The Relation of Kindergarten Entry Skills to Early Literacy and Mathematics Achievement

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Presentation Outline

• Background and Context
• Theoretical Framework – Sfard’s Metaphors
• RQs
• Methods
  – Data Preparation & Sample
  – Measures
• Analyses and Associated Results
  – EFA
  – CFA
  – SEM
• Discussion
• Limitations & Future Research
• Contributions & Conclusions
Background

• Growing focus on early learning and K-12 alignment

• Kindergarten entry assessments
  – Federal/State support
e.g., RttT, ELC, EAGs
  – 2010 (7 states); 2011 (25);
    2012-present (43+) (Connors-Tadros, 2014)
• Oregon Kindergarten Assessment (OKA)
  – Baseline entry skills screening
  – Inform decision-making (instructional)
  – Identify achievement gaps (demographic)
  – Single assessment (Oregon Department of Education, 2013)

• Early Literacy (LNF & LSF); Early Numeracy; Learning-related Behaviors

• Piloted 12-13; *State-wide Field Tested 13-14; State-mandated 14-15

*this study
Important Inquiry Around OKA

• OKA a research-based snapshot of interrelated entry skills (Tindal, Irvin, & Nese, Manuscript submitted for publication) though, state practices, and potential floor effects and hypersensitivity may impact utility (Catts, Petscher, Schatschneider, Bridges, & Mendoza, 2009; Francis, Shaywitz, Stuebing, Shaywitz, & Fletcher, 1996; Paris, 2005)

Construct Validity (characterize, interrelation)
Predictive-concordant Validity (end-of-year K achievement)
Theoretical Framework
(Sfard, 1998)

**Acquisition Metaphor (AM)**
- Individual development
- Inward-focused
- Self-identification and possession

**Participation Metaphor (PM)**
- Group bonds/community
- Outward-focused
- Group-identification and sharing

“the individual/social dichotomy does not imply a controversy as to the definition of learning, but rather rests on differing visions of the mechanism of learning” (p. 7)
Preliminary Evidence of Sfard’s Framework in the OKA

*Tindal et. al (Manuscript submitted for publication)

- 3 factors
- Related skills

*OKA Pilot Data 12-13
Sfard’s Framework – This Study

- Self-Regulation (PM)
- Social (PM)
- Academic Skills (AM)
- Spring Early Literacy (AM)
- Spring Math (AM)

*OKA State Field Test Data 13-14
Empirical Basis for the AM

Technically adequate measures:

1. Screen for risk, gauge status, monitor change
   (McConnell, McEvoy, & Priest, 2002)

2. Establish valid/parsimonious factor structures
   (Justice, Invernizzi, Geller, Sullivan, & Welsch, 2005)

Early Literacy
Early Math
Early Literacy and Math Skills

• **Alphabetic** (e.g., naming and sounding letters)

• **Numeracy** (e.g., early number sense and operations)

• **Interrelated and predict** proximal and distal skills
  (e.g., phonemic, vocabulary, word/passage reading, comprehension; higher-order operations, geometric/spatial reasoning, statistics)

  (Literacy: see Cummings, Kaminski, Good, and O'Neal, 2011; Linklater, O’Connor, and Palardy, 2009; Ritchey, 2008; Ritchey and Speece, 2006; Speece, Ritchey, Cooper, Roth, & Schatschneider, 2004; Wagner, Torgesen, & Rashotte, 1994)

  (Math: see Clements, Sarama, and Lieu, 2008; Foegen, Jiban, & Deno, 2007; Gersten et al., 2012; Gersten, Jordan, and Flojo, 2005; Lembke and Foegen, 2009; Seethaler and Fuchs, 2011; VanDerHeyden et al., 2004; VanDerHeyden, Broussard, and Cooley, 2006)
Empirical Basis for the PM

Technically adequate measures:

1. Characterize early learning-related behaviors (Bandura, 1991; Zimmerman, 1998)
2. Gauge status and monitor change
3. Document relation to acquisition (Ladd, Birch, & Buhs, 1999)

Self-regulation
Social-interpersonal
Early Learning-Related Behavioral Skills

• **Self-regulation** (e.g., listening, following directions, task focus and completion)

• **Social-interpersonal** (e.g., sharing, working/playing cooperatively, relating to adults/peers)

• *Interrelated and predict* proximal/distal achievement

  (see Cooper and Farran, 1988; Finn, 1993; Ladd, Birch, & Buhs, 1999; McClelland, Acock, & Morrison, 2006; McClelland, Morrison, and Holmes, 2000; McClelland and Morrison, 2003)
Theoretical-Empirical Takeaways

• Skills representing the AM (early literacy/emergent reading and numeracy) and PM (self-regulation/social-interpersonal) are identifiable early, and are measurable.

• AM/PM skills are complexly intertwined and positively related in early learning and K-12 contexts (beyond demographic, prior achievement, IQ, and other influences).

• AM and PM appear to underlie the OKA.
Research Questions

1. What are the underlying dimensions (latent factors) and interrelations of the learning-related behavioral and academic skill components of the OKA?

2. What is the relation of kindergarten students’ entering learning-related behaviors and academic skill to the level of early/emergent literacy and mathematics achievement measured in the spring of the same kindergarten school year when controlling for student demographic characteristics?
Data Structure and Preparation

1. Restrict sample to valid OKA and \( \geq 1 \) spring BM score
2. Zeroes retained when flagged for being included in state reporting and as attempted
3. Merge extant datasets using unique identifier linking OKA to easyCBM district users in OR
4. OKA demographics took precedence
Sample

2013-14 OKA
• 41,000 kindergarten students
• 63% White, 24% Hispanic, 6% Multi-Ethnic, 3% Asian, 2% African American, 1% American Indian/Alaskan Native, 1% Pacific Islander
• 51% Male, 49% Female
• 10% Disability
• 53% Econ. Disadv.
• 18% LEP

2013-14 Spring easyCBM
• 7,200 (EL); 4,200 (Math)
• Roughly same demographic makeup (6% fewer Hispanic/LEP and 6% greater White
Measures

OKA:

*Early literacy* (easyCBM LNF and LSF – individual fluency)

*Early math* (easyCBM Numbers and Operations – group MC)

*Approaches to Learning* (CBRS; 15-item Mastery Behaviors Scale – teacher ratings of learning-related behavior frequencies; 1 to 5 scale)

**easyCBM spring BMs:**

*Early/Emergent literacy* (LSF, PSF, WRF – individual fluency)

*Early math* (Measurement, Geometry, Numbers & Operations – group MC)
Analyses

1. **EFA** to determine OKA factor structure (RQ1)
2. **CFA** to verify the # of factors, the pattern of loadings, and the latent factor correlation; document easyCBM (RQ1)
3. **SEM** to examine OKA entry skill interrelations and their relation to spring (EL and Math) achievement (RQ2)

Mplus version 7.3 with MLR estimation

(Muthén & Muthén, 1998-2012)
EFA Analysis

- 50% random subsample of OKA
- Geomin (oblique) rotation
- Chronbach’s Alpha (CBRS) = .96
- Kaiser-Meyer-Oklin = .96
- Bartlett’s Test of Sphericity significant
- Items/measures appropriately correlated
- Two solns compared (reasonableness and AIC/BIC):
  2 factors (single behavioral) vs. 3 factors (SR & SI)
# EFA Results

**Communalities, Pattern and Structure Matrices for EFA Random Subsample for OKA Battery (n = 20,585).**

<table>
<thead>
<tr>
<th>Item</th>
<th>Communalities</th>
<th>Pattern Matrix</th>
<th>Structure Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>follows</td>
<td>0.73</td>
<td><strong>0.94 (0.01)</strong></td>
<td><strong>0.78</strong></td>
</tr>
<tr>
<td>completes</td>
<td>0.87</td>
<td><strong>1.00 (0.01)</strong></td>
<td><strong>0.93</strong></td>
</tr>
<tr>
<td>successfully</td>
<td>0.85</td>
<td><strong>1.01 (0.01)</strong></td>
<td><strong>0.91</strong></td>
</tr>
<tr>
<td>attempts</td>
<td>0.69</td>
<td><strong>0.87 (0.01)</strong></td>
<td><strong>0.83</strong></td>
</tr>
<tr>
<td>concentrates</td>
<td>0.80</td>
<td><strong>0.92 (0.01)</strong></td>
<td><strong>0.89</strong></td>
</tr>
<tr>
<td>responds</td>
<td>0.86</td>
<td><strong>0.93 (0.01)</strong></td>
<td><strong>0.92</strong></td>
</tr>
<tr>
<td>time</td>
<td>0.80</td>
<td><strong>0.91 (0.01)</strong></td>
<td><strong>0.89</strong></td>
</tr>
<tr>
<td>finds</td>
<td>0.81</td>
<td><strong>0.94 (0.01)</strong></td>
<td><strong>0.90</strong></td>
</tr>
<tr>
<td>errors</td>
<td>0.63</td>
<td><strong>0.87 (0.01)</strong></td>
<td><strong>0.79</strong></td>
</tr>
<tr>
<td>returns</td>
<td>0.80</td>
<td><strong>0.90 (0.01)</strong></td>
<td><strong>0.89</strong></td>
</tr>
<tr>
<td>share</td>
<td>0.93</td>
<td>0.00</td>
<td><strong>0.70</strong></td>
</tr>
<tr>
<td>cooperative</td>
<td>0.95</td>
<td>-0.01</td>
<td><strong>0.71</strong></td>
</tr>
<tr>
<td>turns</td>
<td>0.95</td>
<td>0.02</td>
<td><strong>0.72</strong></td>
</tr>
<tr>
<td>complies</td>
<td>0.80</td>
<td>0.30</td>
<td><strong>0.76</strong></td>
</tr>
<tr>
<td>fuss</td>
<td>0.73</td>
<td>0.25</td>
<td><strong>0.71</strong></td>
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<tr>
<td>LNF</td>
<td>0.76</td>
<td>0.03</td>
<td><strong>0.41</strong></td>
</tr>
<tr>
<td>LSF</td>
<td>0.68</td>
<td>-0.01</td>
<td><strong>0.37</strong></td>
</tr>
<tr>
<td>Math</td>
<td>0.42</td>
<td>0.13</td>
<td><strong>0.36</strong></td>
</tr>
</tbody>
</table>

**Note.** OKA where: LNF = Letter Names Fluency, LSF = Letter Sounds Fluency, Math = Numbers and Operations, and item abbreviations for the CBRS behavioral rating segment. Primary factor loadings for the three extracted factors (**Self-regulation**, **Social-interpersonal**, and **Academic Skill Proficiency**) are bolded with standard errors shown in parentheses (Preacher & MacCallum, 2003).
EFA Results cont.

3-factor solution most appropriate, best fit (AIC and BIC), minimal cross-loading for OKA:
1. Self-regulation (items 1-10 CBRS)
2. Social-interpersonal (items 11-15 CBRS)
3. Academic Skills Proficiency (LNF, LSF and Numbers & Operations)

OKA Factor correlations:
• $SR$ and $SI = .70$ (strong)
• $SR$ and $ASP = .42$ (moderate)
• $SI$ and $ASP = .05$ (very low)
CFA Analysis

• 50% random subsample (OKA)
• 3 unidimensional models initially specified (OKA)
• Follow-up concurrent estimation (OKA)

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• Two concurrent models (easyCBM matched subsample – 1 spring achievement factor, with/without Math included)
### CFA Results

**Unstandardized and Standardized Loadings for CFA Random Subsample for the OKA Battery**

<table>
<thead>
<tr>
<th>CBRS Item / Measure</th>
<th>Self-regulation Unstandardized</th>
<th>Self-regulation Standardized</th>
<th>Social-interpersonal Unstandardized</th>
<th>Social-interpersonal Standardized</th>
<th>Academic Skills Unstandardized</th>
<th>Academic Skills Standardized</th>
</tr>
</thead>
<tbody>
<tr>
<td>follows</td>
<td>3.36 (0.04)</td>
<td>0.88</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>completes</td>
<td>4.81 (0.07)</td>
<td>0.94</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>successfully</td>
<td>4.14 (0.06)</td>
<td>0.92</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>attempts</td>
<td>2.88 (0.04)</td>
<td>0.85</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>concentrates</td>
<td>4.18 (0.05)</td>
<td>0.92</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>responds</td>
<td>5.20 (0.07)</td>
<td>0.94</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>time</td>
<td>4.03 (0.05)</td>
<td>0.91</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>finds</td>
<td>4.14 (0.05)</td>
<td>0.92</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>errors</td>
<td>2.48 (0.03)</td>
<td>0.81</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>returns</td>
<td>4.04 (0.05)</td>
<td>0.91</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>share</td>
<td></td>
<td>7.18 (0.15)</td>
<td>0.97</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cooperative</td>
<td></td>
<td>8.79 (0.24)</td>
<td>0.98</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>turns</td>
<td></td>
<td>9.63 (0.28)</td>
<td>0.98</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>complies</td>
<td></td>
<td>3.86 (0.05)</td>
<td>0.91</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>fuss</td>
<td></td>
<td>3.36 (0.05)</td>
<td>0.88</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LNF</td>
<td></td>
<td>15.15 (0.10)</td>
<td>0.91</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LSF</td>
<td></td>
<td>8.00 (0.08)</td>
<td>0.83</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Math</td>
<td></td>
<td>1.93 (0.02)</td>
<td>0.61</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. n = 20,585. CBRS items and academic achievement measures specified to load on a single factor (Self-regulation, Social-interpersonal, or Academic Skills) based on three-factor solution results in EFA. All parameter estimates significant, p < .001.*
3-factor solution appropriate, with strong loadings and identical pattern for OKA:
1. Self-regulation (.81 to .94)
2. Social-interpersonal (.88 to .98)
3. Academic Skills Proficiency (.61 to .91, LNF and LSF > NOps)

OKA Factor correlations:
• $SR$ and $SI$ = .79 (strong, .09 higher)
• $SR$ and $ASP$ = .39 (moderate, .03 lower)
• $SI$ and $ASP$ = .20 (low, .15 higher)
CFA Results cont.

Unstandardized and Standardized Loadings for easyCBM-matched Subsample for the easyCBM Spring Benchmarks

<table>
<thead>
<tr>
<th>Spring measure</th>
<th>Unstandardized</th>
<th>Standardized</th>
</tr>
</thead>
<tbody>
<tr>
<td>LSF</td>
<td>14.05 (0.28)</td>
<td>0.93</td>
</tr>
<tr>
<td>PSF</td>
<td>9.37 (0.27)</td>
<td>0.60</td>
</tr>
<tr>
<td>WRF</td>
<td>9.37 (0.23)</td>
<td>0.65</td>
</tr>
</tbody>
</table>

Single early/emergent literacy factor most appropriate for spring achievement BMs:
- .60 to .95, LSF > PSF and WRF
- Spring EL and Spring Math (cont) = .51 (moderate)
SEM Analyses

• Univariate and bivariate distributions and scatterplots (Arbuckle, 1996; Byrne, 2012; Kline, 2010)

• Skew < 2 and kurtosis < 7 for all measures (West, Finch, & Curran, 1995)

• Measurement portion based on EFA/CFA – 3 OKA factors, each predicting spring achievement

• 3 models specified and compared (AIC, BIC, $\chi^2$):
  - Model 1: No Demographics
  - Model 2: Full Demographics
  - Model 3: Sans Nonsignificant Demographics
# SEM Results

<table>
<thead>
<tr>
<th>Fit Criteria</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIC</td>
<td>1967148.50</td>
<td>1966800.65</td>
<td>1966794.38</td>
</tr>
<tr>
<td>BIC</td>
<td>1968054.18</td>
<td>1967438.00</td>
<td>1967404.49</td>
</tr>
<tr>
<td>Chi-square</td>
<td>--</td>
<td>319.85*</td>
<td>3.47*</td>
</tr>
</tbody>
</table>

*Note. Chi-square difference test statistics compare the adjacent/nested model, and are based on loglikelihood values and scaling correction factors available with MLR estimation in Mplus 7.3, in which significant values indicate a better fitting model (Muthén & Muthén, 2015a), *p < .05.*

- **Economic Disadvantage and Nonwhite-Hispanic** removed from Early/Emergent Literacy and Math
- **Female** removed from Emergent Literacy
SEM Results cont.

Reference Group: white, male, no disability, English proficient

Spring EL (.62)

- 1 SD ASP ; .74 SD
- 1 SD SR ; .12 SD
- 1 SD SI ; -.06 SD
- NW-NH ; .17 SD
- Disability ; -.35 SD
- LEP ; .12 SD

Spring Math (.25)

- 1 SD ASP ; .32 SD
- 1 SD SR ; .25 SD
- 1 SD SI ; -.10 SD
- NW-NH ; -.17 SD
- Disability ; -.37 SD
- LEP ; -.57 SD
- Female ; .09 SD
Discussion

1. Validation of the state’s entry model (RQ1)
2. Statistically significant and practically meaningful relations b/t entry skills and spring achievement (RQ2)
3. Demographic relations offer evidence of early gaps widening, closing, remaining the same, and perhaps being created over kindergarten (RQ3)
Limitations and Future Research

1. Nonexperimental design
   – “Preparedness” talk likely unwarranted
   – Caution when generalizing to and beyond cohort

2. Lack of specificity at district, school, classroom, and student levels – capacity, appropriateness and consequences of inferences

3. Little explained about math performance
Limitations and Future Research cont.

Sample RQs:
• How should OKA data influence decision-making at the state level and more localized levels like districts, schools, and classrooms?
• Can data from the OKA be used to identify and address achievement gaps that persist over time?
• Should classroom teachers use OKA data to guide instruction, and in what manner should this be done – what is the impact of doing so?
• How do results from the OKA impact the way in which publicly funded PK-12 learning systems are aligned and improved in Oregon?
Contribution and Conclusions

- Examines the underlying structure of a state-mandated entry assessment – inferences around entry skills, including gaps
- Extends beyond entry into the complex interplay of skills over kindergarten – utility of the OKA for decision-making
- The OKA (improved) may offer a link between PK and K-12 schooling
Completing a dissertation is sort of like sparring with an advisor who knows MMA. You might be finished, but not without a lot of bumps and bruises.
Thank you for serving as my dissertation committee. Additional discussion and questions are welcome.
References


References cont.


# Sample –Subsample Dems

*Demographics for Statewide Full Analytic Sample, Random Subsamples, and easyCBM-matched Subsample*

<table>
<thead>
<tr>
<th>Demographic Characteristic</th>
<th>Full Analytic</th>
<th>EFA50</th>
<th>CFA50</th>
<th>easyCBM</th>
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<tr>
<td></td>
<td>( n )</td>
<td>( % )</td>
<td>( n )</td>
<td>( % )</td>
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<tr>
<td>All Students</td>
<td>41,170</td>
<td>100.00</td>
<td>20,585</td>
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<tr>
<td>Sex</td>
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<td>Asian</td>
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<td>Black</td>
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<td>4,867</td>
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<td>American Indian/Alaskan Native</td>
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<td>Pacific Islander</td>
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<td>White</td>
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<td>Disability Status</td>
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<td>Non-disability</td>
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</tr>
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<td>Disability</td>
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<td>9.44</td>
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<tr>
<td>Not Economically Disadvantaged</td>
<td>19,251</td>
<td>46.76</td>
<td>9,644</td>
<td>46.85</td>
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<td>Economically Disadvantaged</td>
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<td>53.24</td>
<td>10,941</td>
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<td>English Proficiency Status</td>
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</tr>
<tr>
<td>Not Limited English Proficient</td>
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<td>16,854</td>
<td>81.88</td>
</tr>
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<td>Limited English Proficient</td>
<td>7,569</td>
<td>18.38</td>
<td>3,731</td>
<td>18.12</td>
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</tbody>
</table>

*Note.* Demographic breakdown by full analytic sample, the two 50% random subsamples, and the matched easyCBM subsample using both count and percentages relative to the associated (sub)sample. *casewise deletion.*
Extra Slides as Needed
# Overall OKA Desc Stats (missingness)

**Descriptive Statistics for 2013-14 OKA Total Scores (Full Analytic Sample)**

<table>
<thead>
<tr>
<th>OKA</th>
<th>n</th>
<th>Miss</th>
<th>Min</th>
<th>Max</th>
<th>M</th>
<th>SD</th>
<th>Skew</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNF</td>
<td>40,676</td>
<td>494</td>
<td>0</td>
<td>100</td>
<td>18.49</td>
<td>16.71</td>
<td>0.74 (0.01)</td>
<td>-0.09 (0.02)</td>
</tr>
<tr>
<td>LSF</td>
<td>40,306</td>
<td>864</td>
<td>0</td>
<td>100</td>
<td>6.72</td>
<td>9.71</td>
<td>1.79 (0.01)</td>
<td>3.12 (0.02)</td>
</tr>
<tr>
<td>Math*</td>
<td>40,588</td>
<td>582</td>
<td>0</td>
<td>16</td>
<td>8.02</td>
<td>3.17</td>
<td>0.24 (0.01)</td>
<td>-0.38 (0.02)</td>
</tr>
<tr>
<td>SR**</td>
<td>40,364</td>
<td>806</td>
<td>10</td>
<td>50</td>
<td>35.35</td>
<td>8.52</td>
<td>-0.38 (0.01)</td>
<td>-0.18 (0.02)</td>
</tr>
<tr>
<td>Social**</td>
<td>40,364</td>
<td>806</td>
<td>0</td>
<td>25</td>
<td>19.51</td>
<td>4.37</td>
<td>-0.67 (0.01)</td>
<td>0.12 (0.02)</td>
</tr>
<tr>
<td>AL total**</td>
<td>40,364</td>
<td>806</td>
<td>14</td>
<td>75</td>
<td>54.85</td>
<td>12.14</td>
<td>-0.45 (0.01)</td>
<td>-0.09 (0.02)</td>
</tr>
</tbody>
</table>
## Subsample OKA Desc Stats

### Descriptive Statistics for 2013-2014 OKA for Full Analytic Sample, Random Subsamples, and easyCBM-matched Subsample

<table>
<thead>
<tr>
<th>OKA Segment</th>
<th>Full Analytic</th>
<th>EFA50</th>
<th>CFA50</th>
<th>easyCBM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n)</td>
<td>(M)</td>
<td>(SD)</td>
<td>(n)</td>
</tr>
<tr>
<td>Math</td>
<td>40,588</td>
<td>8.02</td>
<td>3.17</td>
<td>20,301</td>
</tr>
<tr>
<td>SR*</td>
<td>40,364</td>
<td>35.35</td>
<td>8.52</td>
<td>20,190</td>
</tr>
<tr>
<td>AL total*</td>
<td>40,364</td>
<td>54.85</td>
<td>12.14</td>
<td>20,190</td>
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</tbody>
</table>
### Descriptive Statistics by Demographics for OKA Total Scores: Achievement Measures

<table>
<thead>
<tr>
<th>Group</th>
<th>LNF</th>
<th></th>
<th>LSF</th>
<th></th>
<th>Math</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
<td>$M$</td>
<td>$SD$</td>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Female</td>
<td>19.25</td>
<td>16.49</td>
<td>7.07</td>
<td>9.79</td>
<td>7.99</td>
<td>3.05</td>
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<td>17.77</td>
<td>16.88</td>
<td>6.39</td>
<td>9.61</td>
<td>8.05</td>
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<tr>
<td><strong>Race/Ethnicity</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>White</td>
<td>20.94</td>
<td>16.40</td>
<td>7.79</td>
<td>10.00</td>
<td>8.41</td>
<td>3.12</td>
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<tr>
<td>Nonwhite/Hispanic</td>
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<td>2.92</td>
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<tr>
<td>Nonwhite/Non-Hispanic</td>
<td>22.04</td>
<td>18.16</td>
<td>8.20</td>
<td>11.24</td>
<td>8.28</td>
<td>3.38</td>
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<tr>
<td><strong>Economic Disadvantage</strong></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Not Disadvantaged</td>
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<td>16.97</td>
<td>9.81</td>
<td>11.10</td>
<td>8.87</td>
<td>3.20</td>
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<td>14.70</td>
<td>3.95</td>
<td>7.2</td>
<td>7.27</td>
<td>2.93</td>
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<td><strong>Disability</strong></td>
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<tr>
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<td>9.90</td>
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<tr>
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<td>3.35</td>
<td>6.67</td>
<td>6.86</td>
<td>3.08</td>
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<td></td>
<td></td>
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<tr>
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<td>7.79</td>
<td>10.18</td>
<td>8.36</td>
<td>3.15</td>
</tr>
<tr>
<td>Limited</td>
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<td>11.51</td>
<td>1.78</td>
<td>4.62</td>
<td>6.46</td>
<td>2.74</td>
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</tbody>
</table>