

# **Child Care Quality and Child Outcome Multiple-Studies Analyses**

Presented at the Child Care Policy Research  
Consortium Meeting

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# Overview



- Research suggests quality child care improves academic and social skills, but associations may be modest
- Examine this questions with
  - Meta analysis of studies of child care quality and child outcomes
  - Secondary data analysis of studies with large numbers of low-income children

# Background

- Relatively consistent research finding:
  - Stronger language, academic, and social outcomes in higher quality child care classrooms
  - In experimental and observational studies and large and small studies
- This finding is the basis for many early childhood policies
  - Quality rating systems
  - Tiered reimbursement for subsidies
  - Quality enhancement programs
  - Public Pre-Kindergarten/Head Start



# Background

- Call to examine research basis
  - Early intervention experimental programs produced large effects
    - Abecedarian:  $d = 1.23$  – IQ at 3 years
    - High Scope:  $d = 1.03$  – IQ at 5 years
    - IHDP:  $d = .83$  – IQ at 3 years
  - Larger observational studies produced much smaller associations between widely used measures of classroom quality and child outcomes
    - NICHD SECCYD:  $d = .26$  Language at 5.4 years
    - CQO:  $d = .20$  Language 4.5 years
    - Tulsa Pre-K evaluation:  $d = .33$  language at 5-6 years

# Goal

- Our goal – Query existing research to answer 4 questions
  - How large is the association between measured quality and child outcomes based on all published research?
  - How large is that association for low-income children and is it stronger when aligned quality-outcome measures?
  - Is there evidence of thresholds in those associations for low-income children?
  - For the most popular quality measures, do some items predict child outcomes better than other items?

# Strategies



1. Meta-analysis of studies published in journals or in evaluation reports on the web
2. Secondary analysis of data from large child care studies involving low-income children
  - Combine findings across studies
  - Look for threshold effects
  - Examine items on ECERS & CLASS

# Meta Analysis

- 20 studies identified with
  - Reported associations between widely used measures of child care quality and child outcomes
  - More than 10 classrooms
  - Published in a journal or online in an evaluation report (presumably some sort of peer review)
  - Multiple reports per study were included
- 97 effect sizes in the 20 studies

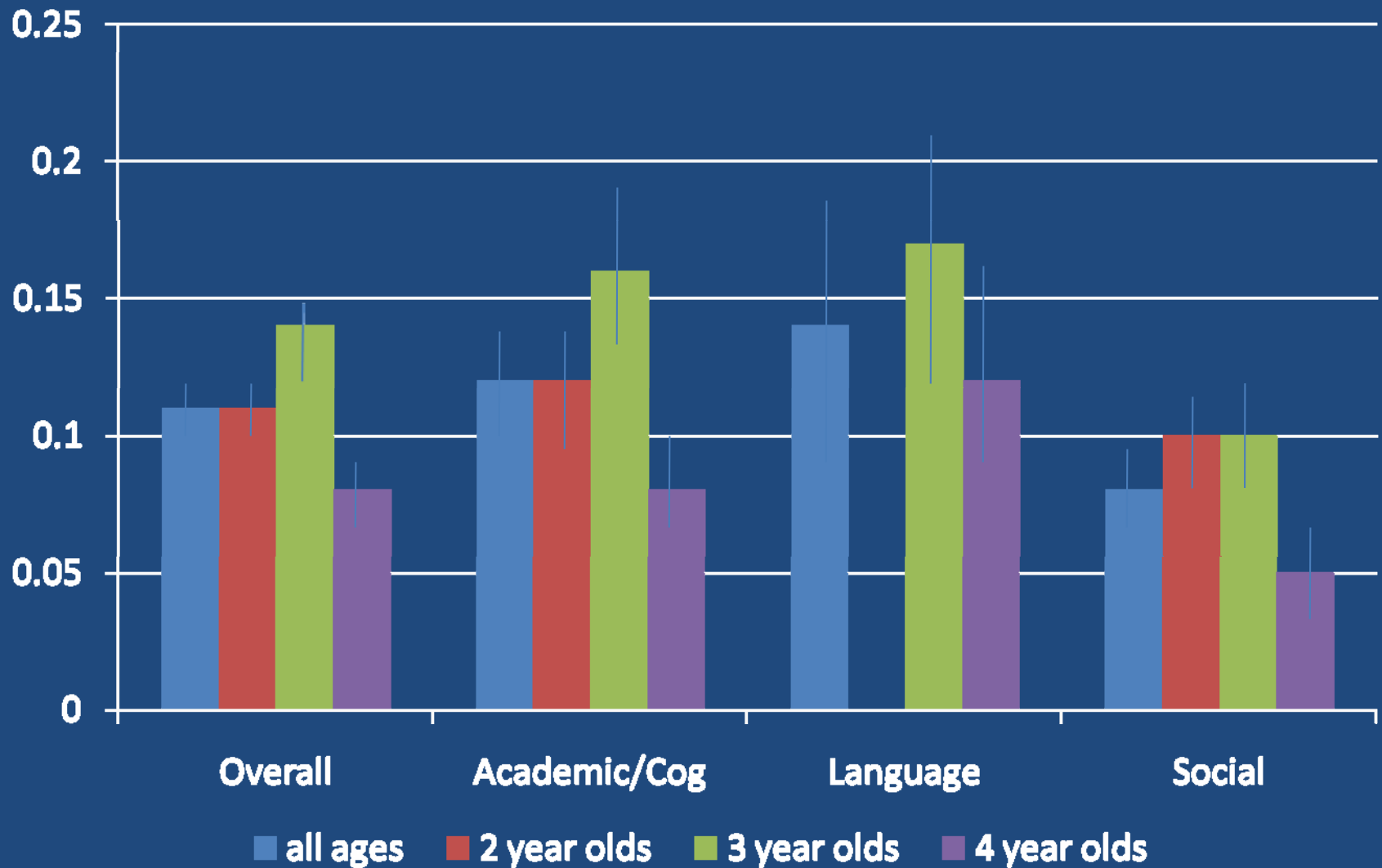


# data

- **AUTHOR ,YEAR**
- **MODELING TECHNIQUE**
- **QUALITY MEASURES**
- **COGNITIVE OUTCOMES REPORTED**
- **STATISTICS**
- **COVARIATES:**
- **STAND REG COEFFICIENT(with controls):**
- **REG COEFFICIENT (with controls), se, df if available**
- **P value (with controls)**
- **Partial correlation**
- **Adjusted means and Square-root of MS error, or effect size d**
- **N per group COEFFICIENT without controls:**
- **bivariate correlation**
- **N**

- Author: **McCartney, 1994**
- MODELING TECHNIQUE: **Multiple Regression**
- QUALITY MEASURES: **ECERS**
- COGNITIVE OUTCOMES REPORTED: **Language - PPVT, PLS, ALI**
- STATISTICS: **standardized regression coefficients, correlations**
- COVARIATES: **family background, home environment, parenting values**
- STAND REG COEFFICIENT(with controls): **B= .19 (PPVT), .23 (PLS), .43 (ALI)**
- REG COEFFICIENT (with controls), se, df if available
- P value (with controls)
- Partial correlation
- Adjusted means and Square-root of MS error, or effect size d,
- N per group COEFFICIENT without controls:
- bivariate correlation: : **r = .23 (PPVT), .23 (PLS), .35 (ALI)**
- N : **n = 131 (PPVT), 131 (PLS), 124 (ALI)**

# Meta Analysis: Mean Partial Correlations and Confidence Intervals



## Meta Analysis: Mean Partial Correlations and Confidence Intervals

	all ages	2 year olds	3 year olds	4 year olds
Overall	.109 (.098-.120)	.111 (.099-.122)	.135 (.121-.149)	.081 (.072-.089)
Academic/ Cog	.120 (.101-.139)	.119 (.100-.138)	.156 (.131-.180)	.085 (.072-.098)
Language	.144 (.094-.194)		.166 (.118-.214)	.122 (.087-.158)
Social	.085 (.069-.101)	.100 (.081-.119)	.101 (.084-.123)	.051 (.042-.061)

# Summary

- Modest associations, albeit highly statistically significant
  - Somewhat larger associations for younger children than older children
  - Somewhat larger associations for academic and language skills than for social skills

# Secondary Data Analysis

- Child Care Quality and Child Outcomes for Low-Income Children
- Studies
  - NICHD Study of Early Child Care and Youth Development
  - Cost, Quality, and Outcomes Study
  - NCEDL 11 state Pre-Kindergarten Evaluation
  - Head Start Family and Child Experiences Survey
    - FACES 1997
    - FACES 2000

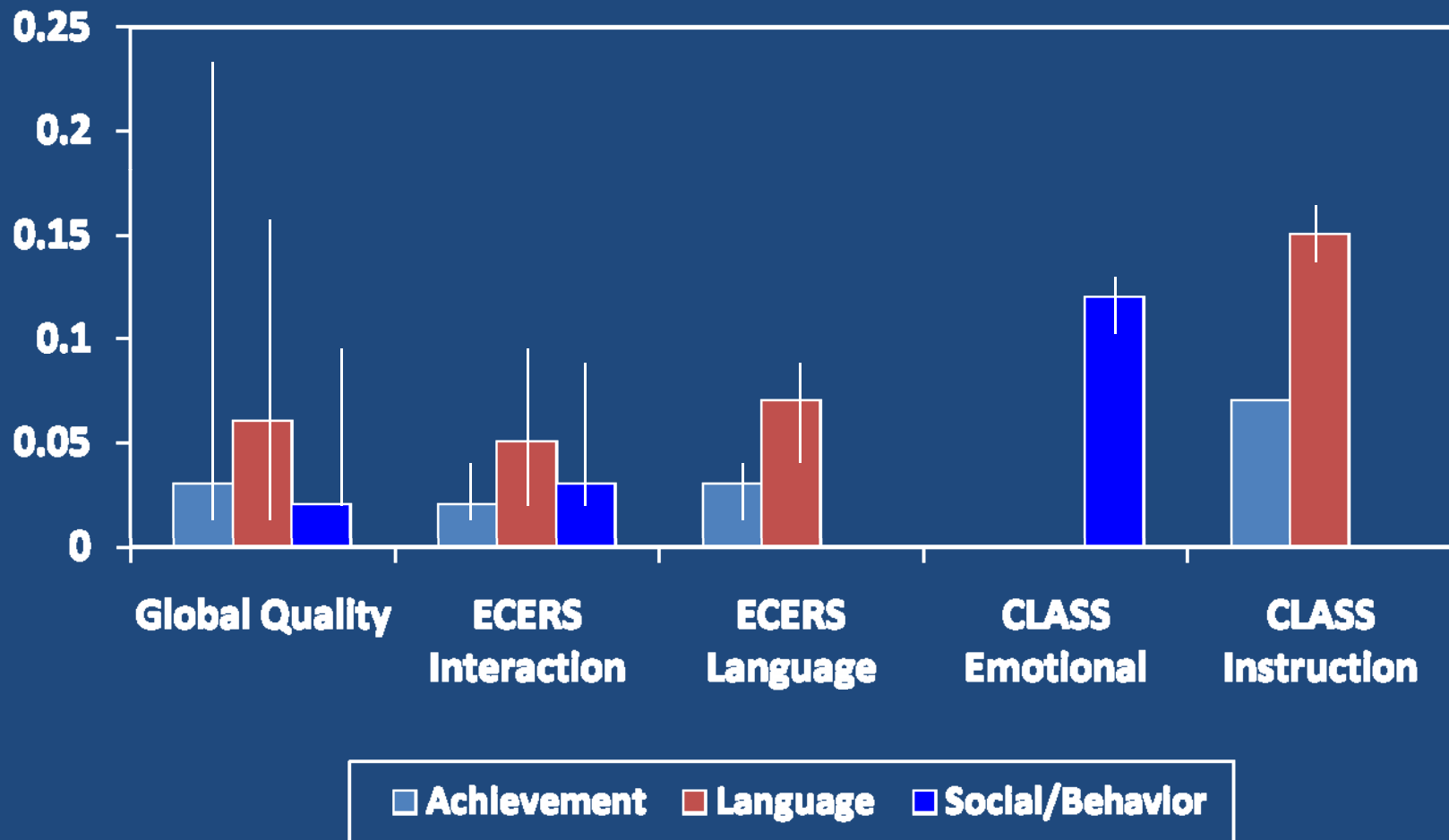
		SECCYD N=129	CQO N=140	NCEDL N=1465	FACES97 N=1493	FACES00 n=1739
Male	%	48%	51%	49%	51%	50%
Child Age - m	M (sd)	54	51.1 (4.4)	60.6 (2.3)	55.4 (6.3)	54.0 (6.5)
M Education	M (sd)	12.6 (1.8)	13.0 (1.7)	11.8 (1.9)	11.7 (1.9)	11.9 (1.8)
Ethnicity						
AfricanAm	%	36%	38%	36%	21%	38%
Hispanic	%	9%	29%	9%	36%	29%
White	%	50%	24%	50%	29%	24%
Other	%	5%	9%	5%	14%	9%

## Question 2

- How large is the association child care quality and child outcomes for low-income children?
  - Is there any evidence it is stronger with “aligned” measures
- Correlations were computed to describe extent to which higher quality scores predicted higher child outcomes scores
  - Adjusted for maternal education, ethnicity, and site

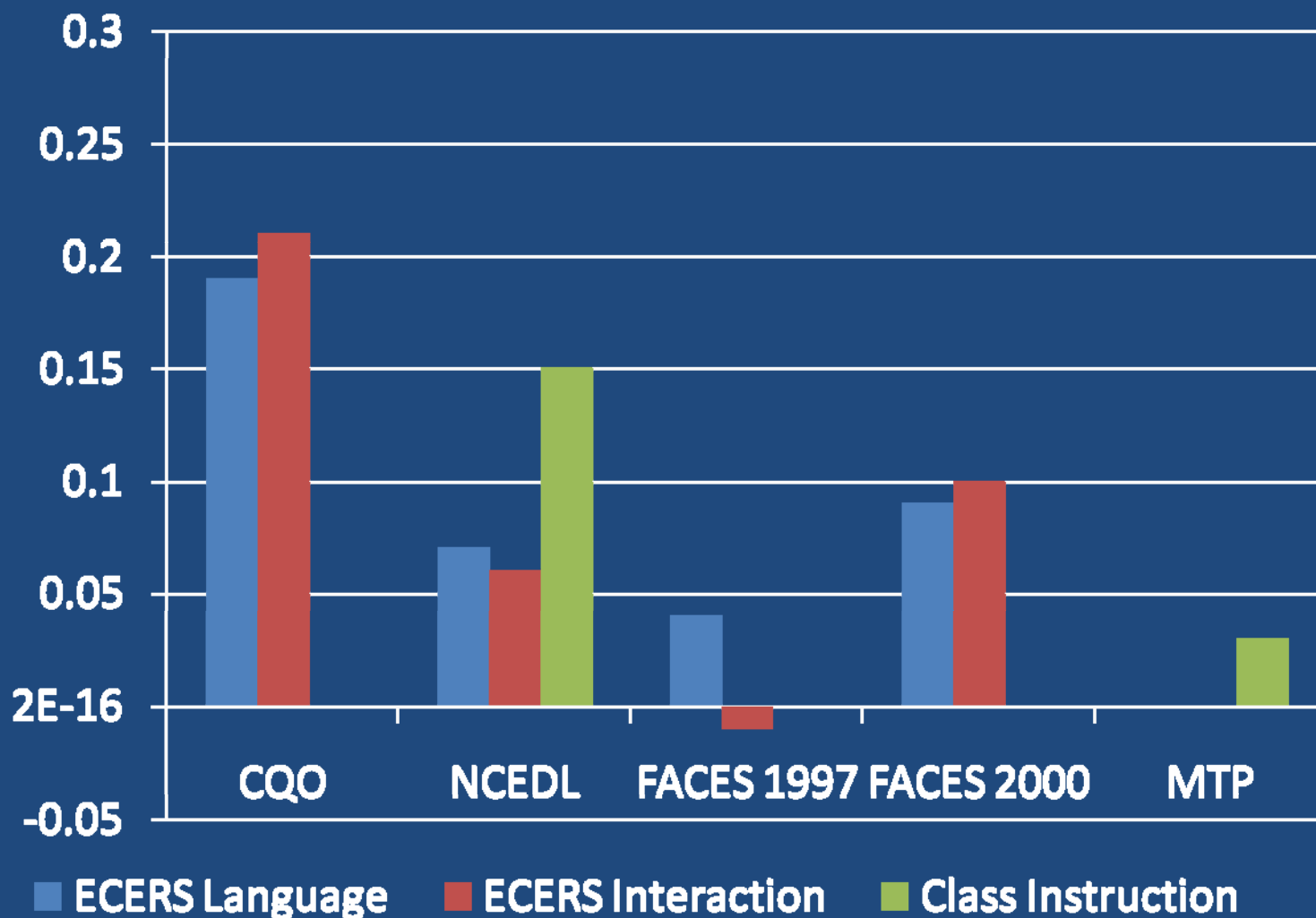


# Secondary data analysis- Low Income 4-5 Year-Old Children: Overall and Specific Quality Measures

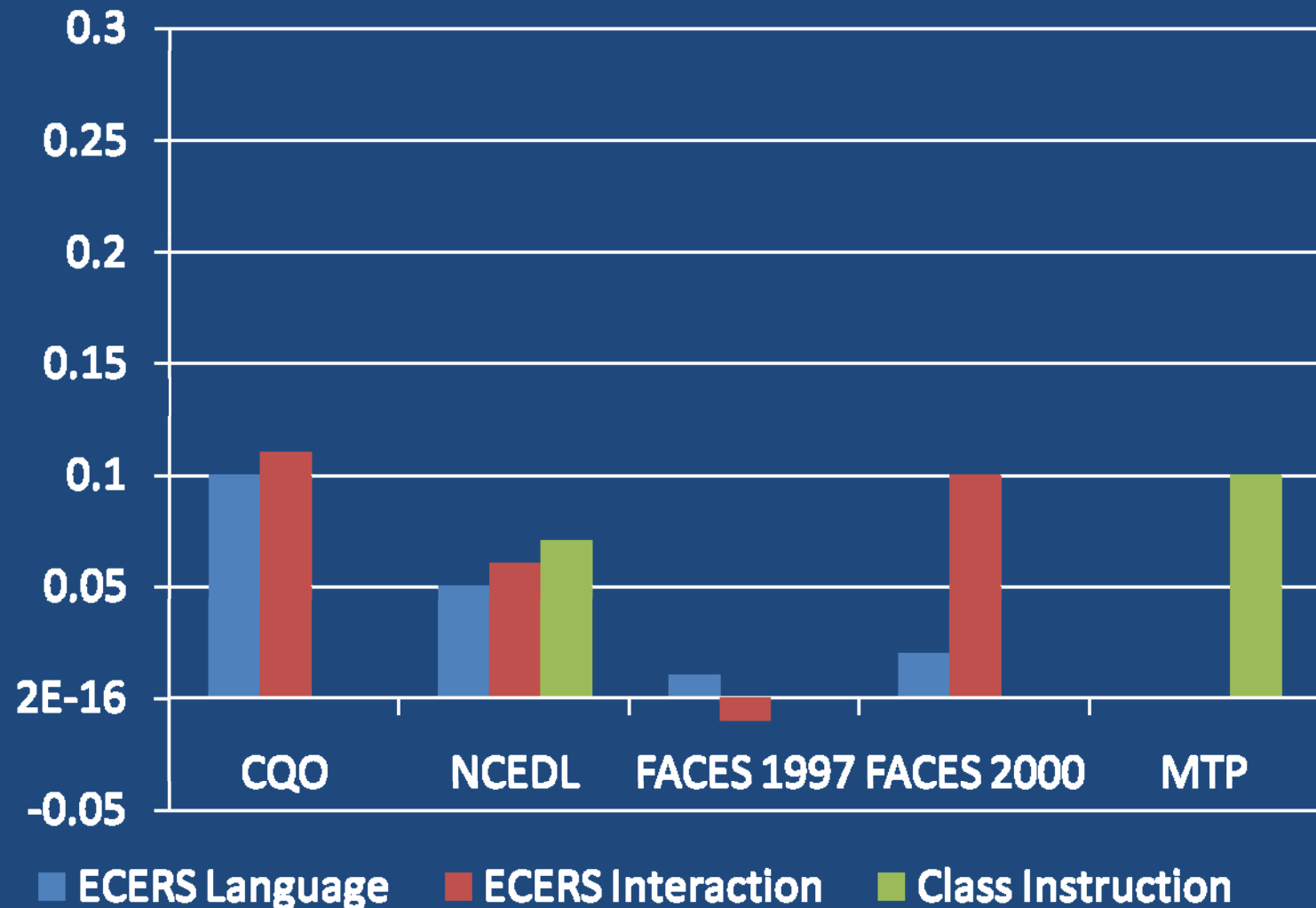


Correlations Adjusted for maternal education, ethnicity, and site

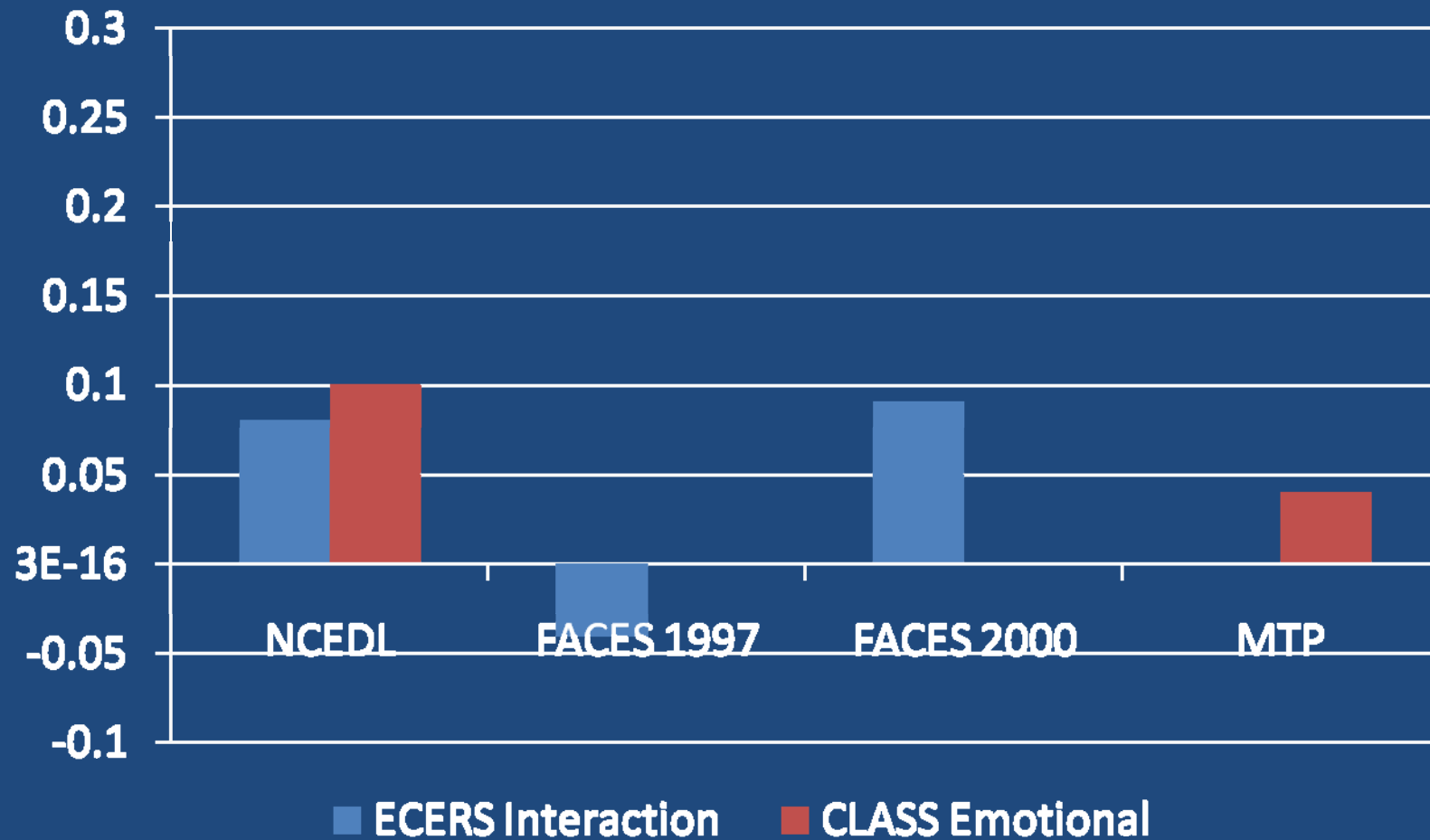
# Associations between Aligned Quality and Language Outcomes



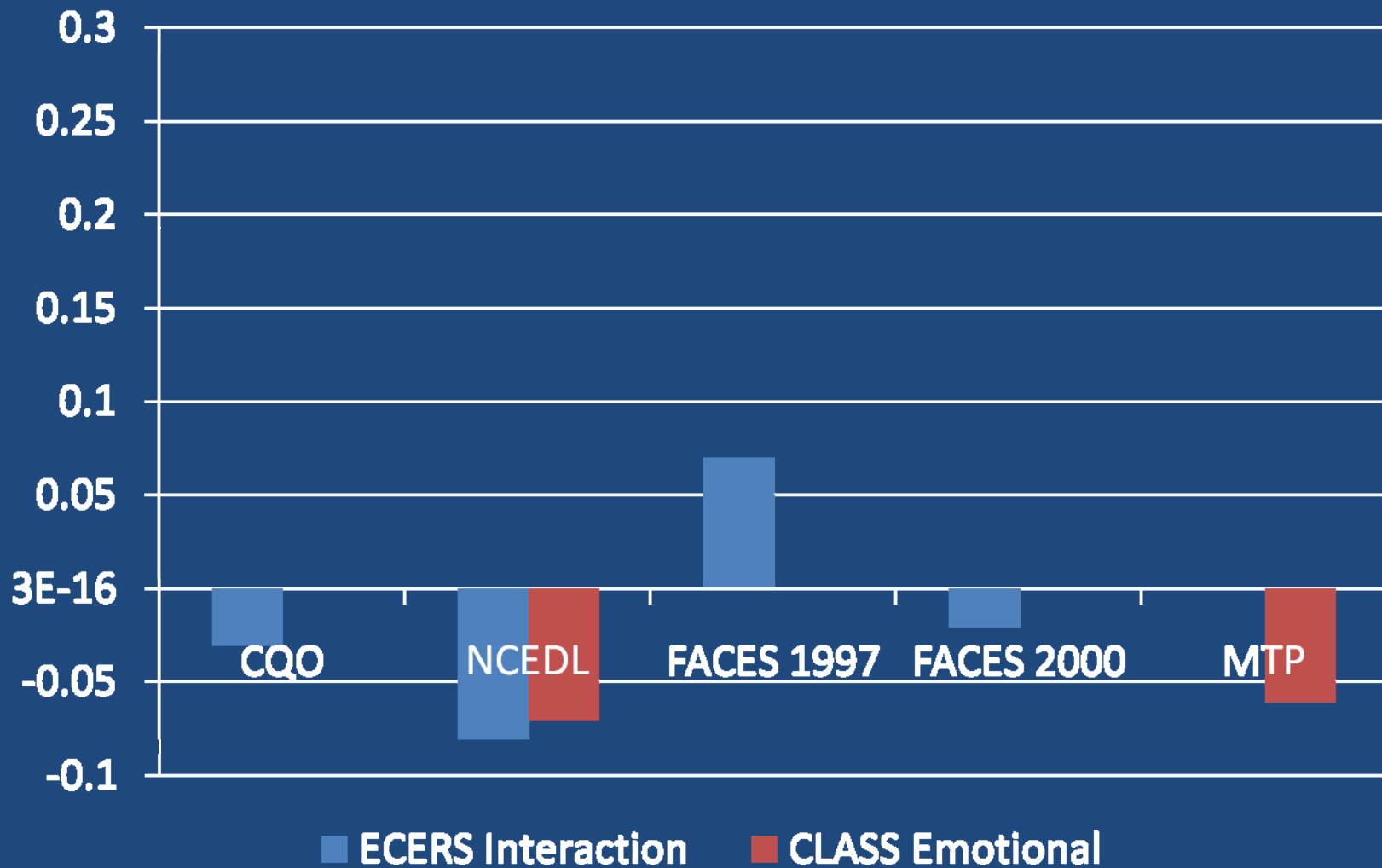
# Associations between Aligned Quality and Reading Outcomes



# Associations between Aligned Quality and Social Skills



# Associations between Aligned Quality and Behavior Problems



# Summary

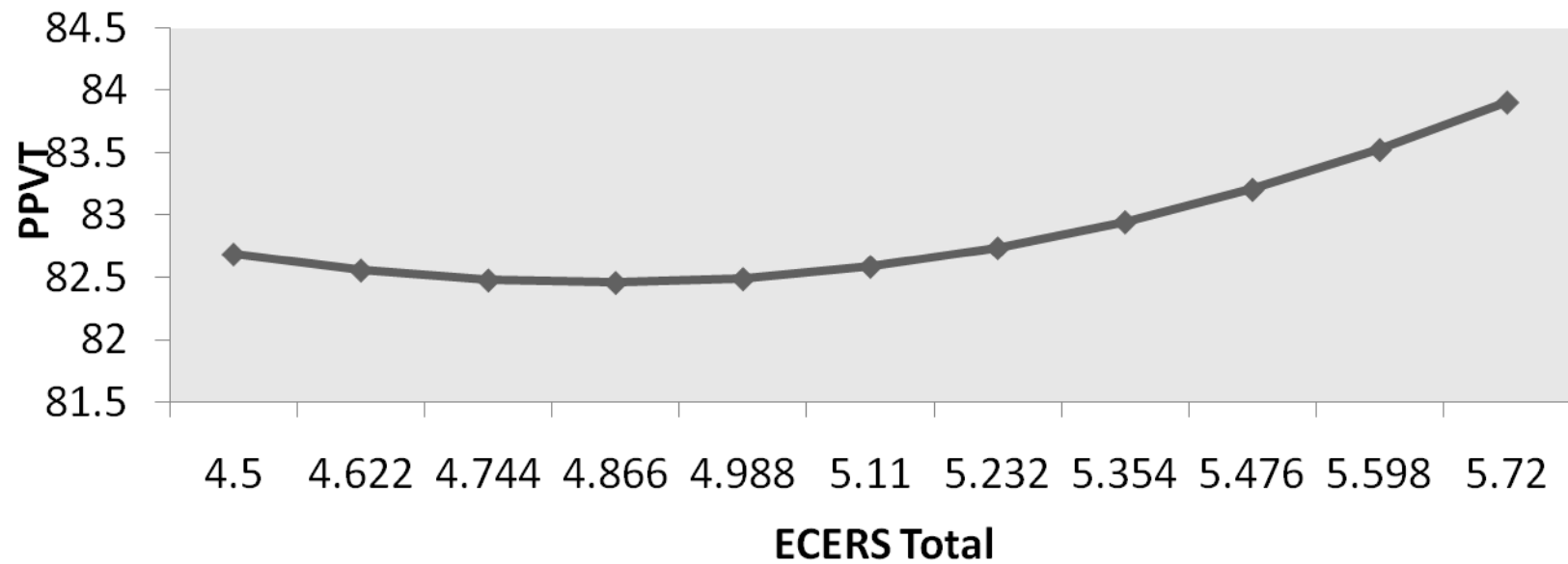
- Very modest associations for low-income children also – even more modest than in meta-analysis
- Some evidence that measures of the classroom thought to be more closely linked to child outcomes showed stronger associations (although still rather modest)

## Question 3

- Is there evidence of nonlinear associations between child care quality and child outcomes
  - Evidence of good enough care: association between quality and outcomes is steeper at lower end of quality
  - Evidence that higher quality is necessary: association between quality and outcomes is steeper at higher end of quality

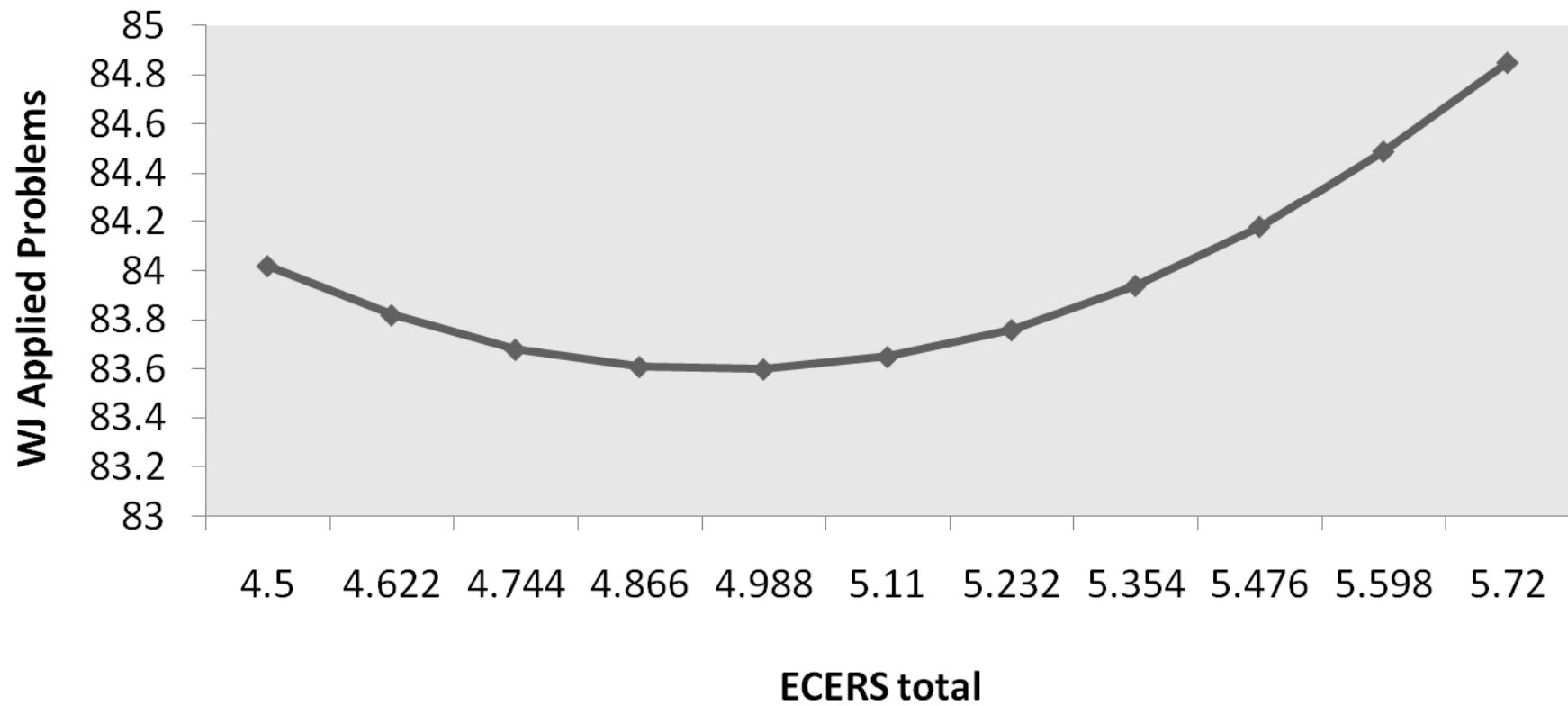
# Nonlinear Associations

**FACES 97 ECERS and language**

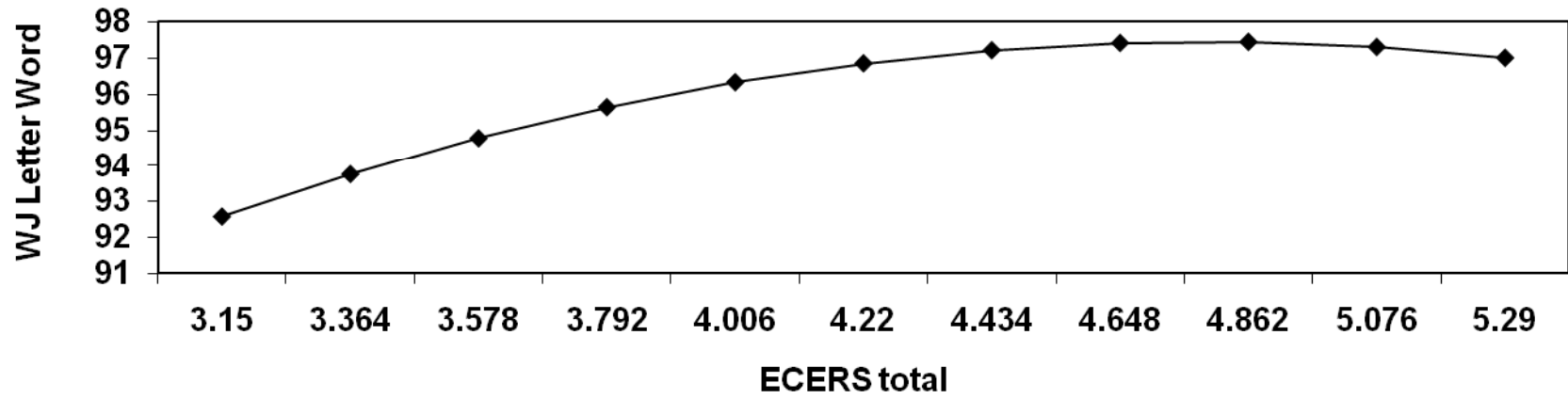




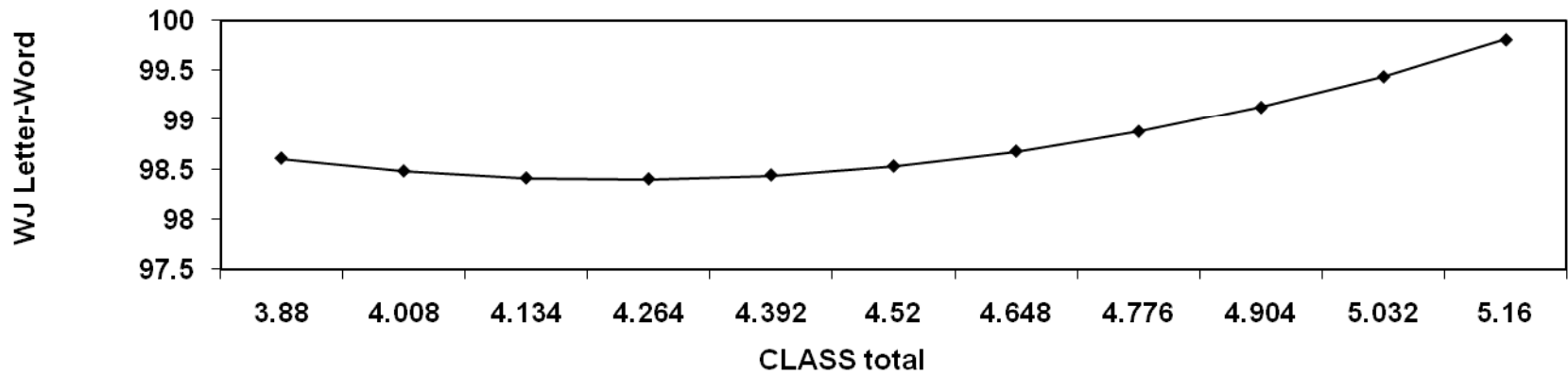
## FACES 97 : ECERS and Math



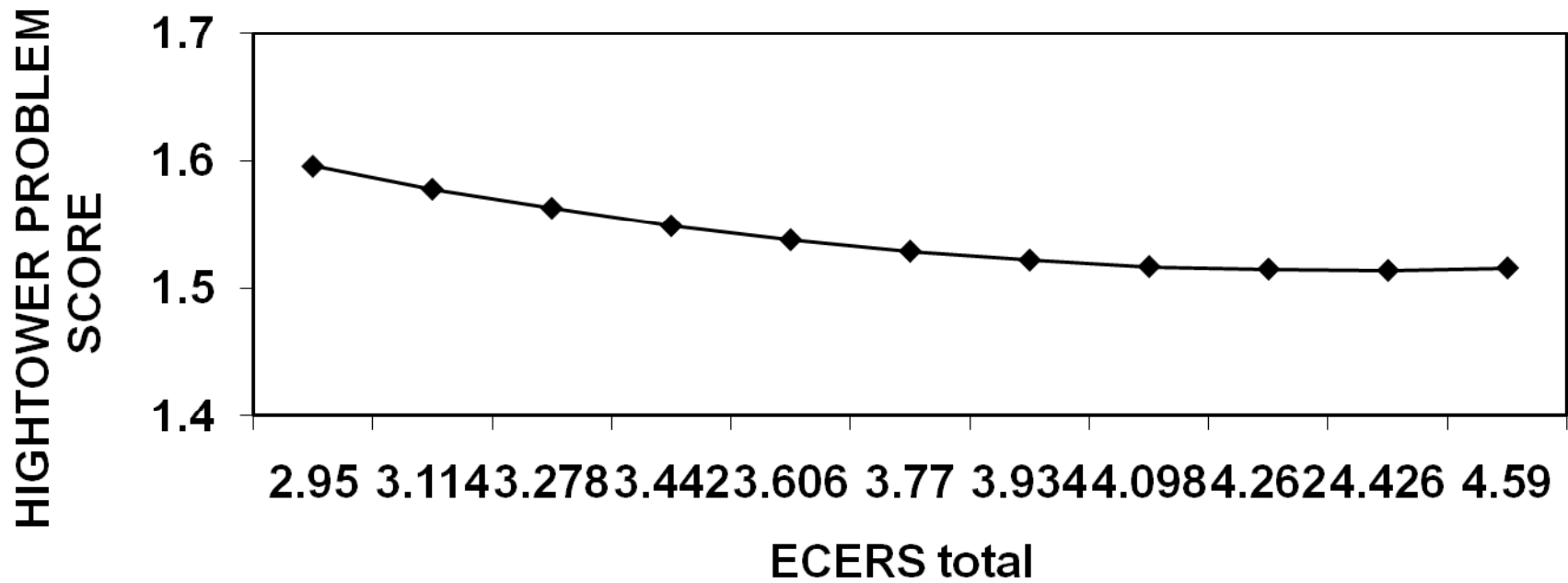
### CQO ECERS total and Reading



### NCEDL: WJ Letter/Word Standard Score



## NCEDL ECERS and Behavior



# Summary

- Growing evidence of nonlinear associations
  - Quality related to child outcomes only when quality is relatively high
  - Caution: Evidence is not obtained in all analyses – but is suggestive



# Question 4

- Background: Some states are using widely used quality measures as part of their quality enhancement programs
  - Providers conduct a self study and then select items to work on improving
- Therefore, looking at associations for items can help guide the choice of items on which to focus

# Individual Items and Child Outcomes

- ECERS-R (37 items)
  - 2 large project, NCEDE 11 state Pre-K evaluation and Cost, Quality, and Child Outcomes Study
  - Items with strongest correlations with language, academic or social outcomes
    - Interaction items (e.g., staff-child interactions)
    - Program structure items (e.g., free play or group time)
  - Items with the weakest correlations
    - Activity items
    - Personal Care items

# Individual Items and Child Outcomes

- CLASS (9 items)
  - 1 large project, NCEDL 11 state Pre-K evaluation
  - Items with strongest correlations with language, academic or social outcomes
    - Negative climate
    - Positive climate
    - Productivity (Language and academics outcomes)
    - Behavior Management (Behavioral outcomes)
  - Items with the weakest correlations
    - Learning Formats
    - Instructional items (Social/Behavioral outcomes)

# Summary

- Stronger associations for items looking at teacher-child interactions
- The whole scales provide better prediction – use of individual items for assessing quality is NOT recommended





# Conclusions

- Higher quality child care is associated with higher language, academic, and social skills and fewer behavior problems
- *BUT* associations are quite modest
- Two explanations
  - True association is modest
  - Measurement issues constrain estimation of associations

# Conclusions

- Measurement
  - Most preschool child outcomes have good reliability and validity, especially standardized tests
  - Most quality measures
    - Are global
    - Were developed conceptually
    - Have good reliability
    - Some validity
      - Relate to child outcomes
      - New studies appear to indicate that scale-based quality enhancement may improve quality and child outcomes

# Conclusions

- Measurement
  - May need more specific and aligned measures
  - Quality measures need more psychometric development
    - Wider set of items
    - Item response theory





# Implications

- Scale scores from widely-used quality measures still provide the best prediction of child outcomes.
  - Much better than structural measures such as teacher education or adult-child ratios
  - Much better than individual items
- Hopefully, they will provide better prediction with further psychometric development