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Title: The Development and Testing of a New Measure of Early Childhood Education Organizational Conditions

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Abstract Body

Background/Context:

The early education field, like K-12, faces substantial challenges improving the quality of teaching and learning and, thus, student outcomes. Despite decades of evidence that high-quality early education can positively impact the learning trajectories of low-income children, the majority of programs nationwide fail to significantly advance children's achievement (Belfield, Nores, Barnett, & Schweinhart, 2006). With the intention of supporting improvement efforts, the early education field has reliable and valid tools to measure classroom structural quality, classroom interactions and instruction, interactions with families, administrative practices, and program culture and climate (e.g., Bryant, 2010).[1] However, these existing tools measure discrete constructs of quality, rather than the complex, integrated organizational structures that work in tandem to either impede or support the effective practice of educators (Zaslow, Tout, & Martinez-Beck, 2010). Educational research has greatly advanced our understanding of this complexity and the dynamics of improvement beyond the individual elements of quality. Despite these advances, the field lacks a rigorously developed tool to measure organizational conditions in early education settings, the results of which can then focus leaders' attention on these organizational dynamics and provide them with accessible and actionable information to improve these conditions. This proposed paper describes the development and pilot testing of this missing tool—what we refer in this proposal as "*Early Childhood Surveys.*"

Prior research on elementary schools led to the identification of five school-level organizational constructs empirically linked to school improvement, articulated in the "five essentials framework" (Bryk, Sebring, Allensworth, Luppescu, & Easton, 2010). These five constructs are: effective leadership, collaborative teachers, family ties, supportive environment, and ambitious instruction. These researchers developed teacher and student surveys to measure these five essential supports and found that they strongly predicted which schools were most and least likely to improve over time: Schools strong in three or more of these supports were 10 times more likely than schools weak in most supports to substantially improve student math and reading outcomes. Furthermore, a weakness in just one of these supports over time undermined other change efforts, reducing the probability of improvement to 10% or less (Bryk et al.).

Early education research suggests, as in elementary settings, that programs more successfully promote children's learning and development when they have strong organizational practices aligned to these five constructs (Burchinal, Vandergrift, Pianta, & Mashburn, 2010; Rohacek, Adams, Kisker, Danziger, Derrick-Mills, & Johnson, 2010; West-Olatunji, Behar-Horernstein, & Rank, 2008). The authors therefore posit that programs with strong practices aligned to these essentials also will exhibit higher-quality classroom practices and better prepare children for kindergarten. The current project, therefore, seeks to adapt the existing five essentials teacher surveys, and create a new parent survey, for use in early education settings.

Purpose / Objective / Research Question / Focus of Study:

The current study sought to scientifically adapt the existing five essentials teacher survey and develop a new parent survey, and pilot test them for use in early childhood education settings.

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[1] Examples of tools measuring these discrete constructs are: Early Childhood Environment Rating Scales (ECERS-R); (Harms, Clifford, & Cryer, 2005); Classroom Assessment Scoring System (CLASS); (Pianta, LaParo, & Hamre, 2007); Parent Education Profile (PEP); (RMC Research Corporation, 2006); Program Administration Scale (PAS): (Talan & Bloom, 2004).

The adaptation and development of these *Early Education Surveys* occurred in 2014-15, was based strongly on Bryk et al.'s (2010) existing framework, and utilized the existing *5Essentials* surveys, which are publicly-available through the Consortium on Chicago School Research's website, with author permission. This proposed paper presents the development process of these two surveys and pilot test findings. In the future, our work will test whether these surveys measure organizational elements of a preschool program that are related to positive classroom and child outcomes via a validation study (to be conducted in 2015-16). Ultimately, the purpose of the *Early Education Surveys* is to provide reliable and valid survey data that will guide early childhood educators to generate continuous quality improvements in teaching and learning by strengthening the organizational conditions in which teachers work every day with children and families.

Setting:
The *Early Education Surveys* have been developed for use in, and therefore were piloted in, publicly-funded early education programs with at least 3 classrooms serving children ages 3 to 5 in either school- or community-based settings. Data collection took place in a large, urban city in the Midwest. Focus groups and cognitive interviews took place with teachers and parents in both school-based and center-based preschool programs across this city. Pilot study data collection occurred in a variety of locations. The teacher survey was piloted with preschool teachers in a local, urban school district as well as in Head Start programs across the nation. The parent survey was piloted in the same local, urban school district as well as center-based Head Start programs across this local city.

Population / Participants / Subjects:
For the *Early Education Teacher Survey*, the authors conducted a single pilot study in Spring 2015. To pilot in school-based programs, the survey was offered to all preschool teachers within our local school district; a total of 1,153 teachers responded. Teacher pilot data were also collected from a national sample of center-based Head Start teachers participating in the Family and Child Experiences Survey (conducted by the Office of Program, Research, and Evaluation Office at the Department of Health & Human Services). Eighty-eight percent of those teachers sampled (n=363) responded to the survey (see Table 1 for total numbers).

To develop the *Early Education Parent Survey*, we embarked on two rounds of interviews with parents and staff, pilot data collection, and Rasch analyses. Our first round (Fall 2014) included focus groups with early education teachers, early education family support specialists, and parents; cognitive interviews with 16 parents; and survey piloting in 4 community-based programs, resulting in 198 pilot surveys from English- and Spanish-speaking parents. Our second round of development included revisions based on our initial Rasch analyses and additional cognitive interviews with parents. The final pilot of the parent survey was conducted in Spring 2015, with surveys administered on-site in seven school-based preschool programs and nine community-based preschool programs. A total of 229 parents, roughly half English-speaking and half Spanish-speaking (evenly distributed over school- and community-based sites), completed the surveys (see Table 2); 81% were completed online using tablets (the remaining were hard copy versions, mostly due to internet connection issues).

Research Design:
Generating the *Early Education Surveys* required an iterative development and testing process; we used qualitative and quantitative feedback from one cycle to inform the next phase of development and testing. Our method of survey development includes the creation of *measures*,

with corresponding items that comprise them, which are analyzed using the Rasch model (Wright & Masters, 1982). To create the *Early Education Surveys,* our study required the adaptation of existing teacher surveys and the development of a new parent survey. For the teacher survey, the authors relied on a bank of existing measures and items publicly available from the *5Essentials* survey (CCSR, 2014). The authors determined whether existing teacher items fit into one of three categories: (a) items that were appropriate as-is for the early education context, (b) items that needed language and terminology revisions for early education, and (c) items that are irrelevant to early education and, therefore, should be discarded. Then, we established whether there were concepts critical in early education not addressed in the existing *5Essentials* surveys (see Figure 1). For the parent survey, the authors conducted additional information collection activities (focus groups, cognitive interviews; see next section) as well as an initial round of pilot testing prior to the final pilot of both surveys, conducted in Spring 2015 (see Figure 2).

The development and pilot study for the *Early Education Surveys* included the following design methods: **(1) Focus groups.** To determine appropriateness for the early education context, we conducted focus groups with four stakeholder groups: (a) exemplar leaders and supervisors from publicly-funded programs in our local city; (b) academic scholars who focus on effective early education (c) parents who are involved in their program's Head Start Policy Council, Parent Committee, Local School Council, or local community organizations; and (d) early education teachers and family engagement staff. Conducting focus groups allowed us to carefully attend to the terminology used in our items to ensure they evoke the intended constructs within early education (ensuring content validity). **(2) Cognitive interviews.** To test our revised or newly generated items, we conducted cognitive interviews. Cognitive interviewing is a method of pre-testing, involving one-on-one interviews with individuals in the target population. Respondents were asked survey questions in a semi-structured format to explore respondents' thought processes and challenges answering the question. This method has been found to be an inexpensive and effective way of identifying problems in surveys (Conrad & Blair, 2004; Willis, 2005). Cognitive interviews ensure that items are easy to understand, the question stems and answer choices are unambiguous, and the questions asked are being interpreted *as intended*. This provided a second opportunity to ensure content validity. **(3) Pilot testing and Rasch analysis.** Rasch measurement is a model that creates unidimensional measures, measuring how people feel on a single, unitary concept. After each round of pilot data collection, we conducted Rasch analyses, attending specifically to measure reliability, indicators of misfitting items, mismatches between item difficulty order and theoretical expectations, and alignment between item and person difficulties. Results of our analyses led to item and measure revisions. Using Rasch modeling, we determined whether the measures included in our pilot study were reliable and differentiated among survey-takers.

Data Collection and Analysis:

The proposed presentation will describe the process of survey development but will focus largely on the data collection, Rasch analysis, and results of the Spring 2015 pilot study. The school-based teacher surveys were administered as part of a larger, online-only survey administration across a local school district from January through April 2015. An item early in the survey identified whether a teacher was a preschool teacher, allowing preschool-specific items to be made available to them. The center-based teacher surveys were administered as part of a larger, national study on Head Start programs in Spring 2015. Surveys were available online or could be requested as a hard copy. All teacher surveys were provided in English only.

The school-based and center-based parent surveys were collected by the authors and research team members. Teams of data collectors visited sites and recruited parents to take the pilot survey between May-June 2015. The online survey was developed using Qualtrics and tablets were available to parents for use; hard copy versions were available upon request or used when difficulties arose connecting to the internet. Surveys were available in both English and Spanish.

Findings / Results:
Rasch analyses were conducted on measures that were pilot tested with teachers and parents. The authors revised measures based on the results to improve the performance of measures (e.g., removing items that misfit). Tables 3 and 4 provide resulting measure reliabilities. 60% of both our teacher and parent measures had a reliability >=.80 (separation >2). Those with reliabilities <.80 will either be dropped or will be revised prior to conducting a full validation study. In most cases, low reliability seemed to be because the measure did not include items difficult enough to capture the full range of respondents. Once final measures are created, we will conduct differential item function (DIF) analyses to explore whether there are significant differences between responses in school-based or center-based programs, and whether there were differences by parents who responded to English and Spanish surveys.

Conclusions:
In practice, it is extremely difficult to move the needle on student outcomes at scale. Similarly, research on improvement efforts often is not able to identify the *conditions* that support or hinder implementation of these efforts. The development of the *Early Education Surveys* will provide needed contextual information that will inform the work of both practitioners and researchers. Our aim is for the surveys to continue to be both *informed by* practice and research and *influence* practice. Specifically, these surveys will provide leaders and practitioners with actionable information to diagnose the strengths and weaknesses of programs so they can build on those strengths and focus improvement efforts on strengthening weaknesses. Simultaneously, the surveys will provide researchers with a validated instrument for future education research and evaluation. For example, the *Early Education Surveys* will enable deeper investigation into the factors that mediate or moderate the effects of organizational strength and change on classroom and child outcomes. It will also provide researchers with a new assessment of previously unmeasured interdependent constructs in early education. This will enable researchers studying early education interventions to evaluate the impact of organizational conditions on implementation fidelity and intervention effectiveness.

However, before these surveys make their way into the field, the authors are taking a rigorous research approach. Next steps include a full validation study to measure and test whether the *Early Education Surveys* are related to classroom practices and child outcomes. Efforts will be made to understand what high- and low-levels of implementation of these five organizational constructs looks like in different settings, further adding knowledge to the early education field. As we continue our research, we are engaging continuously and closely with practice leaders—including the top administrators of Head Start in our city, the local school district, the state-level early education office, and federal research and practice leaders—in efforts to make these tools relevant and useful for use in early education settings.

Appendices

Appendix A. References

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Appendix B. Tables and Figures

Figure 1. Development Process for *Early Education Teacher Survey*

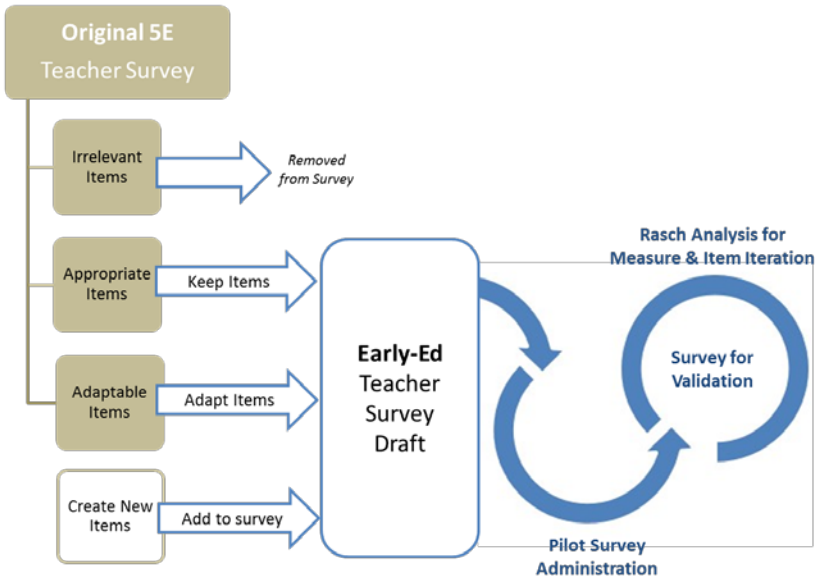

Figure 2. Development Process for *Early Education Parent Survey*

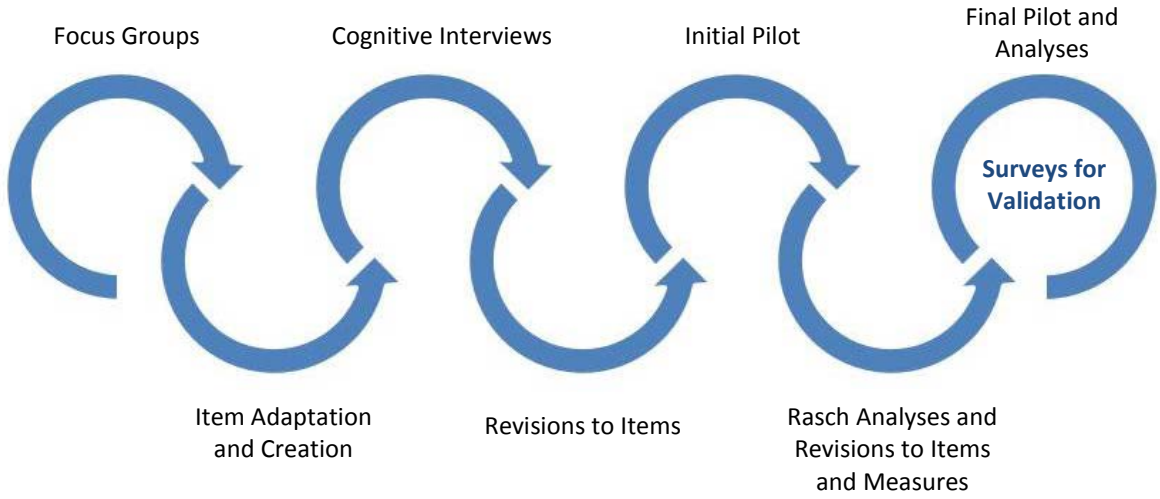

Table 1. Total Samples for Teacher Pilot Study

Language	*TOTAL n*	*School-based programs*		*Center-based (Head Start) programs*	
		Online version	Paper-Pencil	Online version	Paper-Pencil
English	1516	1153	0	248	115

Table 2. Total Samples for Parent Pilot Study

	TOTAL n	*School-based programs*		*Center-based (Head Start) programs*	
		Online	Paper-pencil	Online	Paper-pencil
English	118	46	15	57	0
Spanish	111	22	28	55	6
TOTAL	229	68	43	112	6

Table 3. Preliminary reliability coefficients for piloted *Early Education Teacher Survey*

Measure	*Reliability Coefficient*
Essential: Ambitious Instruction	
Quality of Student Interaction	.81
Early Math	.78
Early Language and Literacy	.83
Early Cognitive Development	.81
Early Social-Emotional Development	.69
Essential: Supportive Environment	
Positive Learning Climate	.73
Teacher Safety	.86
Attendance	.71
Child-Child Interactions	.79
Essential: Involved Families	
Teacher-Parent Trust	.86
School/Center Welcoming Families	.69
Teacher Outreach/Collaboration with Parents	.74
Essential: Collaborative Teachers	
Teacher-Teacher Trust	.81
Socialization of New Teachers	.62
School Commitment	.76
Reflective Dialogue	.83
Quality Professional Development	.81
Innovation	.83
Data Use	.80
Collective Responsibility	.89
Teacher Collaboration	.83
Essential: Effective Leaders	
Teacher-Principal Trust	.90
Program Coherence	.69
Instructional Leadership	.86
Teacher Influence	.84

Table 4. Preliminary reliability coefficients for piloted *Early Education Parent Survey*

Measure	*Reliability Coefficient*
Essential: Supportive Environment	
Child-Child Interactions	.51
Support for Kindergarten Transition	.55
Program Orientation Towards Early Education	.84
Essential: Involved Families	
Parent-Teacher Trust	.96
Family Engagement in Center/School	.68
Quality of Engagement Opportunities	.61
Curriculum-related Teacher Community w/ Parents	.95
General Teacher Communication with Parents	.90
Teacher Care and Responsiveness Towards Parents	.80
Essential: Effective Leaders	
Principal/Director-Parent Relations	.89