Cumulative Childhood Adversity, Educational Attainment & Active Life Expectancy among U.S. Adults

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Background

Childhood conditions (e.g. SES) are associated with both physical functioning[1,2] and mortality risk[3]

Associations partly explained by adult conditions (e.g., SES, behaviors)

Prior studies examined functioning & mortality as distinct outcomes

It is unclear how childhood conditions JOINTLY influence functioning & mortality that define the period of life with – or without significant health problems (Active Life Expectancy)?

[1]Alvarado et al 2007; Guralnik et al 2006; Haas 2008; Luo & Waite 2005; Turrell et al 2007;
[2] Bowen & Gonzalez 2010; Freedman et al 2008
[3] Hayward and Gorman 2004; Barker 1997; Montez and Hayward 2011; Finch & Crimmins 2004; Davey Smith et al 1998

What do we mean by “JOINTLY influencing” physical functioning and mortality?

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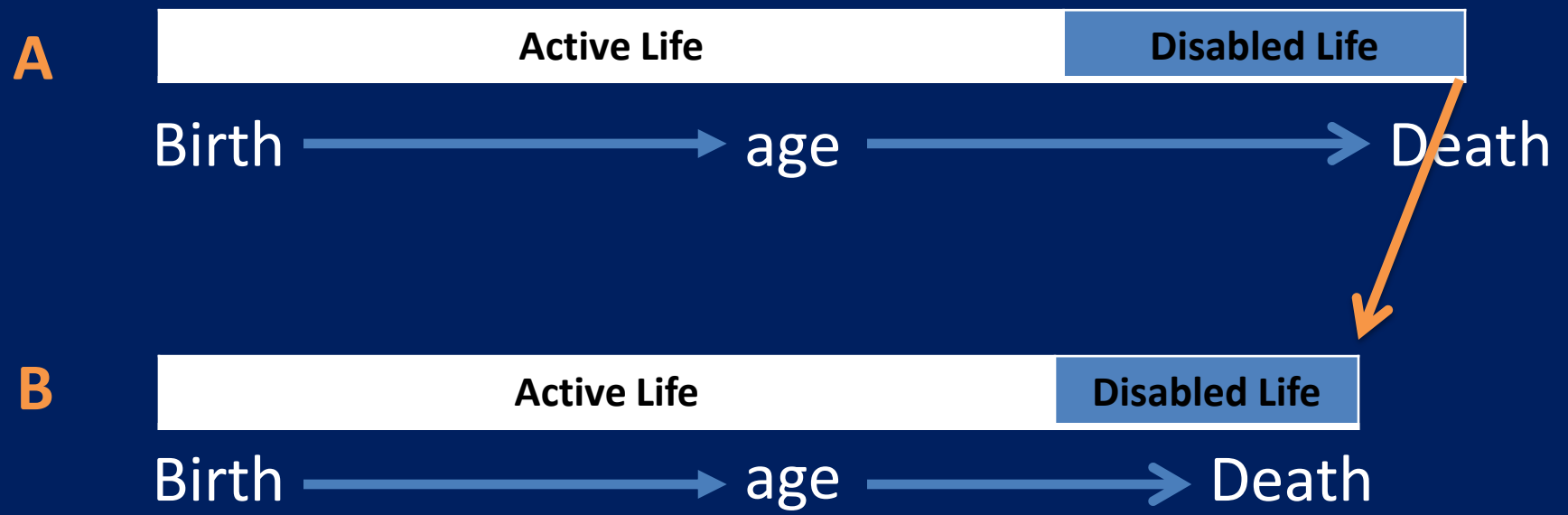

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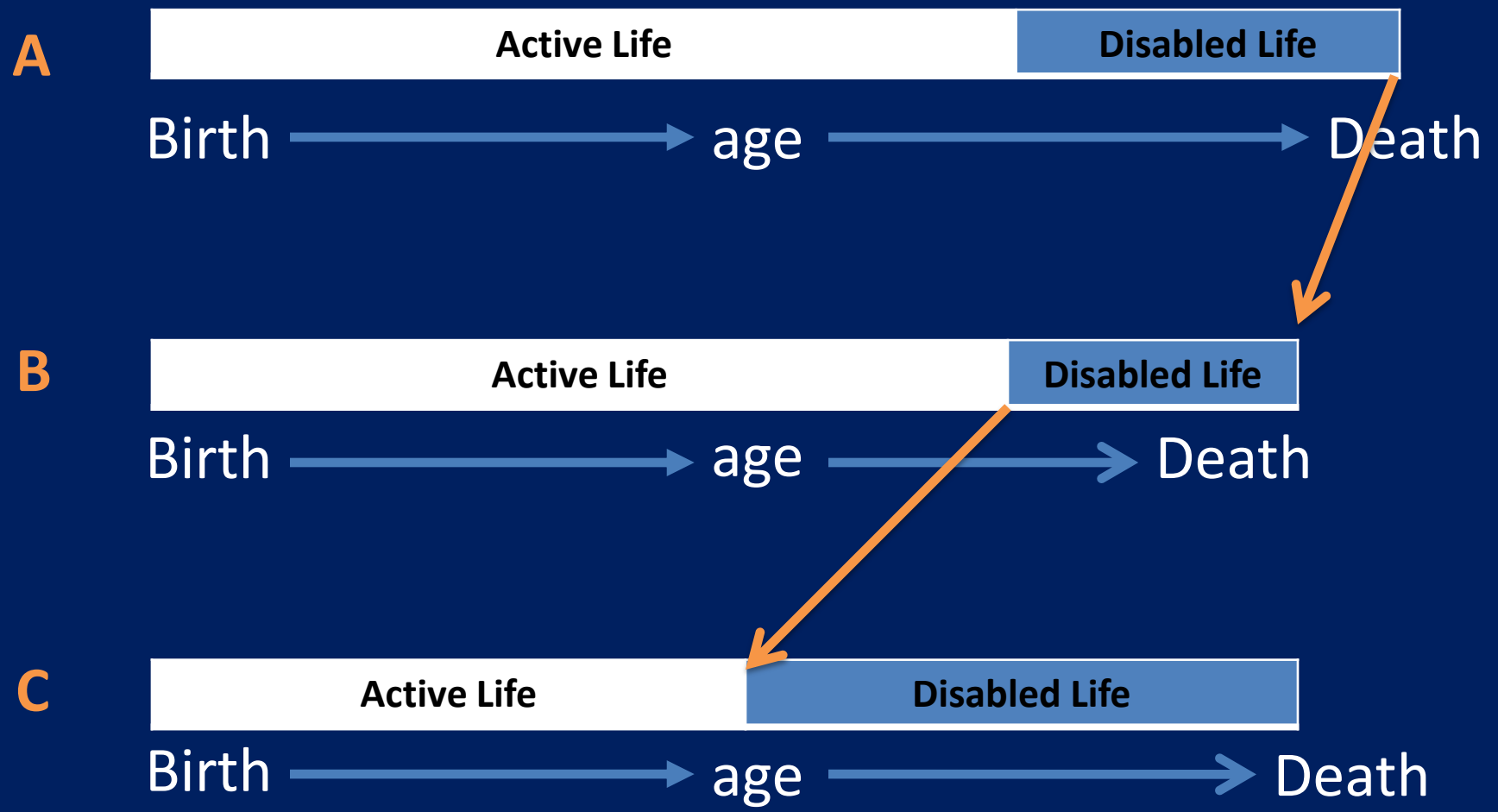
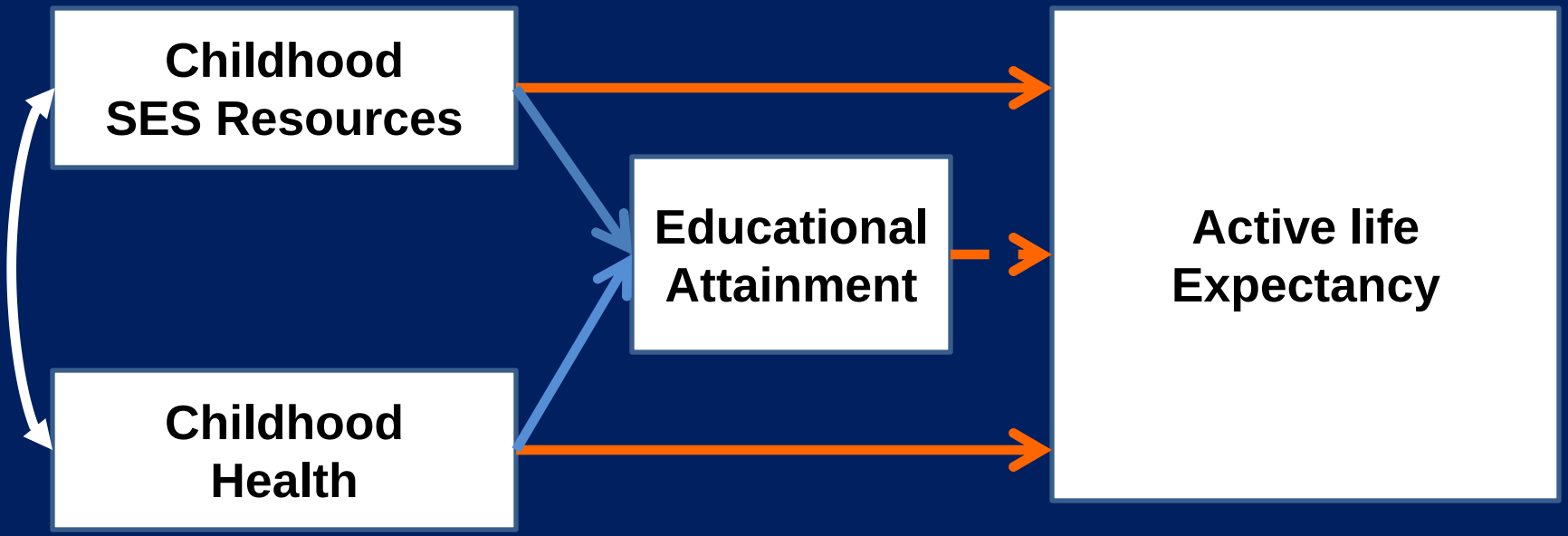


Aims of this Study

To what extent is active life expectancy (ALE) shaped by two critical childhood conditions (health and socioeconomic context)?

To what extent can educational attainment overcome the consequences of a disadvantaged childhood on ALE?

Conceptual Framework

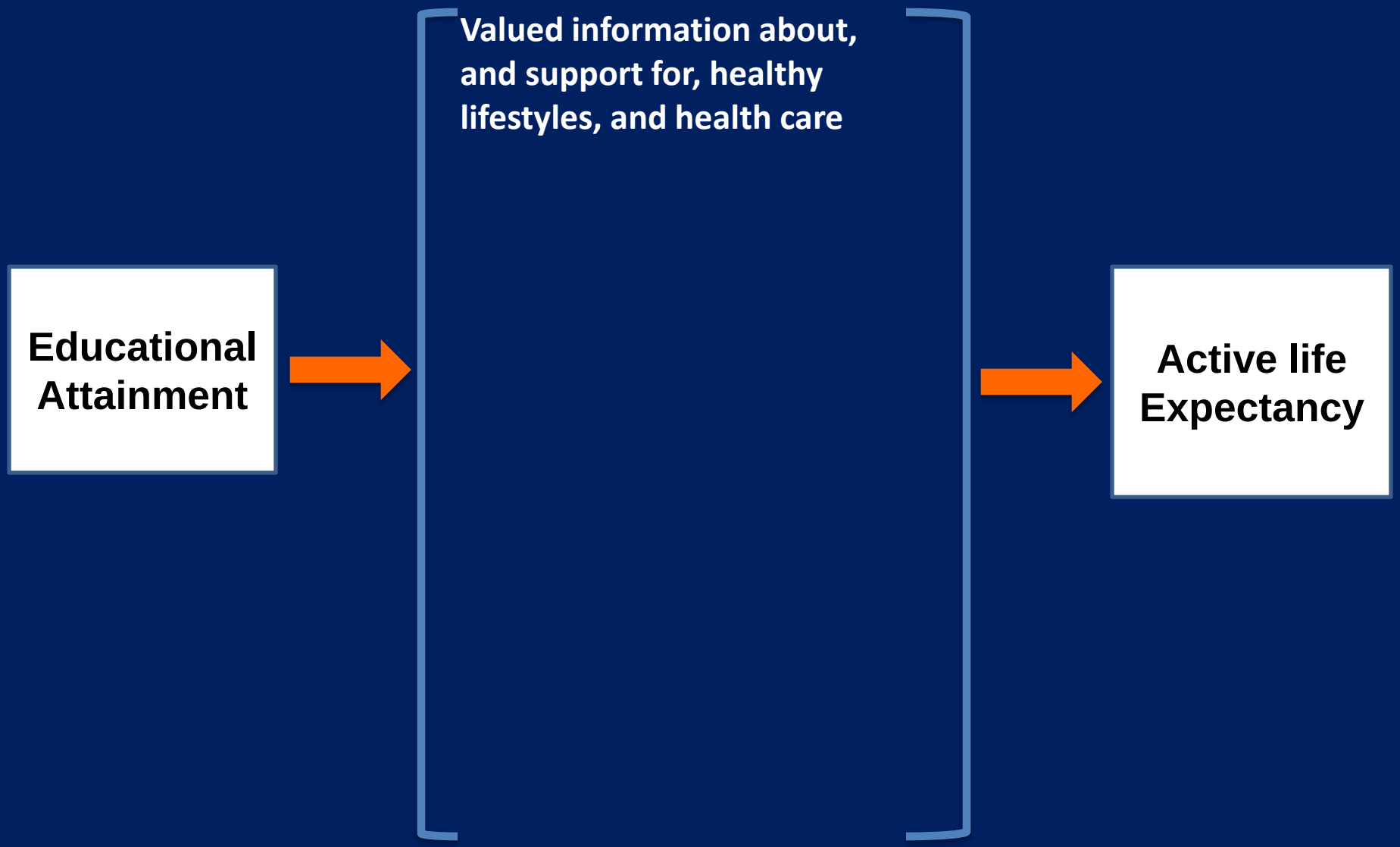


Educational Attainment

- Key indicator of overall lifetime environment [1]
- Numerous & changing mechanisms[2]
- Temporally and causally prior to other dimensions of SES[1]
- More stable than income or occupation
- Policy intervention

[1] Mirowsky & Ross 2003; [2]Link & Phelan

Conceptual Framework



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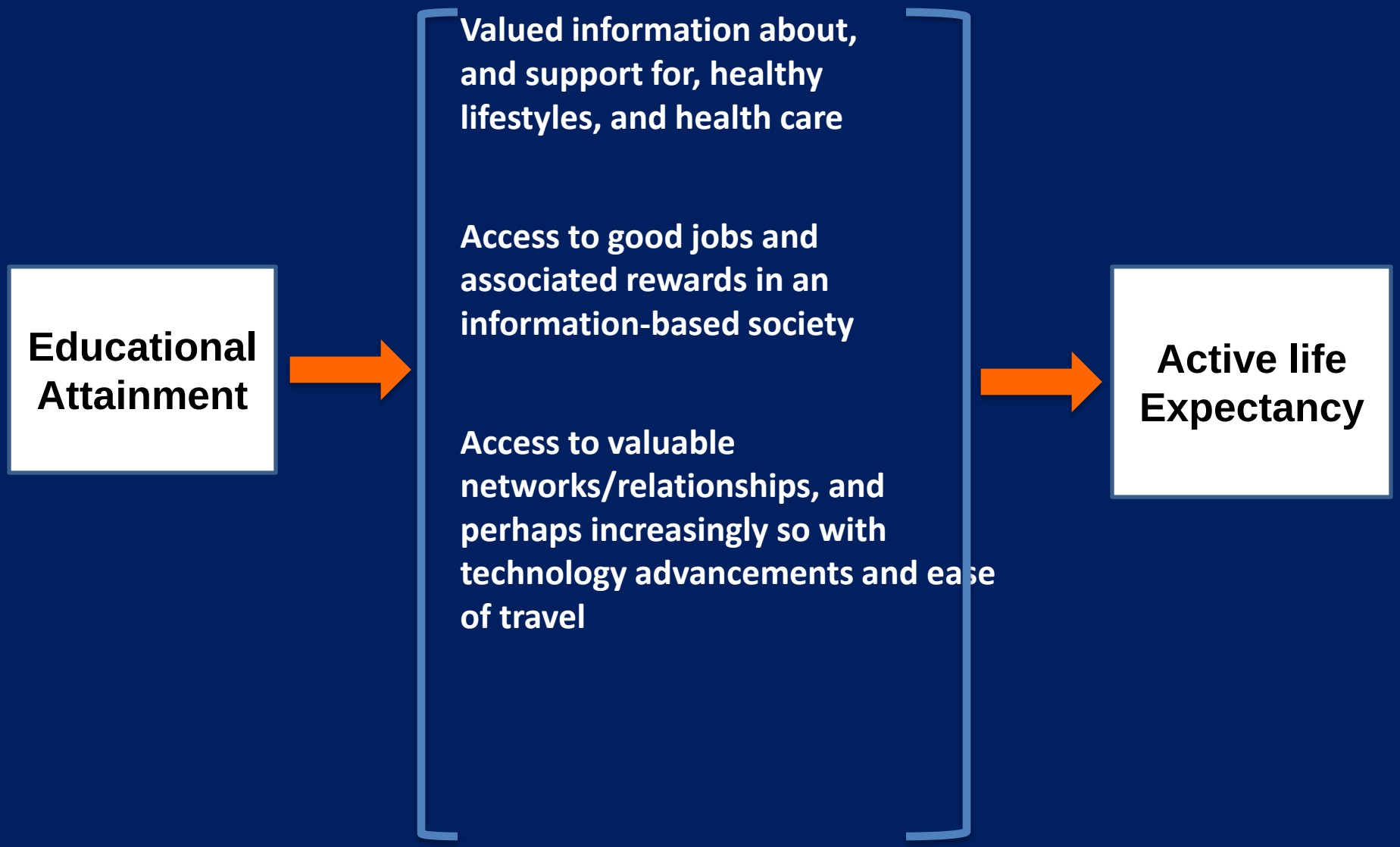

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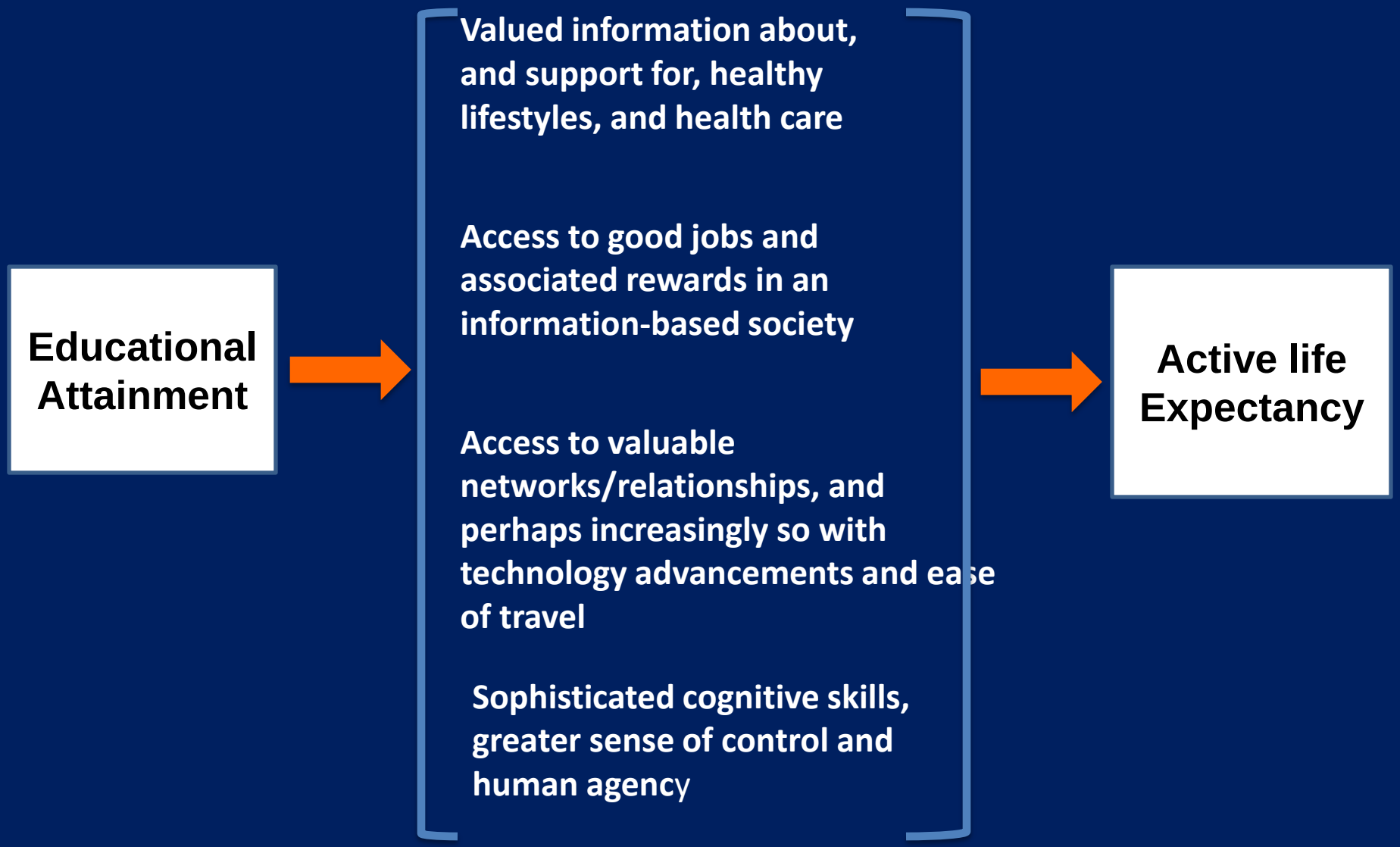


Data

1998–2008 biannual waves of the Health & Retirement Study

- U.S.-born, non-Hispanic white & black men & women
- 50-100 years of age

Measuring Childhood & Adult Conditions

Index of Cumulative Childhood SES Adversities

- Father had <8 years education
- Mother had <8 years education
- Family was poor
- Moved for financial reasons
- Received help from relatives
- Never lived with father
- Father had blue collar occupation

Childhood Health

- 1=fair/poor; 0=good, very good, excellent

Educational attainment

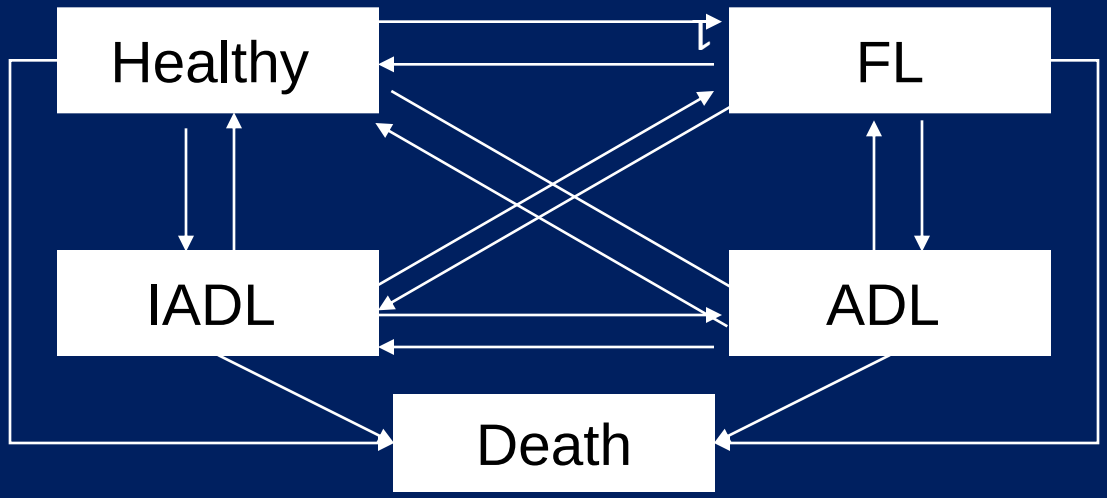
- Less than HS, HS, More than HS

Person-Year Sample Characteristics (N=148,263)

Characteristics	Mean (or %)
Age (years)	66.0
Male (%)	43.9
Black (%)	9.7
Cumulative Childhood SES Adversity (%)	
0	14.6
1	30.0
2	19.3
3	18.3
4	11.0
5+	6.9
Fair/poor Childhood Health (%)	5.7
Educational Attainment (%)	
Less than HS	17.7
HS	36.9
More than HS	54.4

Active Life Expectancy

STEP 1: Define State Space (16 possible transitions)



ADL: difficulty with 1+ of 6 ADLs (e.g., bathing, eating, dressing)
IADL: no difficulty with ADLs, but difficult with 1+ of 5 IADLs (e.g. shopping)
FL: no difficulty with ADL or IADS, but difficulty with 1+ of 11 functions
Healthy: no difficulty

Active Life Expectancy

STEP 2: For each of the 16 transitions, estimate transition rates from multivariate hazard models

$$\ln \mu_{ij}(x) = \beta_{ij0} + \beta_{ij1}\ \text{Age} + \beta_{ij2}\ \text{ELH}$$

All models control for gender, race, and survey weights.

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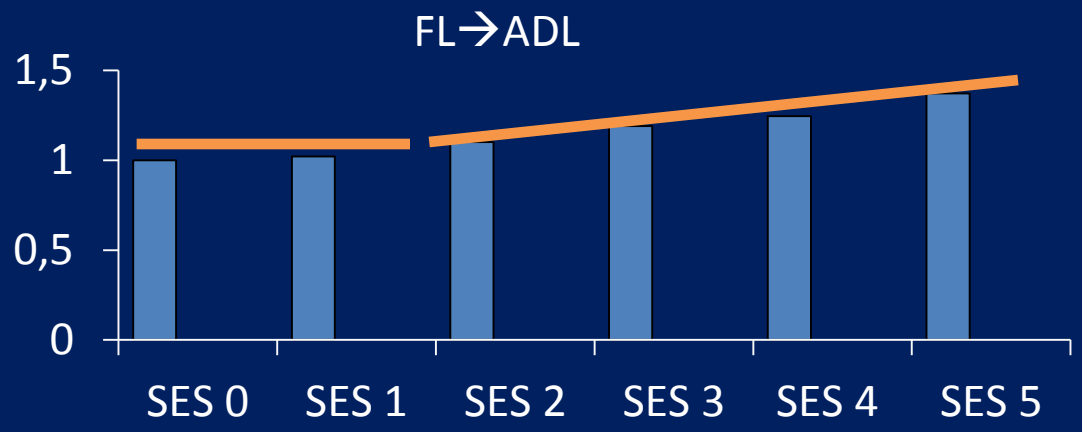
All models control for gender, race, and survey weights.

Key Findings from These Models

- **Adults who experienced adverse childhood conditions were much more likely to make unfavorable transitions**
- **Childhood SES & health independently predicted transitions**
- **Childhood SES showed threshold & dose-response patterns**



Key Findings from These Models

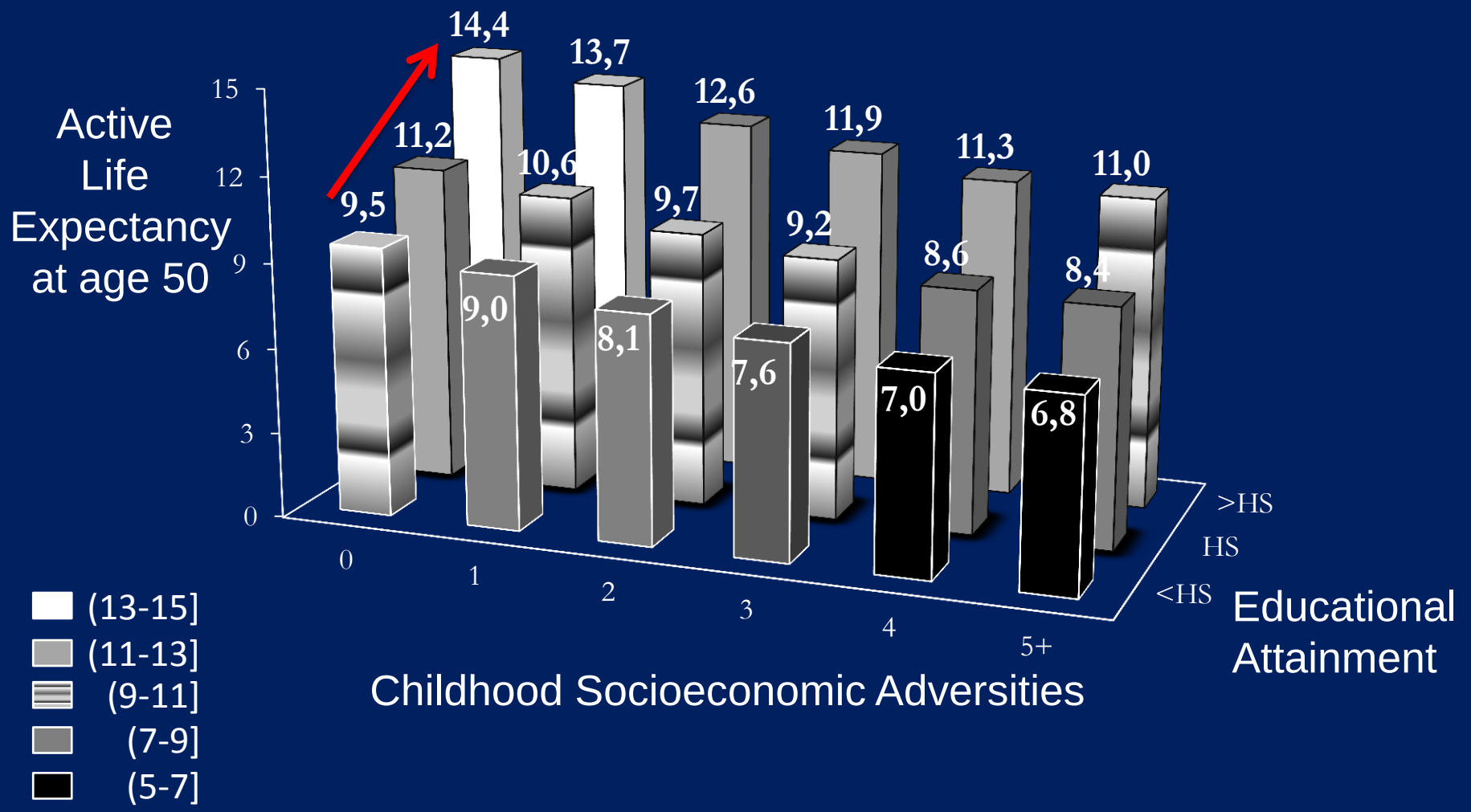
- **Education only partly mediated the effects of childhood SES.**
- **Education did not mediate any of the effect of childhood health**
- **Childhood SES, health, and education combined in an *additive cumulative* way to influence ALE**

Active Life Expectancy

STEP 3: Use the matrix of transition rates to estimate
total and active life expectancy
using multi-state life tables

Analyses stratified by gender

Active Life Expectancy at age 50 for white men who experienced favorable childhood health



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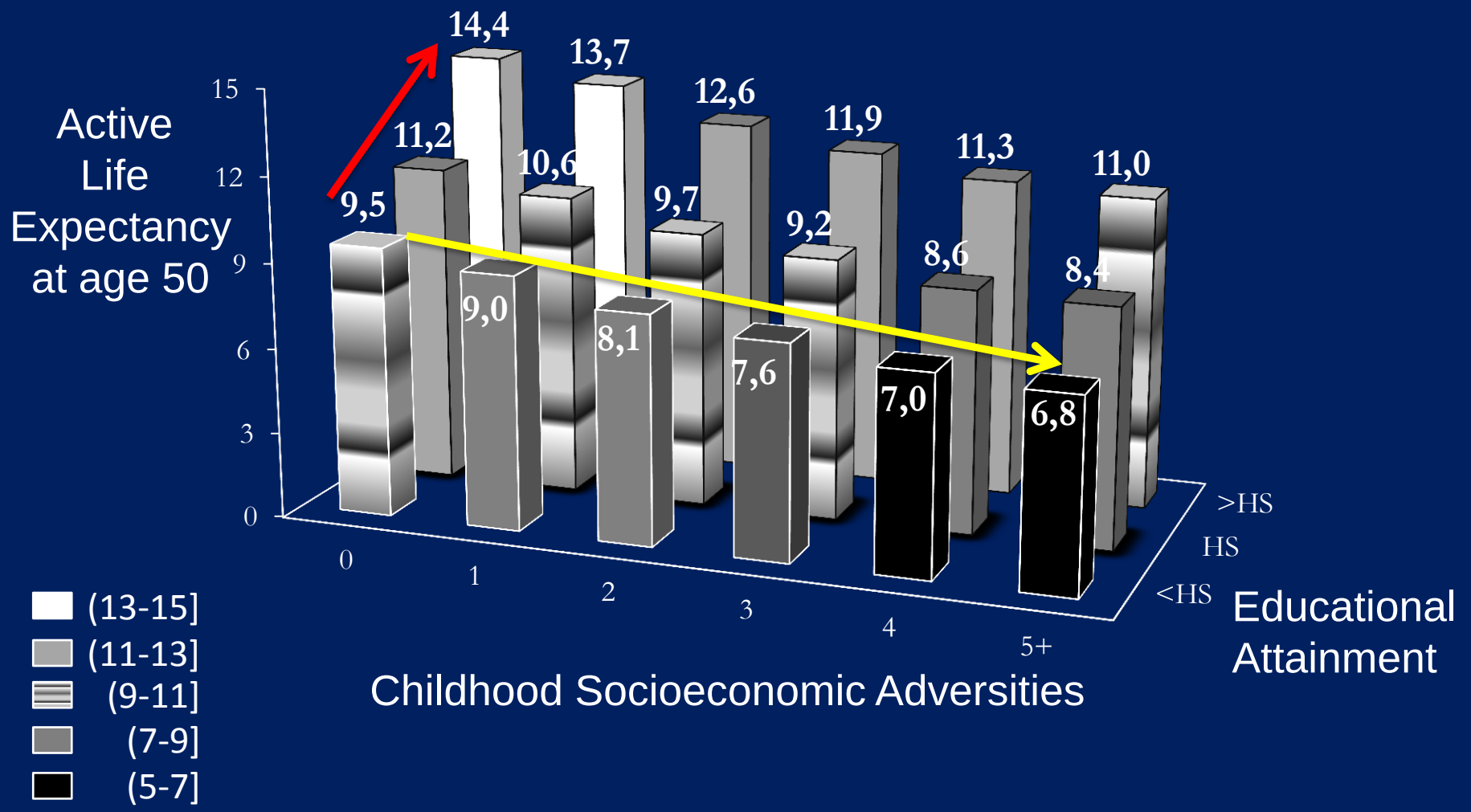

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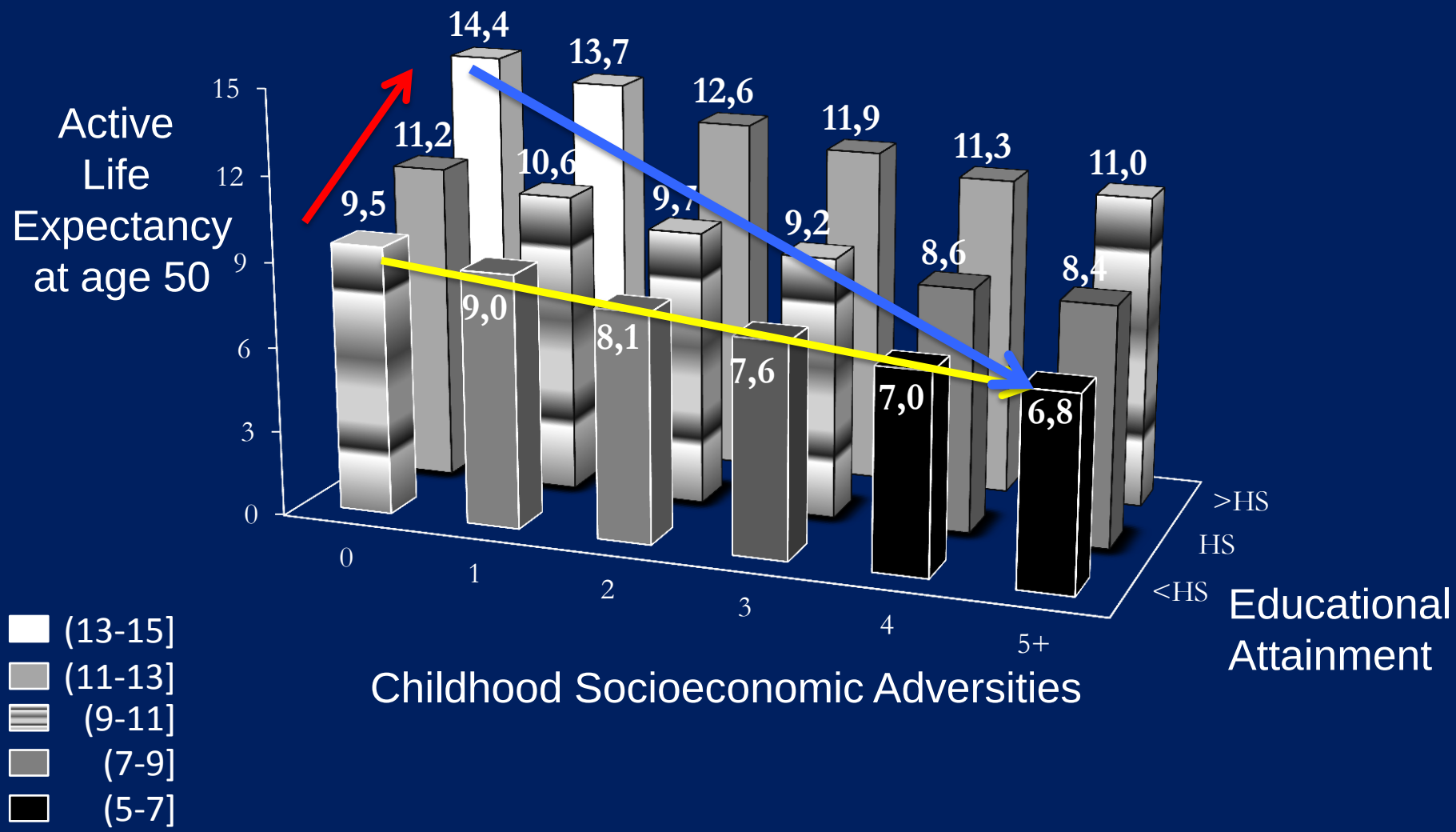
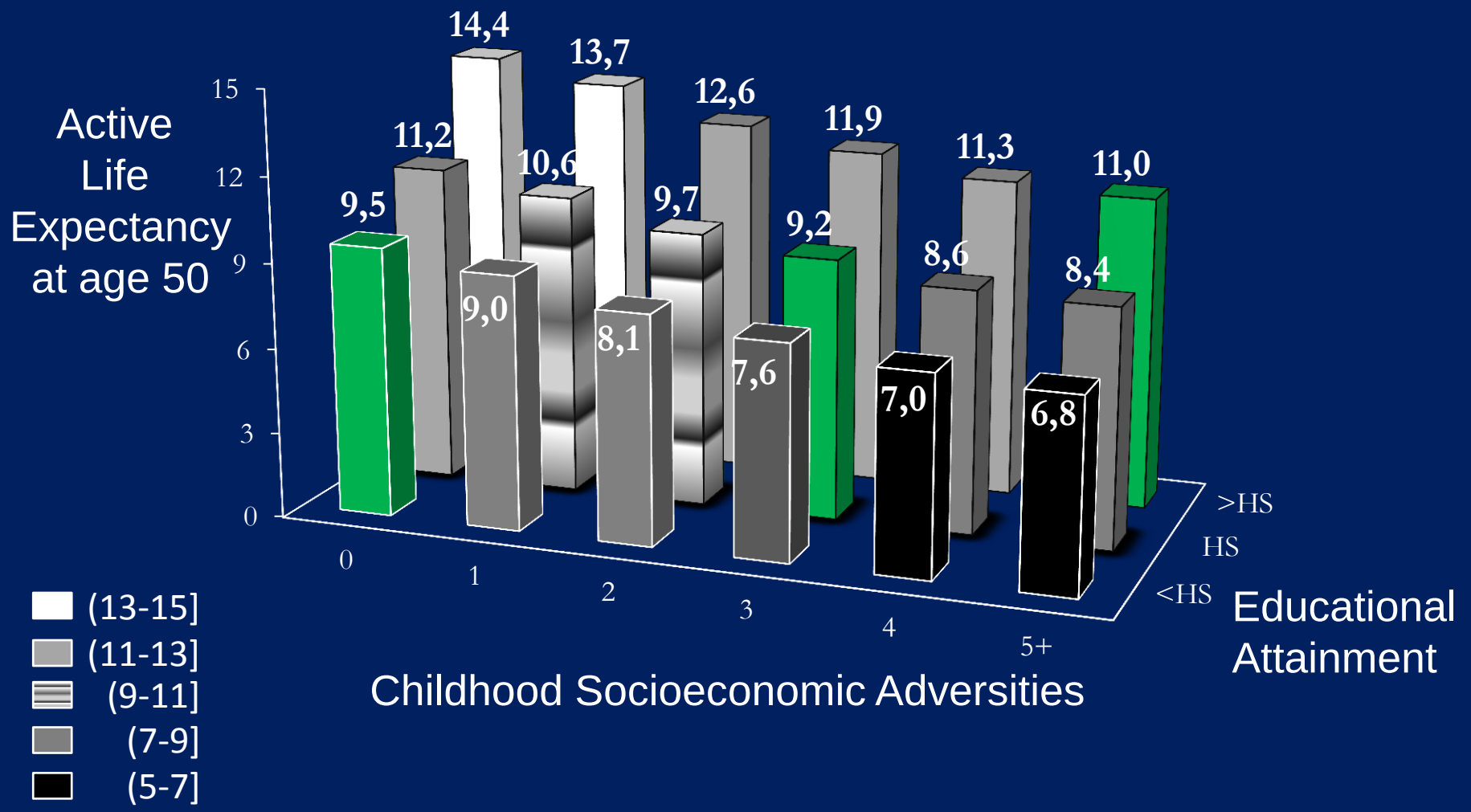


To what extent can educational attainment compensate for childhood adversities?

Active Life Expectancy for white men age 50 who experienced favorable childhood health



Conclusions

Adverse childhood contexts…

- **shorter TLE & ALE & greater % of life impaired**
- **stronger impact on ALE than TLE**
- **Scenario C**

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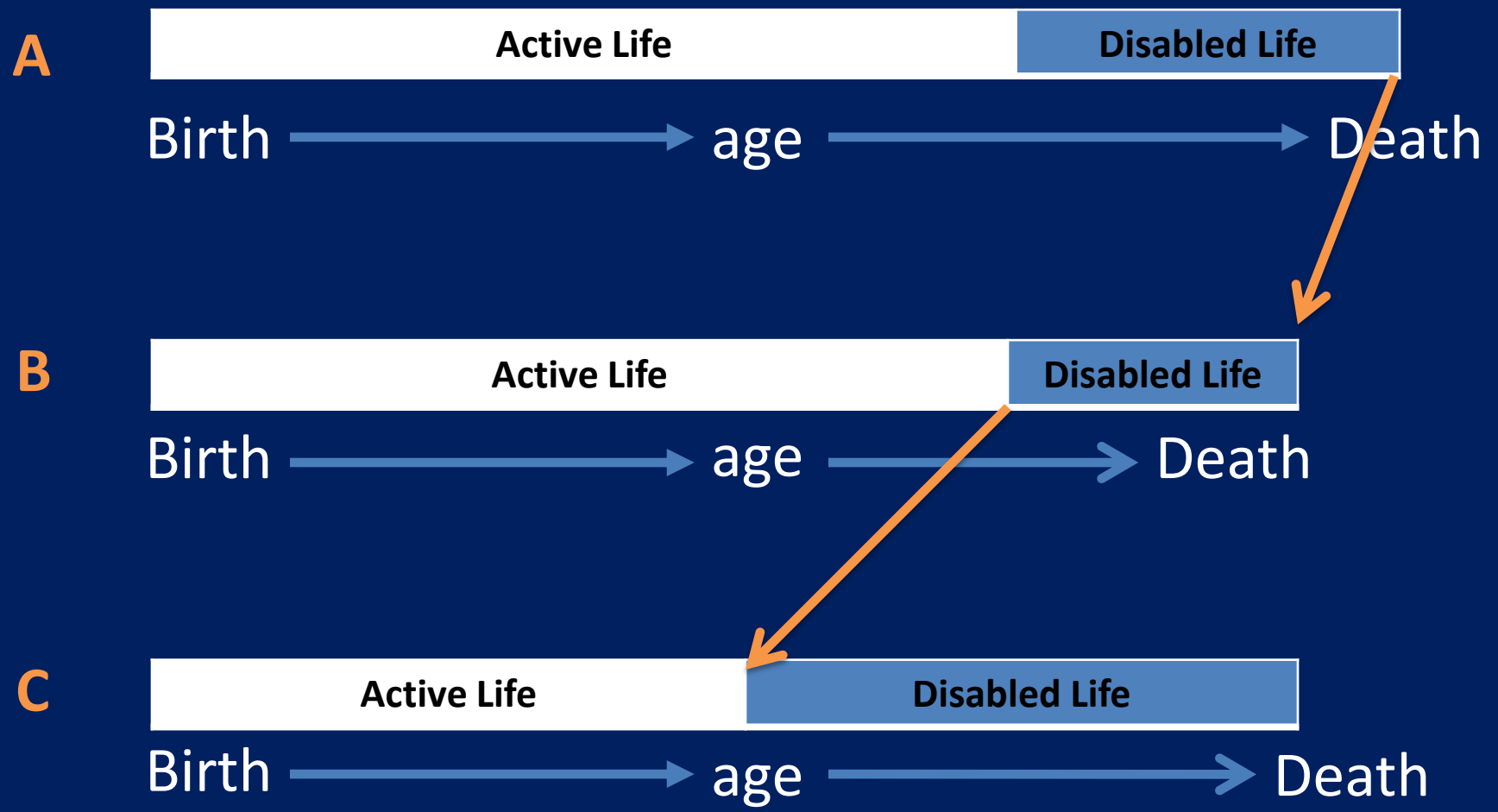

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Education increased TLE & ALE more for adults from advantaged childhoods

The capacity for education to overcome early adversity was more pronounced among men

Findings support "Education as Health Policy"[1]

- **Educated often "leveled or bettered" the playing field among adults raised in disparate contexts – a "turning point"**
- **Weight of the evidence here and many other studies suggests that enhanced educational attainment may represent an important step in improving population health**
- **The benefits of investing in education today may compound among future generations**
- **A multi-pronged approach to improve population health and reduce disparities should include education policy**

[1] House, Shoeni, Kaplan, and Pollak 2008; Low, Low, Baumler, and Huynh 2005

Thank you