Factor Analyses of Quality Measures
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Background
Studies have documented modest relations between global child care ratings on observational child care measures, teacher-child interaction, and children’s development. However, newer studies have examined relations between factors created within the global measures and more targeted outcomes in children’s development. Assessing the structure of global quality measures can help researchers, educators and policy makers determine which aspects of early childhood environments that matter for children’s development should be targeted for quality improvement.

Sample Information
Table 1. Factor Structures to be examined for ECERS-R, ITERS, CIS, and FDCRS

<table>
<thead>
<tr>
<th>Measure</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECERS-R</td>
<td>Pressure</td>
<td>Routines</td>
<td>Activities</td>
</tr>
<tr>
<td>ITERS</td>
<td>Sensitivity</td>
<td>Routines</td>
<td>Activities</td>
</tr>
<tr>
<td>CIS</td>
<td>Sensitivity</td>
<td>Routines</td>
<td>Activities</td>
</tr>
<tr>
<td>FDCRS</td>
<td>Sensitivity</td>
<td>Routines</td>
<td>Activities</td>
</tr>
</tbody>
</table>

Notes: For QUINCE-study, only Time 2 data were selected, as at that time point, providers had received full dose of intervention and the children had been with the providers for 6 months, which is comparable to EHS sample.

Factor Structure
Study 1
To determine if factor structures identified in ECERS-R and FDCRS in the QUINCE study (two-factor for ECERS-R and three-factor for FDCRS) hold true for QUINCE Time 2 data and the same measures used in EHS sample when children were age 14, 24, 36 and 60 months. To examine the validity of four-factor structures of CIS in EHS sample when children were age 14, 24 and 36 months. To test if the four-factor structures identified in ITERS-R in EHS sample hold true for ITERS-R when children were age 14 and 24 months.

Study 2
If the CFA findings of Study 1 indicate the factor structures are not ideal, then run an exploratory factor analysis to find potential factor structures.

Method
CFA under maximum likelihood estimation was used to evaluate a model. If the CFA analysis at 14, 24 and 36 months in EHS sample were used for model development. Direct oblimin rotation was used to run the model. If the factor loading is under .3, the item was excluded.

Key Findings
Table 1. Coefficient Alpha for Measures at Different Time Points

<table>
<thead>
<tr>
<th>Measure</th>
<th>Time</th>
<th>Program</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>F4</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECERS-R</td>
<td>Time 2</td>
<td>EHS 36M</td>
<td>0.85</td>
<td>0.78</td>
<td>0.69</td>
<td>0.64</td>
</tr>
<tr>
<td>FDCRS</td>
<td>Time 2</td>
<td>EHS 60M</td>
<td>0.86</td>
<td>0.76</td>
<td>0.72</td>
<td>0.67</td>
</tr>
<tr>
<td>ITERS</td>
<td>Time 2</td>
<td>EHS 36M</td>
<td>0.84</td>
<td>0.77</td>
<td>0.69</td>
<td>0.65</td>
</tr>
<tr>
<td>CIS</td>
<td>Time 2</td>
<td>EHS 36M</td>
<td>0.82</td>
<td>0.69</td>
<td>0.62</td>
<td>0.58</td>
</tr>
</tbody>
</table>

Note: Variable measure anxiety, correlation is not significant.

Conclusion
Study 1
Using the well accepted cut-off standards, i.e. 0.9<CFI<0.95, the factor structures found in the QUINCE study (two-factor structure for ECERS-R and three-factor structure for FDCRS) do not display good fit for the QUINCE Time 2 data and EHS 14, 24, 36 and 60 month data. The four-factor structure for CIS does not display good fit for the EHS data on all three time points. The four-factor structure of ITERS-R displays good fit for the EHS data for 24 month data, but not ideal for 14 month data (see Table 4, 24 month data are highlighted in red).

Study 2
Taking the severe cut, variable explained, comprehensibility and internal consistency coefficient together, a two-factor structure was the best fit for the CIS data in EHS study. No new reasonable factor structures were found for FDCRS. The new two-factor structure for CIS needs to be examined in the future by applying it to more datasets.

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References