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Research to Inform Development of Effective Public Preschool Programs

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Meta-Analysis of Research Since 1960

IQ, Achievement and Language

.45 sd initial effect birth to 5

.16 sd at ages 5-10

.23 sd at age >10

Higher quality studies es .27 sd larger

Social-Emotional & Behavior

.16 sd, no sig. decline over time

Schooling (grade repetition, spec. ed., grad.)

.15 sd, no sig. decline over time

Barnett, W. S. (2002) Early childhood education. In A. Molnar (Ed.) *School reform proposals: The research evidence* (pp.1-26). Greenwich, CT: Information Age Publishing.

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Meta-Analysis of US Research Since 1960

N= 123 Intervention Studies

Effects on Cognitive Abilities (higher quality studies)

.69 sd initial effect (about **.90 w/ more opt. program)**

.35 sd at ages 5-10 (about **.60 w/ more opt. program)**

.28 sd at age >10 (about **.45 w/ more opt. program)**

Effect on Social-Emotional & Behavior

.16 sd no change over time, larger in higher quality

Effect on Schooling (grade rep., spec. ed., grad.)

.15 sd no change over time, note this long-term by defn.

Camilli et al. (2010) Meta-Analysis. *Teachers College Record*.

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Significant Influences on Effect Size

Time of Follow-Up	**Negative**
Intentional Teaching	**Positive**
Individualization	**Positive**
Comprehensive Services	**Negative**
Research Design Quality	**Positive**

N= 123 Studies of Early Childhood Education

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Impacts of ECD Investments

Educational Success and Economic Productivity

- Achievement test scores
- Special education and grade repetition
- High school graduation
- Behavior problems, delinquency, and crime
- Employment, earnings, and welfare dependency
- Smoking, drug use, depression

Decreased Costs to Government

- Schooling costs
- Social services costs
- Crime costs
- Health care costs (teen pregnancy and smoking)

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Economic Returns to Pre-K for Disadvantaged Children

(In 2006 dollars, 3% discount rate)

	Cost	Benefits	B/C
▪ Perry Pre-K	$17,599	$284,086	16
▪ Abecedarian	$70,697	$176,284	2.5
▪ Chicago	$ 8,224	$ 83,511	10

In all 3 studies the benefits far exceed the costs

Barnett, W. S., & Masse, L. N. (2007). Early childhood program design and economic returns: Comparative benefit-cost analysis of the Abecedarian program and policy implications, *Economics of Education Review, 26,* 113-125; Belfield, C., Nores, M., Barnett, W.S., & Schweinhart, L.J. (2006). The High/Scope Perry Preschool Program. *Journal of Human Resources*, *41*(1), 162-190; Temple, J. A., & Reynolds, A. J. (2007). Benefits and costs of investments in preschool education: Evidence from the Child-Parent Centers and related programs. *Economics of Education Review, 26(1), 126-144*.

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Chicago Child Parent Centers

- High standards similar to "good" State Pre-K
- Immediate impacts at K:
  - General Cog. ES = .63 1 yr, .87 2 yr
  - Math ES = .33 1 yr, .56 2 yr
  - Reading Rd. ES = .20 1 yr, .48 2 yr
- Effects in 2nd grade
  - Math ES = .30 1 yr, .40 2 yr
  - Reading ES = .22 1 yr, .46 2 yr
  - Grade repetition = -5.8% 1 yr, -10.7% 2 yr
  - Effects in grade 2 similar to NJ which has similar program.

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Achievement Gains from Pre-K

	TN RT	TN RD	8 State RD	Head St RT
Cog/Lang	NA	NA	23%	9%
Math	28%	34%	31%	12%
Print	42%	67%	79%	25%

Effect sizes as percent of 1 standard deviation.

- RT is randomized trial, more affected by control participation in other programs than is RD (e.g., Head Start, child care).
- RD is regression discontinuity design, may give better treatment v. no-treatment estimates.

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Tulsa Public Schools and Head Start v. National Head Start

	TPS	THS	NHS (adj.)
Math	**.36**	**.37**	**.12 (<.18)**
Letter-Word	**.99**	**.51**	**.22 (.34)**
Spelling	**.74**	**.33**	**.16 (.22)**

Effects in standard deviation units for comparison across studies.

Tulsa Public Schools (TPS) has largest effects. Tulsa Head Start (THS) which uses public school teachers has larger effects than Head Start nationally (NHS). Even adjusting for problems with the national Head Start study (in parentheses) effects are still smaller in regular Head Start than with public school teachers.

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Birth to 3 Programs

- Early Head Start produced very modest gains for infants and toddlers despite spending considerable $
- Gains did not last to K and no effects at Grade 5
- Nurse Family Partnership produced small gains
- NFP gains appear to be lasting but only for high need subgroups
- There is much uncertainty about best policy and practice birth to three.

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What is Needed for Effective Pre-K

- Well-designed program with clear goals and standards
- Balanced practices & curriculum (not just academic)
- Implemented as designed
- Strong teachers, adequately trained and paid
- Strong supervision and monitoring
- Connections to the public schools and articulation with K-3. Reform in kindergarten and beyond may be needed as children enter better prepared.

Explicit Instruction

Teacher-planned activities and interactions designed to teach information and develop skills.

Comes in different varieties.

Explicit Instruction

Contrasting Explicit Instruction

Mrs. Blanco's class went on a field trip to the pet store down the street where, much to the children's fascination and the adults' dismay, the owner fed the snakes live mice.

Back at the classroom some children are looking at the page in Amazing Snakes on boa constrictors. They ask Mrs. Blanco what the snake is called.

"That's a boa constrictor. 'Constrictor', that's an interesting word. Constrict means to squeeze or tighten. Does your mommy or daddy ever say, 'You're squeezing me too tight,' when you give them a really big hug? When you squeeze too tight like that you are being a constrictor."

She points out how the snake in the picture is squeezing its prey – "the animal it will eat."

The Teacher's Role in Play

- Managing and supporting children's activities

VS

- Scaffolding thinking processes, problem-solving and implementing the standards
- Scaffolding the sophistication of children's socio-dramatic play
- Scaffolding social problem-solving

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New Jersey's Urban Pre-K Program

- Teacher with BA & ECE + asst. in each class;
- Full-day (6 hour educational day), 180-day program, plus extended day/full year;
- Access to all 3 and 4 yr. olds in 31 school systems
- Maximum class size of 15 students;
- Evidence-based curricula;
- Early learning standards and program guidelines;
- Support for potential learning difficulties; and
- Professional development for key staff.

NJ System of Providers

- 2/3 Private—non-profit, for-profit, faith-based
- Districts contract with private providers
- All must provide "critical components"
- Providers receive support from districts & state
- Districts provide coaching and PD
- Districts (and state) must assure quality

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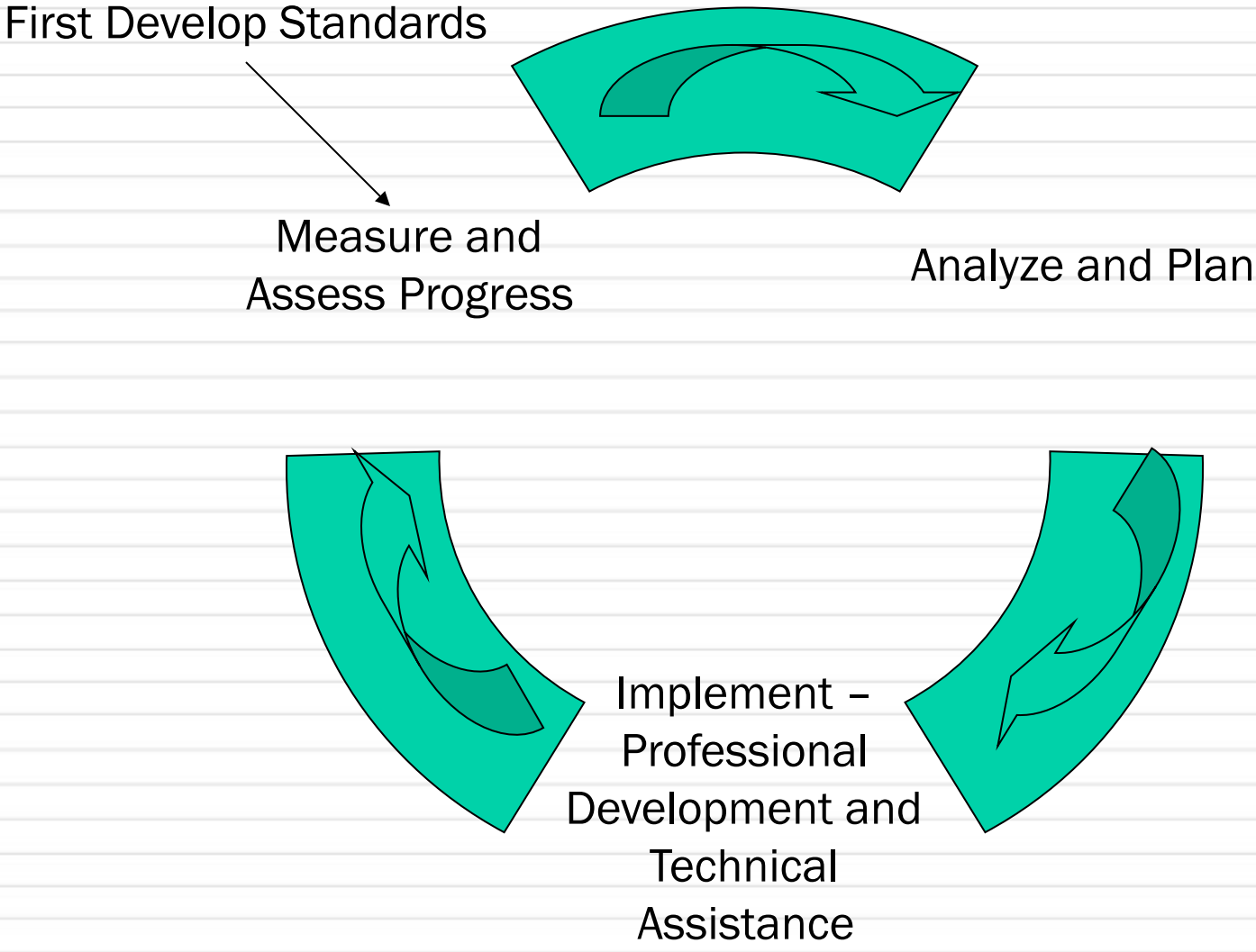
Continuous Improvement Cycle*



Accountability Levels

- Child: teaching, program effectiveness
- Classroom: teaching, program effectiveness
- Program: program effectiveness and efficiency ($)
- State: program effectiveness and efficiency

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Statewide Continuous Improvement Efforts

Standards	Accountability
Preschool Teaching & Learning Expectations	Early Learning Assessment System
Preschool Program Implementation Guidelines	Structured Classroom Observations & Self Assessment & Validation System
NJ Supreme Court Objectives/Legislature	Rigorous Longitudinal Research Study

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NJ Classrooms Change in Literacy Quality Scores

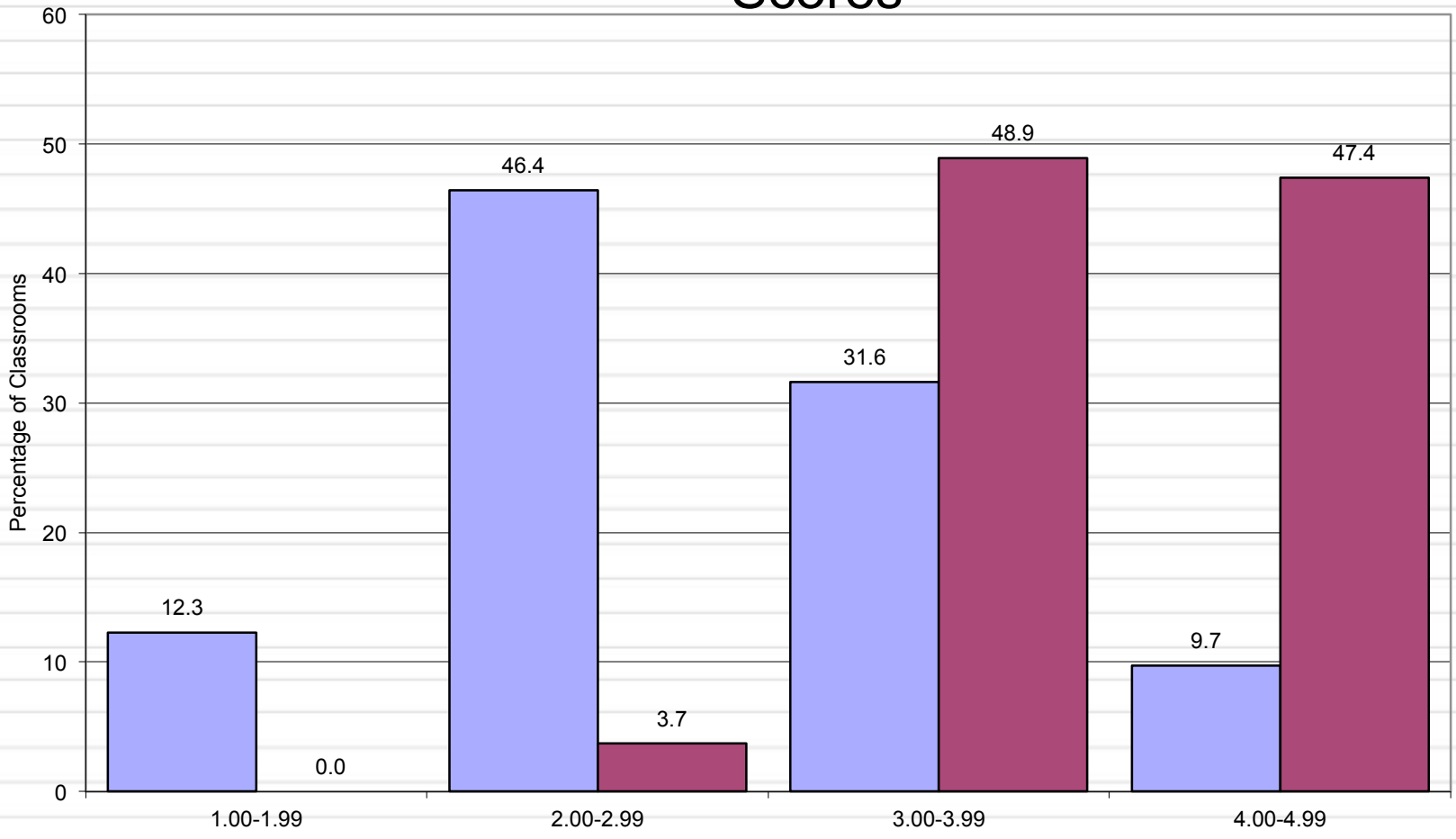

Figure 1. SELA Score

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NJ Classroom Change in Math Quality

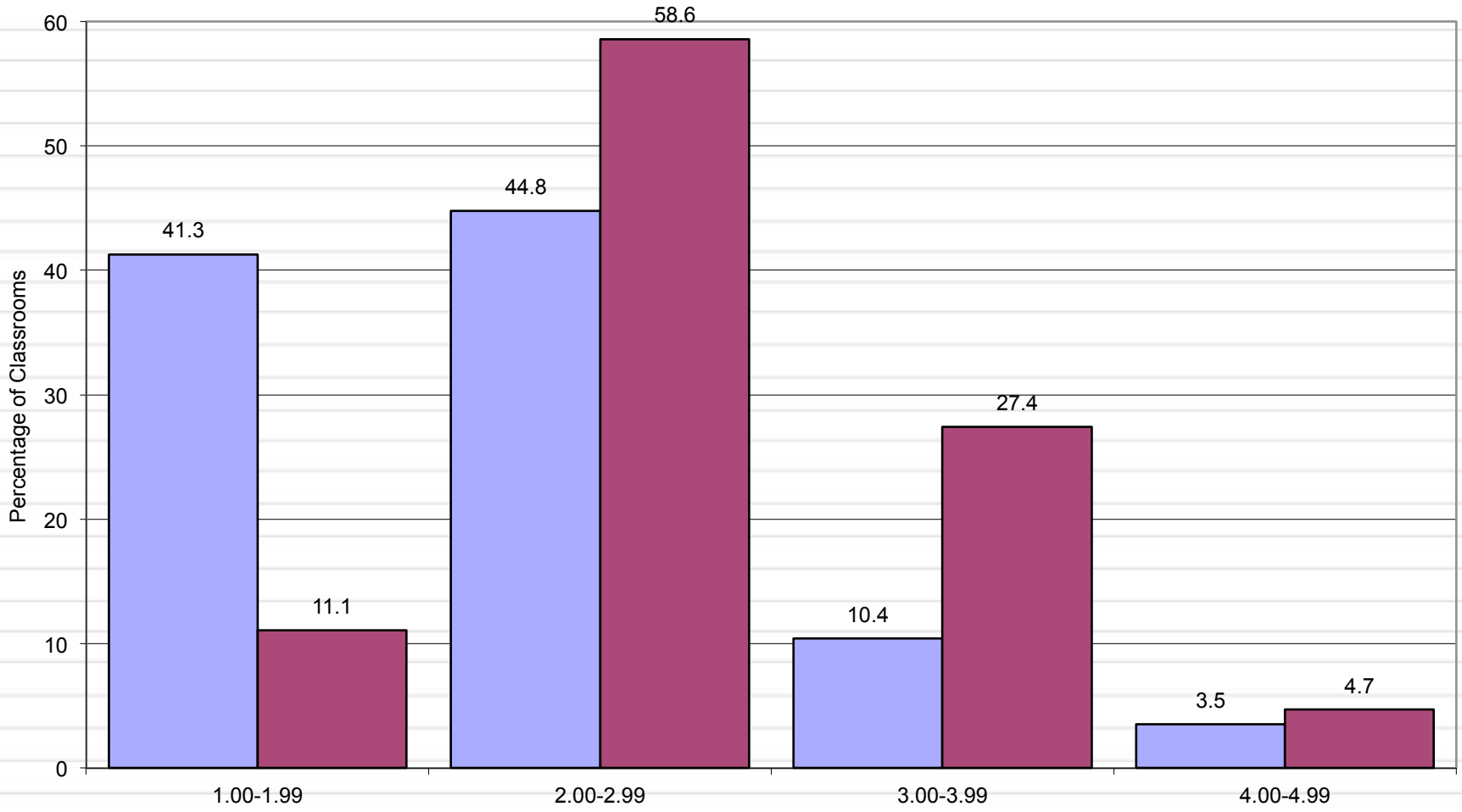

Figure 2. PCMI Score

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NJ Classes Change in ECERS-R Overall Quality

1999-2000 vs 2007-2008

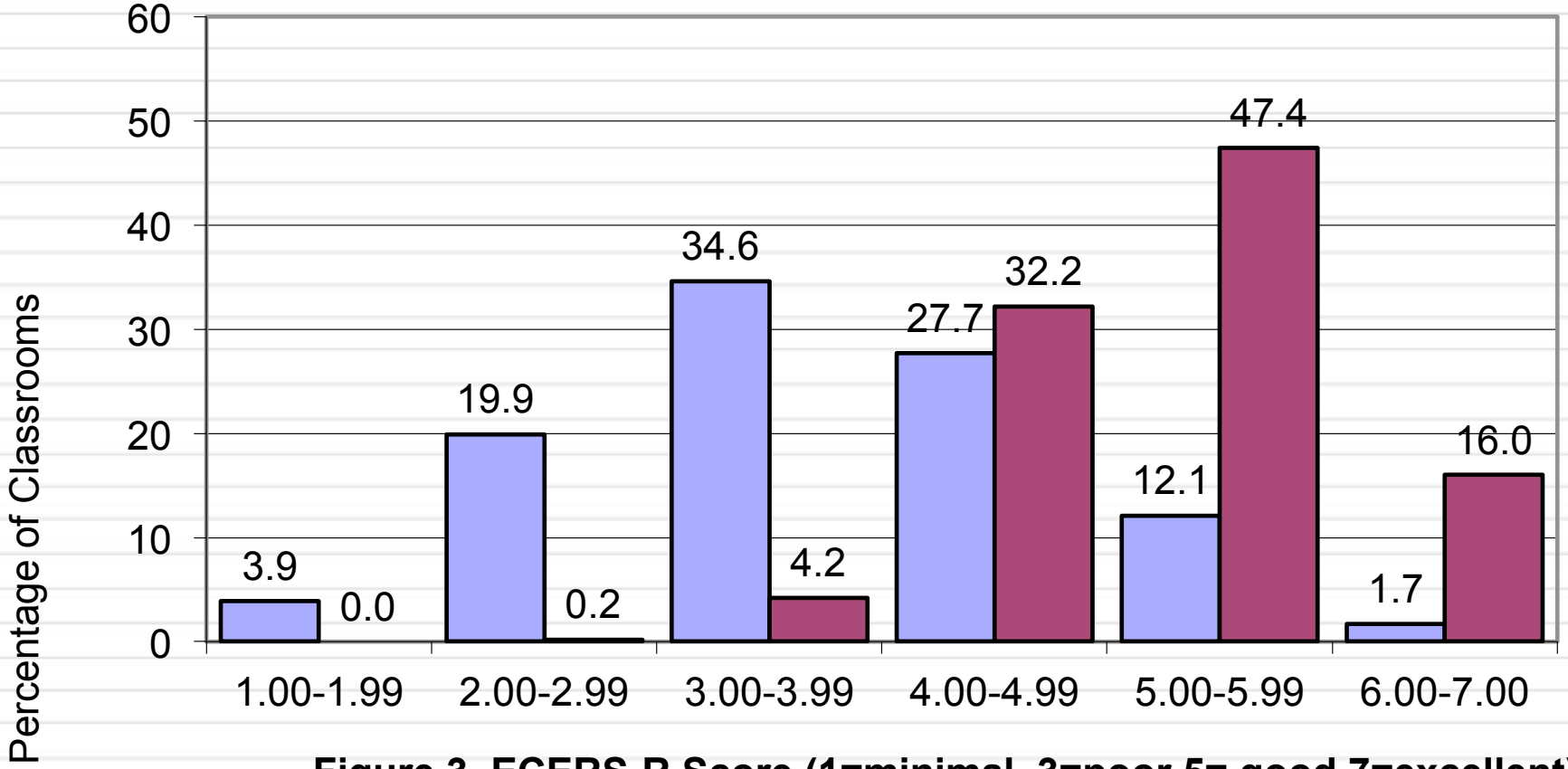

Figure 3. ECERS-R Score (1=minimal, 3=poor 5= good 7=excellent)

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NJ Pre-K Outcomes

- Gains in language, literacy, math starting in K
- 2 years have twice the effect of 1 year
- Latest follow up is 2nd grade
  - Language Effect Size =.22 1yr .40 2yr
  - Math Effect Size =.24 1yr .44 2yr
  - Study underestimates effects; real effects are larger

Grade repetition at end of grade 1, 10% with no pre-K, 7.5% if 1 year, and only 5% if 2 years of pre-K

Conclusions

- Preschool programs can have a substantial long-term impact.
- Effects from large scale programs are sometimes too small.
- Replicating successful approaches and emphasizing what works is important.
- A continuous improvement process can increase quality and effectiveness.
- Much remains to be learned, and we likely know more about 3-5 than birth to 3.
- Every year matters—earlier is better—but to make it matter we need better plans and to ensure that our plans are well-implemented.