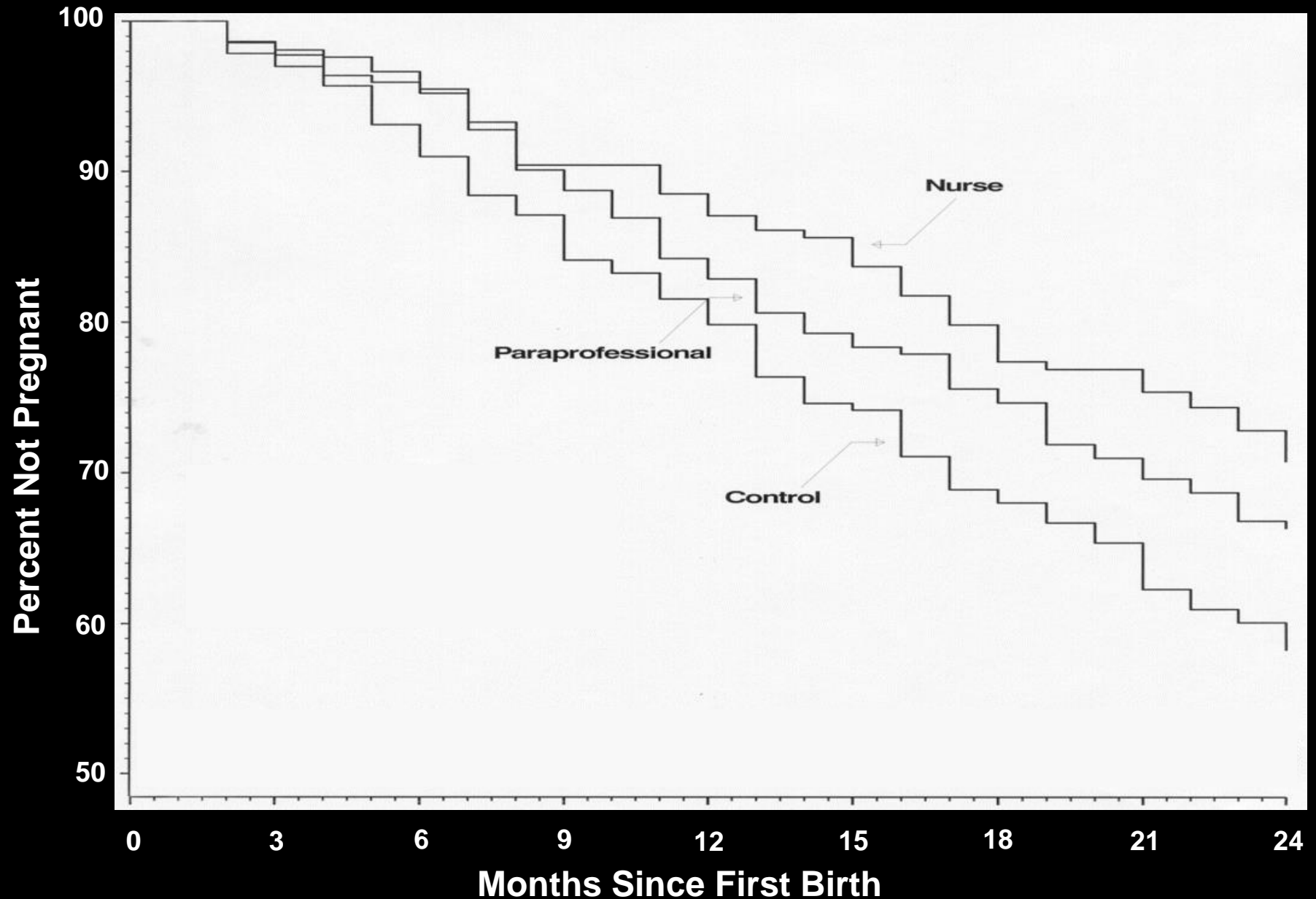


Executive Functioning Composite

Denver – Child age 4



Time to First Subsequent Pregnancy





From Science to Practice

- **Support Organizational and Community Capacity**
- **Education and Consultation**
- **Program Guidelines**
- **Information System**
- **Assessing Program Performance**
- **Continuous Improvement**



International Replication

- **No presumptions**
- **Adaptation**
- **Pre-test and small-scale trial**
- **Larger trial (if population sufficiently large and feasible)**
- **Faithful replication of adapted program**
- **International societies:**
 - **UK – England, Scotland, Northern Ireland**
 - **Australia – aboriginal families**
 - **Canada – ON and BC**
 - **Norway**
 - **Bulgaria – Roma families**
 - **American Indians & Alaskan Natives**

Test Innovations in Model and Implementation

- **Participant retention and completed home visits**
- **Intimate partner violence**
- **Hormonal contraception**
- **New method to observe & promote caregiver-child interaction – DANCE/DANCE STEPS**
- **Maternal depression and anxiety**
- **Development of STAR (Strength and Risk) framework to guide program implementation**
- **Modernize NFP with telehealth, STAR, electronic facilitators, and retention intervention**
- **Improve NFP - child welfare & primary care collaboration**
- **Pilot and test program for multiparous women and those with substance abuse**

Underlying Principles Guiding Nurse-Family Partnership

- **Honoring:**
 - **Parents**
 - **Culture**
 - **Nurses**
 - **Policy-makers committed to protecting children and families**
 - **Clinical excellence**
 - **Sound scientific evidence**

