



2013 Brock International  
Prize in Education Nominee

**Robert C. Pianta**

*Nominated by Andrea K. Rorrer*

# Robert C. Pianta



Dean at Curry School of Education at the University of Virginia  
Novartis Professor of Education  
Director, Center for Advanced Study of Teaching and Learning (CASTL)  
Professor of Psychology at the UVa College of Arts & Sciences  
Director of the National Center for Research in Early Childhood Education

Dear Brock Jurors,

The Brock International Prize in Education honors an individual who has made a significant impact on the practice and understanding of the field of education. Importantly, the Brock International Prize in Education pays tribute to those whose contributions have the “potential to provide long-term benefit to all humanity through change and improvement in education.” With this mission in mind, it is my honor to nominate Robert C. Pianta for the Brock International Prize in Education. Dr. Bob Pianta exemplifies the excellence and qualities sought in the Brock Laureate, particularly in the area of innovation in education. In this nomination letter, I provide an overview of Dr. Pianta’s work and how his scholarship and leadership is poised to transform the field of educational practice with sustained changes in access and opportunity for all students. Dr. Pianta’s nomination is grounded in the rigor, relevance, and ability to renew education from an asset-based model of change.

With a bachelor’s and master’s degree in psychology, Bob Pianta began his career in education as a special education resource teacher in Connecticut. He received his doctorate of philosophy in psychology in 1986 from the University of Minnesota. This was the same year he became an assistant professor at the University of Virginia. Since 2007, Bob has served as the Dean of the Curry School of Education at the University of Virginia. In addition to serving as Dean and Professor of Psychology, Bob is the Director of the Center for Advanced Study of Teaching and Learning (CASTL). In 2003, Bob was selected as the Novartis U.S. Foundation Professor at the University of Virginia. This endowed position is awarded to a scholar “whose work is focused on ensuring that the nation’s neediest children succeed in the early years of school, a critical period for sustained achievement and success.”<sup>1</sup> To date, Bob has authored over 250 journal articles, 50 book chapters, and 10 books. Moreover, Bob’s participation in research and training grants as principal investigator has yielded over \$55 million in support, including grants from entities such as the U.S. Department of Education, the Bill & Melinda Gates Foundation, the American Institutes for Research, the U.S. Department of Health and Human Services Administration, the W.T. Grant Foundation, the National Institute of Child Health and Human Development, and the Institute of Education Sciences.<sup>2</sup>

As evidenced by his vita, Bob Pianta has had a very distinguished career; his contributions can be considered from numerous perspectives, including quantity, quality, and impact. Indeed in each of these categories (i.e., quantity, impact, and quality), Bob has excelled. Bob’s curriculum vita and samples of his work are attached to this nomination. In addition, Appendix A and Appendix B provide links to examples of his empirically-based documents such as policy briefs, and speeches and interviews. Yet, the Brock Prize is about more than recognizing someone for the quantity of his or her work. Thus, while Bob has been a prolific scholar and had a long, steady, and productive career, it is the quality and impact of his focused scholarship that I base this nomination.

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<sup>1</sup> See [http://im.dev.virginia.edu/endowments/professorships/long\\_name/curryschoolofeducation/general/novartisfoundationprofessorship/](http://im.dev.virginia.edu/endowments/professorships/long_name/curryschoolofeducation/general/novartisfoundationprofessorship/)

<sup>2</sup> See Robert C. Pianta Vita.

Dr. Pianta's scholarly work has a broad reach, both nationally and internationally (e.g., Turkey, Brazil, Ecuador), in the practice and policy arena. For instance, in 2010, Bob testified to a Congressional Hearing to the US Senate Health, Education, Labor and Pensions Committee Hearing on ESEA. There he had a dual purpose to inform the Committee of research on both high quality early childhood and effective teaching and learning. In advocating for high quality early childhood education, Dr. Pianta in his testimony noted:

We now know that the long-term effects of early gaps in achievement and social functioning are so pronounced that effective and efficient early education interventions targeted toward these gaps in the preschool period are essential, not only to the developmental success of children, but to the economic and social health of communities.

He added that while a "general pattern" had emerged and many states were expanding their publicly available early childhood education programs the "fragmentation of policy and programs is considerable." Consistent with his research on early childhood education, Bob reviewed the necessity of qualified staff (e.g., credentialed and degreed), training, and support. He emphasized that the most important difference for high quality early childhood education reflects what we know from his research on the instructional practice of teachers in other K-12 settings. That is, the difference in quality of a child's educational experience and their subsequent academic or social benefits relies in large part on the instructional effectiveness.

The role of teachers in the success of students, short-term and long-term, is widely accepted as an imperative. However, few scholars, policy makers, or consultants have offered specific methods for meeting teachers where they are in their development and supporting them while improving their ability to provide high quality and effective instruction. In contrast, Bob Pianta ventured into the search for strategies that have now led to the development of knowledge and skills necessary to improve and maintain effective teaching and learning. While many have offered random, and even somewhat popular, strategies that allegedly make a difference in teaching and learning, few have been able to deliver empirically-based strategies that produce tangible outcomes in the learning of both the teacher and the student. Therefore, Bob is unique, as his scholarship and practice offers research and methods to transform the prominence and role of early childhood education and k-12 teaching and student academic and social learning indefinitely. Specifically, as illustrated in his body of work, Bob has found and tested the link between the evaluation of teaching, professional development, teaching practice, and student-related outcomes. His scholarship emphasizes that effective teaching requires "skillful combinations of explicit instruction, sensitive and warm interactions, responsive feedback, and verbal engagement and stimulation." Substantively, from his book *Enhancing Relationships Between Children and Teachers* (2000) to his current publications, Bob's work has addressed the question of "what is good teaching" and "what is the nature of and importance of the teacher-student interaction." Over time, he has helped us construct a common understanding of what constitutes good teaching by grounding our construction in observable behaviors and expected outcomes. To this end, Dr. Pianta's contributions to education have expanded our notion of effective instructional practice beyond simply the

teacher's content knowledge. Thus, his work exemplifies Albert Einstein's reflection on innovation. Einstein is quoted as saying "To raise new questions, new possibilities, to regard old problems from a new angle, requires creative imagination and marks real advance in science."

All too often success is defined as a lone accomplishment. Bob, however, consistently recognizes the importance and role of his colleagues in both research endeavors and the development of the products that arise from these endeavors. As evidence from the multitude of publications, Dr. Pianta exemplifies a commitment to the development and maintenance of a scholarly community that together is able to expand the wealth of knowledge and information generated. Building on Bob's research and his collaboration on studies in early childhood education, he and his colleagues at the UVa began the Center for Advanced Study of Teaching and Learning (CASTL). CASTL aims "to advance the quality and impact of teaching through scientific study in education settings from infancy to higher education." As noted in their informational materials, CASTL works to achieve its goals by:

- Developing evidence-based theories of effective teaching and learning via large, longitudinal studies of diverse classrooms around the world.
- Creating, evaluating, and disseminating tools for measuring and improving teaching and learning.
- Developing innovative support systems that develop useful knowledge and skills via cutting-edge applications of technology.

Due to the growing demand for access to the work of CASTL and the Classroom Assessment Scoring System (CLASS), Bob and colleague Bridget Hamre founded Teachstone in 2008. Through their leadership, Teachstone is now the avenue for increasing the availability and accessibility of the CASTL tools (e.g., CLASS and MyTeaching Partner) developed from their empirical research.

The Classroom Assessment Scoring System (CLASS), which stems from early childhood development research by Bob and collaborators, is an evidence-based observational instrument applicable from early childhood through high school. The CLASS observation tool, which was validated through observations in over 2,000 classrooms, measures teacher-student interactions in the emotional support, classroom organization, and instructional domains. These domains, with their subsequent dimensions, have been proven to improve student learning. (See Appendix C: CLASS Observation for a description of these domains and dimensions.) Although the initial application of CLASS was for the individual teacher, Bob and his colleagues have expanded its application to school- and district-wide implementation with guidance on the steps that can be taken to improve teacher-student interactions (e.g., time that students and teachers spend together, expanding networks of adults available to students, modeling caring relationships, developing disciplinary policies that foster caring relationships (Hamre, & Pianta, 2006)). Moreover, CLASS is used now in early childhood through high school classrooms. An implementation map in Appendix D provides a brief geographical image of the expansion and use of CLASS. Most recently, Bob's developmental work with CLASS led to his participation in the Gates Foundation sponsored *Measures of Effective Teaching (MET)*

*Project.* The *MET Project* has been used throughout the US as an informational and planning guide for the development of teacher evaluation systems at both the local and state levels.

In his article, “Individualized and Effective Professional Development Supports in Early Care and Education Settings,” Bob indicates that “effective professional development can be characterized as a system of supports to teachers or caregivers in which paths can be traced from inputs to teachers, to teacher inputs to children, to children’s skill gains” (p. 8). Bob’s research provides further evidence of how purposeful professional development for teachers at the individual or aggregate level must be based on their particular knowledge and skill needs to be effective in impacting instructional practice and behaviors. Moreover, this professional development should be consistently planned and aligned to the desired outcomes. In response to these findings, Bob and his colleagues Joe Allen, and Hamre have developed MyTeaching Partner. MyTeaching Partner provides a personalized, professional development program that offers teachers a video-library of exemplary practice, a college course on teacher-student interactions, and web-based coaching. The program, which emerged from empirical research, is designed to provide specific assistance to teachers by utilizing videotaped observations, individual coaching, self-evaluation, and action planning over the course of a school year. Figure 1 illustrates the two-week cycle, as provided by CASTL. A convergence of the necessity for on-going professional development with mounting evidence against the effectiveness of all-call, mass delivered professional development and declining resources for professional development creates a void in learning opportunities for teachers to improve teaching and learning. Taking these conditions into consideration along with the need for teachers to expand their content knowledge and expertise with the growing adoption of the Common Core, individualized professional development aimed at cultivating the teacher-student interaction as a means for improved learning is a necessity.

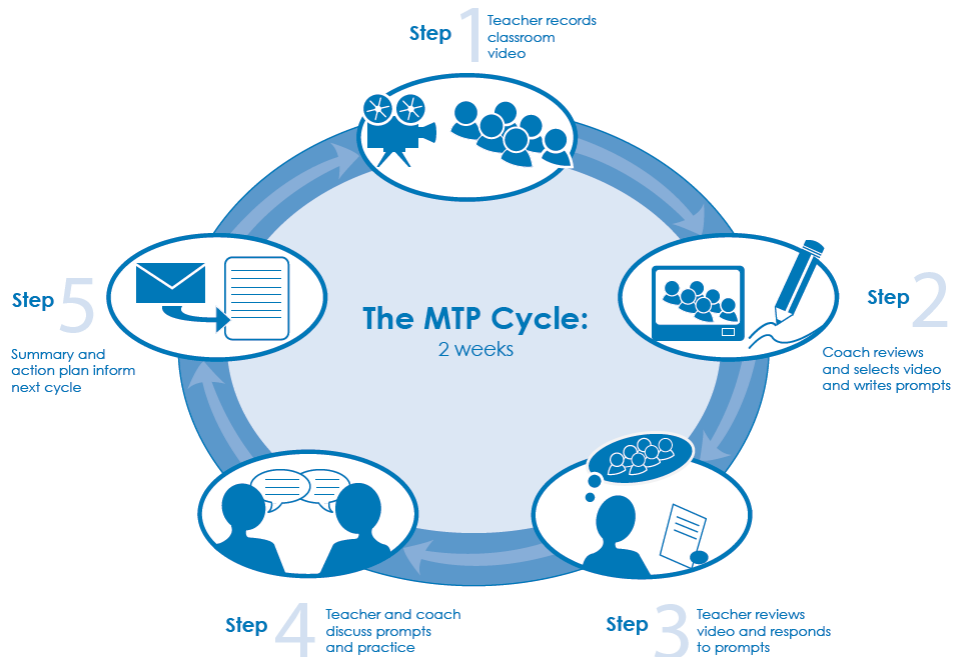


Figure 1. MTP Cycle<sup>3</sup>

Even my field of educational leadership and policy benefits from Bob’s work. For the last two decades, there has been a great deal of attention given to the importance of instructional leadership. Yet, not only does the term carry some ambiguity, so does the expected knowledge, skills, and behaviors of an instructional leader. Bob’s scholarship, however, offers concrete and specific ways in which leaders can support improved teaching and learning systemically and systematically. In particular, Bob’s work provides guidance to school, district, and state leaders in the areas of “look-fors” or observable behavior, and the necessity of the alignment of professional development with student learning goals.

Bob’s scholarship is a focal point for innovation in education. His contributions to the field have removed the elusiveness of “what is effective, quality teaching.” By empirically discerning and narrowing attention to “what is effective, quality teaching,” Bob’s work has increased the ability for all teachers to attain the status of an effective educator in both teaching and learning through a focus on teacher-student interactions. In doing so, he has re-opened the opportunity for students of the future to have a succession of highly effective teachers.

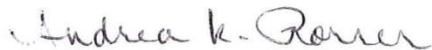
Moreover, Dr. Pianta’s scholarship exemplifies the thoughtful, intellectually focused, and rigorous empirical research that ensures a solid foundation of knowledge in the field of education. This work is simultaneously designed to be accessible to and applicable for practitioners, policy makers, and other scholars alike. Given the inclination of education to turn to, yet proven, market-based reforms or to embrace evaluation systems based on minimal measures to eliminate those identified as weak or ineffective, it is essential that

<sup>3</sup> See CASTL site for further information about MTP. <http://curry.virginia.edu/research/centers/castl/mtp>

education rely on research-based methods with proven track records of success such as those developed by Dr. Pianta. Because of his dedication, depth, and persistence, Bob's work will influence generations of educators in fundamental ways and serve as a catalyst for profound change in education. His scholarship and practice possess the characteristics of reform that offer potential for scalability and sustainability. By providing longitudinal and empirically based research that illuminates the fundamentally important role of teacher-student interactions and the importance of both the "what" and the "how" of effective teaching, Bob's scholarship is changing the nature and quality of instruction through new beliefs and norms of practice.

To my colleagues on the Brock International Prize in Education Jury, thank you for the opportunity to present Dr. Bob Pianta, his accomplishments, and his innovations in education. Like the years before, there are many exemplary nominations for this year's award of the Brock International Prize in Education. I appreciate your sincere and thoughtful consideration of Dr. Pianta for the Brock International Prize in Education. Dr. Pianta's innovative work delicately balances what is needed today in education and yet remains focused on where and how changes in how we do education today provides a gateway to the future.

Sincerely,



Andrea K. Rorrer

Materials Also Attached:

1. Robert C. Pianta Vita
2. Pianta, R. C. (2012). *Implementing observation protocols: Lessons for K-12 education from the field of early childhood*. Washington, DC: Center for American Progress. Retrieved from [http://www.americanprogress.org/issues/2012/05/observation\\_protocols.html](http://www.americanprogress.org/issues/2012/05/observation_protocols.html)
3. Pianta, R.C. (2011). Individualized and Effective. Professional Development Supports in Early. Care and Education Settings. *Zero to Three*. 32 (1): 4–10.
4. Pianta, R.C. (2010). *HELP Testimony*. Retrieved from [www.help.senate.gov/imo/media/doc/Pianta.pdf](http://www.help.senate.gov/imo/media/doc/Pianta.pdf)
5. Hamre, B. K., & Pianta, R. C. (2006). Student-teacher relationships. In G. G. Bear, & K. M. Minke (Eds.), *Children's needs III: Development, prevention, and intervention* (pp. 59-72). Washington, D. C.: National Association of School Psychologists.
6. Hamre, B. K., Pianta, R. C., Burchinal, M., Field, S., LoCasale-Crouch, J. L., Downer, J. T., Howes, C., LaParo, K., & Scott-Little, C. (2012). A course on effective teacher-child interactions: Effects on teacher beliefs, knowledge, and observed practice. *American Educational Research Journal*, 49(1), 88-123.





**Appendix A: Additional Documents**

Topic	Link
Testimony to the US Senate Health, Education, Labor and Pensions Committee Hearing on ESEA	<a href="http://www.help.senate.gov/imo/media/doc/Pianta.pdf">http://www.help.senate.gov/imo/media/doc/Pianta.pdf</a>
Innovation in Curry-Darden School Partnership	<a href="http://curry.virginia.edu/magazine/spring2012/innovation-in-education-reform/">http://curry.virginia.edu/magazine/spring2012/innovation-in-education-reform/</a>
Met Project, references to CLASS	<a href="http://www.metproject.org/downloads/MET_Gathering_Feedback_Practitioner_Brief.pdf">http://www.metproject.org/downloads/MET_Gathering_Feedback_Practitioner_Brief.pdf</a>
The CLASS Protocol	<a href="http://metproject.org/resources/CLASS_10_29_10.pdf">http://metproject.org/resources/CLASS_10_29_10.pdf</a>
An Interaction-Based Approach to Enhancing Secondary School Instruction and Student Achievement	<a href="http://www.sciencemag.org/content/333/6045/1034.full">http://www.sciencemag.org/content/333/6045/1034.full</a>
A Course on Effective Student-Teacher Interactions	<a href="http://curry.virginia.edu/uploads/resourceLibrary/Research_Brief_-_Course_Effects-NCRECE.pdf">http://curry.virginia.edu/uploads/resourceLibrary/Research_Brief_-_Course_Effects-NCRECE.pdf</a>
Implementing observation protocols: Lessons for K-12 education from the field of early childhood	<a href="http://www.americanprogress.org/issues/2012/05/observation_protocols.html">http://www.americanprogress.org/issues/2012/05/observation_protocols.html</a>

**Appendix B: Sample Speeches and Interviews**

<b>Title</b>	<b>Link</b>
Kids and Teachers: What Makes for Success in School	<a href="http://www.youtube.com/watch?v=puRjGAMzg7I&amp;feature=endscreen">http://www.youtube.com/watch?v=puRjGAMzg7I&amp;feature=endscreen</a>
Bob Pianta Discussing CASTL	<a href="http://www.youtube.com/watch?v=FPGXL6s_uRo&amp;feature=endscreen">http://www.youtube.com/watch?v=FPGXL6s_uRo&amp;feature=endscreen</a>
Building Better Teachers	<a href="http://www.youtube.com/watch?v=x2EmCD_r5B4&amp;feature=relmfu">http://www.youtube.com/watch?v=x2EmCD_r5B4&amp;feature=relmfu</a>
Bob Pianta Interview with Andrea Mitchell on Assessing Teacher Effectiveness	<a href="http://www.youtube.com/watch?v=apaTcPSNKxc">http://www.youtube.com/watch?v=apaTcPSNKxc</a>
Are We Preparing Our Children for Success in School?	<a href="http://www.youtube.com/watch?v=yzguUrx0nVg">http://www.youtube.com/watch?v=yzguUrx0nVg</a>
Improving Impacts of Classrooms	<a href="http://www.youtube.com/watch?v=u8MIVAhlycg">http://www.youtube.com/watch?v=u8MIVAhlycg</a>

### Appendix C: CLASS Overview

The information below can be found at:

<http://www.teachstone.org/about-the-class/class-organization/>

#### How is the CLASS™ tool organized?

At every age level, the CLASS™ measure focuses on interactions that support learning. No matter which age or grade level of the tool you use, developmentally appropriate interactions are organized into domains and dimensions:

Age/Grade Level	Emotional and Behavioral Support	Engaged Support for Learning	
<b>Toddler</b>	<ul style="list-style-type: none"> <li>• Positive Climate</li> <li>• Negative Climate</li> <li>• Teacher Sensitivity</li> <li>• Regard for Child Perspectives</li> <li>• Behavior Guidance</li> </ul>	<ul style="list-style-type: none"> <li>• Facilitation of Learning and Development</li> <li>• Quality of Feedback</li> <li>• Language Modeling</li> </ul>	
Age/Grade Level	Emotional Support	Classroom Organization	Instructional Support
<b>Pre-K</b>	<ul style="list-style-type: none"> <li>• Positive Climate</li> <li>• Negative Climate</li> <li>• Teacher Sensitivity</li> <li>• Regard for Student Perspectives</li> </ul>	<ul style="list-style-type: none"> <li>• Behavior Management</li> <li>• Productivity</li> <li>• Instructional Learning Formats</li> </ul>	<ul style="list-style-type: none"> <li>• Concept Development</li> <li>• Quality of Feedback</li> <li>• Language Modeling</li> </ul>
<b>K-3</b>	<ul style="list-style-type: none"> <li>• Positive Climate</li> <li>• Negative Climate</li> <li>• Teacher Sensitivity</li> <li>• Regard for Student Perspectives</li> </ul>	<ul style="list-style-type: none"> <li>• Behavior Management</li> <li>• Productivity</li> <li>• Instructional Learning Formats</li> </ul>	<ul style="list-style-type: none"> <li>• Concept Development</li> <li>• Quality of Feedback</li> <li>• Language Modeling</li> </ul>
<b>Upper Elementary</b>	<ul style="list-style-type: none"> <li>• Positive Climate</li> <li>• Teacher Sensitivity</li> <li>• Regard for Student Perspectives</li> </ul>	<ul style="list-style-type: none"> <li>• Behavior Management</li> <li>• Productivity</li> <li>• Negative Climate*</li> </ul>	<ul style="list-style-type: none"> <li>• Instructional Learning Formats*</li> <li>• Content Understanding</li> <li>• Analysis and Inquiry**</li> <li>• Quality of Feedback</li> <li>• Instructional Dialogue</li> <li>• Student Engagement</li> </ul>
<b>Secondary</b>	<ul style="list-style-type: none"> <li>• Positive Climate</li> <li>• Negative Climate</li> <li>• Teacher Sensitivity</li> <li>• Regard for Adolescent Perspectives</li> </ul>	<ul style="list-style-type: none"> <li>• Behavior Management</li> <li>• Productivity</li> <li>• Instructional Learning Formats</li> </ul>	<ul style="list-style-type: none"> <li>• Content Understanding</li> <li>• Analysis and Problem Solving</li> <li>• Quality of Feedback</li> <li>• Instructional Dialogue</li> <li>• Student Engagement</li> </ul>

## Dr. Robert (Bob) Pianta Brock Prize Nomination

\*Classification Changes: Negative Climate (formerly in Emotional Support) and Instructional Learning Formats (formerly in Classroom Organization) have changed domains. Negative Climate is the third dimension in Classroom Organization; ILF is the first dimension in Instructional Support.

\*\*Dimension Change: Analysis and Problem Solving has been renamed Analysis and Inquiry.



## Robert C. Pianta

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### Education

Ph.D., Psychology, University of Minnesota, Minneapolis, MN, 1986  
M.A., Special Education, University of Connecticut, Storrs, CT, 1978  
B.S., Special Education, University of Connecticut, Storrs, CT, 1978

### Professional Positions

Dean, Curry School of Education, University of Virginia, Charlottesville, VA, 2007-present.  
Director, National Center for Research in Early Childhood Education, University of Virginia, Charlottesville, 2006-present.  
Director, Center for Advanced Study of Teaching and Learning, University of Virginia, 2005-present.  
Professor, Department of Psychology, College of Arts and Sciences, University of Virginia, 2005-present.  
Visiting Scholar, Bernerd School of Education, University of the Pacific, Stockton, CA, October 2005-June 2006.  
Professor, Department of Human Services, Curry School of Education, University of Virginia, 1997-present.  
Adjunct Professor, Stavanger University College, Stavanger, Norway, 2002-2006.  
Co-Principal Investigator, National Center for Early Development and Learning, 2001-present.  
Steering Committee, NICHD Study of Early Child Care, April 1994-present.  
Visiting Associate Professor, Institute of Child Development, University of Minnesota, 1993-1994.  
Associate Professor, Curry Programs in Clinical and School Psychology, Curry School of Education, University of Virginia, 1991-1997.  
Assistant Professor, Curry Programs in Clinical and School Psychology, Curry School of Education, University of Virginia, 1986-1991.  
Special Education Resource Teacher, Bloomfield Middle School, Bloomfield, CT, 1978-1981.  
Licensed Psychologist, Commonwealth of Virginia, 1988-2001.

### Honors and Awards

Fellow, AERA Class of 2011.  
Member, Advisory Board, *Parents Magazine*, 2008-present.  
2007 Distinguished Alumnus Award, Psychology in the Schools Training Program, University of Minnesota, Minneapolis, MN.  
Distinguished Guest Lecture Series in Early Childhood Education in China, Shanghai, China, April 2007.  
Panelist, *The Health of Democracy at Home and Abroad*, The Miller Center at the University of Virginia, Charlottesville, VA, September 30, 2006.  
2006 Harris Visiting Scholar, University of Minnesota, Minneapolis, MN, May 2006.  
100 Most Distinguished Alumni, College of Education and Human Development, University of Minnesota, Minneapolis, MN, 2006.  
Member, Board of Advisors, Early Education Initiative, New America Foundation, Washington, DC, 2005-2006.  
2004 ASHA Editor's Award, *American Journal of Speech Language Pathology*, American Speech-Language-Hearing Association.

## Robert C. Pianta

Novartis US Foundation Professor of Education, Curry School of Education, University of Virginia, 2003-present.

Outstanding Professor of the Year 2003, Curry School of Education, University of Virginia.

William Clay Parrish, Jr. Endowed Chair, Curry School of Education, University of Virginia, 2000-2003.

Best Article Award, *Journal of School Psychology*, Society for the Study of School Psychology, 2003.

AERA Review of Research Award, American Educational Research Association, April 2002.

Lucille E. Michie Award, Curry Programs in Clinical and School Psychology, University of Virginia, 2001.

Theodore D. Tjossem Memorial Lecture, Center for Human Development and Disability, University of Washington, 1997.

Sesquicentennial Award, Center for Advanced Study, University of Virginia, 1993-1994.

Fellow, Institute on Human Development and Psychopathology, Center for Advanced Study in the Behavioral Sciences, Palo Alto, CA, Summer 1990.

Graduate School Fellowship, University of Minnesota, 1981-1982, 1985-1986.

Eva O. Miller Fellowship, University of Minnesota, 1983-1984.

University Scholar, University of Connecticut, 1976-1978.

### Selected Funded Research Grants

Kinzie, M., & Pianta, R. (2012-2016). *Efficacy of MyTeachingPartner Math Science*. Washington, DC: U.S. Department of Education. \$3,498,767.

Pianta, R. C., & LoCasale-Crouch, J. (2011-2012). *New Designs for Teacher Preparation in PK-3*. Los Altos, CA: The David & Lucile Packard Foundation. \$50,000.

Pianta, R. C., & Hamre, B. (2011). *Measures of Effective Teaching Spring Re-Scoring*. Seattle, WA: Bill & Melinda Gates Foundation. \$47,874.

Pianta, R. C. (2011-2015). *Impact Evaluation of Teacher and Leader Evaluation Systems*. Washington, DC: American Institutes for Research. \$339,178.

Pianta, R. C., Downer, J., & Hamre, B. (2010-2015). *National Center on Quality Teaching and Learning*. University of Washington. \$1,651,745.

Williford, A. P., & Pianta, R. C. (2010-2014). *Examining the Efficacy of Banking Time*. Washington, DC: U.S. Department of Education. \$2,688,025.

Pianta, R. C. (2009-2012). *Child Care and Early Education Quality Features*. Princeton, NJ: Mathematica Policy Research. \$76,601.

Pianta, R. C. (2009-2011). *Improving Child Care Quality in Virginia: An Evolution of the Star Quality Initiative*. Washington, DC: U.S. Department of Health and Human Services Administration for Children and Families. \$49,871.

Pianta, R. C., & Hamre, B. (2008-2012). *Toward an Understanding of Classroom Context: A Validation Study*. Princeton, NJ: Educational Testing Service. \$69,060.

Pianta, R. C., Hamre, B., Downer, J., & Mashburn, A. (2007-2008). *Empirical and Theoretical Issues in Classroom Observation*. New York: W. T. Grant Foundation. \$200,000 direct costs.

Kinzie, M., & Pianta, R. C. (2007-2011). *Mathematics and Science for At-Risk Children*. Washington, DC: U.S. Department of Education. \$1,772,797 direct costs.

Pianta, R. C. (2006-2012). *National Center for Research on Early Childhood Education*. U.S. Department of Education. \$12,395,073.

Allen, J. P., & Pianta, R. C. (2006-2010). *Recasting the Secondary School Classroom as a Context for Positive Youth Development*. New York: W. T. Grant Foundation. \$1,251,445 direct costs.

Pianta, R. C., Justice, L., & Hamre, B. (2006-2010). *Education Research and Development Centers*. Washington, DC: U.S. Department of Education. \$8,443,000 direct costs.

Pianta, R. C. (2006-2007). *Appalachian Regional Educational Lab/CNAC*. Washington, DC: The CNA Corporation. \$191,466 direct costs.

Pianta, R. C. (2006-2007). *MyTeachingPartner Pilot in Greater Richmond*. Richmond, VA: United Way of Greater Richmond. \$36,245 direct costs.

Pianta, R. C. (2006-2007). *Professional Development Training and Evaluation in Wyoming Preschools*. Cheyenne, WY: Wyoming Department of Education. \$14,349 direct costs.

Pianta, R. C. (2006). *Early Educational Opportunities and Learning Outcomes in Virginia*. Richmond, VA: Virginia Department of Education. \$15,000 direct costs.



## Robert C. Pianta

- Pianta, R. C. (2005-2012). *Observational assessment of young children's competence*. Washington, DC: National Institute of Child Health and Human Development. \$1,662,543 direct costs.
- Justice, J., Pence, K., Wiggins, A., Rimm-Kaufman, S., Fan, X., & Pianta, R. C. (2005-2008). *Efficacy of Conversational Responsiveness Preschool Intervention*. Washington, DC: U. S. Department of Education, Institute of Education Sciences: Field-Initiated Evaluation Competition. \$1,400,000 direct costs.
- Pianta, R. C. (2004-2007). *Standardized classroom observations from pre-k to 3<sup>rd</sup> grade: A mechanism for improving classroom quality and practices, consistency of P-3 experiences, and child outcomes*. New York: Foundation for Child Development. \$200,000 direct costs.
- Justice, L., Kaderavek, J., Rimm-Kaufman, S., Fan, X., Invernizzi, M., & Pianta, R. C. (2005-2009). *Print referencing efficacy*. U.S. Department of Education, Institute of Educational Sciences: Reading Scale-Up Competition. \$2,299,967 direct costs. Co-Investigator.
- Pianta, R. C. (2005-2007). *The NICHD Study of Early Child Care and Youth Development. Phase IV*. U-10 HD 25449. \$596,309 direct costs.
- Pianta, R. C. (2005-2006). *Professional development training and evaluation in Wyoming preschools*. Wyoming Department of Education. \$33,900 direct costs.
- Pianta, R. C., & Hamre, B. (2004-2006). *APA/IES Postdoctoral Education Research Training Fellowship*. American Psychological Association, Washington, DC. \$110,000 direct costs.
- Pianta, R. C., Kinzie, M., Justice, L., Pullen, P., Fan, X., & Lloyd, J. (2003-2008). *Web Training: Pre-K Teachers, Literacy, and Relationships*. Effectiveness of Early Childhood Program, Curricula, and Interventions, National Institute of Child Health and Human Development. \$3,717,837 direct costs.
- Justice, L., Pianta, R. C., Rimm-Kaufman, S. (2003-2007). *Short- and long-term outcomes of the language-focused curriculum for Head Start children*. U.S. Department of Education, Institute of Educational Sciences. \$993,763 direct costs. Co-Investigator.
- Pianta, R. C. (2004-2006). *National Center for Early Development and Learning. State-Wide Early Education Program Study (SWEEP)*. Subcontract to the University of North Carolina—Chapel Hill. Office of Educational Research and Improvement, U.S. Department of Education. \$133,346 direct costs.
- Pianta, R. C. (2004-2005). *The NICHD Study of Early Child Care and Youth Development: Phase III*. U-10 HD 25449. \$3,219,000 direct costs.
- Pianta, R. C. (2001-2004). *National Center for Early Development and Learning*. Subcontract to the University of North Carolina—Chapel Hill. Office of Educational Research and Improvement, U.S. Department of Education. \$1,288,604 direct costs.
- Pianta, R. C. (1999-2004). *The NICHD Study of Early Child Care and Youth Development*. Extension of Cooperative Agreement U-10 HD 25449. \$3,219,000 direct costs.
- Pianta, R. C., Lloyd, J., Invernizzi, M., Justice, L., & Pullen, P. (2002-2003). *Pre-Kindergarten Curriculum: Literacy and Relationships*. Early Childhood Education and School Readiness Planning Grants, National Institutes of Health. \$125,000 direct costs.
- Turner, S., & Pianta, R. C. (2002-2003). *Virginia Schools and Students Longitudinal Micro Database*. Bankard Fund for Political Economy. \$18,605 direct costs.
- Rimm-Kaufman, S., Pianta, R. C., & La Paro, K. (2000-2002). *Effects of the Responsive Classroom Approach on children's school outcomes*. Northeast Foundation for Children. \$197,000.
- Lloyd, J., & Pianta, R. C. (1997-2002). *Studies on literacy skills and practices for high-risk four-year olds*. Co-Investigator, Subcontract to Center for Improvement in Early Reading Achievement, Office of Educational Research and Improvement. \$120,000/year direct costs.
- Pianta, R. C. (1996-2001). *Kindergarten Transitions Core*. Subcontract to National Center on Early Learning Development, University of North Carolina, Chapel Hill. Office of Educational Research and Improvement, U.S. Department of Education. \$671,013 total direct costs.
- Pianta, R. C. (1995-1999). *The NICHD Study of Early Child Care: Phase II*. Extension of Cooperative Agreement U-10 HD 25449. \$1,829,084 direct costs.
- Pianta, R. C. (1995). *The NICHD Study of Early Child Care*. Supplement to Cooperative Agreement U-10 HD 25449. \$237,992 direct costs.
- Pianta, R. C., & Marvin, R. S. (1992-1995). *Child-parent attachment and family relationships in young children with epilepsy*. National Institute for Disability and Rehabilitation Research. \$365,000 direct costs.

## Robert C. Pianta

- Marvin, R. S., & Pianta, R. C. (1990-1993). *Attachment in children with motor impairments*. National Institute of Health. \$526,000 direct costs.
- Pianta, R. C. (1990-1991). *Parental and family coping patterns and their relation to adjustment in children with epilepsy*. Epilepsy Foundation of America. \$16,810.
- Pianta, R. C. (1989-1990). *Mother-child interaction patterns and their relation to adjustment in children with epilepsy*. Epilepsy Foundation of America. \$24,635.
- Pianta, R. C. (1988-1992). *Training teachers to deal with children at risk for socioemotional and behavior problems*. Commonwealth Center for Research on Teaching, Curry School of Education, University of Virginia. \$40,000.
- Marvin, R. S., & Pianta, R. C. (1988). *Development of attachment in children with severe cerebral palsy*. University of Virginia Medical School Small Grant. \$8,000.

## SCHOLARSHIP

## Refereed and Reviewed Journal Articles

- Jamil, F., Downer, J., & Pianta, R. C. (in press). Associations of pre-service teachers' performance, personality, and beliefs with teacher self-efficacy at program completion. *Teacher Education Quarterly*.
- Cash, A. H., Hamre, B. K., Pianta, R. C., & Myers, S. S. (in press). Rater calibration when observational assessment occurs at large scale: Degree of calibration and characteristics of raters associated with calibration. *Early Childhood Research Quarterly*. doi:10.1016/j.ecresq.2011.12.006
- Hamre, B. K., & Pianta, R. C. (in press). Promoting young children's social competence through the preschool PATHS curriculum and MyTeachingPartner professional development resources. *Early Education and Development*.
- Sabol, T. J., & Pianta, R. C. (2012). Recent trends in research on teacher-child relationships. *Attachment and Human Development*, 14(3), 213-231. doi:10.1080/14616734.2012.672262.
- Burchinal, M., Field, S., López, M. L., Howes, C., & Pianta, R. (2012). Instruction in Spanish in pre-kindergarten classrooms and child outcomes for English language learners. *Early Childhood Research Quarterly*, 27, 188-197. doi:10.1016/j.ecresq.2011.11.003
- Downer, J. T., Lopez, M. L., Grimm, K., Hamagami, A., Pianta, R. C., & Howes, C. (2012). Observations of teacher-child interactions in classrooms serving Latinos and dual language learners: Applicability of the classroom assessment scoring system in diverse settings. *Early Childhood Research Quarterly*, 27, 21-32. doi:10.1016/j.ecresq.2011.07.005
- Downer, J. T., Pianta, R. C., Fan, X., Hamre, B. K., Mashburn, A., & Justice, L. (2012). Effects of web-mediated teacher professional development on the language and literacy skills of children enrolled in prekindergarten programs. *NHSA Dialog*, 14(4), 189-212.
- Hafen, C. A., Allen, J. P., Mikami, A. Y., Gregory, A., Hamre, B., & Pianta, R. C. (2012). The pivotal role of adolescent autonomy in secondary school classrooms. *Journal of Youth and Adolescence*, 41, 245-255. doi:10.1007/s10964-011-9739-2
- Hamre, B. K., Pianta, R. C., Burchinal, M., Field, S., LoCasale-Crouch, J. L., Downer, J. T., Howes, C., LaParo, K., & Scott-Little, C. (2012). A course on effective teacher-child interactions: Effects on teacher beliefs, knowledge, and observed practice. *American Educational Research Journal*, 49(1), 88-123. doi:10.3102/0002831211434596
- Koomen, H. M. Y., Verschueren, K., van Schooten, E., Jak, S., & Pianta, R. C. (2012). Validating the student-teacher relationship scale: Testing factor structure and measurement invariance across child gender and age in a Dutch sample. *Journal of School Psychology*, 50(2), 215-234. doi:10.1016/j.jsp.2011.09.001
- Sabol, T. J., & Pianta, R. C. (2012). Patterns of school readiness forecast achievement and socioemotional development at the end of elementary school. *Child Development*, 83(1), 282-299. doi:10.1111/j.1467-8624.2011.01678.x
- Driscoll, K., & Pianta, R. C. (2011). Mothers' and fathers' perceptions of conflict and closeness in parent-child relationships during early childhood. *Journal of Early Childhood & Infant Psychology*, (7), 1-24.
- Luckner, A. E., & Pianta, R. C. (2011). Teacher-student interactions in fifth grade classrooms: Relations with children's peer behavior. *Journal of Applied Developmental Psychology*, 32(5), 257-266.

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- Allen, J. P., Pianta, R. C., Gregory, A., Mikami, A. Y., & Lun, J. (2011). An interaction-based approach to enhancing secondary school instruction and student achievement. *Science*, 333(6045), 1034-1037. doi:10.1126/science.1207998
- Curby, T. W., Stuhlman, M., Grimm, K., Mashburn, A., Chomat-Mooney, L., Downer, J., . . . Pianta, R. C. (2011). Within-day variability in the quality of classroom interactions during third and fifth grade. *Elementary School Journal*, 112(1), 16-37. doi:10.1086/660682
- Driscoll, K. C., Mashburn, A. J., Wang, L., & Pianta, R. C. (2011). Fostering supportive Teacher–Child relationships: Intervention implementation in a state-funded preschool program. *Early Education and Development*, 22(4), 593-619. doi:10.1080/10409289.2010.502015
- Jacobson, L. A., Williford, A. P., & Pianta, R. C. (2011). Role of executive function in children's competent adjustment of middle school. *Child Neuropsychology*, 17(3), 255-280. doi:10.1080/09297049.2010.535654
- LoCasale-Crouch, J., Kraft-Sayre, M., Pianta, R. C., Hamre, B. K., Downer, J. T., Leach, A., . . . Scott-Little, C. (2011). Implementing an early childhood professional development course across 10 sites and 15 sections: Lessons learned. *NHSA Dialog*, 14(4), 275-292. doi:10.1080/15240754.2011.617527
- Luckner, A. E., & Pianta, R. C. (2011). Teacher student interactions in fifth grade classrooms: Relations with children's peer behavior. *Journal of Applied Developmental Psychology*, 32(5), 257-266. doi:10.1016/j.appdev.2011.02.010
- Mikami, A. Y., Gregory, A., Allen, J. P., Pianta, R. C., & Lun, J. (2011). Effects of a teacher professional development intervention on peer relationships in secondary classrooms. *School Psychology Review*, 40(3), 367-385.
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- Burchinal, M., Vandergrift, N., Pianta, R., & Mashburn, A. (2010). Threshold analysis of association between child care quality and child outcomes for low-income children in pre-kindergarten programs. *Early Childhood Research Quarterly*, 25(2), 166-176. doi:10.1016/j.ecresq.2009.10.004
- Chien, N. C., Howes, C., Burchinal, M., Pianta, R. C., Ritchie, S., Bryant, D. M., . . . Barbarin, O. A. (2010). Children's classroom engagement and school readiness gains in prekindergarten. *Child Development*, 81(5), 1534-1549. doi:10.1111/j.1467-8624.2010.01490.x
- Crosnoe, R., Leventhal, T., Wirth, R. J., Pierce, K. M., & Pianta, R. C. (2010). Family socioeconomic status and consistent environmental stimulation in early childhood. *Child Development*, 81(3), 972-987. doi:10.1111/j.1467-8624.2010.01446.x
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- Downer, J. T., Booren, L. M., Lima, O. K., Luckner, A. E., & Pianta, R. C. (2010). The individualized classroom assessment scoring system (inCLASS): Preliminary reliability and validity of a system for observing preschoolers' competence in classroom interactions. *Early Childhood Research Quarterly*, 25(1), 1-16. doi:10.1016/j.ecresq.2009.08.004
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- Downer, J. T., Kraft-Sayre, M., & Pianta, R. C. (2009). Ongoing, web-mediated professional development focused on teacher-child interactions: Early childhood educators' usage rates and self-reported satisfaction. *Early Education and Development, 20*(2), 321-345. doi:10.1080/10409280802595425
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Note that individual investigators' names appear only on a corporate-author banner. Papers listed are a subset of the total number of corporate papers for which Pianta had a substantial role in producing the manuscript according to Steering Committee policy.

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- Pianta, R. C. (2003, Winter). The transition to school: A focus on children, families, schools, and communities. *Focus on Pre-K and K*, 16(2), 1-8.
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- Stuhlman, M. W., Hamre, B., & Pianta, R. (2002). Advancing the teen/teacher connection. *Education Digest*, 68(3), 15-17.
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### Dissertation

- Pianta, R. C. (1986). *The longitudinal effects of stressful maternal life events and conditions on the developmental outcomes of a high risk sample in the first grade*. (Doctoral dissertation, University of Minnesota, Department of Psychology).

### Measures and Materials

- Pianta, R. C., La Paro, K., & Hamre, B. (2008). *Classroom Assessment Scoring System—PreK [CLASS]*. Baltimore: Brookes Publishing.
- Pianta, R. C., La Paro, K., & Hamre, B. (2008). *Classroom Assessment Scoring System—K-3 [CLASS]*. Baltimore: Brookes Publishing.
- Pianta, R. C., and Hamre, B. (2001). *Students, Teachers, and Relationship Support [STARS]: User's Guide*. Lutz, FL: Psychological Assessment Resources, Inc.
- Pianta, R. C. (2001). *Student-Teacher Relationship Scale*. Lutz, FL: Psychological Assessment Resources, Inc.
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- Pianta, R. C., & Kraft-Sayre, M. E. (2000). *A program for enhancing the transition to kindergarten: Linking families, schools, and children*. The National Center for Early Development and Learning, University of North Carolina—Chapel Hill, NC.
- Pianta, R. C., Bunosky, L., Fitz, M., Hamre, B., Kraft-Sayre, M., & Steinberg, D. R. (1999). *Teacher relationship interview coding manual*. Charlottesville, VA: University of Virginia.
- Pianta, R. C. (1997). *The Teacher Relationship Interview*. Unpublished measure, University of Virginia, Charlottesville, VA.
- Pianta, R. C., & Marvin, R. S. (1993). *Manual for Classification of the Reaction to Diagnosis Interview*. Child-Parent Attachment Project, University of Virginia, Charlottesville, VA.
- Pianta, R. C. (1992). *Child-Parent Relationship Scale*. Unpublished measure, University of Virginia, Charlottesville, VA.
- Pianta, R. C., & Marvin, R. S. (1992). *The Reaction to Diagnosis Interview*. Child-Parent Attachment Project, University of Virginia.

### Special Issues of Journals Edited

- Developmental perspectives on school outcomes for risk and non-risk populations. (1997). Special Issue of the *Journal of School Psychology*, 35(1).
- Developmental perspectives and the practice of school psychology. (1996). Special Issue of the *Journal of School Psychology*, 34(3).
- Beyond the parent: The role of other adults in children's lives. (1992). *New Directions in Child Development*, Vol. 57. San Francisco: Jossey-Bass.

### Selected Presentations/Conferences

- Pianta, R. C. (2012, June). *Design of 21st century school model*. Bahcesehir University, Istanbul, Turkey.
- Pianta, R. C. (2012, June). *Experience-based brain and biological development program*. Canadian

- Institute for Advanced Research, Alton, Ontario.
- Pianta, R. C. (2012, June). Invitee: *Early learning roundtable*. U.S. Department of Education, Washington, DC.
- Pianta, R. C. (2012, April). *Building the relational capacity of early care and education*. Zero to Three Conference, Washington, DC.
- Pianta, R. C. (2012, March). William C. Friday Distinguished Lecture: *Improving impacts of classrooms: Professional development and classroom observation*. University of North Carolina at Chapel Hill.
- Pianta, R. C. (2012, March). *What does it take to improve quality and impact of early care and education?* Educare Learning Network meeting, Kansas City, MO.
- Pianta, R. C. (2012, March). Panelist: *Observations and teacher effectiveness, Multiple measures of effective teaching*. SREE Spring 2012 Conference, Washington, DC.
- Pianta, R. C. (2011, November). One size can't fit all—Developing smart policies to evaluate pre-K-3 teacher effectiveness. *Pre-K Now Webinar*.
- Pianta, R. C. (2011, May). Keynote: *What do we know about quality? What works to improve quality and produce better child outcomes?* National Smart Start Conference, Greensboro, NC.
- Pianta, R. C. (2011, April). *Using observation to improve teaching and learning*, Inaugural Symposium, University of Virginia, Charlottesville, VA.
- Pianta, R. C. (2011, April). Discussant and Presenter, *Changing classroom processes and practices to improve outcomes for students: Intervention strategies and outcomes; Interplay between biological and behavioral reactivity and social experiences across different school contexts; Effective approaches for improving quality and school readiness*, Society for Research in Child Development Conference, Montreal, Canada.
- Pianta, R. C. (2011, April). *Recalibrating professional development for teacher success*, *Education Week Webinar*.
- Pianta, R. C. (2011, March). *Frameworks for using QRIS data to improve quality: Systems, program and alignment*, 2011 National QRIS Conference, Washington, DC. Also presented at Florida Early Learning Advisory Council meeting, Tampa, FL, June 2011.
- Pianta, R. C. (2011, March). *Building better teachers: Academic, social, and emotional benefits of positive student-teacher interaction*. Atlanta Speech School, Atlanta, GA.
- Pianta, R. C. (2011, March). *Access and quality: Ensuring impacts of investments in early education and care*. First 5 California and the Water Cooler Joint Conference on Early Learning, Research, Practice, and Policy. Consultant to First 5 California, Sacramento, CA. Also presented at University of Pennsylvania, Philadelphia, PA, January 2011.
- Pianta, R. C. (2011, February). *Improving impacts of classrooms: Professional development and classroom observation*, NASP Convention-Distinguished Lecture, San Francisco, CA.
- Pianta, R. C. (2011, February). *Building better teachers: Transforming P-12 education*, Head Start Summit, Baltimore, MD.
- Pianta, R. C. (2011, January). *Using standardized observation to measure and improve teacher effectiveness*, U.S. Department of Education, Washington, DC.
- Pianta, R. C., & Allen J. P. (2010, December). *My Teaching Partner: Impacts and classroom practices and students*, William T. Grant Foundation Intervention Grantees Meeting, Washington, DC.
- Pianta, R. C. (2010, November). *National Center for Research on Early Childhood Education findings*. Fifth Annual Leadership Symposium, National Center for Research on Early Childhood Education, Arlington, VA.
- Pianta, R. C. (2010, October). Co-Chair, National Expert Panel: *The importance of integrating developmental sciences knowledge into educator preparation curriculum*. NCATE Developmental Sciences Briefing, Washington, DC.
- Pianta, R. C. (2010, August). *Building an effective early education system: High-quality classrooms and supportive transitions*, The University of Tokyo, Tokyo, Japan.
- Pianta, R. C. (2010, July). Panelist: *The state of pre-K research: Advances made and unanswered questions*. Partner Network Meeting, Pre-K Now, Washington, DC.
- Pianta, R. C. (2010, July). *Access to quality: The key issue in ensuring impacts of early childhood education and care investments*. Birth to Five Policy Alliance National Meeting, Denver, CO.
- Pianta, R. C. (2010, June). *Caregivers and children: Understanding relationships, understanding development*. Head Start's Tenth National Research Conference, Washington, DC.
- Pianta, R. C. (2010, May). *Quality and impacts of pre-K: Observing and improving teacher-child interactions*. The Texas School Ready! Summit, Children's Learning Institute, Austin, TX.

## Robert C. Pianta

- Pianta, R. C. (2010, April). *Classroom observation at scale: Classroom Assessment Scoring System (CLASS)*. Teacher Evaluation Working Group, The Parthenon Group, Memphis, TN.
- Pianta, R. C. (2010, April). Barbara Lemann Lecture: *Improving impacts of classrooms: Professional development and classroom observation*. Tulane University Health Sciences Center, New Orleans, LA. Also presented at The Institute for Research on Education Policy & Practice Colloquium, Stanford University School of Education, Stanford, CA; Bank Street College of Education, New York, NY, February 2009; New York University Proseminar, New York, NY, September 2009; Center for Developmental Science, University of North Carolina at Chapel Hill, October 2010; Georgia State University, Atlanta, GA, October 2010; American Psychological Association Division 15 - Educational Psychology Program, Washington, DC, August 2011; and Rutgers Edward J. Bloustein School of Planning and Public Policy, New Brunswick, NJ, November 2011.
- Pianta, R. C. (2010, March/April). Discussant and Presenter, *Coaching and coursework impacts on preschool teachers' interactions with children*, Society for Research in Child Development Conference, Montreal, Canada.
- Pianta, R. C. (2010, February). Keynote: *Improving classroom impact*. Association Montessori International – USA, Jacksonville, FL.
- Pianta, R. C. (2009, December). *Standardized observation and improvement of teacher-child interactions: CLASS and MyTeachingPartner*. National Summit on the Science of Professional Development in Early Childhood Education, Georgetown University, Washington, DC.
- Pianta, R. C., & Comer, J. (2009, November). National Expert Panelist, *The lack of application of child and adolescent development knowledge and how this hinders student learning in schools*, NCATE/FCD, Washington, DC.
- Pianta, R. C. (2009, November). *Classroom experiences and learning outcomes for DLL students: An agenda for educators, practitioners, and policymakers*, National Center for Research on Early Childhood Education, Arlington, VA.
- Pianta, R. C. (2009, November). *Standardized observation of teachers' interactions with children: The Classroom Assessment Scoring System; Improving the quality and impact of teacher-child interactions: MyTeachingPartner, The Initiative for Applied Education Research*, Jerusalem, Israel.
- Pianta, R. C. (2009, October). *Impact of high-quality Pre-K on longer term outcomes and school systems*. First Five Years Fund Panel Discussion, Washington, DC.
- Pianta, R. C. (2009, October). Panelist and Discussant: *How has/should a developmental perspective inform the field of prevention science?* 36th Minnesota Symposium on Child Psychology, Minneapolis, MN.
- Pianta, R. C. (2009, February). *Kids & teachers: What makes for success in school*, Venable PTO, Charlottesville, VA.
- Pianta, R. C. (2008, December). *Making the most of early learning: Children and teachers in the classroom*, National Conference of State Legislatures, Atlanta, GA.
- Pianta, R. C., Burchinal, M., Hamre, B., & Meisels, S. (2008, November). *Enhancing the quality of teacher-child interactions and their effects on children's learning*, NAEYC Conference, Dallas, TX.
- Pianta, R. C. (2008, November). *Instructional, organizational, and emotional support for achievement*, Education Trust Conference, Washington, DC.
- Pianta, R. C., & Bowman, B. (2008, November). *Effective professional development with early education teachers preK-3*, Institute on Pre-K, Harvard University, Boston, MA.
- Pianta, R. C. (2008, November). *Looking inside classrooms: What do we know about quality teaching?* Education Policy Initiative, University of Michigan, Ann Arbor, MI.
- Pianta, R. C. (2008, October). Expert Panelist, *Evolution of teaching*, NASBE Annual Conference, Arlington, VA.
- Pianta, R. C. (2008, October). *Increasing the application of knowledge about child and adolescent development and learning in educator preparation*, NCATE/FCD National Expert Panel, Arlington, VA.
- Pianta, R. C. (2008, October). Presenter and Expert Panelist, *Strategies for professional development of the early childhood workforce: What are we learning from research?*, A Working Meeting on Recent School Readiness Research: Guiding the Synthesis of Early Childhood Research, NCATE, Washington, DC.
- Pianta, R. C. (2008, September). Panelist, Connecticut Governor's Forum: *Linking ready kids to ready schools*, Hartford, CT.
- Pianta, R. C. (2008, June). *Outcomes and accountability in pre-K: Understand the debate*, ECE Teach for

- America Webinar.
- Pianta, R. C., & Downer, J. (2008, June). *Improving the quality of teacher-child interactions through focused observation and consultation: MyTeachingPartner*. National Association for the Education of Young Children, New Orleans, LA.
- Pianta, R. C., & Downer, J. (2008, June). *Improving the quality of teacher-child interactions through focused observation and consultation: MyTeachingPartner*. National Association for the Education of Young Children, New Orleans, LA.
- Pianta, R. C. (2008, June). *Classroom interactions, credentials, and child outcomes: Improving early education*, Head Start's Ninth National Research Conference, Washington, DC.
- Pianta, R. C. (2008, May). National Expert Panel for NCATE, *Increasing the application of knowledge about child and adolescent development in educator preparation programs*, Washington, DC.
- Pianta, R. C., & Hamre K. (2008, May). *Conceptualization, measurement, and improvement of classroom processes: Standardized observation as a metric for teacher quality and effectiveness*, Conference on Teacher Quality, Northwestern University, Evanston, IL.
- Pianta, R. C. (2008, April). *Opportunity in early education: Improving the quality of teacher-child interactions through classroom observation and professional development*, University of Nebraska, Lincoln, NE.
- Pianta, R. C. (2008, April). Keynote: *How can we improve child outcomes in Head Start through teacher-child relationships?* National Head Start Association, Nashville, TN.
- Pianta, R. C. (2008, April). *The value of teacher/child relationships in improving child outcomes*. National Head Start Association Conference, Nashville, TN.
- Pianta, R. C. (2008, March). Roundtable discussion, *Identifying thresholds of preschool quality that maximize children's development*, SREE, Crystal City, VA.
- Douglas, K., Roller, C., & Pianta, R. (2008, March). *The science of observing child-teacher interactions in PK-3<sup>rd</sup> grade classrooms*. American Educational Research Association, New York, NY.
- Henry, A., Mashburn, A., Grimm, K., & Pianta, R. (2008, March). *Identifying thresholds of preschool quality that maximize children's development*. Poster/roundtable discussion. Annual Research Conference, Society for Research on Educational Effectiveness, Crystal City, VA.
- Pianta, R. (2008, January). *Developing the next wave of quality measures for early childhood and school-age programs*. Presenter/Panelist, Office of Planning, Research and Evaluation and the Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services, Washington, DC.
- Pianta, R. (2007, December). *School readiness and the transition to kindergarten in the era of accountability*. Faculty Author Series, University of Virginia, Colonnade Club, Charlottesville, VA.
- Pianta, R. (2007, November). *School readiness and the transition to kindergarten*. Charlottesville Preschool, Charlottesville, VA.
- Meisels, S., Pianta, R., Jones, J., & Moore, M. (2007, November). *How assessment and standards can support states' learning goals for young children*. NAEYC 2007 Annual Conference & Expo, Chicago, IL.
- Pianta, R., (2007, September). Participant, Wingspread Conference, *Using research to improve outcomes for young children: Challenges, strategies, and effective action*. Sponsored by The Johnson Foundation, NAEYC, and SRCD, Racine, WI.
- Pianta, R. (2007, September). *Making early education opportunities work for kids and teachers: Professional development and classroom observation*. Minnesota State Department of Education, Minneapolis, MN.
- Pianta, R. (2007, September). *How can research and practice in school psychology matter for helping students and teachers?* 2007 Distinguished Alumni Presentation, University of Minnesota, Minneapolis, MN.
- Pianta, R. (2007, September). *Quality in early care and education: It's all about relationships*. McEvoy Lecture, University of Minnesota, Minneapolis, MN.
- Pianta, R. (2007, July). *Making early education opportunities work for kids and teachers: Professional development and classroom observation*. International Attachment Conference, Braga, Portugal.
- Pianta, R. (2007, July). *Covering pre-k: Finding stories that truly matter*. Harold W. McGraw Jr. Annual Seminar for Reports New to the Education Beat, Hechinger Institute on Education and the Media, New York, NY.
- Pianta, R. (2007, July). *Effects of web-mediated professional development*. School Reform and Beyond

- Design Conference, Ann Arbor, MI.
- Pianta, R. (2007, June). *Aligning children's development with teacher competencies*. The Governor's Early Childhood Summit: Aligning the Continuum of Early Childhood Development, Richmond, VA.
- Pianta, R. (2007, May). Keynote: *Conversations to make the most of early childhood education*. Ready at Five Partnership School Readiness Symposium, Columbia, MD.
- Pianta, R. (2007, April). Distinguished Guest Lecture Series, East China Normal University, Shanghai, China.
- Lima, Olivia, Downer, J., Pianta, R., Houlihan, E., & Hamre, B. (2007, March). *Observational assessment of children in a preschool environment*. Poster, Society for Research in Child Development, 2007 Biennial Meeting, Boston, MA.
- Downer, J., Hamre, B., Pianta, R., & Hadden, S. (2007, March). *Predicting the quality of teacher-child interactions in pre-kindergarten classrooms: Patterns across activity settings*. Poster, Society for Research in Child Development, 2007 Biennial Meeting, Boston, MA.
- Mashburn, A., Pianta, R., Downer, J., & Hamre, B. (2007, March). *MyTeachingPartner: Effects of a web-based intervention to improve teacher quality*. Poster symposium, Society for Research in Child Development, 2007 Biennial Meeting, Boston, MA.
- Jerome, E. M., Hamre, B. K., & Pianta, R. C. (2007, March). *Teacher-child relationships from kindergarten to sixth grade: Trajectories of conflict and closeness*. Student poster symposium, Society for Research in Child Development, 2007 Biennial Meeting, Boston, MA.
- Hamre, B. K., & Pianta, R. C. (2007, March). *Growth models of classroom quality over the course of the year in preschool programs*. Paper symposium, Society for Research in Child Development, 2007 Biennial Meeting, Boston, MA.
- Driscoll, K., & Pianta, R. (2007, March). *Banking time in Head Start: Effectiveness of an intervention designed to promote supportive teacher-child relationships*. Poster, Society for Research in Child Development, 2007 Biennial Meeting, Boston, MA.
- Wilson, H. K., Pianta, R. C., & Stuhlman, M. W. (2007, March). *The role of classroom climate in the development of social competencies in the first grade*. Poster, Society for Research in Child Development, 2007 Biennial Meeting, Boston, MA.
- Mashburn, A., Hamre, B., Pianta, R., & Downer, J. (2007, March). *Three dimensions of child-teacher interactions in PK-third grade classrooms*. Paper symposium, Society for Research in Child Development, 2007 Biennial Meeting, Boston, MA.
- Pianta, R., & Hamre, B. (2007, March). *Using web-based feedback to improve teacher-child interactions in pre-kindergarten*. Paper symposium, Society for Research in Child Development, 2007 Biennial Meeting, Boston, MA.
- Jacobson, L., & Pianta, R. (2007, March). *Executive function skills and children's academic and social adjustment to middle school*. Poster, Society for Research in Child Development, 2007 Biennial Meeting, Boston, MA.
- LoCasale-Crouch, J., & Pianta, R. C. (2007, March). *Systemic, standardized observation in early childhood teacher development*. Paper symposium, Society for Research in Child Development, 2007 Biennial Meeting, Boston, MA.
- Pianta, R. C. (2007, February). *Using classroom observations to assess the quality of teacher-student interactions*. Classroom Measurement Meeting, sponsored by The Spencer Foundation & W. T. Grant Foundation, Chicago, IL.
- Pianta, R. C. (2007, January). *Making early education opportunities work for kids and teachers: Professional development and classroom observation*. Great Expectations Conference, sponsored by the Chicago Metro AEYC and the Erikson Institute, Chicago, IL.
- Pianta, R. C. (2007, January). *Quality issues in early childhood teacher preparation*. Faculty Forum: Early Childhood Quality Network and Ohio Department of Education, Columbus, OH.
- Pianta, R. C. (2006, November). *NAECS/SDE: Making early education opportunities work for kids and teachers: Professional development and observation*. NAEYC Annual Conference, Atlanta, GA.
- Pianta, R. C. (2006, November). *Updates from the Interagency School Readiness Consortium: Lessons learned about providing professional development*. NAEYC Annual Conference, Atlanta, GA.
- Pianta, R. C. (2006, November). *Ready schools: Transition practices and quality classrooms*. Pre-kindergarten Staff Development Day, Norfolk, VA. Sponsored by United Way of South Hampton Roads, Norfolk Public Schools, and Smart Beginnings South Hampton Roads Coalition.



- Pianta, R. C. (2006, September). Invited panelist, *The health of democracy at home and abroad*, The Miller Center and the University of Virginia, Charlottesville, VA.
- Pianta, R. C. (2006, June). *Observing interactions in classrooms: Experiences from two national-level studies*. National Children's Study Federal Advisory Committee Meeting, Bethesda, MD.
- Pianta, R. C. (2006, May). *Transition planning and ready schools: Frameworks, policies, and practices for connecting families, programs, and schools*. Milwaukee United for Successful Transitions. Milwaukee Public Schools, Milwaukee, WI.
- Konold, T. R., & Pianta, R. C. (2006, April). *Measuring method variance in child behavior observations: A comparison of mothers, fathers, and teachers*. American Educational Research Association (Division E), San Francisco, CA.
- Pianta, R. C. (2006, April). *Enhancing the transition to kindergarten: Linking children, families, and schools*. Fairfax Future: Investing in School Readiness, Fairfax, VA.
- Pianta, R. C. (2006, January). *Observations in classrooms: Implications and outcomes*. National Association of State Boards of Education, Alexandria, VA.
- Pianta, R. C. (2006, January). *Going to kindergarten: Key skills and experiences*. Success by 6 Summit, Coalition of the Shenandoah Valley, James Madison University, Harrisonburg, VA.
- Pianta, R. C. (2005, November). *Kids and teachers: The ingredients of success in school*. Florida Educational Research Association, Miami, FL.
- Pianta, R. C. (2005, October). *Ready schools: Transition practices and quality classrooms*. Indiana Institute on Disability and Community / Early Childhood Center, Indiana University, Indianapolis, IN.
- Pianta, R. C. (2005, May). Keynote, Workshop Leader: *Ready schools: Transition practices and quality classrooms*, Massachusetts Department of Education, Marlboro, MA.
- Pianta, R. C. (2005, April). Discussant, Paper Symposium: *Kindergarten experiences and early academic trajectories: New evidence from the ECLS-K*. Society for Research in Child Development, 2005 Biennial Meeting, Atlanta, GA.
- Pianta, R. C. (2005, April). Chair, Paper Symposium: *What can the study of schools and schooling contribute to understanding development and how it can be studied?* Society for Research in Child Development, 2005 Biennial Meeting, Atlanta, GA.
- Pianta, R. C. (2005, April). Co-author, Paper Symposium: *State prekindergarten systems: Linking policies, implementation, quality, and child outcomes*. Society for Research in Child Development, 2005 Biennial Meeting, Atlanta, GA.
- Pianta, R. C. (2005, April). Participant, Discussion Hour: *Overcoming obstacles in conducting school-based research*. Society for Research in Child Development, 2005 Biennial Meeting, Atlanta, GA.
- Pianta, R. C. (2005, April). Co-author, Paper Symposium: *Early child care and children's development in the primary grades: Results from three large longitudinal studies*. Society for Research in Child Development, 2005 Biennial Meeting, Atlanta, GA.
- Pianta, R. C. (2005, April). Discussant, Paper Symposium: *Antecedents of the early teacher-child relationship*. Society for Research in Child Development, 2005 Biennial Meeting, Atlanta, GA.
- Pianta, R. C. (2005, April). Co-author, Poster Session: *Classroom process and early achievement*. Society for Research in Child Development, 2005 Biennial Meeting, Atlanta, GA.
- Early, D., Bryant, D., Howes, C., Burchinal, M., Pianta, R., Clifford, R., & Barbarin, O. (2005, April). Paper Symposium: *Ready to learn? Predictors of children's gains in pre-kindergarten programs and the implications for policy*. Society for Research in Child Development, Atlanta, GA.
- Downer, J., La Paro, K., Rimm-Kaufman, S., & Pianta, R. (2005, April). Poster: *Teacher-child behaviors in the kindergarten classroom: A two-level analysis*. Society for Research in Child Development, Atlanta, GA.
- Pianta, R. C. (2005, March). *Kids and teachers: What makes for success in school?*, Engaging the Mind, UVA's Statewide Community Lecture Series, University of Virginia, Charlottesville, VA.
- Pianta, R. (2004, November). *What's going on in pre-k and primary grade classrooms?* The Pew Seminar on Coverage of Early Childhood Education, Hechinger Institute on Education and the Media, Columbia University, Singer Island, FL.
- Pianta, R. C. (2004, November). *School as context for development: Readiness and relationships*. The School Readiness Conference, Family Life Project, University of North Carolina at Chapel Hill.
- Pianta, R. C. (2004, June). *NCEDL's multi-state study of pre-kindergarten: Characteristics, quality, & practices*. Head Start's 7th National Research Conference, Washington, DC.
- Pianta, R. C. (2004, April). *Ready schools: The transition to school and quality of experiences in K-12*



- classrooms*. NIH Human Development Conference, Fairfax, VA.
- Pianta, R. C. (2004, March). *Research on child-teacher relationships, classroom process, and observation: Toward aligning accountability, professional development, and access to quality*. School of Education, University of Wisconsin, Madison, WI.
- Pianta, R. C. (2004, February). *Going to kindergarten: Transition models and practices*. Transition Forum, Child and Family Policy Center, Association for Children of New Jersey, New Jersey Education Association, and the New Jersey Department of Education, Rutgers University, NJ.
- Pianta, R. (2004, February). *Conceptualizing and assessing readiness from both sides: What we know about children and classrooms at entry to school*. Panel member, presenter. American Association for the Advancement of Science, Seattle, WA.
- Pianta, R. (2004, January). *Children's experiences in pre-k, kindergarten, and early elementary classrooms*. National Association of State Boards of Education, Alexandria, VA.
- Pianta, R. C. (2003, November). *Going to kindergarten: Transition models and practices*. University of Western Sydney, Sydney, Australia.
- Pianta, R. C. (2003, October). *Social and relational processes in elementary school classrooms*. Center for Children, Relationship, and Culture. University of Maryland, College Park, MD.
- Pianta, R. C. (2003, October). *Social and relational processes in elementary school classrooms*. Human Development and Psychology, Graduate School of Education, Harvard University, Cambridge, MA.
- Pianta, R. C. (2003, May). *Enhancing the transition to kindergarten: Linking children, families, and schools*. Keynote address. Responsive Full-Day Kindergartens: Preparing for Children and Families, Massachusetts Department of Education, Marlboro, MA.
- Pianta, R. C. (2003, May). *Going to kindergarten: Transition models and practices and quality of classroom settings*. Fourth National Meeting of the School Readiness Indicators Initiative, Kansas City, MO.
- Pianta, R. C. (2003, May). *Observing in early educational classrooms: Lessons for policy, educational research, and the future of professional development*. Northwestern University, Evanston, IL.
- Pianta, R. C. (2003, May). *Quality of teacher-child relationships: The implications of observational research for re-designing professional development*. Spring Scientific Meeting: Relationship-based child care; What we know and what we need to know. Zero to Three: National Center for Infants, Toddlers and Families, Washington, DC.
- Pianta, R. C. (2003, April). *Large-scale observations of first and third grade classrooms: What kids and teachers do and whether it relates to teachers' credentials and experience*. Curry Spring Speaker Series on Risk and Prevention, Curry School of Education, University of Virginia, Charlottesville, VA.
- Pianta, R. (2003, April). *Starting school from low-income homes*. Discussant. Society for Research on Child Development, Tampa, FL.
- Pianta, R., & Early, D. (2003, April). *Preschool teachers and classrooms: Results from the National Center for Early Development and Learning Six-State Study*. The Child-Care Workforce. Society for Research on Child Development, Tampa, FL.
- Wiechel, J., Pianta, R., Hughes, K., Espinosa, L., & Egertson, H. (2002, November). *Kindergarten: Gate or gateway?* President's Seminar, National Association for the Education of Young Children, New York, NY.
- Bryant, D., Clifford, R., Early, D., Pianta, R., Ritchie, S., Trammel, C., Hawley, S., French, A., Gallagher, C., Denno, D., & Henderson, K. (2002, November). *What is Pre-K? Preliminary findings from a six state pre-kindergarten study*. National Association for the Education of Young Children, New York, NY.
- Pianta, R. C. (2002, October). *Experiences in P-3 classrooms: The implications of observational research for redesigning early education*. Foundation for Child Development, New York, NY.
- Pianta, R. C. (2002, September). *Research that matters for children and families: Interdisciplinary, large-scale long-term studies in community-based settings*. Texas A&M University, College Station, TX.
- Pianta, R. C. (2002, April). *Validity and value of research on the transition of children into kindergarten—What parents need to know*. Symposium presented at the American Educational Research Association, New Orleans, LA.
- Pianta, R. C. (2002, March). *Transition to school: Building links among families, schools, and communities*. Maryland Department of Education, Howard County, MD.
- Pianta, R. C. (2002, March). *It's about child care and so much more....* Congressional Briefing: The Congressional Child Care Caucus. Consultant to the Society for Research in Child Development and

- the American Psychological Association, Washington, DC.
- Pianta, R. C. (2001, September). *Relationships between teachers and children: Effects on child outcomes and implications for research, practice, and policy*. Department of Psychology, University of South Carolina, Columbia, SC.
- Pianta, R. C. (2001, August). *Early teacher-child relationships and children's social and academic performance through eighth grade*. Xth European Conference on Developmental Psychology, Uppsala, Sweden.
- Pianta, R. C., & Friedman, S. (2001, June). *The NICHD Study of Early Child Care: Findings and discussion*. NAEYC's 10<sup>th</sup> Annual Conference: National Institute for Early Childhood Professional Development, Washington, DC.
- Pianta, R. C. (2001, May). *Social, emotional, and cognitive school readiness*. Congressional Briefing: The Congressional Child Care Caucus, "Early childhood care and education: What policymakers need to know," Consultant to the Society for Research in Child Development and the American Psychological Association, Washington, DC.
- Pianta, R. C. (2001, May). *Enhancing relationships between teachers and children*. Central Virginia Association for the Education of Young Children, Charlottesville, VA.
- Pianta, R. C. (2001, May). *Transition to school: Building links among families, schools, and communities*. Presentation at the Annual Innovative strategies for All Young Children Conference, Curry School of Education, University of Virginia, Charlottesville, VA.
- Pianta, R. C. (2001, April). *What large-scale surveys can and cannot tell us about education policy issues*. Panel discussant, Symposium, Annual meeting of American Educational Research Association, Seattle, WA.
- NICHD Early Child Care Research Network. (2001, April). *Experiences in first grade classrooms: The other side of school readiness*. Paper presented at the biennial meeting of the Society for Research in Child Development, Minneapolis, MN (Pianta presenter).
- Stuhlman, M., & Pianta, R. C. (2001, April). *Assessing teacher child relationships through narratives: Associations with behaviors in the classroom*. Paper presented at the biennial meeting of the Society for Research on Child Development, Minneapolis, MN.
- Pianta, R. C. (2001, April). *Longitudinal studies of competence and educational outcomes*. Paper presented at the biennial meeting of the Society for Research on Child Development, Minneapolis, MN.
- Pianta, R. C. (2001, April). *The other side of school readiness: Observations in first grade classrooms in the NICHD Study of Early Child Care*. Paper presented at the biennial meeting of the Society for Research on Child Development, Minneapolis, MN.
- Pianta, R. C. (2001, February). *Relationships between children and teachers in elementary school: Assessment and prediction of children's academic and social outcomes*. University of Minnesota, Minneapolis, MN.
- Pianta, R. C. (2000, December). *Research on readiness and the transition to school*. Pennsylvania State University, Harrisburg, PA.
- Pianta, R. C. (2000, October). *Social processes in early education: Relationships between children and teachers*. Colloquium offered at the University of Delaware, Newark, DE.
- Stuhlman, M., & Pianta, R. (2000, June). *A narrative approach to assessing child-teacher relationships: Associations with behavior in classrooms*. A poster presented at the Ninth Annual Conference of NAEYC's National Institute for Early Childhood Professional Development, San Francisco, CA.
- Pianta, R. C. (2000, June). *Bringing the study of teachers and classrooms to prevention science*. Roundtable discussion at Annual Meeting of the Society for Prevention Research, Montreal, Canada.
- Pianta, R. C. (2000, February). *Schools that work for all children: Relationships and resilience*. Keynote speaker, The Twelfth Collaborative Conference for Special Education, Courage to Risk, Colorado Springs, CO.
- Lloyd, J. W., Pianta, R. C., Lundren, K., & Burgess, K. (1999, December). *Predicting phonemic awareness in kindergarten: teachers' ratings of children's skills in preschool*. Paper presented at National Reading Conference, Orlando, FL.
- Pianta, R. C. (1999, November). *Social processes in early education: Relationships between teachers and children*. Colloquium offered at the University of North Carolina at Chapel Hill, School of Education.
- Sheeran, T., Marvin, R. S., & Pianta, R. C. (1999, August). *Mental models of marital relationships:*

- Evaluating the spouse relationship interview.* Poster presented at the American Psychological Association Annual Convention, Boston, MA.
- NICHD Early Child Care Research Network. (1999, August). *Child care and cognitive and socioemotional development through the preschool years.* Paper presented at the American Psychological Association Annual Convention, Boston, MA.
- Pianta, R. C. (1999, August). *Promoting literacy before and after school entry: Classroom activities and transition practices.* Presentation at American Psychological Association Annual Convention, Boston, MA.
- Pianta, R., Rimm-Kaufman, S., Sayre, M., La Paro, K., & Hamre, B. (1999, June). *Research studies on the transition to kindergarten.* Poster presented at the Annual Project Directors' Meeting, NIECDE, Washington, DC.
- Weiss, K. L., Pianta, R. C., & Marvin, R. S. (1999, April). *Patterns of family adaptation to childhood chronic illness.* Poster presented at the Seventh Florida Conference on Child Health Psychology, Gainesville, FL.
- Burgess, K., Lundgren, K., Lloyd, J., & Pianta, R. C. (1998, December). *Literacy instruction for at-risk preschoolers: Self-reported teacher beliefs and practices.* Paper presented at the National Reading Conference, Austin, TX.
- Rimm-Kaufman, S. E., & Pianta, R. C. (1998, July). *Differences in family involvement between kindergarten and preschool.* Poster presented at Head Start's Fourth National Research Conference. Washington, DC.
- Pianta, R. C. (1998, April). *A national perspective on entry to school: The National Center for Early Development and Learning's Transition Practices Survey.* Symposium presented at the American Educational Research Association Annual Meeting, San Diego.
- Rimm-Kaufman, S., Pianta, R. C., & Cox, M. J. (1998, April). *Teacher judgments of success in the transition to kindergarten.* Paper presented at the American Educational Research Association Annual Meeting, San Diego.
- Early, D., & Pianta, R. C. (1998, April). *Kindergarten transition practices: Relations with teacher and classroom characteristics.* Paper presented at the American Educational Research Association Annual Meeting, San Diego.
- Pianta, R. C. (1997, April). *The effects of early deprivation: Investigations of a continuum of caregiving experiences.* Symposium discussant, Biennial meeting of the Society for Research in Child Development. Washington, DC.
- Pianta, R. C. (1997, April). *Family relationships in children with disabilities and chronic medical conditions.* Theodore D. Tjossem Memorial Lecture, Center on Human Development and Disability, University of Washington, Seattle, WA.
- Pianta, R. C. (1997, April). *Assessing parents' representational models of relationships with their children.* Theodore D. Tjossem Memorial Workshop, Center on Human Development and Disability, University of Washington, Seattle, WA.
- Pianta, R. C. (1996, April). *Social influences on school adjustment.* Symposium discussant. Annual meeting of the American Educational Research Association. New York, NY.
- Pianta, R. C. (1996, April). *Children's relationships with teachers: Assessment, continuity, and linkages with school adjustment.* Symposium discussant. Annual meeting of the American Educational Research Association. New York, NY.
- Pianta, R. C. (1996, March). *Relationship-based approaches in early intervention.* School of Education, University of North Carolina at Chapel Hill.
- Pianta, R. C. (1995, October). *Relationship-based psychopathology in the preschool years.* Paper presented at the annual meetings of the American Academy of Child and Adolescent Psychiatry. New Orleans, LA.
- Pianta, R. C., Morog, M. C., & Marvin, R. S. (1995, March). *Adult attachment status and mothers' behavior with their spouses.* Paper presented at the Biennial Meeting of the Society for Research in Child Development, Indianapolis, IN.
- Pianta, R. C. (1995, March). *The Pictorial Scale of Perceived Competence and Acceptance: A discussion.* Paper presented at the Biennial Meeting of the Society for Research in Child Development, Indianapolis, IN.
- Pianta, R. C. (1994, October). *Relationships, risk, and chronic illness in children.* Institute of Child Development, University of Minnesota.

- Morog, M. C., Pianta, R. C., & Marvin, R. S. (1994, October). *Adult attachment status, parents' reaction to diagnosis, and child attachment status in children with a disability*. Paper presented at International Conference on Attachment, Toronto.
- Pianta, R. C., & Marvin, R. S. (1994, September). *Parent-child interaction patterns*. Paper/workshop presented at the Epilepsy Foundation of America National Leadership Conference, Alexandria, VA
- Pianta, R. C. (1994, March). *Attachment and parenting in children with cerebral palsy*. Grand Rounds, Department of Pediatrics, Methodist Hospital, St. Louis Park, MN.
- Pianta, R. C. (1994). *Relationship-based approaches to assessment of children*. Grand Rounds, Department of Pediatrics, PHP, Minnetonka, MN.
- Marvin, R. S., & Pianta, R. C. (1993, October). *Assessing parents' success in grieving their child's diagnosis*. Paper/workshop presented at the annual meeting of The American Association of Cerebral Palsy and Developmental Medicine, Nashville, TN.
- Pianta, R. C., & Marvin, R. S. (1993, March). *Patterns of parents' reactions to their child's diagnosis: Relations with parent-child interaction*. Paper presented at the Biennial Meeting of the Society for Research in Child Development, New Orleans, LA.
- Lothman, D. J., & Pianta, R. C. (1993). *Mother-child interaction as a regulator of social development in children with epilepsy*. Paper presented at the Biennial Meeting of the Society for Research in Child Development, New Orleans, LA.
- Marvin, R. S., & Pianta, R. C. (1992, October). *Assessing parents' success in grieving their child's diagnosis*. Paper/workshop presented at the annual meeting of The American Association of Cerebral Palsy and Developmental Medicine, San Diego, CA.
- Pianta, R. C. (1992, March). *Relationships and risk*. Psychology Department, Tulane University, New Orleans, LA.
- Pianta, R. C., & Marvin, R. S. (1991, December). *Parents' representations of relationships and attachment behavior in children with cerebral palsy*. Symposium presented at the Biennial Training Institute of the National Center for Clinical Infant Programs, Washington, DC.
- Pianta, R. C., & Artilles, A. (1991, September). *Research on children at-risk for failure in school*. Universidad de Landivar, Guatemala City, Guatemala, C. A.
- Pianta, R. C., & Steinberg, M. (1991, April). *Relationships between children and kindergarten teachers: Associations with home and classroom behavior*. Paper presented at symposium "Relationships between Children and Non-Parental Adults: Research in School and Day Care Settings," R. Pianta (chair) at the biennial meeting of the Society for Research in Child Development, Seattle, WA.
- Pianta, R. C., Lothman, D. L., & Clarson, S. (1990, November). *Predicting social behavior in children with epilepsy using measures of mother-child interaction, child behavior, and medical risk*. Poster presented at the Annual Meeting of the American Epilepsy Society, San Diego, CA.
- Lothman, D., Pianta, R. C., Clarson, S., & Fowler, P. (1989, December). *Mother-child interaction in children with epilepsy: Relations with child competence*. Poster presented at the annual meeting of the American Epilepsy Society, Boston, MA.
- Pianta, R. C. (1989, April). *Assessment of attachment behaviors in children with moderate to severe motor impairments*. Paper presented at symposium "Using the Strange situation with Special Populations," B. Vaughn (chair) at the biennial meeting of the Society for Research in Child Development, Kansas City, MO.
- Pianta, R. C., & Castaldi, J. (1989, April). *Stability of depressive symptoms in five and six year old children*. Poster presented at the biennial meeting of the Society for Research in Child Development, Kansas City, MO.
- Castaldi, J., & Pianta, R. C. (1989, March). *Depressive symptoms in five year old children*. Poster presented at the annual meeting of the National Association of School Psychologists, Boston, MA.
- Pianta, R. C. (1987, April). *The relationship between different classifications of maternal stress and children's first grade outcomes*. Research display presented at the biennial meeting of the Society for Research in Child Development, Baltimore, MD.
- Pianta, R. C., & Egeland, B. (1987, April). *Continuity and discontinuity in maternal caregiving at 6, 24 and 42 months in a high risk sample*. Research display presented at the biennial meeting of the Society for Research in Child Development, Baltimore, MD.
- Pianta, R. C. (1987, March). *Developmental research on a high risk sample: Implications for practice*. Symposium presented at the annual meeting of the National Association of School Psychologists, New Orleans, LA.

- Pianta, R. C. (1986, September). *The longitudinal effects of maternal life stress on the developmental outcomes of first grade children*. Paper presented at the annual meeting of the American Psychological Association, Washington, DC.
- Pianta, R. C., & Egeland, B. (1985, April). *The effects of family intactness on children's developmental outcomes*. Research display presented at the biennial meeting of the Society for Research in Child Development Biennial Meeting, Toronto, Ontario, Canada.
- Erickson, M., & Pianta, R. C. (1984, April). *Behavior problems in young children: Early identification and prevention*. Paper presented at the annual meeting of the National Association of School Psychologists, Philadelphia, PA.
- Pianta, R. C. (1984, April). *Environmental effects on preschool intellectual development: Implications for intervention*. Paper presented at the annual meeting of the National Association of School Psychologists, Philadelphia, PA.
- Ysseldyke, J., & Pianta, R. C. (1983, March). *Psychoeducational decision-making: Generalizations and implications for training and practice*. Paper presented at the annual meeting of the National Association of School Psychologists, Detroit, MI.
- Cherkes, M., & Pianta, R. C. (1978, March). *Information processing: An approach to diagnosis and instruction*. Paper presented at the Gatlinburg Conference for Research in Mental Retardation, Gatlinburg, TN.

### Service/Training

- Pianta, R. C. (2011, January). *Leadership and decision-making for effective classroom teaching*. Professional Development, New York City Department of Education, New York, NY.
- Pianta, R. C. (2010, November). *Improving impacts of classrooms: Professional development and classroom observation*. Virginia Association of Elementary School Principals Annual Conference, Williamsburg, VA.
- Pianta, R. C. (2008, February). *Current trends in early care and education*. Panelist/Presenter, Women United in Philanthropy, Charlottesville, VA.
- Pianta, R. C., & Hamre, B. (2005, November). *Pathways to early school success: Early learning strategies for low-income children*. National Center for Children in Poverty, New York, NY.
- Pianta, R. C. (2005, November). *Transition planning and ready schools: Frameworks, policies, and practices*. Child Care Solutions, Syracuse, NY.
- Pianta, R. C. (2005, October). *MyTeachingPartner*. Academy for Educational Development Symposium, Charlottesville, VA.
- Pianta, R. C. (2005, September). *Observing interactions in classrooms: The ingredients of school success*. Erikson Institute, Chicago, IL.
- Pianta, R. C. (2005, April). *Transition planning and ready schools*. The Council of Chief State School Officers (CCSSO), St. Louis, MO.
- Pianta, R. C. (2005, February). *Going to kindergarten: Transition models and practices*. Georgia Partnership for Successful School Transition, SmartStart Georgia, Atlanta, GA.
- Pianta, R. C. (2005, February). *The social ecology of the transition to school: Classrooms, families, and children*. Center for Developmental Science, University of North Carolina at Chapel Hill.
- Pianta, R. C. (2005, January). *Social and relational processes in elementary school classrooms*. Psychology Department, University of North Carolina—Greensboro, Greensboro, NC.
- Pianta, R. C. (2004, November). *Going to kindergarten: Transition models and practices*. Office of Early Childhood education, Ohio Department of Education, Columbus, OH.
- Pianta, R. C. (2004, November). *Going to kindergarten: Transition models and practices*. Issues Regarding Transition to Kindergarten and Building Bridges for Smooth Transition. Stark County Educational Service Center, Canton, OH.
- Pianta, R. C. (2004, September). *Teacher-child relationships*. Professional Development Meeting, Fairfax County Public Schools, Fairfax, VA.
- Pianta, R. C. (2004, June). *The National Center for Early Development and Learning's multi-state study of pre-kindergarten: Quality, practices and child outcomes*. NAEYC's Professional Development Institute, Baltimore, MD.
- Pianta, R. C. (2004, March). *Successful kindergarten transition*. SERC Transition to Kindergarten Conference, Connecticut Department of Education, Rocky Hill, CT.

- Pianta, R. C. (2004, February). *Going to kindergarten: Transition models and practices*. Association for Children of New Jersey, New Jersey Education Association, New Jersey Department of Education, and Child and Family Policy Center, Newark, NJ.
- Pianta, R. C. (2004, January). *Children's experiences in pre-k, kindergarten, and early elementary classrooms*. National Association of State Boards of Education, Alexandria, VA.
- Pianta, R. C. (2004, January). *Enhancing relationships between children and teachers*. Fairfax County Public Schools, Alexandria, VA.
- Pianta, R. C. (2003, November). *Transition to school: Building links among families, schools, and communities*. Ohio Department of Education, Center for Students, Families, Communities, Office of Childhood Education, Columbus, OH.
- Pianta, R. C. (2003, September). *Children's experiences in pre-k, kindergarten, and early elementary classrooms*. Foundation for Child Development. New York, NY.
- Pianta, R. C. (2003, September). *Getting children ready for school—What's needed?* Keynote presentation, Partnership for Children Readiness Conference. Charlottesville, VA.
- Pianta, R. C. (2003, June). *Student-teacher relationships*. Three-day workshop presented to teachers and administrators from the school district of Atri, Italy. Atri, Italy.
- Pianta, R. C. (2002, October). *NICHD and NCEDL Overview: Early Child Care and Children's Development Prior to School Entry*. Presentation to the Netherlands Child Care Delegation. The Netherlands Embassy, Washington, DC.
- Pianta, R. C. (2002, April). *Curry's initiative in risk and prevention*. Presentation in conjunction with the Office of Development and the Curry School of Education Foundation. New York, NY.
- Pianta, R. C. (2002, September). *Children's early literacy and relationships with adults*. Virginia Department of Education, Roanoke, VA.
- Pianta, R. C. (2002, July). *Early learning: Transition to kindergarten*, Best Schools Leadership Initiative, Summer Academy. Keynote speaker/Workshop presenter, New Hampshire Department of Education, Concord, NH.
- Pianta, R. C. (2002, April). *Nurturing the seedling*. Three-part workshop for the Ready to Learn Task Force for parents, administrators, and community/social workers. Keynote speaker, Breakfast of Champions, "Cultivating Community: Sowing Seeds for Success!" Department of Education, Dover, NH.
- Pianta, R. C. (2002, April). *Being helpful to children and families*. Keynote address, John L. Snook Child Advocate Award Breakfast, Children, Youth & Family Services, Inc., Charlottesville, VA.
- Pianta, R. C. (2001, October). *Banking time*. First Annual Conference for Parents, Head Start, Title I, Bright Stars and Family Support, Charlottesville, VA.
- Pianta, R. C. (2001, July). *Enhancing the transition to kindergarten*. Governor's Institute for Early Childhood Educators. Juniata College, Huntingdon, PA.
- Pianta, R. C. (2001, March). *The relationship model of transition*. New Hampshire Department of Health and Human Services, Head Start Conference, Manchester, NH.
- Pianta, R. C. (2000, December). *Transition to school: Building links among families, schools, and communities*. Ready at Five Conference, Maryland State Department of Education, Baltimore, MD.
- Pianta, R. C. (2000, October). *Banking Time*. Charlottesville Schools Professional Development Conference, Charlottesville, VA.
- Pianta, R. C. (2000, October). *Enhancing relationships between children and teachers: How to build resilience in schools*. Charlottesville City Schools, Charlottesville, VA.
- Pianta, R. C. (2000, August). *The kindergarten transition*. Workshop presented at the National Head Start Association Conference, Washington, DC.
- Hamre, B., La Paro, L., & Pianta, R. (2000, June). *System for observing classroom quality in pre-kindergarten and the early grades*. A poster presented at the Ninth Annual Conference of NAEYC's National Institute for Early Childhood Professional Development, San Francisco, CA.
- Pianta, R. C. (2000, June). *Enhancing relationships between children and teachers: How to build resilience in schools*. Albemarle County Leadership Retreat 2000, Charlottesville, VA.
- Kraft-Sayre, M., Rimm-Kaufman, S., & Pianta, R. (2000, June). *Collaborative intervention to build relationships and smooth the transition to kindergarten*. A poster presented at the Ninth Annual Conference of NAEYC's National Institute for Early Childhood Professional Development, San Francisco, CA.
- Pianta, R. C., & Kraft-Sayre, M. (2000, May). *Hartford Foundation for Public Giving, Brighter Futures*

- Initiative, Transition to School Projects*: Hartford, CT.
- Pianta, R. C. (2000, May). *Viewing families of children with special needs*. Innovative Strategies Conference, Curry School of Education, University of Virginia, Charlottesville, VA.
- Panel discussant. (2000, May). George Graham Conference. Curry School of Education, University of Virginia, Charlottesville, VA.
- Pianta, R. C. (2000, February). *Building stronger relationships between parents and children*. Workshop offered at The Twelfth Collaborative Conference for Special Education, Courage to Risk, Colorado Springs, CO.
- Pianta, R. C. (2000, February). *Enhancing relationships between children and teachers: how to build resilience in schools*. Workshop offered at The Twelfth Collaborative Conference for Special Education, Courage to Risk, Colorado Springs, CO.
- Pianta, R. C. (2000, February). *Developmental Approaches to School-Age Children with Emotional Disturbances*. Colloquium offered to the Bedford County School System and Centra Health, Bedford, VA.
- Pianta, R. C. (1999, November). *Best practices in transition to school programs*. Workshop presented to the Hartford Foundation for Public Giving, Hartford, CT.
- Pianta, R. C. (1999, October). *Investing in the education of young children*. Presented at The Rotary Club, Charlottesville, VA.
- Pianta, R. C. (1999, May). *Applying the construct of resilience in schools*. Workshop presented at the New Jersey Association of School Psychologists Conference, Jamesburg, NJ.
- Pianta, R. C. (1999, May). *Banking time*. Workshop, Innovative Strategies for All Young Children, Curry School of Education, University of Virginia, Charlottesville, VA.
- Pianta, R. C. (1999, May). *What lies ahead for school psychology; building schools that work for all children*. Keynote speaker, New Jersey Associations of School Psychologists, Jamesburg, NJ.
- Pianta, R. C. (1999, May). *Promoting relationships: A key to prevention*. Keynote speaker, Innovative Strategies for All Young Children, Curry School of Education, University of Virginia, Charlottesville, VA.
- Pianta, R. C. (1998, October). *Ready, set, go: Preparing children for school success*. Workshop presented at Parents' Day, Curry School of Education, University of Virginia, Charlottesville, VA.
- Pianta, R. C., & Gercke, N. (1998, October). *Predicting adjustment to school from data collected at school entry: The Charlottesville City School Kindergarten Screening Program*. Virginia Department of Education Research and Testing Conference, Tysons Corner, VA.
- Pianta, R. C. (1998, April). *Use and effects of child care in the United States: Results from the NICHD Study of Early Child Care*. Paper presented at the Virginia State Department of Education State Operated Programs Conference, Richmond.
- Pianta, R. C. (1998, March). *Child care, families, and children's competencies at age 3: Findings from the NICHD Study of Early Child Care*. Paper presented at Celebrating Literacy: Early Childhood Best Practices Conference, University of Virginia Department of Continuing Education, Charlottesville.
- Pianta, R. C. (1995, April). *Starting school ready to learn: What we know about children and contexts from birth to school age*. Education Day, Curry School of Education, University of Virginia.
- Pianta, R. C. (1995, May). *Observational assessment of the quality of child care*. Lynchburg Task Force on Child Care Quality. Lynchburg, VA
- Pianta, R. C. (1994, November). *Society's stake in preschool*. Paper presented at the Conference on Preschool for At-Risk Children, Sponsored by the Urban League, Charlottesville, VA.
- Pianta, R. C. (1992, November). *Assessment of severe emotional disturbance*. Charlottesville City Schools.
- Pianta, R. C. (1991, May). *Children with severe emotional disturbance: Assessment and intervention*. Bedford County Schools, Bedford, VA.
- Pianta, R. C. (1991, October). *A conversation with the editors of early childhood journals*. University of Wisconsin Early Schooling Conference, Madison, WI.
- Pianta, R. C., & Erickson, M. F. (1990, April). *Family focused assessment and intervention with children from birth to five years*. Pre-convention workshop. National Association of School Psychologists Annual Meeting, San Francisco, CA.
- Pianta, R. C. (1990, November). *Attachment relationships between children and adults--implications for educators*. Annual meeting of the Virginia Association of Independent Schools, Richmond, VA.

- Pianta, R. C. (1989, October). *A briefing on strategies and programs for preparing teachers to meet the needs of at-risk students*. Virginia Association of Colleges of Teacher Education, Virginia Beach, VA.
- Pianta, R. C. (1989, October). *Naturalistic assessment of infants, toddlers and preschool children*. Virginia Psychological Association, Richmond, VA.
- Pianta, R. C. (1989, May). *Child neglect: Research, assessment and intervention*. Prince William County Social Services, Manassas, VA.
- Eisenhart, C., & Pianta, R. (1989, October). *Teacher preparation programs for at risk children*. Conference on meeting the needs of at-risk students, Longwood College, Danville, VA.
- Pianta, R. C. (1988, October). *Early identification and treatment of childhood disorders*. Central Virginia Interagency Council, Lynchburg, VA.

## TEACHING

### Funded Training Grants

- Pianta, R. C., Rimm-Kaufman, S., & Wycoff, J. (2009-2014). *UVA Interdisciplinary Predoctoral Training Program in Educational Sciences*, U.S. Department of Education. \$1,975,766 direct costs.
- Pianta, R. C. (2006-2010). *Interdisciplinary postdoctoral research training fellowship in education sciences*. U.S. Department of Education. \$592,865 direct costs.
- Pianta, R., Rimm-Kaufman, S., & Justice, L. (2004-2009). *Interdisciplinary Doctoral Training Program in Risk and Prevention*. Institute of Educational Sciences, U.S. Department of Education, Washington, DC. \$4,655,503 direct costs
- Pullen, P., Snell, M., Pianta, R. C., & Justice, L. (2002-2007). *Interdisciplinary training for early childhood and development risk*. U.S. Department of Education, Office of Special Education and Rehabilitation Services. \$1,500,000 direct costs.
- Snell, M., & Pianta, R. C. (1997-2000). *Interdisciplinary training for early intervention and preschool personnel*. U.S. Department of Education, Office of Special Education and Rehabilitation Services. \$569,494 total direct costs
- Pianta, R. C., & Marvin, R. S. (1997-1999). *An early intervention training curriculum on parent-child relationships*. U.S. Department of Education, Office of Special Education and Rehabilitation Services. \$393,990 total direct costs.
- Pianta, R. C. (1992-1997). *Interdisciplinary specialty training of master's personnel in intervention with infants, toddlers, and families*. U.S. Department of Education, Office of Special Education and Rehabilitation Services. \$580,000 total direct costs.
- Pianta, R. C., & Hrnrcir, E. (1989-1992). *Multidisciplinary preparation of pre-service personnel in intervention with infants and families*. (HO29Q90012) U.S. Department of Education, Office of Special Education. \$225,000 total direct costs.

### Courses Taught

#### University of Virginia

- EDLF 730: *Foundations of Educational Research*, Fall 2009-present
- PSYC 359: *Research in Psychology*, Fall 2009-present
- EDHS 788: *Field Project for ECDR Students*, Spring 2007-2008
- EDHS 976: *Research Design in Education Sciences*, Spring 2005-2007
- EDHS 976: *Seminar in School/Clinical Psychology -- Social and Affective Processes in the Development of Young Children*, 1993-2005.
- USEM171: *Society's Response to Children in Need*, Guest lecturer, Spring 1998.
- EDHS 976: *Seminar in School/Clinical Psychology -- Developmental Psychopathology in Infancy*, 1990-1993.
- EDHS 865: *Child Psychotherapy*, 1986-2005.
- EDHS 589: *Psychoeducational Assessment and Intervention with Young Children At Risk for School Failure*, Division of Continuing Education, 1987, 1989, 1990.
- EDHS 864: *Individual Intervention II: Techniques of Individual Psychotherapy*, 1986-1989.



- EDHS 863: *Individual Intervention I: Principles of Individual Psychotherapy*, 1986-1989.  
 EDIS 590: *Assessment and Intervention with Infants with Special Needs*, Co-instructor with E. Hrnair, Spring 1990.  
 EDHS 589: *Child Abuse*, Summer 1987.  
 EDHS 589: *Psychological Assessment of Infants and Young Children*, Division of Continuing Education, Summer 1988.

### Other Institutions

- CPSY 5310: *Sadness, Grief and Depression in Children and Adolescents*, University of Minnesota, Institute of Child Development, Summer 1985.  
 EPSY 5849: *Assessment of the Preschool Child*, University of Minnesota, Department of Educational Psychology, Spring 1985.  
 PSYCH: *Psychology of Adjustment*, St. Mary's Junior College, Minneapolis, MN, Winter 1985.  
 PSYS 5313: *Psychoeducational Assessment from Infancy to Preschool*, University of Minnesota, Department of Psychoeducational Studies, Summer 1984.

### Supervision of Clinical Training

- Therapy team leader, Child-Parent Psychotherapy. Center for Clinical Psychology Services, University of Virginia, Curry School of Education, 1991-1993.  
 Therapy supervisor. Center for Clinical Psychology Services, University of Virginia, Curry School of Education, 1986-1993.  
 Assessment supervisor. Center for Clinical Psychology Services, University of Virginia, Curry School of Education, 1986-1993.  
 Therapy team leader, Play Therapy. Center for Clinical Psychology Services, University of Virginia, Curry School of Education, 1986-1991.

## SERVICE

### Service to the University of Virginia and Curry School of Education

- Lead, Communications & Change Management Task Force, Office of the President, University of Virginia, 2012-present.  
 Member, University Calendar Committee, University of Virginia, 2011-present.  
 Chair, Review Committee for the reappointment of Greg Roberts, Dean of Admissions, University of Virginia, 2011-2012.  
 Member, University Budget Model Steering Committee, 2011.  
 Member, Inaugural Steering Committee, University of Virginia, 2010-2011.  
 Chair, Committee on the Inaugural Academic Conference, University of Virginia. 2010-2011.  
 Expert Panel Member, Child Development & Behavior Branch, Rockville, MD, July 2008.  
 Member, Provost Search Committee, University of Virginia, Spring 2007.  
 University of Virginia Representative, The Joint Legislative Audit and Review Commission (JLARC), Virginia Preschool Initiative, Richmond, VA, 2007-present.  
 Director, Risk and Prevention in Education Sciences Doctoral Program, Curry School of Education, 2004-present.  
 Research Advisory Council, 2005-present; Research Facilitator, 2005-present, Teachers for a New Era, University of Virginia.  
 Chair, Dean Search Committee, Curry School of Education, University of Virginia, 2006.  
 Presenter, *Fall Life Academy*, Department of Psychology, University of Virginia, Wintergreen Resort, October 2006.  
 Member, Search Committee, Department of Leadership, Foundations, and Policy, Curry School of Education, University of Virginia, 2005.  
 Member, Search Committee, Department of Leadership, Foundations, and Policy, Curry School of Education, University of Virginia, 2004.

Representative, Organization of Institutional Affiliates, American Educational Research Association, Washington, DC, October 2004-present.

Member, Search Committee, Curry School Foundation Director, Curry School of Education, University of Virginia, 2003.

Member, Search Committee, Grants Administrator, Curry School of Education, University of Virginia, 2003.

Coordinator, Curry Spring Speaker Series on Risk and Prevention, Curry School of Education, University of Virginia, Spring 2003.

Member, Advisory Board, Virginia Center for Educational Policy Studies, Curry School of Education, University of Virginia, 2002-present.

Chair, Strategic Planning, Initiative on Risk and Prevention, Curry School of Education, University of Virginia, 2001-present.

Chair, Search Committee, Curry Programs in Clinical and School Psychology, University of Virginia, 2001-2002.

Member, Search Committee, Early Childhood and Developmental Risk, Curry School of Education, University of Virginia, 2001.

Member, Institutional Review Board for the Behavioral Sciences, University of Virginia, 2000-2004.

Member, Promotions Committee, Curry School of Education, 1999-2002.

Member, Quantitative Methods Search Committee, Curry School of Education, 1999.

Chair, Academic Affairs Committee, Curry School of Education, 1996-1997.

Academic Affairs Committee, Curry School of Education, 1995-1997.

Talbott Chair Search Committee, Curry School of Education, 1994.

Director, Infant and Family Intervention Training Project, Curry School of Education, 1988-1997.

### **Service to the Profession: National and International**

Member, National Early Education Council, Jumpstart, Boston, MA, 2012-present.

Faculty Consultant, National Conference of State Legislatures, Denver, CO, 2012-present.

Member, Head Start National Research Advisory Board, Washington, DC, 2009-present.

Member, Advisory Board, William T. Grant Foundation, Washington, DC, 2008-present.

External Reviewer, Promotion & Tenure, Harvard Graduate School of Education, Cambridge, MA, April 2012.

External Reviewer, Promotion & Tenure, Northwestern University, School of Education and Social Policy, Evanston, IL, February 2012.

Member, Center for American Progress Early Childhood Education Advisory Committee, Washington, DC, 2011-present.

External Reviewer, Promotion & Tenure, Academy of Finland, Helsinki, Finland, 2011-2012.

Member, Scientific Advisory Board for the Legacy for Children, National Institute for Early Education Research, Rutgers University (NIEER), New Brunswick, NJ, 2009-2018.

Member, Steering Committee, Rothschild Foundation, Jerusalem, Israel, 2009-present.

Member, First School National Advisory Board, Chapel Hill, NC, 2009-present.

Member, Advisory Group, International Reading Association and Eunice Kennedy Shriver National Institute of Child Health and Human Development, 2009-present.

Member, Advisory Committee, Historically Black Colleges and Universities, 2009-present.

Consultant, Technical Work Group, Office of Planning, Research, and Evaluation in the Administration for Children and Families, Washington, DC, October 2009.

Member, Technical Review Panel for Early Childhood Longitudinal Study, Westat, Rockville, MD, 2008-present.

Member, External Review Panel, Steinhardt School of Culture, Education, and Human Development (Dean Mary Brabeck), New York University, New York, NY, March 2008.

Member, Committee on Research and Dissemination, American Association of Colleges for Teacher Education, Washington, DC, 2008-2011.

Member, Advisory Board, Washington Kids Count Project, Seattle, WA, 2008-2010.

Chair, Smart Beginnings Leadership Council, United Way, Charlottesville, VA, 2007-present.

Member, Opportunity to Start Strong, Commonwealth of Virginia, Office of the Governor, Richmond, VA, 2007-2010.

Member, Governor's Working Group on Early Childhood Initiatives, Richmond, VA, 2007-2010.

Consultant, The Family Life Project, University of North Carolina at Chapel Hill, 2007-2010.

Member, Committee on Early Childhood Mathematics, Center for Education, National Research Council, National Academies of Science, Washington, DC., 2007-2008.

Member, Scholars Selection Committee, William T. Grant Foundation, Washington, DC, 2007-2010.

Reviewer, Promotion and Tenure Evaluation, Southern Illinois University School of Medicine, Spring 2007.

Consultant, Observational Measurement of Classroom Quality, Spencer Foundation & W. T. Grant Foundation, Chicago, February 2007.

Consultant, Teaching as a Clinical Practice, Carnegie Foundation, Washington, DC, January 2007.

Member, Federal Advisory Committee, National Children's Study, Rockville, MD, 2007-2008.

Member, Committee on Early Childhood Education, National Research Council National Academies, Washington, DC, 2006-2007.

Advisor, PK-3 Research and Evaluation Forum, Foundation for Child Development, New York, NY, December 2006-2007.

Member, Professional Development Task Force, Start Strong Council, Virginia Department of Education, Richmond, VA, 2006-present.

Consultant, Appalachian Regional Education Laboratory, Washington, DC, April 2006.

Consultant, Department of Human Development, Teachers College, Columbia University, New York, NY, January 2006.

Member, Advisory Board, Integrative Research Activities for Developmental Science (IRADS), Center for Developmental Science, University of North Carolina at Chapel Hill, 2006-2011.

Consultant, Foundation for Child Development, New York, NY, 2005.

Member, Board of Advisors, Early Education Initiative, New America Foundation, Washington, DC, November 2005-2007.

Participant, Research Roundtable, *Child and adolescent development research and teacher education: Evidence-based pedagogy, policy, and practice*, National Institute of Child Health and Human Development and the National Council for the Accreditation of Teacher Education, Washington, DC, 2006.

Consultant, Erikson Institute, Chicago, IL, 2005-2006.

Participant, Ready Schools Planning Meeting, W. K. Kellogg Foundation, Washington, DC, July 2005.

Consultant, Center for Human Growth and Development, University of Michigan, Ann Arbor, MI, August 2005.

Reviewer/Consultant, Child Development Framework Project, PBS Parents, Washington, DC, 2005.

Consultant, *Discipline and the Power of Relationships*, Family Communications, Inc., Pittsburgh, PA, May 2005.

Proposal reviewer, The Spencer Foundation, Chicago, IL, 2005.

Member, The National Early Childhood Accountability Task Force, The Pew Charitable Trusts, Washington, DC, 2005-2007.

Member, Learner-Centered Principles Task Force, American Psychological Association, Washington, DC, 2005-2006.

Member, Advisory Board, National Research Center for Rural Education Support (NRCRES), University of North Carolina, 2005-2010.

Reviewer, Tenure and Promotion Committee, Department of Human Development and Applied Psychology, Ontario Institute for Studies in Education, University of Toronto, Ontario, Canada, 2005.

Member, IES Peer Review Panel, Predoctoral Interdisciplinary Research Training Program in the Education Sciences, Institute of Education Sciences, U.S. Department of Education, Washington, DC, 2005.

National advisor, Transforming Transitions to Kindergarten, Research & Training Center on Family Support and Children's Mental Health, Portland State University, Portland, OR, 2004-2005.

Reviewer, Tenure and Promotion Committee, College of Education, Wayne State University, November 2004.

Reviewer, External Review Team, Department of Human Development, University of Maryland, November 2004.

Consultant, *Design Options for Studying Head Start Quality Enhancements*, Administration for Children and Families, U.S. Department of Health and Human Services, July 2004-January 2005.

Representative, APA Division 7, Teachers' Needs Analysis Project, Washington, DC, May 2004.

Member, Scientific Review Panel, Latino Children, Preschooling, and Early Development Project, PACE,

## Robert C. Pianta

- University of California—Berkeley, Berkeley, CA, December 2003-present.
- Representative, Educational Leadership Conference, Division 7, American Psychological Association, Washington, DC, September 2003.
- Advisor, Task Force on Evidence-Based Interventions in School Psychology, School Psychology Program, University of Wisconsin-Madison, Madison, WI, June 2003.
- Member, Ready Schools Advisory Panel, HIGH/SCOPE Educational Research Foundation, Ypsilanti, MI, 2003.
- Consultant, National Governors' Association Task Force on School Readiness, Washington, DC, 2003.
- Panel Chair, Educational Issues, Society for Research in Child Development, Atlanta, GA, April 2005.
- Member, Early Childhood Education Advisory Committee, The Norfolk Foundation, Norfolk, VA, 2003.
- Reviewer, Committee to Select Distinguished Professors, University of North Carolina at Chapel Hill, March 2003.
- Member, Head Start National Reporting System Technical Working Group, Department of Health and Human Services, Washington, DC, 2003-2005.
- Member, Commission on NAEYC's Technical Resource Team, Washington, DC, 2003-2004.
- Mentor/Consultant, AERA-Spencer Pre-dissertation Fellows Program, American Educational Research Association, Washington, DC, 2003-present.
- Contributor/Columnist, *Head Start Magazine*, July 2002–2003.
- Reviewer, The Israel Science Foundation, Jerusalem, Israel, 2002.
- Reader/Reviewer, Psychology Undergraduate Program, School of Psychology, Murdoch University, Murdoch, Western Australia, 2002.
- Contributor/Consultant, Pathways Mapping Initiative, School Readiness Knowledge Base, Project on Effective Interventions, Harvard University, 2001-2002.
- Consultant/Participant, *Promoting Full-Day Kindergarten*, Foundation for Child Development, New York City, NY, May 2002.
- Consultant, American Institutes for Research, National Center for Education Statistics, Washington, DC, January-June 2002.
- Reviewer/Member, Division 16 Convention Committee of the American Psychological Association, December 2001–January 2002.
- Member, Advisory Council, Full-Day Kindergarten Study, Education Commission of the States, Denver, CO, 2001.
- Consultant, Westat, Building Futures: Head Start Impact Study, U.S. Department of Health and Human Services, Rockville, MD, 2001-present.
- Reviewer, Grant Applications, William T. Grant Foundation, New York, NY, 2001.
- Consultant, Duke Center for Social Policy, Duke University, Durham, NC, February 2001.
- Consultant, Classroom Observational Strategies, U.S. Department of Education, Title 1 Research Group, Washington, DC, April 2001.
- Reviewer, Grant Proposal, National Science Foundation, Washington, DC, 2001.
- Member, National Advisory Board, National Center for Family and Community Involvement in Schools, Southwest Educational Development Laboratory, Dallas, TX, 2000-2005.
- Consultant, Ewing Marion Kauffman Foundation, Project on School Readiness, Kansas City, MO, December 1999.
- Consultant, Child Mental Health Funders and Agencies Work Group, November 1999.
- Member, Task Force on the Impact of Psychology on Preschool/Early Childhood Education, Board of Educational Affairs, American Psychological Association, 1999-2000.
- Consultant, Hartford Foundation for Public Giving, Brighter Futures Initiative: Transition to School Project, 1998-2000.
- Member, Commission on Children and Families, Charlottesville/Albemarle, 1998-1999.
- Expert Panel on Pre-Kindergarten Standards for the State of California, Health and Education Communication Consultants, 1998-1999.
- Consultant to Early Childhood Longitudinal Study—Birth Cohort, WESTAT and National Center for Educational Statistics, 1998-2000.
- Promotions Review:
- University of Haifa, Israel, 2004.
  - State University of New York at Buffalo, 2003.
  - The University of California at Los Angeles, 2003.

- The University of Chicago, 2003.  
 The University of Delaware, 2003.  
 George Mason University, 2003.  
 Stanford University, 2003.  
 Indiana University, School of Education, 2001-02.  
 The University of Texas at Dallas, School of Human Development, 2000.  
 University of Pittsburgh, Department of Psychology in Education, 2000.  
 Georgia State University, College of Education, 2000.  
 Harvard University, Graduate School of Education, 1999.  
 University of California Los Angeles, Graduate School of Education, 1998, University of Minnesota School of Education, 1998.  
 University of Washington School of Nursing, 1998.  
 Wayne State University Department of Psychology, 1997.  
 Harvard University Graduate School of Education, 1997.  
 Cornell University Department of Human Development and Ecology, 1996.  
 Tufts University Department of Child Study, 1994.
- Advisory Board, Costs, Quality, and Child Outcomes in Child Care Centers. Four-site study of child care, Yale University, University of North Carolina, University of Colorado Denver, University of California Los Angeles, 1995-1996.
- Consultant, Service Use, Need, and Outcomes in Child and Adolescent Psychopathology (UNOCAP). MacArthur Foundation Consultant to National Institute of Mental Health, 1995.
- Consultant, Child and family adaptation to chronic illness. NIH-funded research project, Joan Austin, Ph.D., Principal Investigator, 1994.
- Consultant, Epilepsy Foundation of America, Issues and answers: A guide for parents of children with seizures, Birth to Age Six and Age Six to Twelve, 1993.
- Consultant, National Institute for Disability and Rehabilitation Research, Research Priorities in Epilepsy, June 1991.
- Consultant, Adult Attachment and Adolescent Development Research Project, Pennsylvania Hospital, Diana Rosenstein, P.I., 1997
- Examiner, Doctoral Thesis, The University of New England, Armidale, NSW 2351, Australia, 1999.
- Grant review: National Institute of Mental Health B-START Program, 1998.
- Grant review: National Institute of Child Health and Human Development, Small Grants Special Emphasis Panel, 1997.
- Grant review: The Spencer Foundation, 1995.
- Grant review: The National Science Foundation, 1995, 1997.
- Grant review: National Institute of Child Health and Human Development, Special Competition on the Effects of After-School Care on the Development of Children, December 1992.
- Grant review: Field-initiated research competition. U.S. Department of Education, Office of Special Education, August 1991.
- Grant review: Infant intervention training project competition, U.S. Department of Education, Office of Special Education, Division of Personnel Preparation, October 1989.
- Society for Research in Child Development Panel Reviews:  
 Children At Risk (3+ Years), 2001, Biennial Meeting  
 Parenting, 1999, Biennial Meeting  
 Family and Kinship Relations, 1997, Biennial Meeting  
 Emotional Development, 1995,  
 Infancy: Social and Emotional Process, 1993, Biennial Meeting  
 Children At Risk, 1991, Biennial Meeting  
 Developmental Psychopathology, 1987, Biennial Meeting, International Conference on Infant Studies
- Advisory Board Member, Center for Early Education and Development, University of Minnesota, Institute of Child Development, 1985-1986.
- Advisory Board, Bright Stars Preschool Program, Albemarle County Public Schools, 1996-1997.
- Consultant, Charlottesville City Schools, Program for Four-Year-Olds, 1995-2000.
- Chair, Appalachian Education Laboratory, Virginia Association of Colleges of Teacher Education Study Group on Students At-Risk, 1988-1990.

Virginia Interagency Coordinating Council Task Force on Personnel Preparation, Virginia Department of Mental Health, Mental Retardation and Substance Abuse, 1989-1990.

Kindergarten Readiness Assessment Review Panel, Virginia Department of Education, 1989-1990.

Consultant, Creating Nurturing Environments for At-Risk Students, Commonwealth Center for Research on Teaching, University of Virginia and James Madison University. Minigrant of \$5000 awarded to Donovan Steiner, Principal Investigator, Eastern Mennonite College, 1989-1990.

### **Service to the Profession: Editorial**

Editor, *Journal of School Psychology*, 1999-2007.

Editorial Advisory Board, *Journal of Family Psychology*, 2003-2004.

Editorial Advisory Board, *School Psychology Review*, 1995-1998, 2000.

Advisory Editor, *Journal of School Psychology*, 1992-1998.

Editorial Board, *Exceptional Children*, 1994-1995.

Associate Editor, *Early Education and Development*, 1988-1999.

Field Reviewer:

*American Educational Research Journal*

*American Journal on Mental Retardation*

*Behavior Disorders*

*Child Development*

*Development and Psychopathology*

*Developmental Psychology*

*Exceptional Children*

*Exceptionality*

*Infant and Child Development*

*Infants and Young Children*

*Journal of Abnormal Child Psychology*

*Journal of Consulting and Clinical Psychology*

*Journal of Special Education*

*Merrill-Palmer Quarterly*

*Pediatrics*

*Personality and Social Psychology Bulletin*

*Psychological Bulletin*

*Remedial and Special Education*

*School Psychology Review*

### **Selected Media Interviews**

Pianta, R. C. (2011, January). Expert Interview with Andrea Mitchell, NBC Universal.

#### **Print media**

*APA Monitor*

*The Boston Globe*

*Business Week*

*The Calgary Herald*

*The Cavalier Daily*

*Charlottesville Daily Progress*

*Christian Science Monitor*

*The Colorado Gazette*

*Education Week*

*International Herald Tribune*

*New York Times*

*The Orlando Sentinel*

*Parenting*

*Parents Magazine*

*The Plain Dealer*

*Redbook*

*Richmond Times-Dispatch*

*The Star-Ledger*

*USA Today*

*U.S. News and World Report*

*University of Virginia News*

*Virginia Pilot*

*Wall Street Journal*

*Washington Post*

#### **Broadcast media**

NBC-TV

ABC-TV

MSNBC-TV

WVIR-TV

CNN-TV

University of Virginia TV News

NPR, "Insight" with Tom Graham

PBS, WETA, "Reading Rockets"

PBS, Invited guest, "Education News Parents Can Use," Early Childhood Education Good Start, Grow Smart," with Doris McMillon

**Professional Association Memberships**

American Psychological Association, Regular Member, 1987–present.

National Association of School Psychologists Association, Member, 1986–present.

Society for Research on Educational Effectiveness, Member, 2006-present.

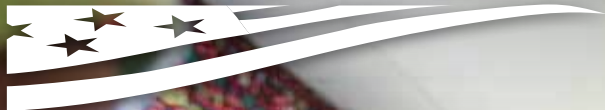
Society for Research in Child Development, Member, 1986-present.

Society for Prevention Research, Member, 2000-2002.

Society for the Study of School Psychology, 1996-present.

Council for Exceptional Children, Member, 1991-1999.

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# Implementing Observation Protocols

Lessons for K-12 Education from the Field of Early Childhood

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Robert C. Pianta May 2012



Center for American Progress



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# Introduction and summary

While it might seem counterintuitive, at least some of the answers to turning around our nation’s struggling K-12 public schools can be found at the nearest preschool.

At a time of considerable urgency and demand for improvements in our nation’s schools, particularly when it comes to evaluating the effectiveness of teachers, there is no need to reinvent the wheel. Instead of looking to the development and implementation of new educational models and methodologies, K-12 educators would do well to learn from the lessons and experience accrued by their counterparts in the early childhood sector, specifically when it comes to teacher performance evaluation.

There is no shortage of debate on the challenges and promises of teacher performance evaluation as the reauthorization of the Elementary and Secondary Education Act of 2001, also known as No Child Left Behind, proceeds and as states seek to implement reforms. Unfortunately, there is precious little precedent for the use of performance evaluation of teachers in the K-12 education setting, at least good performance evaluation.<sup>1</sup> The well-documented shortcomings of existing evaluation methods from principal “drive-by” observations to hiring interviews to tenure reviews and more all lead to the same conclusion—nearly every teacher “passes” whatever “test” they face. The problem is that the “tests” themselves do not discriminate good performers from poor performers and make virtually no connection between these “tests” and student achievement, professional development, or incentives to improve.

Relying on the status quo for teacher performance evaluation wastes time and energy—performance metrics are nonexistent or not valid and there is little to no linkage among the key components of most evaluation and performance-improvement systems. As practiced now teacher evaluation is a nonsystem with a lot of moving parts of dubious value and very little connection among them.

Some measure of teachers’ classroom practices, usually in the form of observation, is at the core of nearly every proposal and early-stage rollout of the next

generation of teacher performance evaluation efforts in districts and states.<sup>2</sup> Typically coupled with estimates of teachers' contributions to student gains on achievement tests as well as with other indicators of performance, observation of teachers' classroom practices is a cornerstone of this new wave of assessment. To ensure that an evaluation system is capable of providing teachers with the actionable feedback needed to improve, solid information is paramount. Clearly, high-quality classroom behavior and practices are at the core of any definition of "effective teaching" and what most teachers would identify as the manner in which they contribute to student learning.

It is sensible to think that observational assessment of teachers' classroom behavior would be a central component of any evaluation system since teachers' behaviors and interactions are students' most direct experience of teaching. Yet like most initiatives in education reform, observation is subject to implementation and policy challenges that could very well hinder its ultimate benefits. The short list of challenges include: technical issues in defining and measuring teaching behavior; gathering information about a teacher through consistent and reliable observation; ensuring that the behaviors observed really matter for student learning (for example, validity of the observation); determining how observations connect to high-stakes consequences such as tenure and professional development; and a host of support and infrastructure requirements needed to roll out sound observation efforts on a large scale.<sup>3</sup> Yet there are too few models of how to do observation well in the K-12 sector. But there is one sector where we have more than two decades of widespread application of classroom observation from which to draw lessons: early childhood education, which is the focus of this paper.<sup>4</sup>

This report draws from decades of experience using observation in early childhood education, which has implications for administrative decisions, evaluation practices, and policymaking in K-12. Early childhood education has long embraced the value of observing classrooms and teacher-child interactions. In early childhood education the features of the settings in which children are served are the hallmarks of quality. These features can include health and safety considerations, the materials and physical layout of the space, and the interactions that take place between adults and children—such as conversations, emotional tone, or physical proximity. Standardized observations of these early childhood education features in turn yield metrics that are used in state and federal policy, program-improvement investments, and the credentialing of professionals<sup>5</sup>—all uses that K-12 education is now considering.

Like most initiatives in education reform, observation is subject to implementation and policy challenges that could very well hinder its ultimate benefits.

This paper examines lessons learned from observation in early childhood education that may be helpful as states and districts begin implementing more rigorous observation protocols for K-12 teachers. Although these lessons apply to all grades, they may be particularly relevant for K-3 as assessment of student performance using standardized achievement tests is most challenging in those grades. These lessons focus on the importance of standardization, trained observers, methods for ensuring the validity and reliability of the instruments, and the use of observational measures as a lever to produce effective teaching. These lessons form the basis for the following recommendations:

- Any measure must provide information in the form of metrics that clearly differentiate those being assessed. Observation is no exception—thus observation is a form of measurement and assessment consisting of codes and benchmarks that must be applied rigorously, just as they are in assessments of student performance.
- Observations used in systems of decision making and performance improvement must adhere to standardized procedures. There are three components of standardization that are key elements for evaluating any observation instrument and its implementation—training protocol, parameters around observation, and scoring directions.
- The technical properties of observational protocols and scoring systems are fundamental for their use. Reliability is one of these properties and pertains to the level of error or bias in the scores obtained. It is critical that users select tools that have documented reliability for use across observers, teachers, time, and situations. Effective training programs for observers help to ensure raters are consistent with one another as they make ratings. Similarly, including periodic “drift” testing at predetermined intervals will help to improve the degree to which raters remain consistent with scoring protocols and with each other.
- Any observation of teacher performance must show empirical relations with student learning and development if the use of observation is expected to drive improvement in student outcomes. Selecting an observation system that includes validity information cannot be overstated.
- Pragmatically, observation takes time and different systems of observation require different time commitments. The amount of observer time available can be an important practical consideration when selecting an observational system.

In general the more ratings a school or district is able to obtain and aggregate, the more stable an estimate of typical teacher practices will result.

- Observations can identify teacher classroom behaviors that matter for students, can describe typical teacher practices, can show how a given classroom or teacher compares with a national or district average, can forecast the likely contribution of a teacher to children's learning, or can document improvement in teachers' practices in response to professional development. Users, however, must be cautious to not overstep the appropriate use of observational instruments in their enthusiasm to apply them in any and all circumstances.
- Observations can be used in both accountability and program-improvement applications. Importantly, policy and program investments over time can change the typical distribution of scores as teachers, classrooms, and programs improve, and as a consequence it can be necessary to periodically "raise the bar" on performance standards or cutoff scores.
- Feedback to teachers is most effective when it is individualized and highly specific, focused on increasing teachers' own observation skills, promotes self-evaluation, and helps teachers see and understand the impact of their behaviors more clearly.

Note: To better make our point, we've employed the technique of using fictional situations throughout this paper to illustrate specific points that further our overall argument that the use of early childhood education observational evaluation methods have value for K-12 education.

# Large-scale use of standardized observation protocols for early childhood settings and teachers

This section describes large-scale work being done in the observation of teachers and classroom settings in early childhood education. Most of the discussion focuses on two prominent observation systems—the Early Childhood Environment Rating Scale, or ECERS,<sup>6</sup> and the Classroom Assessment Scoring System, or CLASS.<sup>7</sup> We present explicit descriptions of observation use in the monitoring, accountability, and professional development framework of Head Start, in statewide programs for children from birth through five years of age, and in various states’ Quality Rating and Improvement Systems<sup>8</sup> (analogous to Human Capital Management Systems in K-12). In addition, we describe uses related to high-stakes accountability decisions, program improvement, and identifying specific challenges and solutions.

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## ECERS: Early Childhood Environment Rating Scale

The suite of Environmental Rating Scales, or ERS, developed in the late 1970s and 1980s by researchers Richard Clifford, Thelma Harms, and colleagues have been nothing short of foundational to the development of the early childhood education infrastructure in the United States and around the world.<sup>9</sup> The ERS are observational tools that capture in standardized formats information on a host of features in the settings that serve young children, including physical safety, hygiene, nutrition, educational materials, program offerings (for example, activity schedules), and qualities of social and language interactions between adults and children. Observers are trained for agreement with master-coded examples and demonstrate specific levels of accuracy before using the system in the field. A combination of observation and interviews are used to gather data, all of which yield quantitative scores for program features plus an overall global scale for quality. The Early Childhood Rating Scale, or ECERS, is one of a suite of environmental rating scales, or ERS, for children from birth to five years old. There are ERS for infants, toddlers, and for family child care.

ECERS is the most widely used metric for program quality in early childhood education settings such as Head Start, preschool, and subsidized child care.

It would be difficult to overstate the importance of the environmental rating scales, particularly the ECERS, in early childhood education program development and policy. Nearly every single public investment in early childhood education—from increasing access or slots in existing programs to opening new sectors of programming to improving existing programming—has involved legislative or regulatory language related to ensuring quality. For more than three decades, the ERS have been the gold standard.

The ECERS has had a ubiquitous presence in most major studies of early education quality and impacts, including national-level evaluations of Head Start and Early Head Start program quality and impacts.<sup>10</sup> The scales have been used in studies and program-improvement efforts in Canada, most European countries, and increasingly in Asia. In each use the scales have proven reliable and valid and required only minor adaptations in each country. Nearly all of these studies used large and diverse samples of children, teachers, and settings. These research studies not only provided data on the validity and use of these rating scales, but also considerable experience in the development and deployment of regimes for training, quality control, and scoring. Because the ERS were designed to capture properties of settings and adult-child interaction thought to be relatively invariant across the range of U.S. settings—family day care, private preschools, Pre-K, and Head Start—perhaps it is not surprising to find that these features operate similarly in other western industrialized countries.

Nearly all the research on ERS over the course of the 1980s, 1990s, and into the early 2000s, finds a relation between higher scores on the ECERS and more positive child development outcomes in areas that are considered important for later school success, such as language development.<sup>11</sup> Of interest is that more recent studies of state-funded, prekindergarten and Head Start programs have found fewer and more modest associations between ECERS scores and children’s growth on school-readiness assessments, a pattern that will be explored in greater detail later in this paper.

As noted earlier, environmental rating scales are used in a variety of ways, including high-stakes applications as well as for self-assessment by center staff, preparation for accreditation, and voluntary improvement efforts by licensing or other agencies. More than 20 states use ECERS as one of the metrics on their Quality

It would be difficult to overstate the importance of the environmental rating scales, particularly the ECERS, in early childhood education program development and policy.



Rating and Improvement Systems, or QRIS,<sup>12</sup> an accountability and program-development policy tool that figures prominently in the recent federal investment in early childhood education, specifically the Early Learning Challenge grants that are part of Race to the Top. In most QRIS models several metrics hypothesized to be part of program quality (for example, quality of the environment, teacher credentials, features of the curriculum to name a few) are combined to derive an overall rating of quality (for example, three stars in a five-star rating system) that can serve as a signal to improve quality. States are investing in program improvements and professional development that are purportedly coupled with QRIS metrics. Although states' algorithms for combining quality metrics and the specific quality metrics themselves vary, the ECERS is featured in most.<sup>13</sup>

Subsequently, there are an abundance of examples of scaled-up use of standardized observation using the ECERS that align with policy initiatives and program-development investments in quality improvements. Overall these efforts affect millions of children.<sup>14</sup> Evident throughout all these uses is how standardized observation is a fundamental component of systems that serve both an accountability aim (for example, tiered reimbursement for services contingent on observation metrics, a policy innovation that could apply in K-12 for something like Title I programs or special education) and program-improvement aims (for example, coaching or investments in credentialing). Features of early childhood programs specified on the ECERS indicators are also woven into professional licensure and credentialing systems. This is an example of observational indicators linking back into professional-preparation program content and the systems that credential professionals and license settings. Several states offer certificates through which early childhood professionals receive credit, licenses, and program accreditation based directly on their production of items on the ERS.<sup>15</sup>

As previously noted, the ERS, particularly the early childhood environment rating scale, have been a policy target for accountability and improvement. Public investments in early childhood have been linked in policy or regulation to raising ECERS scores and have gone directly to the features of programs and settings assessed by the ECERS. This linkage demonstrates very clearly that even for observational assessments, metrics that have stakes attached tend to change over time, in other words, what gets measured gets done. With more than two decades of investments in Head Start, ECERS scores gradually increased nationwide to the point that the mean score in nationally representative reports showed an overall quality level of “5” on the ECERS seven-point range.<sup>16</sup> Features of quality measured by the ERS that include materials, the physical environment, hygiene,

or program schedules have primarily accounted for the reported jumps in scores. These increases have undoubtedly improved the experiences of children, the safety of settings, and the overall quality of programs. Further, in several cases these improvements appear to also have corresponded to improvements in some measured aspects of children’s development.<sup>17</sup>

Yet other features of programs measured by the ERS, including aspects of adult-child interactions, have been much harder to improve. Moreover, recent studies, including those tracking Head Start, show that ERS-defined quality improvements have not directly led to improvements in children’s school readiness. To the extent that the features of early childhood programs assessed by ECERS show considerable variation, then the use of ECERS in these large-scale program improvement and accountability efforts was associated with incremental increases in child outcomes. When programs lack educational materials or fail to operate with a daily schedule of learning activities (indicators on the ECERS), then a focus on those benchmarks translates into increments in children’s outcomes. But when nearly all programs get “up to speed” on ECERS-defined quality and variation in those features declined (such as occurred in Head Start), links between programs’ ECERS scores and child outcomes also appeared less strong. Further analysis of these patterns of results related to quality assessment and improvement revealed that other elements of observed program quality (for example, teacher-child interactions) were potential candidates for more focused assessment. In some sense there was evidence of an accountability-framed observational assessment pushing improvement to the point that there was a ceiling effect on the assessment.

In a very real way, these examples show how observation can be embedded into accountability and improvement models such as those being discussed presently in K-12 and actually drive change in observed indicators. In short, experience with the ERS protocols in a wide range of large-scale deployments indicates that observations can be scaled and used in accountability, program development, and market-oriented policy tools to produce, over time, change in those features of programs assessed by those tools.

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## CLASS—Classroom Assessment Scoring System

The Classroom Assessment Scoring System, or CLASS,<sup>18</sup> is a more recently developed observational instrument designed to measure features of teacher-child interaction in settings serving children as young as infancy and extending, with

different versions, through high school. Currently, however, the CLASS has been most widely used in preschool classrooms.<sup>19</sup>

The CLASS dimensions are based on development theory and research suggesting that interactions between children and adults are a primary mechanism of development and learning, a tenet widely held to be the case for younger children and recently validated for students in middle and secondary grades as well. Unlike the ERS observation system, the CLASS metrics focus only on interactions between teachers and children in classrooms (scoring for any dimension is not determined by the presence of materials, the physical environment, safety, or the adoption of a specific curriculum). This distinction between observed interactions and physical materials or reported use of curriculum is important because in most early elementary settings materials and curriculum are usually prevalent and well organized. With the CLASS the focus is on what teachers do with the materials they have and the interactions they have with students. In addition, it complements the information gathered by the ECERS.

Importantly, the scoring guides, manuals, training materials, and initial validity testing for the CLASS were developed through use in two large-scale national studies involving observations of early education classrooms—the National Institute of Child Health and Human Development study of early care and youth development<sup>20</sup> and the National Center for Early Development and Learning Multi-State PreK Study.<sup>21</sup> These studies provided a wealth of experience and information on scaling up standardized classroom observations of teacher-child interactions in more than 5,000 Pre-K–fifth grade classrooms and created a strong research and evidence base for a host of practical decisions and resources.

The CLASS describes three broad domains of teachers’ interactions with children—emotional support, classroom organization, and instructional support—that are common across teacher-child interactions from preschool to 12th grade. Within each domain there are several specific dimensions of interaction that vary by grade. The CLASS measures effective teacher-student interactions across Pre-K-12 in a way that is sensitive to important developmental and context shifts that occur as students mature. The CLASS is aligned with a set of professional development supports such that teachers are helped to make positive changes in the areas of their practice with which they struggle.

The CLASS, like the ECERS, is widely used in research and program development as well as in Head Start and QRIS systems. These uses require standardized

The CLASS is aligned with a set of professional development supports such that teachers are helped to make positive changes in the areas of their practice with which they struggle.

training and reliability testing protocols. In the past three years more than 4,000 people across the country have been trained to reliably use the CLASS—thus documenting its scalability. As with the ECERS, there are a variety of training opportunities that allow districts and states to effectively use the CLASS on a large scale, including a fully developed and tested train-the-trainer model. Most of the CLASS observation training takes place in face-to-face training workshops following trainees' completion of a set of preparation assignments and video review that can be done on the web. The most recent versions of the CLASS, developed for use in upper elementary and secondary classrooms, rely extensively on the web as the mechanism to support training to acceptable levels of reliability.

It is evident from the work done on training with the CLASS and with the ERS, that large-scale, national-level implementation and rollout of an observational assessment is possible with combinations of live and web-based training protocols to sustain the training of thousands of observers to acceptable levels. A growing body of work now documents the ways in which the CLASS observations from Pre-K-12 settings identify components of teacher-student interactions that contribute to students' social and academic development.<sup>22</sup> The pattern of results is quite clear: teachers' instructional support (feedback, focus on conceptual understanding, rich conversational discourse) are overall low; at the same time, instructional support behaviors appear to be strong predictors of students' learning gains. Importantly, it has also been demonstrated that these teacher instructional behaviors can be improved by professional development.<sup>23</sup>

The CLASS is also used in a variety of high-stakes and program-improvement applications. In recent federal legislation reauthorizing Head Start, it was specifically mentioned that a standardized observation of teacher-child interaction was to be the metric for program monitoring and accountability. The CLASS was chosen as this measure and in the spring of 2009 large-scale training and train-the-trainer workshops were launched to achieve a national rollout. As an analogue to the use of observations in K-12 accountability systems, every Head Start grantee (grantees range in size from a few to many hundred classrooms and are the fiscal unit of allocation) is evaluated every three years with CLASS observations conducted in a representative number of classrooms by a set of independent, trained evaluators. Cutoff scores have been established based on the accumulated empirical evidence on the CLASS that designate levels of scores that are acceptable for continued operation of a Head Start program. In effect, observations will be used as a component of measuring Head Start grantees' performance: If classrooms

are not meeting certain standards for qualities of teacher-child interactions then a grantee will have to compete again for Head Start funding.

In parallel to this accountability-driven evaluation use, the Office of Head Start has funded a network of training and technical-assistance centers, early childhood specialists, and related personnel to focus on program improvements and human-capital advancement, much of which focuses on the CLASS and associated professional-development programs that have been demonstrated to improve the CLASS scores. It is estimated that as many as 25 percent of current Head Start grantees could fall below the CLASS cutoffs for quality and would therefore have to reapply on a competitive basis for Head Start funding.

Like ECERS, the CLASS is also being used in Quality Rating and Improvement System models for preschool and child care programs in a variety of states. New Mexico, Florida, Georgia, Massachusetts, Pennsylvania, and others have adopted the CLASS as one of their QRIS metrics. In fact, several states are using both the CLASS and ECERS in their QRIS models, thus relying heavily on standardized observation for accountability and program improvement.

It is too early to tell the extent to which high-stakes adoption of the CLASS in early childhood-accountability or program-improvement systems has resulted in an actual shift in program quality or in children's school readiness. It is, however, quite evident that the system's use in this framework has driven grantee's attention and requests for training and technical assistance to the degree that early childhood education is now very focused on teachers' instructional interactions. Clearly, between the ECERS and the CLASS, early childhood education has accumulated a wealth of experience in using standardized observations in policy and program-improvement contexts and in deploying observational protocols. It is this experience and the base of information garnered from research studies and evaluation that provide the basis for the lessons learned that we examine next.

# Three key considerations when using observation in large-scale applications

Research and experience with using observation in large-scale applications (districts, states, nationwide) in early childhood education programs has enabled the accumulation of evidence in three key areas related to using classroom observations. These three areas are:

- Reasons to observe classrooms and teachers—we present a model for understanding how observing teachers’ behaviors plays an important role in organizations geared toward systematically producing higher quality opportunities for classroom learning. This includes research-based information on several key areas of teachers’ observable practice and how those practices impact learning.
- Choosing and using observation tools—we outline key questions that can guide instrument selection that are aligned with strategic program goals. We also include a list of guiding principles for the successful use of observation tools, as well as logistic information regarding important ways to standardize observation protocols.
- Using data from observations to systematically improve the quality of classroom practice—we review strategies for translating observational findings into effective feedback for teachers and offer guidelines for presenting observational findings to teachers in ways that support them in making practical shifts to maximize student growth and development.

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## Reasons to observe classrooms and teachers

Teaching and learning is a system where teachers’ behavior and instruction are embedded in and influenced by supports and constraints that are important to consider. In order to understand why and how standardized, valid classroom observations can improve student outcomes, it is helpful to see how these

observations are embedded within an overarching framework for recognizing how learning and development take place for both teachers and students.

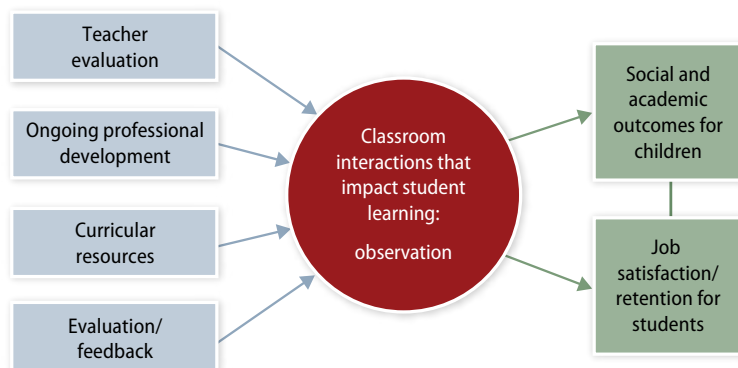
Specifically, we see three key and linked aspects of the teaching-learning system which are represented in Figure 1:

- Inputs/resources
- Teachers' interactions with children
- Outcomes such as student learning

Starting with inputs, we looked to literature in the fields of adult learning and professional development (in education as well as in other fields) to better understand the resources that support the acquisition of a set of behavioral competencies in teachers, which translate into improved learning outcomes for students. We found four areas that seemed key to helping teachers develop these competencies: providing teachers with knowledge about effective practices; providing professional development that is individualized, classroom practice-based, and ongoing; providing curricular resources and materials; and providing specific feedback on teachers' own practice.

The skills that teachers develop as a result of these inputs can foster effective interactions with students. Observations of teachers' interactions and classroom processes play a major role in helping describe and identify effective practices and improving these practices through professional development. Thus observation can be an effective tool in building capacity for teaching and learning.<sup>24</sup>

**FIGURE 1**  
**Links between Inputs and Outputs**



Observing teachers' classroom interactions and practices is one element of assessing how this instructional system is operating and a potentially key lever for improvement. It is not the only element, however, of the system supporting children's learning. To make the point, consider that in many early childhood classrooms teachers exhibit qualities of interactions with students that are consistent with children's learning gains, but in the absence of curricula that can focus those interactions on key skills and knowledge, little learning actually occurs. This is particularly true in areas in which curriculum is underdeveloped, such as math or science. Relatedly, many elementary school teachers exhibit positive features of interaction and instruction but lack of knowledge in a particular content domain (for example, math or science), undermining the impact of those interactions on student learning. The use of standardized observations, if they reliably and validly measure classroom interactions that impact student learning, is a direct and effective mechanism for focusing on teachers' classroom interactions with the potential to illuminate links between certain inputs (resources for teachers) with desired outcomes (optimized student learning).

Certainly this is not a new or novel idea. Every principal spends time observing teachers and most teacher-education programs have some way of providing future teachers with feedback on their practicum experiences in classrooms. Still the vast majority of these observations rely on unstandardized, informal, and nonvalidated procedures. Each school district, principal, and mentor-teacher derives their own set of ideal teacher practices, some based on empirical research and some simply a reflection of personal preference or broad educational theory. Without the more systematic use of standardized, reliable, and validated observational tools, the ultimate value of these observations and the feedback they provide to teachers is limited, particularly when the aims of such approaches include documentation and improvement of practices in a very large number of classrooms (often in the thousands). Without a standardized, validated system in place, teachers are likely to receive very different types of feedback and support depending on grade-level, school or on the person doing the observing. Such approaches are unlikely to build capacity in a school or district nor result in system-level improvements over time.

The advantage of using tools that are standardized, reliable, and validated against student outcomes is that educators, mentors, and administrators can make comparisons on an even playing field. When noting strengths and challenges across classrooms, observers can see and note behaviors directly related to student growth and development.<sup>25</sup> The use of these tools in no way interferes with giving personalized feedback to teachers. Instead it allows for highly specific

Without a standardized, validated system in place, teachers are likely to receive very different types of feedback and support depending on grade-level, school or on the person doing the observing.



and individualized feedback with regard to clearly defined areas consistent across all teachers, while also providing a strong background for interpretation of scores. Further use of standardized tools outweighs the disadvantages related to a highly customized approach in which every classroom, school, or district adapts an existing tool or develops a new one, particularly because these type of customizations rarely if ever have the strong technical properties (reliability, validity) of existing tools. As a consequence the resulting hybrids often cannot support the desired interpretations and uses (for example, tenure decisions, inferences about improvements, and more).

We next discuss these specific features of observational protocols—standardization, reliability, validity, link to professional development—and the role they play in the selecting an observational system.

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## Choosing and using an observational system

In the swirl of competing interests—teachers’ unions, teachers, reformers—school district leaders find themselves wanting and needing to act and having to make difficult decisions. In this context deciding to use observations of teachers as a component of performance assessment is perhaps the least complex decision school leaders face. Still there are a host of questions and concerns that go into choosing a particular observational system and the procedures involved in implementing that or any observational approach.

In this section we describe:

- The focus of an observation and the nature and scope of behaviors observed
- Standardization of protocols and procedures; reliability and training
- The validity of observations as measures of teacher or classroom qualities
- Additional complementary supports for implementation and use

In each of these areas, lessons learned from large-scale use observations in early childhood settings are presented along with vignettes that present actual applications and situations that translate these lessons into actions and decisions in K-12 schools.

## What teaching practices do observational tools assess?

There are multiple published and unpublished classroom observation systems available for use and deciding among them is the first step in putting an observational system to work.<sup>26</sup> The primary advantage of using an existing observation tool is that it saves a great deal of time and resources that would otherwise be put into developing a new instrument, even one with minimal levels of reliability and validity for predicting outcomes of interest.

Different instruments provide users with different types of information about classrooms. Some are quite broad in nature, providing data on the physical environment, the types of activities, or the teacher's execution of professional responsibilities such as record keeping and communicating with families. Others adopt a more focused approach, such as exclusively attending to a specific set of instructional interactions that take place within short observation windows or focusing on comparisons between the experiences of specific groups of students within the classroom. Still others strike a balance in terms of scope, including information on a variety of teacher and student behaviors but excluding information that would require knowledge outside of what is obtained during specified observation windows (for example, not including information about how a teacher communicates with parents, makes lesson plans, and more). It is important that users begin by defining the goals that their organization has in using a particular observation tool. After defining the desired output information, users can then select a measurement tool that is aligned with their objectives.

In addition to ensuring a match between the scope of an observation instrument and the defined goals of an organization, users are advised to consider the specific design of the instrument, including its age range and the grade levels from which data on the psychometric properties of the instrument have been obtained. If your goal is to assess fourth-grade classrooms, for example, it is ideal to use an instrument that was generated with this developmental level in mind and has been validated for use with this age group.

Relatedly, some users may want to focus more on the provision of general support for learning, whereas others may have programmatic goals that focus more specifically on the quality of instruction in different content areas, such as mathematics or reading. There are instruments available that assess implementation of content-specific learning supports as well as tools that focus on supports linked to student growth and development across content areas. If an organization has a particular

interest in a certain content area, they may wish to supplement a protocol for observing generalized supports with one that includes specific interactive practices relevant to the content area of focus.

## Focusing observational protocols

### Content specific or more general?

The fictional Fairmont school district is considering mandating the use of a new mathematics curriculum in all of its schools. A small number of teachers who are pilot testing the new curriculum have been trained on this approach to teaching mathematics and have been provided with all needed materials. The district is now looking to evaluate the extent to which teachers using the new curriculum are incorporating high-quality strategies for teaching mathematics in comparison with the extent to which teachers in a control group of schools are also incorporating such strategies in their math classes. The aim of the evaluation is to help the district decide whether the new curriculum is a good choice for districtwide use.

In this scenario the Fairmont school district may wish to use an observation protocol that is focused on research-based definitions and descriptions of high-quality mathematics instruction or to supplement a more generalized observational protocol with a content-specific protocol for mathematics instruction.

In contrast to Fairmont, the make-believe Lakeview school district wants to conduct an observational assessment of all its teachers in order to gain a better understanding of systemwide areas of strength and weakness that will enable the district to plan for in-service programming and create individualized professional-development plans for teachers. Observers will conduct multiple observations per day, which means these observations will occur at different times of day and during different activities for different teachers.

The Lakeview district would likely benefit from use of a protocol that is designed to assess generalized supports for learning that produce benefits for student development across content areas since not all teachers will be observed teaching the same content areas.

An additional consideration that falls within this question concerns the specificity, or “granularity,” of the behaviors being observed. For example, is the observational system capturing information on specific, highly discrete teacher behaviors (for example, counting the times the teacher praises a child) or on more global, but well-defined patterns of behavior that unfold over a lesson or period of time (for example, a tendency to use a variety of ways to motivate students)? Measures using *frequency counts* or *time-sampling methodology* ask users to count the number of specific types of behaviors observed in a specified time window (usually short in length). *Global ratings* guide users to watch for patterns of behavior and make integrative, summary judgments about value, nature, or quality of those behavioral patterns. Some examples of behaviors assessed by time sampling measures include time spent on

literacy instruction, the number of times teachers ask questions during instructional conversations, and the number of negative comments made by peers to one another. In contrast, global-rating systems may assess the degree to which literacy instruction in a classroom matches a description of evidence-based practices, the extent to which instructional conversations stimulate children's higher-order thinking skills, or the extent to which classroom interactions contain a degree of emotional and behavioral negativity between teachers and students and among peers.

Recalling the earlier discussion about the early childhood environmental rating scale and how program-quality investments tracked the metric, particularly the features of programs that reflected materials and the physical environment, the lesson there was that observational indicators drove investment and training in ways that changed levels on those indicators. Specificity of the actual observational indicator matters here. To the extent that what gets observed gets done, then observational approaches that focus on counting behaviors (for example, the number of open-ended questions a teacher asks or the frequency with which a teacher does a specific action) will drive increases in those discrete behaviors as the observation rolls out into accountability of program improvement work. There is a tradeoff with specificity, however. Generally speaking, it is easier to obtain high levels of reliability for highly specific and discrete behaviors using counting or time-sampling collection methods. But those discrete indicators have shown little power in relation to predicting student learning gains. Rather, data collected over time that capture broader yet well-defined features or patterns of interaction tend to be better contextualized to the individual classroom setting and better demonstrate predictive power in relation to accounting for student learning. More general codes focused on patterns of interactions and behaviors require some judgment by observers and hence are more challenging with regard to reliability and training while showing stronger relations with student learning.<sup>27</sup>

There are advantages and disadvantages to each type of system. An advantage of global ratings is that they assess how behaviors are organized and results can be more meaningful to teachers rather than a simple count of discrete behaviors in isolation. To illustrate this point consider the act of smiling by a teacher, which can be termed a teacher's positive affect. This act of smiling can have different meanings and may be interpreted differently depending on the response of students in the classroom. In some classrooms teachers are exceptionally cheerful but their emotional displays are inconsistent with those of students. Other teachers are more subdued in their emotions but there is a clear match between teacher and student experience. A measure that simply counted the number of times a

teacher smiled at students would miss these more nuanced interpretations. In this case an observational instrument, with a focus on frequencies of specific behaviors may lend itself to easy alignment with the evaluation of focused interventions. If a goal is, for example, to increase the numbers of times teachers provide students with specific feedback, then time-sampling methods could be useful. Time sampling could yield specific data on intervention effects on feedback by counting the frequencies of specific feedback behaviors before and after the intervention (or in classrooms that did and did not receive the intervention). Similarly, the success of an intervention designed to increase the amount of time spent in learning activities (versus “down time”) could be evaluated using time sampling methods.

One other difference related to the granularity of observations concerns the degree to which specificity is related to observer effects. Scores obtained from global ratings appear to contain more information about the observer than time-samplings of more discrete behaviors. This finding is not surprising given that global ratings tend to require greater levels of inference than do frequency approaches. Counting the number of times a teacher smiles, for example, requires much less inference than does making a holistic judgment about the degree to which a teacher fostered a positive classroom climate. This point emphasizes the need for adequate training and strategies for maintaining reliability among classroom observers, issues we consider in greater detail shortly.

The apparent advantages of more discrete behaviors in terms of somewhat lower observer-related variance, however, are counteracted by a number of other facets of observation. This brings us to another factor to consider: the extent to which an observational score can be attributed to stable characteristics of a teacher versus factors that change over time as a result of a number of variables, including subject matter, number of students, and time of day. This is a very important consideration when the desired outcome of the observation is to make some inference about a teacher’s skills or capacity. Evidence clearly suggests that more discrete, specific behaviors such as those that can be counted or time sampled do not capture stable features of teachers or classrooms, whereas more global ratings that capture patterns of behavior reflect properties of a specific teachers’ approach to interaction that remain stable across periods of the day, days of the week, months, and even content areas. Highly specific and discrete codes do not appear to capture the behavioral tendencies of teachers that are stable across time or that distinguish between different teachers’ styles.

Is the observation protocol standardized in terms of administration procedures and does it offer clear directions for conducting observations and assigning scores?

It is important to select an observation system that provides clear instructions for use, both in terms of how to set up and conduct observations and how to assign scores. Without standardized directions to follow, different people are likely to use different methods, which severely limits the potential for agreement between observers when making ratings, thus hampering systemwide applicability.<sup>28</sup> In this regard standardization is not the same as reliable or valid, instead it refers to the rules and procedures for observing and ensuring consistency and quality control in how information is collected. These procedures include considerations of time of day, qualifications of observers, length of the observation, and other features that could undermine the quality of data collected and ultimately the inferences drawn from those data.

## Importance of standardization for observational instruments

A teacher-preparation program is looking for a way to assess their students' performance at the beginning and end of their student-teaching experience, during which time they are also taking a course on effective teaching practice. Program officials find "Observational Protocol A," which has six clearly defined, theoretically based, 10-point scales that observers use to rate teacher practice. Several members of the faculty read the definition of the six scales and agree that the teaching behaviors the scale assesses are aligned with the course objectives as well as with the broader goals of the program. It is decided that the six scales would be good targets for assessment. The program selected, however, does not include training or observational protocols or explicit directions for scoring. As a consequence, Observational Protocol A is used quite differently by the two faculty members in assessing student performances.

When Professor A makes observations he arranges the observation time in advance with the teachers. He arrives at the appointed time, but does not begin the observation until he can tell that the teacher is

ready to begin the lesson and he ends the observation as the teacher ends the lesson. During this time he takes detailed notes about the teacher's practice along the six dimensions. When scoring, he reasons that if he sees a teacher engaging in the behaviors under consideration several times, they should get "full credit," or a 10, on the scale.

Meanwhile, Professor B also conducts observations using the same well-defined scales, but her visits are unannounced. She typically arrives at the beginning of the school day and begins taking notes as soon as she arrives and observes for two consecutive hours, regardless of start and stop time of activities. In terms of scoring, she reasons that teachers start at a "1" level and she moves the score up a point on the scale every time the teacher successfully engages in the behavior under consideration. Given these differences in protocol, it is likely that Professor A's scores could be systematically higher than Professor B's.

*continued on next page*

This example shows that even with well-defined codes, it is extremely important to have a clear observation and scoring protocol that all observers follow in order to obtain scores that are consistent across observers. In this example, note that significantly different scores are likely to result from Professor A's observations and Professor B's observations as a result of their different administration and scoring techniques, and that these scores may or may not reflect real differences between the two teachers they observed. For instance, if Professor A

used his interpretation of the protocol to conduct initial start-of-student-teaching observations and Professor B used her interpretation of protocol to conduct the end-of-student-teaching observations, any real gains in teaching practice could be obscured. What's more, the preparation program might conclude that the course and teaching experience did not function as effective preparation when in fact, if the teachers were evaluated using the same protocol on both measurement occasions, they might have shown improvements.

There are three main components of standardization that users may consider when evaluating an observation instrument: training protocol, parameters around observation, and scoring directions. With regard to the training protocol there are several questions: Are there specific directions for learning to use the instrument? Is there a comprehensive training manual or user's guide? Are there videos or transcripts with gold standard scores available that allow for scoring practice? Are there other procedures in place that allow for reliability checks such as having all or a portion of observers rate the same classroom (live, via video, or via transcript) to ensure that their scoring is consistent? Are there guidelines around training to be completed before using the tool such as do all observers need to pass a reliability test, observe in a certain number of classrooms, or be consistent with colleagues at a certain level?

Regarding parameters around observation, users are also advised to look for direction and standardization in terms of the length of observations, the start and stop times of observations (are there predetermined times, times connected with start and end times of lessons/activities, or some other mechanism for determining when to begin and end?), time of day, specific activities to observe, whether observations are announced or unannounced, and other related issues.

As for scoring, users are advised to look for clear guidelines. Some questions to consider: Do users score during the observation itself or after the observation? Is there a predefined observe/score interval? How are scores assigned? Is there a rubric that guides users in matching what they observe with specific scores or categories of scores such as high, moderate or low? Are there examples of the kinds of practices that would correspond to different scores? Are scores assigned based on behavior counts or qualitative judgments? How are summative scores created and reported back to teachers?

## Does the observation include reliability information and training criteria?

Reliability is a key consideration in selecting an observational assessment tool.<sup>29</sup>

Reliability is a property of any measurement tool that refers to the degree of error or bias in the scores obtained. It addresses the extent to which a tool measures those qualities consistently across a wide range of considerations that could affect a score, for example, the raters themselves, the length of the observation period, and observer training. In observational assessments of classrooms, a reliable tool produces the same score for the same observed behaviors regardless of features of the classroom outside of the scope of the tool and regardless of who is making the ratings. Just as a yardstick registers the same number of inches when measuring a given sheet of paper, regardless of whether that paper is measured during the day or at night, inside or outside, or who is holding the yardstick, a tool that measures teachers' ability to promote student language should produce the same scores for the same behaviors, regardless of whether these behaviors occur during math or literacy, whole group or small group, and regardless of who is making the ratings.

## Consistency is the foundation of observation

Let's consider the experience of two observers who we will call Principal Menendez and Vice Principal Edwards. Both individuals are conducting observations in their school using the same standardized protocol on which they have both been well trained. Menendez and Edwards both want to make sure that they are consistent not only with the scoring manual, but also with one another since they will split classrooms between them and do not want differences between the two of them to result in unfair advantages or disadvantages in the ratings the classrooms are given. Therefore, they decide that on a regular basis, once every 10 observations, for example, they will go into classrooms together, observing and rating the same lesson to check the consistency of their scores. They frequently find that they are scoring reliably, however, if there are discrepancies between their scores, they discuss them to make sure that they are interpreting behaviors consistently with the instructions supplied by the system. They find that this keeps them from drifting from the scoring protocol outlined in the manual and gives them confidence that they are truly using the same yardstick to measure the performance of all teachers in their school, regardless of who is conducting the observation.

In another example, observer Brown and observer Yang both conduct classroom observations assessing the efficacy of teachers' behavior-

management techniques among other things. Observer Brown is rating a classroom in which a teacher is working with a group of 10 students on a hands-on science lesson. The teacher engages in effective behavior-management techniques, her expectations are clear, and she helps the students learn to regulate their own behaviors in positive, efficient ways.

Meanwhile, observer Yang is rating a different classroom in which the teacher is managing the behavior of a group of 23 students as they wait for a guest speaker who is unexpectedly delayed. This teacher engages in the same kinds of behavior-management techniques as in the science classroom—expectations are clear, the teacher is positive and effective, and helps the students learn to self-regulate their behaviors. Despite the differences in group size and classroom activity, these two teachers receive the same scores on the behavior management scale because they are engaging in the same types of behaviors with the same levels of efficacy. These two teachers may receive different scores in other areas such as questioning or use of time, but their behavior-management techniques were equivalent in quality and thus are scored the same.



There are several aspects of reliability, but perhaps the two most relevant when considering classroom observation systems are *stability over time* and *consistency across observers*.

Turning first to stability over time, assuming a goal is to detect consistent and stable patterns of teachers' behaviors, users need to know that constructs being assessed represent a stable characteristic of the teacher across situations in the classroom and are not random occurrences or behaviors that are linked exclusively to the particular moment of observation. If ratings shift dramatically and randomly from one observation cycle or day or week to the next, these ratings are not likely to represent core aspects of teachers' practice. Conversely, if scores are at least moderately consistent across time, they likely represent something stable about the set of skills that teachers bring into the classroom setting and as a result feedback and support around these behaviors is much more likely to resonate with teachers and function as useful levers for helping them change their practice. It is advantageous if observational tools provide information on their test-retest reliability or the extent to which ratings on the tool are consistent across different periods of time (within a day, across days, across weeks, or more).

A notable exception around the criteria of stability over time as a marker for reliability, however, is when teachers are engaged in professional-development activities or are otherwise making intentional efforts to shift their practice. In these cases, as well as in cases where a school or district's curriculum is changing or new programwide goals are being implemented, a lack of stability in observations of teacher behaviors may well represent true changes in core characteristics and not just random (undesired) fluctuation over time. In these cases it would be desirable to collect data on the extent of change and specific areas where change is observed.

With regard to stability across observers, in order for results of observations to be useful and valid, training protocols and provisions of scoring directions must be clear enough to produce agreement across observers. If there is very low agreement between two or more observers' ratings of the same observation period, the degree to which the ratings represent the teachers' behavior rather than the observers' subjective interpretations of that behavior or personal preferences is questionable. Conversely, if two independent observers can consistently assign the same ratings to the same patterns of observed behaviors, this speaks to the fact that ratings truly represent attributes of the teacher as defined by the scoring system as opposed to attributes of the observer. Therefore, users may wish to select

There are several aspects of reliability, but perhaps the two most relevant when considering classroom observation systems are *stability over time* and *consistency across observers*.

systems in which there is documented consensus among trained raters to what extent teachers are engaging in the various behaviors under consideration.

If there will be several different observers making ratings, an important consideration is how much variability in scores can be attributed to the raters themselves.<sup>30</sup> Not surprisingly, rater effects are significantly higher when using observation systems requiring raters to make global judgments than with time-sampling systems that provide counts of low-inference behaviors. Almost every observational system, however, will have some rater effects and therefore it is important to be aware of these effects and make efforts to keep them to a minimum regardless of the type of observation system being used.

Rater effects are most relevant if there will be multiple people conducting observations within a given system. Even if a single individual is conducting all observations within a school, and if these ratings will not be used in comparison to ratings completed by other raters or in other schools, it is still important for each observer to receive excellent training on the instrument, meet “gold-standard” criteria prior to conducting observations, and to take periodic “drift” tests to ensure that they remain reliable with the standards outlined by the developers of the measure such as those standards that have proven links to student outcomes. When there are several different observers, the importance of this issue is multiplied as each individual observer must maintain reliability with both the “gold-standard” criteria of the instrument developers as well as with one another.

Several steps can be taken to minimize rater bias.<sup>31</sup> First, it is important to select tools that are well standardized and have documented potential for reliable use across observers. In addition, implementing a high-quality training program for all observers will help ensure that raters are more consistent with one another. Similarly, including periodic “drift” testing at predetermined intervals (annually or biannually if observations are conducted for professional-development purposes and monthly if data will be used for accountability purposes) can offer a refresher in scoring procedures and help improve the degree to which raters remain consistent with scoring protocols and with each other.

With regard to scheduling observations/assigning raters to classrooms, rotating raters across teachers can help avoid systematic variance in scores. If, for example, all classrooms are visited twice over the course of the year and Vice Principal Smith and curriculum coordinator Jones share observation responsibilities, consider having each rater observe each classroom one time. Random assignment

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of observers to classrooms can also be useful in reducing systematic rater bias. Alternately, if time and resources allow, multiple raters can observe and rate classrooms simultaneously and their scores can be averaged thereby reducing the amount of bias introduced by any single observer.

### Is there evidence for the validity of the observational metrics?

Validity represents the degree to which scores or metrics derived from the observation system are associated with specific student or teacher outcomes. Along with reliability considerations, validity is one of the most important aspects to consider when selecting an observation instrument. Different observation systems have varying levels of data available on how closely aligned the outputs of observations are with students' performance in a specified area, students' growth on specified skill sets or other outcomes of interest.

Selecting instruments with demonstrated validity is critical to making good use of observational methodology because this information allows users to have confidence that the information being gathered is relevant to the outcomes that they are interested in and that the types of behaviors outlined in the system can be held up as goals for high-quality teacher practice. Without validity information users have no such assurances. Knowing that assessment tools are directly and meaningfully related to outcomes of interest before they are used either in professional development or accountability frameworks is important.

Equally important is clarity. A system may be valid for one set of outcomes but not for another, so clarity around outcomes of interest is key. An observation system, for example, may include validity data regarding the prediction of students' academic achievement during that school year, but it may demonstrate no relation to student dropout rates in subsequent years. If the objective of conducting the observation is to evaluate whether teachers are engaging in behaviors that promote students' learning over the course of the year, this may be a well-suited instrument for that purpose. But if the objective is to determine whether teachers are enacting behaviors that will prevent students from dropping out, a different observation with documented links to dropout rates may be preferable.

If a user has a particular observation tool that is aligned with the questions they want answered about classroom practice and meets the criteria summarized previously (for example, standardized, reliable), there is always the possibility that no data

will be available on validity for the particular outcomes that the user is interested in evaluating. In these instances, it would certainly be possible to use the observation in a preliminary way and evaluate whether it is, in fact, associated with outcomes of interest. A district, for example, could conduct a pilot test with a subgroup of teachers and students to determine whether scores assigned using the observation tool are associated with the outcomes of interest. This testing would provide some basis for using the instrument for accountability or evaluative purposes.

In sum, the importance of selecting an observation system that includes validity information cannot be overstated. It may be difficult to find instruments that have been validated for your purposes, but this is truly essential for making observational methodology a useful part of teacher evaluation and support programs. If the teacher behaviors that are evaluated in an observation are known to be linked with desired student outcomes, teachers will be more willing to reflect on these behaviors and “buy in” to observationally based feedback. Further, teacher educators and school personnel can feel confident establishing observationally based standards and mechanisms for meeting those standards, which means educational systems, teachers, and students will all benefit.<sup>32</sup>

### The importance of complementary sources of information

Obtaining information about classrooms from multiple sources and from different perspectives, including the perspectives of teachers, students, and individuals who are generally familiar with the classroom on a routine basis, as well as the observers’ data collected during the specific observation window, can provide a more comprehensive picture of the classroom environment. This can also be helpful in terms of providing constructive feedback in that one could seek out coherent patterns in responses across observers/raters. Having a teacher engage in a self-study or self-assessment in conjunction with structured observations made by neutral observers may be an example of a useful way of facilitating goal setting and problem solving with teachers. Likewise, obtaining students’ perspectives can be an invaluable resource in understanding how specific teacher behaviors impact students’ subjective experiences of the classroom. Equipped with this information, those providing feedback to teachers may be able to present a richer picture of what is happening in the classroom and how that impacts all classroom participants, including the teacher’s own feelings of efficacy and students’ experiences of support and challenge in the classroom.

As the goals of conducting observations include not only gathering information on the quality of classroom processes but also using that information to help teachers improve their practices (and, eventually, student outcomes), observation systems that include a protocol to assist in translating observation data into professional-development planning is desirable. Information such as national norms and threshold scores defining “good enough” levels of practice (levels of quality that result in student improvement), or expected improvements in response to intervention would be extremely useful to have, although few, if any, instruments currently provide this kind of information to users.

Also useful are guidelines or frameworks for reviewing results with teachers, suggested timelines for professional-development work, and protocols that can be given to teachers or placed in files that can be easily translated into systemwide databases and handouts with suggested competence-building techniques. Few, if any, observation systems currently provide these types of resources.

Different school systems have different resources available to devote to classroom observation. Some schools have personnel available to spend full days in classrooms in order to obtain data on important aspects of classroom functioning. Other school systems have less time available on a per classroom basis. In selecting an observational assessment instrument, it is vitally important that the instrument is used in practice in the same standardized ways it was used in development in order to obtain results with the expected levels of reliability and validity. Some instruments have been tested and validated using longer periods of observation than others. For that reason users may wish to generate a realistic approximation of how they will allocate observation time before selecting an assessment tool to ensure that the instrument selected can be used reliably and with validity within the parameters of that time budget.

Different systems of observation require different time commitments. The amount of time that the observer will have available to them can be an important practical consideration when selecting an observational system. Keep in mind that in general, the more ratings one is able to obtain and aggregate, the more stable an estimate of typical teacher practices one will have. Most observational systems reporting sufficient levels of reliability and validity require a substantial amount of time for observation (at least one hour). If these types of validated tools are used, then ways must be found to accommodate these time demands. There is clearly a need for validated observational tools that can be completed quicker, particularly

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to accommodate the more typical observational strategies used by principals (which may be 5- or 10-minute walkthroughs), but none are currently available that meet the criteria reviewed above.

With regard to time of day, there is some evidence that, at least in elementary schools, observations completed during the first 30 minutes of the school day may yield lower ratings on some aspects of teaching, such as instructional practices, than observations conducted during the rest of the day. This isn't surprising given that this initial period of the day is typically used to complete management activities such as taking attendance and listening to school announcements. There is also some evidence that the quality of some social aspects of the classroom environment, such as classroom climate, may decrease over the course of the school day, which may reflect teacher and student fatigue. Other aspects of teaching practice, like instruction, seem to be more consistent after the first 30 minutes of the school day. Users of classroom observations may wish to consider these factors when deciding when to observe. There may be good reasons to observe during the beginning of the school day, however, if scores on observations are going to be used to compare teachers, a good policy may be to standardize the observational protocol to either include or not include these first 30 minutes.

With regard to time of year, findings from observations throughout the school year indicate that by and large there is consistency in teachers' behaviors over time, but there are indications that in general scores are somewhat lower at the very beginning of the year, around the winter holidays, and again at the end of the school year. For these reasons it is advisable to avoid the first and last months of the school year and days leading up to the winter holidays if the objective is to obtain scores that accurately represent typical practice.

### Summary: Choosing and using observational protocols

While it may not always be possible to find tools that meet all the criteria we've outlined, it is nonetheless important that users evaluate potential observation systems with these criteria in mind and consider ways to address areas of concern. (Consider pilot testing and data gathering if an instrument hasn't been evaluated as a predictor of your specific outcomes of interest).

Above all, users must understand the types of inferences that are appropriate based on the data collected. Observational data can support inferences related

to identifying teacher classroom behaviors that matter for students, describing typical practices in classrooms, determining how a given classroom or teacher compares with a national or district average, predicting what is the teacher's likely contribution to children's learning, and determining the extent to which teachers' practices improve in response to professional development. In order to draw any conclusions from observational data, however, the instruments must be subjected to extensive testing and evaluation. Users must be cautious to not overstep the appropriate use of observational instruments.

There is currently very little data to indicate the appropriateness of cut-off scores that would separate "sufficient" from "insufficient" levels of teaching skill on any of the reviewed instruments. Likewise, there are no published norms to guide expected levels of change in response to a given intervention strategy over a given period of time. For these reasons we must be extremely cautious in using observational data to determine whether teachers pass or fail in their provision of quality teaching or whether their progress in response to intervention is sufficient or lacking. In the future, with additional research, these types of inferences are likely to be more tenable. For the time being, however, the most appropriate use of observational data is to provide a sense of individual or programmatic areas of strength and areas of challenge, to guide individualized professional development or other support, and to determine if that support is working to move teachers "up" in their ability to provide quality teaching.

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### Using observation data to systematically improve the quality of classroom practice

Certainly the goal is to use observational methodology and the data acquired from observations to help teachers meet the challenges they face and in so doing improve the quality of their classroom practice. Creating a highly effective professional-development system is a sizable task that requires orienting efforts toward ongoing, individualized support for teachers to produce specific practices that impact students' growth and development.<sup>33</sup> This is a significant shift from the current standard—a workshop-based, one-size-fits-all approach.

Professional development is most effective if it is constructed around helping teachers make improvements in areas that really matter for students, when those areas targeted for observation and improvement are clearly defined, and when all participants agree that the targets of the observation are valid goals to work toward.



Selecting an observational tool that has demonstrated associations between observation-based scores and high-priority aspects of student development is helpful in getting all participants on the same page on what is being observed and why. The behaviors being observed can be directly translated into goals for practice. The language used by the tool provides members of an organization with a shared vocabulary and an underlying understanding of program goals along with facilitating clear communication and collaboration.

## Enhancing the teacher-observer relationship

Mr. Jones, a teacher, feels slightly anxious as he anticipates the arrival of Dr. Taylor, his assigned staff-development professional. He has had contact with Taylor only once before, at the first of his two yearly observational assessments. Taylor called in advance to arrange a time to observe, but called this morning to say he would be delayed and that he would try to make it in the afternoon. Jones understands that delays can be unavoidable but he had prepared his whole morning so that Taylor would be able to observe him testing out new strategies that he wants specific feedback about.

When Taylor finally arrives he is friendly and courteous, but seems rushed and departs after only a brief observation. He leaves a copy of his evaluation for Jones to read with a note thanking Jones for his time. The evaluation, however, fails to touch on the areas of most concern to Jones and doesn't provide the direction he was seeking because there was no lead-in conversation between Jones and Taylor. Jones wishes that he had had the opportunity to share his thoughts with Taylor rather than being "tested" by a system that was not individualized to meet his specific professional needs. What's more the evaluation provides no concrete suggestions for fine-tuning Jones's practice or links to the specific behaviors engaged in by Jones that would have resulted in determinations of "needs attention," "meets expectations," or "does not meet expectations." Overall, Jones does not find the results of the evaluation particularly useful.

For another teacher, Mr. Lee, the experience of being observed was very different. At the start-of-the-school-year in-service meetings, all

teachers received an orientation to the observational system that the school would be using to evaluate teachers. This orientation allowed teachers to get a sense about what kinds of teaching behaviors were important to incorporate into their practice and how they could expect those practices to impact students. Teachers were then paired with coaches who also gave brief overviews that included outlines of the professional-development system and how it would work. The coaches then met with individual teachers one-on-one to hear about their personal goals for the year as they related to the practices that would be assessed in the classroom observations. Coaches tried to visit classrooms on request as well as on a monthly basis. The classroom observations and feedback were focused on the specific goals that teachers had set for themselves at the start of the year or on new goals that teachers and coaches had set in response to observational findings or teachers' requests for assistance.

Lee was observed on several occasions by his coach Ms. Brown who gave him feedback about specific behaviors in written form. Each observation was followed up with a face-to-face meeting or phone calls shortly afterwards to review Brown's feedback, get Lee's perspective, and brainstorm specific ideas for making positive changes. Each meeting ended with Lee and Brown deciding together on the areas where Lee might best focus his efforts prior to the next observation. During that next observation the areas previously identified would be honed in on. Unlike Jones's experience, Lee feels that his coach/observer is a great resource and the good working partnership allows Lee to reflect on his work in a more focused and productive way.



Observational data only contributes to professional-development efforts if it is shared effectively with teachers. Giving teachers feedback about the results of observations and helping teachers reflect on this feedback in productive ways provides the bridge between knowledge about what matters for students and changes in teachers' actual practice. Both the content and style with which feedback is communicated are important areas to consider. Our recommendation, stemming from successful observationally based professional-development initiatives, is that feedback is most effective when it is: focused on increasing a teacher's own powers of observation, promotes reflection and self-evaluation skills, promotes intentionality around behaviors and patterns of interaction with students, helps teachers see the impact of their behaviors more clearly, and assists teachers in improving their implementation of lessons and activities. Doing this means providing feedback that is specific and behavioral in nature and balances attention to a teacher's positives and strengths with constructive challenges.

## Focusing observations to improve outcomes

Student teacher Ms. McIntyre was formally observed by her lead teacher, Dr. Douglas, on three occasions. Following the first observation, the two met to discuss Douglas's feedback. In her observation Douglas used a system that included five broad areas of practice, each of which including 7 to 10 subcategories.

Douglas diligently went through McIntyre's level of performance in 43 areas. Because there are so many areas, Douglas felt that she only had time to touch on the level of proficiency that McIntyre demonstrated in each area without going into detail or giving many examples of specific behaviors observed. Both Douglas and McIntyre were dissatisfied with the process. Additionally, McIntyre was unsure how to improve in areas where she lacks confidence.

During the second observation Douglas decided to focus her feedback only on an area of exceptional strength for McIntyre and on an area with which she struggles. Although all 43 areas of practice were observed, the feedback was much more directed. In the follow-up conversation of this observation Douglas was able to give specific examples of the kinds of teacher and student behaviors she observed.

She shared with McIntyre exactly how specific responses to students' comments increased engagement as well as how missing early signs of student disengagement resulted in time being taken away from instruction and instead directed to behavior. While this observational experience felt more helpful to both parties the issue of missed early signals of disengagement failed to resonate with McIntyre, precisely because she had missed them.

To remedy this shortcoming, for the next observation Douglas and McIntyre agreed to videotape the lesson so that they can review the tape together and see the exact same behavioral exchanges. Taking this approach allowed McIntyre to see exactly where she needed to shift her attention and pinpointed changes she could make in her physical presence in the classroom (moving around versus always standing at the front of the room), in the frequency with which she scanned the room, and in how she responded when she noticed a student who appeared bored. Again, Douglas still rated all 43 areas of practice if needed, but this kind of focused feedback supported by the use of video footage was much more helpful to McIntyre than simply reviewing large numbers of scores.

Certainly, making a single observation and providing feedback is a useful start, but to be effective the observation-feedback cycle needs to be repeated multiple times over the course of a school year. The aim should be to build on the lessons of the first observation and carrying those lessons forward into subsequent observations so that initial feedback is specifically addressed in follow-up observations. Just as teachers are encouraged to do formative assessments with their students in order to help them learn, this type of formative assessment of teachers' practices can help them recognize and improve their instruction. Similar to formative assessments of student learning, teachers and support personnel can use data from observations to guide planning for making changes and to guide the selection of behaviors that will be the focus of follow-up observations. This process of feeding data back into the system maximizes the effectiveness of efforts toward improvements in the teaching practice. Charting progress, being able to document systematic progress towards goals (or lack thereof), and recording agreed upon strategies for making changes all help make observational data a highly effective tool for providing support for professional development.

# Recommendations and lessons derived from observation in early childhood education

The experience with scaling-up observational assessments in early childhood education demonstrates that standardized observational approaches used to measure teacher performance represent a credible complement to the current focus on teacher credentials and degrees on the one hand and the value-added metrics of student performance on the other. Furthermore, observational approaches link more directly to professional-development systems for producing effective teaching and as such represent an alternative to credentials or degrees that may have greater long-term benefits for building capacity and quality. Below are a set of key lessons learned from work in early childhood education that may have utility for K-12 educators as they launch into the use of observational measures of teacher performance as well as for policymakers and district leaders who advocate such uses.

- Any measure must provide information in the form of metrics that discriminate among those being assessed if such measures are going to be useful in any form of decision making. Observation is no exception, thus observation should be a form of measurement and assessment consisting of codes and benchmarks applied rigorously, just as they are in assessments of student performance.
- Observations used in systems of decision making and performance improvement at any level of scale must adhere to standardized procedures. There are three components of standardization that are key elements for evaluating any observation instrument and its implementation: training protocol, parameters around observation, and scoring directions.
- The technical properties of observational protocols and scoring systems are fundamental for their use. Reliability is one of these properties and pertains to the level of random error or bias in the scores obtained. It is critical that users select tools that have documented reliability for use across observers, teachers, time, and situations when metrics obtained from these tools will be used to draw conclusions about teacher performance. Effective training programs for

observers help ensure raters are consistent with one another as they make ratings. Similarly, including periodic “drift” testing at predetermined intervals will help to improve the degree to which raters remain consistent with scoring protocols and with each other.

- Any observation of teacher performance must show empirical relations with student learning and development if the use of observation is expected to drive improvement in student outcomes. Selecting an observation system that includes validity information cannot be overstated.
- Pragmatically, observation takes time and different systems of observation require different time commitments. The amount of observer time available can be an important practical consideration when selecting an observational system. In general, the more ratings a school or district is able to obtain and aggregate the more stable an estimate of typical teacher practices will result.
- Observations can identify teacher classroom behaviors that matter for students, describe typical practices, show how a given classroom or teacher compares with a national or district average, forecast the likely contribution of a teacher to children’s learning, or document improvement in teachers’ practices in response to professional development. Users, however, must be cautious to not overstep the appropriate use of observational instruments in their enthusiasm to apply them in any and all circumstances.
- Observations can be used in both accountability and program-improvement applications. Importantly, policy and program investments can over time change the typical distribution of scores as teachers, classrooms, and programs improve. As a consequence it can be necessary to periodically “raise the bar” on performance standards or cutoff scores.
- Feedback to teachers is most effective when it is individualized, highly specific, and focused on increasing teacher observation skills, promoting self-evaluation, and helping teachers see and understand the impact of their behaviors more clearly.

The evidence from years of classroom observation in early childhood education suggests that a teacher’s performance in a classroom, in terms of actual behavioral interactions with students, can be assessed observationally in scaled-up applications using standardized protocols; can be analyzed systematically with regard to various sources of error; and in turn can be shown to be valid for predicting

student learning gains as a function of specific and aligned supports provided to teachers. Exposure to such supports is predictive of greater student-learning gains.<sup>34</sup> The widespread introduction of observations into K-12 represents a tremendous opportunity and a massive challenge to a system not accustomed to doing this type of evaluation well.

K-12 educators would do well to learn from the lessons and experience accrued by their counterparts in the early childhood sector. At a time of considerable urgency and demand for school improvements the good news is there is no need to reinvent the wheel. In fact more explicit acknowledgement of the expertise already present in early childhood education might actually help K-12 educators proceed cautiously and thoughtfully, yet move with deliberate speed as they travel along this promising path of school improvement.

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## About the author

**Robert Pianta** is the dean of the Curry School of Education, the Novartis U.S. Foundation professor of education, and a professor of psychology at the University of Virginia, where he also directs the University of Virginia Center for Advanced Study of Teaching and Learning. His research and policy interests focus on the measurement and production of effective teaching in classrooms from pre-school to high school. Pianta has published more than 300 scholarly papers and is lead author on several influential books related to early childhood and elementary education. He is the senior author and developer of the Classroom Assessment Scoring System, a method for assessing teacher/classroom quality being used in many district-, state- and national-level applications.

Pianta's assessments of teacher effectiveness are the national standard for Head Start classrooms and are included in the Gates Foundation's "Measures of Effective Teaching" study. Pianta is principal investigator and director of the Institute of Education Sciences' National Center for Research on Early Childhood Education; is principal investigator of MyTeachingPartner, a NICHD-funded clinical trial evaluation of Web-based coaching and video training for PreK teachers; and co-principal investigator on MyTeachingPartner-Secondary, an evaluation of this approach in middle school and high school classrooms.

Pianta is co-director of the University of Virginia's interdisciplinary pre- and post-doctoral training programs in education sciences and past editor of the *Journal of School Psychology*. He consults with numerous foundations as well as state and federal initiatives.

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# Individualized and Effective Professional Development Supports in Early Care and Education Settings

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**T**he opportunities to which young children are exposed in child care, pre-K and Head Start programs, and a host of other settings (including their homes), are viewed by many as a point of leverage for addressing low levels of, and gaps in, K-12 achievement, and even social and economic outcomes that concern the country at large. The public is exposed routinely, and through many different channels, to the argument that early childhood education is an asset for our nation's children and our future. Despite the attention, regulation, and rhetoric, it is abundantly clear that the early childhood system is more of a promissory note than a bulwark for the future. And perhaps most important to realizing the promise of early education in the United States is to meet the needs of caregivers and teachers for support that enhances their actual effectiveness in the setting(s) in which they practice. Understanding these needs shifts the debate from "should a preschool teacher have a BA or not" to constructing and delivering at scale a set of proven-effective professional development supports that lead to improved outcomes for adults and children. With three quarters of children from birth to 5 years old spending more than 20 hours per week in an early education or care setting, it seems reasonable to focus on strengthening the skills of the many adults who interact with them on a daily basis.

Arguing about degrees, certification requirements, or even cutoffs on a quality distribution can be distractions from the central issue of designing, testing, and implementing at-scale, the kind of supports that teachers and care providers need to be both knowledgeable and effective in fostering child development, regardless of their level of formal education. Of course, to the extent that formal education remains a workforce aim and is incentivized by policy and resources,

it would be sensible to use the vehicles of degrees and formal education credits (and associated funds) to incent or reward teachers' participation in effective professional development. But if early education programs are going to achieve high quality at scale (Pew Charitable Trusts, 2005), then new mechanisms of supporting teachers' effectiveness must be developed and tested both in preservice and in alternate certification and retraining routes used by large school

districts or alternative suppliers (Clifford & Maxwell, 2002; Whitebook, Bellm, Lee, & Sakai, 2005). The good news is that there are several promising, effective, and potentially scalable models; the challenges are that they require the providers of professional development to re-conceive the nature of and delivery systems for them to be effective.

In this article I will address three broad points relevant to increasing teachers' competence and their impacts on children's development. First, I describe features of the

## Abstract

**For early care and education programs to achieve high quality, caregivers and teachers need professional development supports that enhance their actual effectiveness in the settings in which they practice. In this article, the author discusses three areas relevant to increasing the competence of early care and education providers: (a) challenging features of the early education and care workforce, (b) the evidence for a specific focus on teachers' interactions with children in quality assessment and professional development, and (c) a summary of promising results from recent studies of professional development**

early education and care workforce to provide perspective on the challenges. I then present evidence for a specific focus on teachers' interactions with children in quality assessment and professional development, and wrap up with a summary of promising results from recent studies of professional development.

## The Early Care and Education Workforce

**S**TATES DETERMINE THE varied workforce regulations that apply to different types of teaching staff and forms of care; that is, they have different qualifications for different roles. Sound confusing? Well, as one example, in 2006, 78% of the states had preservice higher education requirements for directors of child care centers, whereas only 25% had higher education requirements for child care teachers or for providers in large family child-care homes. And even when states require some level of preservice higher education for entry into a professional role as a teacher, there are quite varied requirements for licensure or certification in early childhood. For example, in some states child development associate certificates are the preservice requirement for directors and master teachers in early childhood education programs, whereas experience alone or experience plus a high-school diploma is the most common minimum preservice requirement for child care teachers, and qualifications are often even lower for licensure as a child care provider. Even across state-funded pre-K programs there are large differences in teacher qualifications, ranging from a child development associate certificate to an associate's degree to a bachelor's degree (Bryant et al., 2004).

In the less regulated environment of family- or center-based child care, credentialing is more varied and requirements even lower. The 2007 child care licensing study (National Association for Regulatory Administration, 2009) was one of the more recent and comprehensive studies of the child care workforce. The study found that in the vast majority of states (42), directors of child care centers are required only to have some occupational-vocational training, some higher education credit hours in early childhood education, or a child development associate credential. Similarly, for individuals considered as teachers in licensed child-care centers, 40 states required some combination of a high-school degree and experience, and 13 states had no requisite educational qualifications.

Clearly, there is not a nationwide set of minimal qualifications for adults serving as teachers of young children, whether this teaching takes place in child care, Head

Start, or public pre-K. Moreover, there is too little agreement on the performance standards and metrics for those standards, and the preparation and supports that should align with performance standards are woefully out of synchrony. Child care providers and teachers play an essential role in fostering high-quality learning opportunities for young children, but children passing through early education and care settings in the birth to 5 year period can expect a stunning level of variation from year to year and setting to setting in even the most basic qualifications of those providers. Despite the wide variation, the adults are expected to unlock the promise of those settings to foster healthy development, and even to close achievement gaps at the start of school. And most important, given the exceptional variation in this non-standardized system of certification and licensure, to rely on it as a mechanism to drive professional development, skill development, and child development, would be folly.

## The Importance of Teachers' Interactions

**T**HERE IS A wealth of strong research studies involving standardized descriptions and measurements of teachers' practices in early education classrooms, and there are many experimental studies of a cluster of interventions designed to improve their practices and interactions with children. These studies emanate from both a strong conceptual and empirical base in developmental psychology and early education, but also from investigators' interests in engineering effective and scalable approaches to supporting teachers in classrooms. The results of these studies clearly show the value—for child development and learning—of the qualities and patterns of interactions with adults in early education and care settings.

Effectively fostering development and learning in early education and care settings requires precise and skillfully delivered blends of explicit instruction, sensitive and warm interactions, responsive feedback, and verbal engagement or stimulation intentionally directed to ensure children's learning while embedding these interactions in a setting that is not overly structured. Interaction that displays these features uniquely predicts gains in young children's skills development and social competence all across the birth to 5 year period and closes gaps in performance at entry to school. To be effective, caregivers and teachers of young children must intentionally and strategically weave instruction into activities that give children choices to explore and play, must engage them through multiple input channels, and should be embedded in natural settings that are



PHOTO: KAWI STREET STUDIOS

**Child care providers and teachers play an essential role in fostering high-quality learning opportunities.**

comfortable and predictable. The best early childhood educators are opportunists—they know child development and exploit interests and interactions to promote it.

A cluster of experimental and well-designed natural history studies show that teacher-child interactions can provide a boost to achievement of up to a half a standard deviation, with greater effects accruing to children with higher levels of risk and disadvantage (Domitrovich et al, 2009; Hamre & Pianta, 2005; Raver et al, 2008.). Experimental studies, although few and involving far fewer children, show similar effects. In fact, findings are almost uniform in demonstrating significant and meaningful benefits for enrollment in early education settings in which teacher-child interactions are supportive, instructive, and stimulating. Unfortunately, the odds are stacked against children getting the kind of early education experiences that close gaps in achievement. Overall, observational studies, including results from several thousand settings, indicate that young children are exposed to moderate levels of social and emotional supports and quite low levels of instructional support—levels that are not high enough to close performance gaps.

These realities about the level and distribution of high quality early education classrooms in the United States probably reflect the convergence of at least three





PHOTO: STEPHEN BOBB

**To be effective, caregivers and teachers of young children must intentionally and strategically weave instruction into activities that give children choices to explore and play.**

factors. First, teaching young children is uniquely challenging and is not easy. Second, many of the publicly funded early education programs that are included in large-scale studies (such as Head Start and state pre-K) are composed of a high percentage of children who live below the poverty line who can bring with them a collection of features that make teaching even more challenging, especially when concentrated in a classroom. Third, the system of early education operates on a shoestring of support—it is often less well-funded than K-12, classrooms are housed in trailers or makeshift locations, and teachers or care providers describe themselves as alienated from and lacking the supports available in K-12. The degree to which a teacher (or program) can provide gap-closing social and instructional interactions is a product of balancing her capacity and skills with the needs of children in the classroom—an equation that poses serious challenges to policymakers and program administrators interested in making good on the promise of early educational experiences.

### Promising Approaches to Professional Development

**G**IVEN THE CENTRAL role of teacher-child interactions in children's developmental and skill gains, one approach to professional development (Domitrovich et al., 2009; Mashburn et al., 2008; Raver et al., 2008) focuses on changing teachers' classroom behaviors. A variety of projects and models attempt to do this. Some focus on producing effective interac-

tions across a wide range of developmental domains and activities (Pianta, Mashburn, Downer, Hamre, & Justice, 2008), some focus on high-quality implementation of instruction and interactional support for literacy and language (Landry, Swank, Smith, Assel, & Gunnewig, 2006; Neuman & Cunningham, 2009; Pianta, Mashburn, et al., 2008; Powell, Diamond, Burchinal, & Koehler, 2010), and still other models focus on math (Clements & Sarama, 2008; Ginsburg et al., 2005). The evidence base is strong for approaches in all three clusters noted above.

Recent research has focused on developing and evaluating professional development models that produce effective teacher-child interactions across developmental domains as well as high-quality implementation of instruction and interactional support for literacy and language. Thus the aim is to improve the overall nature and quality of interactions and to address the finding that, even for teachers who use proven-effective language and literacy curricula, studies show these have no effect on child outcomes when the quality and effectiveness of implementation (i.e., instructional interactions), are low (Dickinson & Brady, 2005; Howes et al., 2008). Early childhood educators, including many with a bachelor's degree, appear drastically underprepared in how to implement instructional activities, are rarely exposed to multiple field-based examples of objectively defined high-quality practice, and receive few if any opportunities to receive feedback about the extent to which their interactions and instruction promote skills.

### My Teaching Partner

The My Teaching Partner (MTP) suite of professional development resources (Pianta, Mashburn, et al., 2008) was developed to address the need to improve the nature and quality of teachers' and care providers' interactions with children across the entire range of activities that take place in early education and care settings. Professional development that focuses on interactions and quality of implementation of instructional activities must be based on a way of defining and observing interaction and implementation that shows links to growth in child outcomes; my colleagues and I based MTP on the Classroom Assessment Scoring System (CLASS; Pianta, La Paro, & Hamre, 2008), because higher ratings on CLASS dimensions predict greater gains on preschoolers' scores on standardized assessments of academic achievement and better social adjustment, even accounting for teacher, program, and family selection factors. Thus MTP professional development models rely on the CLASS as one of the central targets for teachers' knowledge and skill training. Because the majority of teacher interactions fall below the threshold levels identified by Burchinal et al. (2010), most preschool and early care settings do not operate in the *active range* (i.e., the level of quality above which researchers see impacts on children's outcomes and below which they don't see any association between observed levels of quality and child outcomes); however, evidence suggests that even small incremental improvements (in any of the three domains—emotional, organizational, instructional supports) are associated with meaningful changes in children's skills. Thus the aim of MTP supports is to move teacher-child interactions into (and up) the range in which they improve children's readiness (Burchinal et al., 2008; Hamre, Pianta, Downer, & Mashburn, 2008; Mashburn, Downer, Hamre, Justice, & Pianta, 2010).

The MTP (Pianta, Mashburn, et al., 2008) approach aligns, both conceptually and empirically, the following: (a) knowledge of teacher-child interactions; (b) extensive opportunities for observation of high-quality instructional interaction through analysis and viewing of multiple video examples; (c) skills training in identifying appropriate or inappropriate instructional, linguistic, and social responses to children's cues, and how teacher responses can contribute to student literacy and language skill growth; and (d) repeated opportunities for individualized feedback and support for high-quality and effectiveness in one's own instruction, implementation, and interactions with children. Conceptually, this is a system of professional development supports in which a direct path can be traced from professional

development inputs to teachers, to teacher inputs to children, to children's skill gains. I describe this system briefly below.

My colleagues and I developed a 3-credit course to be offered in partnership with university-based or community-college programs. The course is an intensive, skill-focused didactic experience in which students learn knowledge of how the development of children's skills is linked to features of interactions with adults (using CLASS [Pianta, La Paro, & Hamre, 2008] as the focus) in family and early education settings and learn how high-quality implementation of curricula and activities leads to skill growth (again using CLASS as the focus). Teachers learn skills to identify behavioral indicators of high-quality and effective teaching on CLASS dimensions and to identify such indicators in their own teaching.

With regard to teacher-child interactions, the course was designed to advance knowledge that teachers need to be actively engaged in interactions with children in order for learning to occur. Teachers who believe they should take a more passive role in children's learning are unlikely to engage in intentional teacher-child interactions, particularly instruction. Although definitions of *developmentally appropriate practice* assert the importance of active involvement (National Association for the Education of Young Children, 2009), many early childhood professionals assert beliefs that downplay the active role of adults in children's learning. Thus, the course materials provided examples from research and video highlighting how cognitive and language development was enhanced through intentional teacher-child interactions.

The course also provided very specific knowledge about effective interactions and used the CLASS (Pianta, La Paro, & Hamre, 2008) as the framework for this knowledge. Teachers were taught to make explicit links between behavioral actions and intended consequences for children. For example, when learning about behavior management, teachers were encouraged to watch and analyze videos that highlighted the ways in which specific teacher actions led to more or less positive behaviors among students in the classrooms. The course also targeted teachers' skills in detecting effective teacher-child interactions through video analysis. My colleagues and I hypothesized that it was not sufficient for teachers to be able to gain knowledge about effective interactions; they needed actual skills involving identification of effective interactions with a high degree of specificity in order to be most likely to transfer the coursework into changes in their practice. The primary focus of the course was analysis of videotapes from real classrooms



**Research clearly shows the value—for child development and learning—of the qualities and patterns of interactions with adults in early education and care settings.**

to develop skills of identifying effective (and ineffective) interactions and articulating specific behavioral evidence to support these judgments.

Results from the controlled evaluation of the course demonstrated that an in-service course can improve the quality of teachers' interactions with children. Among a group of 440 early childhood teachers, half were randomly assigned to take a 14-week course on effective teacher-child interactions (Hamre et al., 2010). Compared to teachers in a control condition, those who took the course reported more intentional teaching beliefs and demonstrated greater knowledge of and skills in detecting effective teacher-child interactions. Teachers in the course also reported stronger beliefs about the importance of teaching children early literacy and language skills and demonstrated greater knowledge about these skills. And it is important to note that teachers who took the course demonstrated more effective emotional and instructional practices in interactions with children. These results add to the growing literature on effective interventions for early childhood professionals that documents explicit efforts to change teachers' classroom practices (Bierman et al., 2008; Domitrovich et al., 2009; Pianta et al., 2008; Raver et al., 2008). Because the course was equally effective across teachers with less than an associate's degree as well as those with advanced degrees, it could meet a broad set of needs in the professional workforce. And there was limited, but suggestive, evidence that a portion of the benefits of the course for improving teachers' interactions

was a function of its impact on teachers' skill in detecting effective interactions in video.

Opportunities for observation of others' effective teacher-child interactions and for coaching and analysis of one's own interactions are delivered through the MTP Web site. The MTP (Pianta, Mashburn, et al., 2008) Video Library provides more than 200 video clips demonstrating effective implementation of instructional activities in literacy and language development (Kinzie et al., 2006; Pianta, Mashburn, et al., 2008). Each video clip is tagged directly to a CLASS (Pianta, La Paro, & Hamre, 2008) dimension (e.g., teacher sensitivity, quality of feedback) and is accompanied by a highly detailed annotation of the specific, moment-to-moment interactions of teacher and child(ren) in the video clip that correspond to CLASS behavioral indicators at varying levels of quality. Thus these video clips are directly linked, or aligned, with the measure and metrics for quality of teacher-child interactions that are the focus of change. Viewing these videos helps teachers become skillful observers of classroom behavior and competent in identifying the effects of teacher behavior on child engagement, cognition, attention, language, and social interaction.

MTP (Pianta, Mashburn, et al., 2008) coaching involves observation-based analysis and feedback enacted through a regular cycle of Web-mediated interaction (both synchronous and asynchronous) between a teacher and coach. Every 2 weeks, teachers videotape their implementation of instructional activities in the areas of literacy, language, and self-regulation, and send this footage to



their consultant. The coach then edits the tape into a series of brief segments that focus on a specific dimension of interaction as defined by the CLASS (e.g., concept development; Pianta, La Paro, & Hamre, 2008). The three edited segments are always of the same nature. The three segments and accompanying written feedback and questions (called *prompts*) are posted to each teacher's private Web site. Teachers view the three segments and accompanying consultant comments and respond to the prompts posed by the consultant. The intention of these prompts is to focus the teacher's attention on specific aspects of her behavior toward children and the children's response. Teachers and consultants then meet through a video-conference to discuss the prompts, feedback, and the teacher's responses, and to problem-solve. This entire coaching cycle is spread over 2 weeks and is repeated throughout the year.

In the initial evaluation of MTP (Pianta, Mashburn, et al., 2008) coaching with 220 public pre-K program teachers dispersed across 41 districts in a state, teachers who received coaching showed more positive growth for seven dimensions of CLASS-measured (Pianta, La Paro, & Hamre, 2008) teacher-child interactions, with significant gains for Teacher Sensitivity, Instructional Learning Formats, and Language Modeling. Interestingly, in follow-up analysis it was evident that coaching effects on teacher behavior were in part attributable to the amount of time teachers spent viewing and commenting on video clips of their own behavior. And in classrooms with all of the children enrolled coming from families at or below 200% of the federal poverty guidelines,

there were remarkable differences for gains in teachers' interactions. In these classrooms, there was a very large effect for Teacher Sensitivity and Instructional Learning Formats, such that it appears that the level or intensity of supports a teacher might need to be successful depend in part on how demanding it may be to address the needs of children in that specific classroom.

In examining effects on child outcomes in this first study of MTP (Pianta, Mashburn, et al., 2008) coaching, my colleagues and I examined effects on child outcomes for teachers in the coaching conditions (Mashburn et al., 2008) relative to those whose teachers had access only to the video library. Children showed better gains in directly assessed receptive and expressive language and in emergent literacy skills when their teachers received more than 20 hours of consultation support. And for early career teachers who had access only to the video library, children in their classrooms made greater gains in emergent literacy skills.

Finally, in a recent investigation of MTP (Pianta, Mashburn, et al., 2008) coaching, using locally trained coaches in 15 sites across the country, effects are pronounced and significant. Teachers (including Head Start, public pre-K and subsidized child care) improved significantly on qualities of their instructional interactions, emotional supports, and organization, with effect sizes in the range of moderate to large (Pianta, 2011). It is not surprising that other research groups have demonstrated similar results—that coaching teachers in interactions linked to instructional supports for learning and good implementation of curriculum can have significant benefits for their practice and for children (Bryant & Taylor, 2009; Koh & Neuman, 2009; Landry et al., 2006; Powell et al., 2010).

These results, both from my colleagues' and my research program and those of a range of other investigators, demonstrate quite clearly the positive impacts on both practice and on child outcomes of professional development supports that are targeted and focused on teachers' and caregivers' skills and interactions with children in the setting(s) in which they practice. Unlike nearly all other forms of professional development, these targeted, practice-focused supports—particularly those delivered in an ongoing format such as coaching, that provides job-embedded feedback on practice—produce gains for teachers and children. But even a traditional college course can produce benefits for practice. The critical elements that determine the impact of effective professional development, from what appears in the published studies and reports, are a very clear focus on specific and verifiably effective practices in classrooms (e.g., interactions, curriculum implementation), a coherent

conceptual model for teachers' understanding the impacts of both the professional development on practice and the practice on child outcomes (e.g. alignment), a specific focus on teachers' development of skills (in contrast to building awareness or changing attitudes), and, as much as possible, a connection to the actual setting and children the adult engages with everyday. In other words, not all coaching is likely to be effective, and in fact most coaching models are not.

## Summary and Implications

**T**HE BEST APPROACHES to professional development align (conceptually and empirically) the requisite knowledge of practices (interactions and implementation of curriculum) effective for improving child outcomes (e.g., language development or early literacy) with extensive opportunities for observation of high-quality instructional interaction through analysis and viewing of multiple video examples; skills training in identifying appropriate (or inappropriate) responses to children's cues and how teacher responses can contribute to students' literacy and growth of their language skills; and repeated opportunities for individualized feedback and support for high quality and effectiveness in one's own instruction, implementation, and interactions with children. Conceptually, effective professional development can be characterized as a system of supports to teachers or caregivers in which paths can be traced from inputs to teachers, to teacher inputs to children, to children's skill gains.

Again, evidence is very promising that when such targeted, aligned supports are available to teachers, children's skill gains can be considerable—on the order of a half a standard deviation on average, and as much as a full standard deviation. Unfortunately, preschool teachers are rarely exposed to multiple field-based examples of objectively defined high-quality practice (Pianta, 2005), and they receive few if any opportunities to receive feedback about the extent to which their classroom interactions and instruction promote these skill domains (Pianta, 2005). At present, there is very little evidence that the policy frameworks and resources that should guide and encourage professional development and training of the early childhood workforce are aligned with the most promising, evidence-based forms of effective professional development. Thus, it is not surprising that teachers with a 4-year degree or 2-year degree do not differ from one another substantially in either their practice or their students' learning gains, and it is not surprising that investments in courses and professional development appear to return so little to children's learning. Changes in teachers' practices truly

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The National Center for Research on Early Childhood Education focuses on conducting research, disseminating research findings, and carrying out leadership activities aimed at improving the quality of early childhood education across the United States.

do depend on the nature and type of professional development, and future considerations for policy aimed to improve the quality and effects of preschool must very clearly address this disconnect; investments in professional development need to be made far more contingent on what researchers know is beneficial to teachers and children, as opposed to on what is convenient or beneficial to professional-development providers.

Finally, one might also envision professional preparation and credentialing models based on what researchers are learning from aligned professional development—professional development that is directly targeted toward effective teacher practices and for which the inputs to teachers are tightly coupled with those practices and its evaluation. To the extent that these models of support and education for teachers can be demonstrated to produce gains in teacher competencies that produce child outcome gains, then it seems critical to build such

opportunities for professional preparation back into the pre-service sector and to find methods for credentialing and certifying teachers on the basis of participation in effective professional development and demonstration of competence. In fact, new policy statements related to professional development and career development being suggested by the National Association for the Education of Young Children (2009) explicitly identified teachers' performance in classroom settings, specifically their interactions with children, as a dimension of career advancement that should be credentialed and tied to professional development. Such statements by professional organizations reflect an openness to innovation that, paired with demonstrably effective supports for teachers, could pave the way for tremendous positive change in outcomes for teachers and children. ¶

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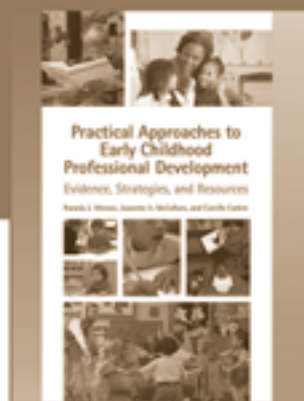
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## OUTSTANDING RESOURCE FOR EARLY CHILDHOOD PROVIDERS

### Practical Approaches to Early Childhood Professional Development *Evidence, Strategies, and Resources*

PAMELA J. WINTON, JEANETTE A. MCCOLLUM,  
and CAMILLE CATLETT

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Early childhood education and ESEA  
Connecting Early Education to K-3 through Professional Development for Effective  
Teaching and Learning  
Robert C. Pianta, Ph.D.  
Curry School of Education  
University of Virginia

TESTIMONY TO THE US SENATE HEALTH, EDUCATION, LABOR AND  
PENSIONS COMMITTEE HEARING:  
“ESEA REAUTHORIZATION: EARLY CHILDHOOD EDUCATION”  
May 25, 2010

Let me start by commending the committee on its interest in early childhood education as part of the approach to ESEA authorization. The loosely organized system of educational and developmental opportunities to which young children are exposed in child care, state-funded pre-k programs, Head Start programs, k-3 classrooms, and a host of other settings (including children’s homes), increasingly is viewed as a point of leverage for addressing low levels of, and gaps in, K-12 achievement. This is sensible policy: learning is cumulative and the skills and knowledge that children acquire early are foundational underpinnings of what they learn later – fall behind early and stay behind is the rule. The time for serious policy and program work connecting early childhood education with k-12 is now.

We now know that the long-term effects of early gaps in achievement and social functioning are so pronounced that effective and efficient early education interventions targeted toward these gaps in the preschool period are essential, not only to the developmental success of children, but to the economic and social health of communities. Both small experimental studies and evaluations of large-scale programs show consistently the positive impacts of exposure to preschool. The evidence comes from studies of child care, Head Start, and public school programs using a wide range of research methods including experiments. Lasting positive impacts have been found for large-scale public programs as well as for intensive programs implemented on a small scale, though even some of the intensive small-scale interventions were public school programs. Overall the positive long-term effects of preschool education include: increased achievement test scores, decreased grade repetition and special education rates, increased educational attainment, higher adult earnings, and improvements in social and emotional development and behavior, including delinquency and crime. Obviously, if programs provide child care they also benefit parents and can increase earnings in both the short and long-term. Increased income that results from providing families with free or subsidized child care also has positive benefits for young children’s development, though these are likely small relative to the direct benefits of high-quality preschool programs for children.

Who can benefit from educationally effective preschool programs? All children have been found to benefit from high-quality preschool education. Claims that preschool programs only benefit boys or girls, or one particular ethnic group, or just children in poverty do not hold up across the research literature as a whole. Children from lower-income families do tend to gain more from good preschool education than do more advantaged children. However, the educational achievement gains for non-disadvantaged children are substantial, perhaps 75 percent as large as the gains for low-income children. Some concerned with reducing the achievement gap between children in poverty and others might conclude that preschool programs

should target only children in poverty. Such an approach ignores evidence that disadvantaged children appear to learn more when they attend preschool programs with more advantaged peers, and they also benefit from peer effects on learning in kindergarten and the early elementary grades when their classmates have attended quality preschool programs.

But we must be very clear about the magnitude of effects, whether short or long term. Any of the evaluations cited above indicate preschool programs produce *modest* effect sizes overall, somewhat greater effects for low-income children, with some evidence that gains last through early grades. Typical child care has considerably smaller short- and long-term effects than more educationally focused programs such as selected Head Start programs or higher-quality preschool programs linked to public education. And across studies and program models/features effects range from near-zero to almost a standard-deviation on achievement tests (the size of the achievement gap for poor children). There is no evidence whatsoever that the average run-of-the-mill preschool program produces benefits in line with what the best program produce. Thus on average, the non-system that is preschool in the United States narrows the achievement gap by about 30%.

Thus despite significant investments and obvious benefits, the promise of early education as a scaled-up asset for fostering learning and development of young children in the US is not yet being fully realized—too many children, particularly poor children, continue to enter kindergarten far behind their peers. Results from the first follow-up of the nationally representative Early Childhood Longitudinal Study-Birth Cohort (ECLS-B) show a gap of roughly one standard deviation on school readiness skills for children below the 20<sup>th</sup> percentile on family socioeconomic status. Because the wide-ranging and diverse set of experiences in preschools are not, in aggregate, producing the level and rate of skills gains required for children to enter school ready, it is argued that simply enrolling more children in more programs, although helpful, will not close, or even narrow in noticeable ways, the skills gap at school entry. Rather there is a dire need for investments and attention (in research, program development, and policy initiatives) that *enhance the positive impacts* of existing and expanding educational offerings on the very child outcomes on which skills gaps are so evident.

How to construct delivery systems for the equitable distribution of such experiences, ensure the training and expertise necessary to support the value of early education, and evaluate the extent to which the delivery system produces desired outcomes for children pose serious challenges for scientists and policy-makers. K-12 education policy and practice is now grappling with, and relying on, early childhood education to an unprecedented extent, the strategic use of which is undoubtedly in the interest of America. It is quite clear that realizing the promise of early education in the United States depends on a more complete integration of early education and care experiences for 3 and 4 year olds with the k-3 system. Your opportunity, in ESEA reauthorization, I believe, is the set in motion policies that design a new entry portal into public education in the United States, one that ensures effective, integrated, aligned educational experiences for children from 3 to 8. Failing to take advantage of this opportunity only costs more downstream.

*The landscape of early education – School starts at 3, sort of*

One might ask, “How can school start at 3? Kids are at home or in child care, and compulsory education doesn’t even start at age 5 in most states—and in some they don’t even have universal kindergarten!” In some ways this perception is correct; from age 3 until whatever age enrollment in the K-12 system is mandatory, children spend time in a very loosely organized collection of settings that provide a mixed assortment of opportunities for learning. This could

hardly be described as “school” if our referent point was the local elementary school. On the other hand, parents think child care is school—in the 2000 Current Population Survey, 52% of parents reported their 3- and 4-year-old children were “in school,” some 4,000,000 children overall. Many parents seek out child care that is advertised as “improving your child’s school readiness” and some purchase billions of dollars worth of educational materials to which they expose their children as early as the first months of life.

Early education and child care settings historically have viewed learning and achievement as by-products of enrollment or exposure—one could hardly describe that as a “school.” But in the last decade the early education and care system has systematically re-focused and re-organized into loose collection of opportunities to learn that are increasingly intentional, purposeful, and driven by education policy and standards—a virtual school distributed across various settings. State and Federal pressure on early education and care is revealed in voters’ expectations that investments in the increasing formalization of this system will produce “school readiness” in the children who enter kindergarten and the analyses of economists who present the financial benefits to a community of investment in early education. K-12 education is now paying attention to the early education and care pipeline.

Over the past four decades, the federal government and most states have invested heavily in providing public preschool programs for 3- and 4-year-old children. The percentage of preschoolers in child care increased from 17% in 1965 to about 80% in 2008. A marked increase in publicly funded programs accompanied this overall increase; Head Start was established in 1965 and by 2007-2008 served nearly 900,000 children in this age range. State-funded public pre-kindergarten programs greatly expanded during the past 20 years. Now 38 states offer these programs, which served approximately 1.1 million children across the nation in 2007-2008. By 2008, about 80% of American children attended a center-based preschool program the year prior to kindergarten, most in private programs. Just over half attended a center-based program the year before that (at age 3), with two out of three of these in a private program. The combination of increased enrollment, expansion of publicly-funded preschool programs, and recognition of the unique role of early education experiences in the establishment of education success has led to a current state in which school, for all intents and purposes, starts for the vast majority of children in the United States at age 4, and for many, at 3. However, despite this general pattern, the fragmentation of policy and programs is considerable.

A widely understood example of policy fragmentation and its impact on experience is the set of regulations regarding access to K-12 opportunities. The age for compulsory school attendance in the United States ranges from 5 to 8 (Education Commission of the States [ECS], 2000), while kindergarten attendance is mandatory in some states and optional in others. Kindergarten lasts two and one-half hours in some states, and a full day (6-7 hours) in others and state-funded pre-k programs range from as short as 2.5 hours per day and as long as 10 hours per day.

The situation is far worse with regard to the balkanization and fragmentation of programs for younger children. The term “preschool” encompasses a diverse array of programs under a variety of names and auspices for children who have not yet entered kindergarten. Again we focus here only on three broad types of programs serving children at ages 3 and 4 linked to largely separate public funding streams: private child care centers, Head Start, and pre-K programs in public education. Yet the real landscape of preschool is far broader and more complex.

Enrollment of 4-year-olds is split nearly 50-50 between public (including special education) and private programs. Private programs serve about 1.6 million 4-year-olds, including children receiving public supports such as subsidies to attend these private programs. Public programs include the about 1 million children in pre-K (regular and special education) and the 450,000 4-year-olds in Head Start. At age 3, private programs predominate, serving roughly 1.4 million children. State-funded pre-K (regular and special education) serves only about 250,000 children at age 3, while Head Start serves about 320,000 3-year-olds. The point here is that even if we focus only on a narrow “slice” of the age 3 – 3<sup>rd</sup> grade span, in this case, opportunities for 3- and 4-year-olds, we see little to no evidence of consistency in policy or on programmatic initiatives that create the templates for local opportunities for children and families. In thousands of communities across the country, children, particularly the most vulnerable, are funneled into one program at 3 and then shuffled to another at 4, and yet another at 5—or worse they are among those who lack access to any of these opportunities. And most have some other sort of child care (subsidized or not) at some point in the day or week. To be concrete, if the public schools cannot manage to offer universal full-day kindergarten, then how does one go about conceptualizing and designing a system of early education and care that is aligned with it? I hope you can see the need for an age 3-3<sup>rd</sup> grade approach to policy and program improvement.

For the considerable investments of time, money and effort in early education of 3 and 4 year olds to pay off, a primary goal of policy and program development must now be the alignment of the learning opportunities, standards, assessments, and goals in early education with those in K-12.

#### *The workforce*

Enrollment of 3- and 4-year olds in early education programs is pressuring the supply chain for early childhood educators and for effective training of those educators. Universal pre-k programs for 4 year olds will require at least 200,000 teachers, with estimates of 50,000 new, additional teachers needed by 2020. Ninety-five percent of the workforce currently staffing formal preschool and early education programs comes from 4-year and 2-year early childhood training programs and certified teachers from the K-12 system, with some unknown number of adults with unknown credentials staffing family-based child care and informal care. Unlike K-12 in which the supply chain is regulated by a single state entity and typically requires a 4-year degree from an accredited institution (or equivalent), training of the early education and care workforce is widely distributed and loosely regulated. Even in state-funded pre-k programs, rapidly ramping-up has forced many states to rely on teachers with elementary grade certifications and teachers with 2-year degrees “grandfathered” into certification. Growing demand has created problems both in relation to supply of early educators who can staff expanding programs and in terms of providing new teachers with appropriate training, staff development, and support to ensure that they create learning opportunities that produce achievement.

The attributes and skills of the adults who staff elementary school and pre-school educational settings tend to be very different. At the kindergarten level, nearly all states require a Bachelor’s degree and some level of specialized training in education for adults to be certified to teach and over 95% of the teachers in kindergarten classrooms meet both criteria. Even though many have only sparse training in teaching your children.

In contrast, preschool teachers vary widely in their level of training and, on average, receive less training and education than their elementary school counterparts. There are large

differences even among teachers in state-funded pre-K programs. Minimum requirements range from a Child Development Associate (CDA) certificate to an Associate's degree to a Bachelor's degree. Furthermore, some states require that the 2- or 4-year degree be in early childhood education or child development, while others do not specify a field of study. Even in the fairly well-regulated domains of state-funded pre-kindergarten programs and kindergarten, there is substantial variance in the preparation and qualifications deemed necessary for the workforce, a reality that seems indefensible given the developmental needs of 4- and 5-year-olds. How could fostering early literacy for a 4-year-old require such a different preparation than fostering literacy in a 5-year-old?

Head Start has national standards for program structure, operation and teacher credentials, but does not require all teachers to have college degrees. Head Start is increasing their educational standards for teachers and educational coordinators, with aims that all Head Start teachers will have at least an Associates (AA) degree specialized in early childhood, and all education coordinators have at least an BA degree specialized in early childhood by the 2011 school year. And at least 50% of the Lead teachers in Head Start must have at least a BA degree by 2013. As I will note later, there is no evidence that garden variety educational experiences – coursework – will lead these teachers to be more effective in the classroom.

For children enrolled in the less-regulated ecology of family- or center-based child care, exposure to credentialed or degreed staff is even lower. The 2007 child care licensing study was one of the more recent and comprehensive studies of the child care workforce. Drawing on data gathered from 49 states and the District of Columbia, in the vast majority of states (42) directors of child care centers are only required to have some occupational/vocational training, some higher education credit hours in early childhood education, or a Child Development Associate's credential. Only one state required that directors of child care centers hold a Bachelor's degree. Similarly, for individuals considered as teachers in licensed child care centers, 40 states required some combination of a high school degree and experience. Only 10 states required some vocational program, certificate or CDA, and 13 states had no requisite educational qualification for child care teachers.

Capable early education is a complex and challenging task – teachers need to know a lot about basic child development, far more than the typical course – and they need to know about how to teach and stimulate vocabulary, conversations, early literacy, knowledge of science and the community, and early mathematics – all the while handling sensitively the varied needs of 15-25 3-8 year-olds – and within a classroom of 3 year olds the range of skills can go from 2 years to 5, while in a classroom of 8 year olds it could range from 2-12. Imagine the training and support required to support the developmental and educational growth of all those children!

Clearly we have not settled on a set of minimal qualifications for adults serving in the role of teachers of young children, whether this teaching takes places in community child care, Head Start, public Pre-K or k-3 classrooms. And we have not even begun to address the need to be consistent in our regulation and training of those skills across the 3-3<sup>rd</sup> grade span.

In short, to the extent that teachers play an essential role in fostering effective learning opportunities for young children, children passing through the preschool-3<sup>rd</sup> grade period can expect a stunning level of variation from year to year and setting to setting in even the most basic features (i.e., educational level) of these personnel.

And consistent with nearly every other form of teacher training, there is so little evidence linking pre-service or in-service training experiences or teacher credentials to child outcomes or to observed performance for teachers, that there is considerable debate about whether requiring a

4-year degree is the best way to ensure early education programs help children learn. Addressing workforce needs in this system will require a re-thinking and re-balancing of several factors, including incentives, the content and processes of training, and efforts to professionalize the workforce and integrate the early education system with K-3.

*What makes for an effective teacher in pk-3?*

Degrees are poor proxies for the instructional and social interactions teachers have with children in classrooms. Children's direct experiences with teachers, such as the ways teachers implement activities and lessons; whether a teacher is encouraging and able to assist the child if he/she is struggling; whether the teacher uses the opportunity to engage the child in conversation are the features of early education that are responsible for children's learning. The active ingredient for learning is what a teacher does, and how she does it, when interacting with a child.

Effective teaching in early education, including the elementary grades, requires skillful combinations of explicit instruction, sensitive and warm interactions, responsive feedback, and verbal engagement/stimulation intentionally directed to ensure children's learning while embedding these interactions in a classroom environment that is not overly structured or regimented. These aspects of instruction and interaction uniquely predict gains in young children's achievement, have been directly tied to closing gaps in performance, and are endorsed by those who advocate tougher standards and more instruction and by those who argue for child-centered approaches. But unlike for older children, to be effective, teachers of young children must intentionally and strategically weave instruction into activities that give children choices to explore and play, engage them through multiple input channels, and should be embedded in natural settings that are comfortable and predictable. The best teachers are opportunists – they know child development and exploit interests and interactions to promote it – some of which may involve structured lessons and much of which may not.

Interactions with teachers determine the value of enrollment in preschool and contribute to closing performance gaps. As one example, we examined whether children at risk of early school failure exposed to high levels of observed instructional and emotional support from teachers would display higher achievement than at-risk peers not receiving these supports. Two groups of children were identified: those whose mothers had less than a 4-year college degree and those who had displayed significant behavioral, social and/or academic problems, who, on average, were behind their peers at age four and further behind by first grade. Yet if placed in classrooms in which teachers demonstrated the type of interactions described above these gaps were eliminated: children from low-education households achieved at the same level as those whose mothers had a college degree and children displaying prior problem behavior showed achievement and adjustment levels identical to children who had no history of problems.

These results are consistent with a cluster of experimental and well-designed natural history studies that show a return to achievement from observed classroom quality of between a half to a whole standard deviation on standardized achievement tests, with greater effects accruing to children with higher levels of risk and disadvantage. Experimental studies, although few and involving far fewer children, show similar effects. In fact, findings are almost uniform in demonstrating significant and meaningful benefits for enrollment in early education settings in which teacher-child interactions are supportive, instructive, and stimulating. Yet these "effects" studies do not provide information on the prevalence and distribution of such "gap closing" classrooms within the system of early education and care, or how to produce gap-closing settings.

*Quality is less available than you think*

Unfortunately, the odds are stacked against children getting the kind of early education experiences that close gaps. Observational studies including several thousand settings, indicate that young children are exposed to moderate levels of social and emotional supports in their Pre-K, K, 1<sup>st</sup> and 3<sup>rd</sup> grade classrooms and quite low levels of instructional support—levels that are not as high as those gap-closing, effective classrooms described above. The quality of instructional interactions, particularly the dimensions that appear to matter most for children’s achievement, is particularly low (the average levels hover around a “2” on a seven-point scale).

In addition to somewhat low levels of instructional support, in nearly every study that includes a large number of classrooms, there is also an exceptional degree of variability in the opportunities that appear to contribute to increased performance. Observations that include several thousand child care settings, pre-k, kindergarten and first grade classrooms show that some children spending most of their time engaged in productive instructional activities with caring and responsive adults who consistently provide feedback, challenges to think, and social supports. Yet for others, *even in the same program or grade*, most of their time is spent passively sitting around, having few if any interactions with an adult, watching the teacher deal with behavior problems, exposed to boring and rote instructional activities. In some programs, even in classrooms right next to one another that share the same materials and curriculum, the exposure of children to high quality learning and social supports is so dramatically different that one would conclude the difference was planned. Children in some classrooms may be exposed to few, if any, instances of any form of literacy-focused activities, whereas in others children received more than an hour of exposure to literacy-related activities, including narrative storytelling, practice with letters, rhyming games, and listening.

Drawing from the very large sample of state-funded pre-k classrooms in the NCEDL study, we used the statistical procedures of multi-stage cluster analysis to group similar classrooms together as a way of profiling this sector of American education (the NCEDL sample represents 80% of pre-k programs serving 4-year olds in the US). They show that only about 25% of pre-k classrooms show high levels of emotional and instructional support—the type of classroom setting almost universally described as high quality (this is not unique to pre-k; we find the same rates in first and third grade). Even further troubling is evidence that the preschooler lucky enough to experience a pre-k classroom likely to contribute to achievement is unlikely to be enrolled in a similarly high quality, gap-closing classroom in kindergarten or first grade. Rather it appears that exposure to gap-closing classroom quality, although highly desirable from nearly every perspective imaginable, is a somewhat random and low prevalence event that is even more unlikely for children in poverty.

These realities about the level and distribution of high quality early education classrooms in the United States probably reflect the convergence of at least three factors. First, teaching young children is uniquely challenging and is not easy. Second, many of the publicly-funded early education programs that are included in large-scale studies (such as Head Start and state pre-k) are composed of a high percentage of children who live below the poverty line who can bring with them a collection of features that make teaching even more challenging, especially when concentrated in a classroom. Third, the system of early education operates on a shoestring of support and is not at all aligned with k-12—it is often less well-funded than k-12, classrooms are housed in trailers or makeshift locations, and teachers tend to not use the same curricula, assessments, or approaches to teaching across these years. There is no systematic approach to connecting preschool – what takes place for 3 and 4 year olds – with early elementary school –

and so we lose much of the potential leverage for early education impacts on later learning and achievement simply by the way the system is (not) designed.

*Professional development to improve teacher effectiveness and early education impacts 3-3rd*

Too few of the students who are in greatest need of effective teaching in their early education experiences receive them and the few that do are unlikely to receive them consistently, making it unlikely that the positive effects will be sustained for children who need consistent supports.

These findings should spark an interest in raising and leveling the quality of classroom supports available to young children across the ages of 3-8—this is truly a critical period for learning skills required later. One option is to focus on structural features of schools and classrooms such as teacher education and certification, class size, and curriculum and enact policies to ensure that these proxies for quality are uniformly in place. The available data do not provide compelling support for this option, although it should not necessarily be discarded altogether. Another option is to aim regulation and support at what teachers do in classrooms as they interact with children and find ways to more directly change and improve the dimensions of instructional and social interactions teachers have with children in large numbers of classrooms.

A first step in that direction would be more systematic, objective, standardized descriptions of such interactions and professional development and training systems for teachers that actually support them to interact more effectively with their students. Ultimately, such systems, if based on strong and valid metrics, may be a more cost-effective mechanism for effecting real change for teachers and children in part because rather than focusing personal and financial resources in the pursuit of *proxies* that show little relation to teacher quality and child outcomes, such a system could be organized around direct assessments of teacher/classroom quality shown to be related to children's outcomes. Increasingly there are tools to help facilitate progress toward this goal. Observational measures such as those we have developed – the Classroom Assessment Scoring System, or CLASS – and those used in other large-scale applications, that focus on standardized observation of instruction, are reliable and valid measures, directly linked to improvement in student outcomes. These tools, spanning the 3-3<sup>rd</sup> period could form the basis of strategic scientifically-based development of a new generation of professional development and policy initiatives aimed at increasing educational opportunity by forming a coherent and consistent view of teaching and learning across these ages, one predicated on an understanding of how young children learn through interactions with adults.

Others and we are innovating with technologies for conducting classroom observation at-scale. It may be quite feasible to imagine a system of program development and improvement teachers/classrooms can be observed on an annual basis using an instrument that assesses dimensions of classroom experience that contribute to child achievement.

More important than being able to observe and measure social and instructional interactions in classrooms is to design and test models for improving these opportunities to learn. What is emerging, through more systematic evaluations of professional development programs that are closely linked to classroom practice, such as mentorship and coaching, is that direct training and constructive feedback and support to teachers based on observation of their interactions with children in classrooms yield promising results for improving early education practice and children's performance. Challenges remain in how to further develop, validate, and scale-up such approaches, but the science of early education holds considerable promise for advancing these possibilities.



For the early childhood education system to move toward the goal of active and marked advancement of children’s skills and competencies, the quality and impacts of programs must be improved through a vertically and horizontally integrated system of focused professional development and program designs/models that are educationally focused (as described earlier). In short, programs themselves need to re-align around educational aims (in key developmental domains and appropriately articulated) and teachers must receive preparation and support to deliver classroom experiences that foster those aims more directly. Teaching would entail providing teacher-student interactions that promote the acquisition of new skills, delivers curricula effectively, and individualizes instruction/interaction based on children’s current skill level, background, and behavior. Programs require (and policy should incentivize use of) proven-effective professional development supports through which teachers would acquire the skills in effective teacher-child interactions and implementation of curricula and assessment in developmentally-synchronous ways.

Improvement of early education impacts rests on *aligning professional development and classroom practices with desired child outcomes*. In particular, the field needs a menu of professional development inputs to teachers (pre-service or in-service) that are proven to produce classroom practices (e.g., teacher-child interactions) that in turn result in the acquisition of desired skills among children (e.g., literacy skills). Efforts to develop such a system of aligned, focused, and effective professional development for the wide-ranging early childhood workforce are underway through the auspices of the Department of Education-funded National Center for Research on Early Childhood Education (NCRECE) and by several other investigators, which target children’s early literacy and language development, and mathematics.

Targeted intervention to improve teacher interactions with children and instruction in academic skills such as the NCRECE My Teaching Partner approach does increase effective teaching and children’s social and academic gains. Other research groups have demonstrated similar results—that coaching teachers in interactions that are linked to instructional supports for learning and good implementation of curriculum can have significant benefits for children. Mentoring and training are difficult to measure and to bring to scale, though relatively “easy” to prescribe as the professional development answer. One critical component of bringing mentoring to scale concerns the ability of systems to prepare and regulate mentors; yet only three states have defined core competencies for technical assistance providers.

Professional development approaches optimally should be designed for “high-priority” skill targets, such as preschool language and literacy or math, and start with defining these targets and ensuring that there is a curriculum in place that reflects these targets. A high priority target for literacy or math instruction is one that (a) is consistently and at least moderately linked to school-age achievement, (b) is amenable to change through intervention, and (c) is likely to be under-developed among at-risk pupils. It is clear that increasing teachers’ knowledge of developmentally relevant skill progressions can be a key aspect of improving their instruction and child outcomes yet teacher also require dedicated attention to implementing that knowledge through their interactions in the classroom.

*An innovative web-based professional development treatment for improving school readiness.* Because effects of organized curricula on children’s skills are mediated and/or moderated by teacher-child interactions, these interactions must be a *central focus* of PD interventions aiming to improve child outcomes. The average pre-k-3 child experiences teacher-child interactions of mediocre-low quality, but small increments produce skill gains.

MyTeachingPartner (MTP) Coaching focuses on improving teacher-child interactions defined and measured by the CLASS. Because the majority of teachers' interactions fall below the threshold levels *most preschool classrooms do not operate in the "active range;"* small incremental improvements are associated with meaningful changes in children's skills. Importantly, MTP is capable of moving teacher-child interactions into (and through) the range in which they improve children's readiness.

For example, the improvements yielded from MTP were substantial. MTP coaching of teachers improved their interactions and instruction and closed the achievement gap in literacy and language development for poor children by almost a third. Coaching was delivered to teachers *entirely through the web*; this is perhaps one of the first completely web-based professional development approaches that is effective, individualized, and improves teacher-child interactions across any curriculum. And the use of the web in this and other novel and effective approaches to professional development affords potential for scalability and cost-savings for travel, and location is not a precondition to individualized feedback to teachers. To illustrate, MTP is among the least expensive professional development for teachers for which cost has been documented with effects larger than those typically reported in the literature. And MTP and other web-mediated approaches can be aligned with training, certification, and degree requirements for teachers.

The best approaches to professional development focus on providing teachers with developmentally-relevant information on skill targets and progressions and support for learning to skillfully use instructional interactions, and effectively implement curricula. These approaches *align* (conceptually and empirically) the requisite knowledge of desired skill targets and developmental skill progressions in a particular skill domain (e.g., language development or early literacy) with extensive opportunities for a) *observation* of high quality instructional interaction through analysis and viewing of multiple video examples, b) *skills training* in identifying in/appropriate instructional, linguistic, and social responses to children's cues, and how teacher responses can contribute to student literacy and language skill growth, and c) repeated *opportunities for individualized feedback* and support for high-quality and effectiveness in one's own instruction, implementation, and interactions with children. This is a system of professional development supports that allow for a direct tracing of the path (and putative effects) of inputs to teachers, to inputs to children, to children's skill gains.

Again, evidence is very promising that when such targeted, aligned supports are available to teachers, children's skill gains can be considerable, on the order of a standard deviation. Unfortunately, preschool-grade 3 teachers are rarely exposed to multiple field-based examples of objectively-defined high quality practice and receive few if any opportunities to receive feedback about the extent to which their classroom interactions and instruction promote these skill domains. And at present, there is also very little evidence that the policy frameworks and resources that should guide and incent professional development and training of the early education workforce actually are aligned with the most promising, evidence-based forms of effective professional development. Thus there is little wonder that teachers with a four-year degree or two-year degree do not differ from one another substantially in either their practice or students' learning gains, or that investments in courses and professional development appear to return so little to children's learning. It truly does "depend" on the nature and type of professional development and future considerations for policy aimed to improve the quality and effects of preschool must very clearly address this disconnect and make investments in

professional development far more contingent on what we know is beneficial to teachers and children as opposed to convenient or beneficial to professional development providers.

### **Summary and conclusions**

The conclusions are fairly straightforward. First, early educational opportunities in this country are a non-system. Publicly supported early education programs (child care, Head Start, state-funded pre-kindergarten, k-3) encompass such a wide range of funding streams and targets, program models, staffing patterns and qualifications, curriculum, assessments, and teacher capacities that it cannot be understood as an organized aspect of the public system of support for children. This is unfortunate because evidence is so clear the opportunities to learn, and learning that takes place, in this age range are simply more important than at other ages, for the long-term well-being of individuals, families, and communities.

Second, despite this stunning variability and fragmentation, there is compelling evidence from well-controlled studies that early educational experiences can boost development and school readiness skills, can close achievement gaps in elementary school, and can have longer-term benefits to children and communities over time. Unfortunately, the effects of various program models are quite varied, with some rather weak and ineffective while other scaled-up programs narrowing the achievement gap by almost half. And it is quite clear that programs that are more educationally-focused and well-defined produce larger effects on child development.

Third, for children enrolled in preschool, features of their experience in those settings matter – particularly the ways in which teachers interact with them to deliver developmentally stimulating opportunities. The aspects most often discussed as features of program quality regulated by policy (such as teacher qualifications or curriculum) have much less influence on children than is desired and their influence pales in comparison to what teacher actually do with children. Critically important, interactions between teachers and children can be observed and assessed using standardized and scalable approaches (as is evident in the use of CLASS in Head Start and many school districts). Unfortunately, when assessed in this manner, it is evident that most early education classrooms fall short on teachers’ demonstrating gap-closing interactions. Finally and perhaps most promisingly, teachers’ skills and children’s learning can be improved with specific and focused professional development training and support.

If effective models of professional development can indeed change child outcomes, then the potential for scaling and building incentive and policy structures around these models becomes an important feature of systemic improvement and policy. The recent development and expansion of Quality Rating and Improvement Systems in early childhood are one such example of a set of policy initiatives that integrate measurement of inputs and outcomes with incentives and resources for teacher improvement.

Finally, one might also envision professional preparation and credentialing models based on what we are learning from studies of effective professional development and its evaluation. To the extent that these models of support and education for teachers can be demonstrated to produce gains in teacher competencies that produce child outcome gains, then it seems critical to build such opportunities for professional preparation “back” into the “pre-service” sector and to find methods for credentialing and certifying teachers on the basis of participation in effective professional development and demonstration of competence. In fact, new policy statements related to professional development and career development being suggested by the National Association for the Education of Young Children explicitly identify teachers’ performance in classroom settings, specifically their interactions with children, as a dimension of career advancement that should be credentialed and tied to professional development. Such statements

by professional organizations reflect openness to innovation that, paired with demonstrably effective supports for teachers, could pave the way for tremendous positive change in outcomes for teachers and children.

In an era of high-stakes testing in which even *young children* may be held to uniform, minimum performance standards, it is disconcerting to note that the system on which the nation is relying to produce such outcomes provides exceptional variability in the nature and quality of actual *opportunities to learn*. It seems unreasonable to expect universal levels of minimal performance for students when the opportunities in early education are so unevenly distributed. As the system of early education serving children from 3-8 in the United States evolves as an integral component of the solution to a host of problems related to schooling and achievement, serious attention is needed to policies, particularly for teachers and their professional development and support, that help re-design this portal into public education in terms of aligned, effective experiences in classrooms that indeed foster children's learning and development.



# Student–Teacher Relationships

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## BACKGROUND AND DEVELOPMENT

### **The Importance of Student–Teacher Relationships**

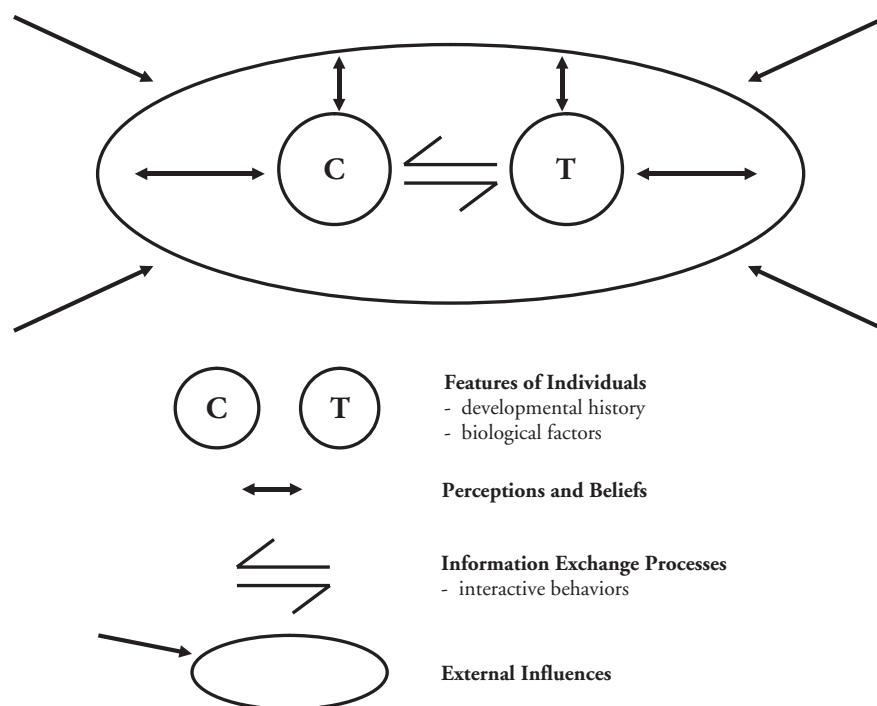
A sizable literature provides evidence that strong and supportive relationships between teachers and students are fundamental to the healthy development of all students in schools (e.g., see Birch & Ladd, 1998; Hamre & Pianta, 2001; Pianta, 1999). Positive student–teacher relationships serve as a resource for students at risk of school failure, whereas conflict or disconnection between students and adults may compound that risk (Ladd & Burgess, 2001). Although the nature of these relationships changes as students mature, the need for connection between students and adults in the school setting remains strong from preschool to 12th grade (Crosnoe, Johnson, & Elder, 2004). Furthermore, even as schools place increasing attention on accountability and standardized testing, the social quality of student–teacher relationships contributes to both academic and social–emotional development (e.g., Gregory & Weinstein, 2004; Hamre & Pianta, 2001). As such, student–teacher relationships provide a unique entry point for educators and others working to improve the social and learning environments of schools and classrooms. These relationships may be a direct focus of intervention or may be viewed as one important feature of successful implementation of many of the other interventions described in this volume.

As children enter formal school settings, either in preschool or kindergarten, relationships with teachers provide the foundation for successful adaptation to the social and academic environment. From the first day of school, young children must rely on teachers to provide them with the understanding and support that will allow them to get the most out of their daily interactions in the classroom. Children who form close relationships with teachers enjoy school more and get along better with peers. Positive relationships with teachers can also serve as a secure base for young children; they are better able to play and work on their own because they know that if things get difficult or if they are upset, they can

count on their teacher to recognize and respond to these problems.

Relationships with teachers may be particularly important for children who display early academic or behavior problems. In one study examining children at academic risk, a group of children were designated as at risk for referral for special education or retention on the basis of low kindergarten screening scores. Those who ultimately did get retained or referred between kindergarten and second grade were compared with those who, despite being high risk, were promoted or not referred (Pianta, Steinberg, & Rollins, 1995). The children who, despite predictions of retention or referral, were ultimately promoted or not referred had far more positive relationships with their teachers than their high-risk peers who were retained or referred. Similarly, highly aggressive third- and fourth-graders who are able to form supportive relationships with teachers are more likely than other aggressive students to be well liked by peers (Hughes, Cavell, & Willson, 2001). Positive relationships with teachers may even help those behaviorally at-risk students learn more adaptive behavior, as evidenced in one recent study among a group of aggressive African American and Hispanic students in which supportive student–teacher relationships were associated with declines in aggressive behavior between second and third grade (Meehan, Hughes, & Cavell, 2003).

The need for positive relationships with teachers does not diminish as children mature. Support in teacher–student relationships may be particularly salient at transition points, such as the transition from elementary to middle school (Wentzel, 1998). Middle school teachers who convey emotional warmth and acceptance as well as make themselves available regularly for personal communication with students foster the positive relational processes characteristic of support. These supportive relationships help maintain students' interests in academic and social pursuits, which in turn lead to better grades and more positive peer relationships. Although teachers are not the only source of support for middle school students, the support students receive from their parents, peers, and teachers seemed to have additive, thus fairly independent, effects. Thus, teacher



**Figure 1.** *A Conceptual Model of Teacher–Child Relationships*

support among this age group may be particularly salient for students who have low levels of parent support (Harter, 1996).

Although students have less time with teachers during high school, there is strong evidence that relationships with adults in these settings are among the most important predictors of success. Data from the National Longitudinal Study of Adolescent Health indicate that high school students reporting greater connectedness to teachers display lower rates of emotional distress, suicidal ideation, suicidal behavior, violence, substance abuse, and early sexual activity (Resnick et al., 1997). Connection with teachers was a better predictor of many outcomes than was students' sense of family connectedness. As with young students, the benefits of positive relationships with adults are not limited to social and emotional outcomes. Although both parental and teacher support are important in predicting students' achievement, a recent study indicated that student-perceived teacher connection was the factor most closely associated with growth in achievement from 8th to 12th grade (Gregory & Weinstein, 2004).

### **A Conceptual Model of Student–Teacher Relationships**

Developmental systems theory (e.g., Lerner, 1998) informs the core conceptual model for student–teacher relationships. Using this theory, the development of the person-in-context is depicted as a function of dynamic processes embedded in

multilevel interactions between a person and his or her contexts over time. Consistent with developmental systems theory, the conceptual model of teacher–child relationships presented by Pianta (1999) is reproduced as Figure 1. As discussed below, the primary components of relationships between teachers and students include (a) features of the individuals and their representation of the relationship, (b) processes by which information is exchanged between the relational partners, and (c) external influences of the systems in which the relationship is embedded.

**Individuals: Demographic, Psychological, and Developmental Factors.** At the most basic level, relationships incorporate features of individuals. They include biological facts such as gender; biological processes such as temperament, genetics, and responsiveness to stressors; developed features such as personality, self-esteem, or social skills; as well as the perceptions each individual holds of their relational partner and the relationship itself. Below teacher and student characteristics that contribute to the development of their relationships with one another are discussed.

Teacher demographic factors show a fairly inconsistent association with quality of the teacher–student relationship. Teacher experience and education have shown little relation to teachers' or students' reports about the qualities of their relationships (Stuhlman & Pianta, 2001; Wentzel, 2003). In contrast, teachers' beliefs and perceptions about students and

about their own roles are much more salient to the formation of supportive relationships in the classroom. Brophy (1985) suggested that teachers view themselves primarily as instructors or socializers and that their perceptions in relation to these two roles affect the way they interact with students. Instructors tend to respond more negatively to students who are under-achievers, unmotivated, or disruptive during learning tasks, whereas teachers who are socializers tend to act more negatively toward students they view as hostile, aggressive, or interpersonally disconnected. Teachers' self-efficacy beliefs may also affect the nature of the relationship they develop with students. Teachers who believe that they have an influence on students tend to interact in ways that enhance student investment and achievement (Midgley, Feldlaufer, & Eccles, 1989). Furthermore, when teachers hold high generalized expectations for student achievement, students tend to achieve more, experience a greater sense of self-esteem and competence as learners, and resist involvement in problem behaviors during both childhood and adolescence (e.g., Roeser, Eccles, & Sameroff, 1998); thus, these expectations are quite salient to student–teacher relationships.

Teachers' mental health may also play a role in relational experiences, as evidenced by two recent studies. Among a group of child care providers and preschool teachers, caregivers reporting more depressive symptoms were less sensitive and more likely to engage in negative interactions with young students (Hamre & Pianta, 2004), likely resulting in less positive relationships. Teachers experiencing a recent loss or depression in their personal lives were also more likely to respond in a dependent fashion to students' needs and have difficulty establishing emotional or behavioral boundaries for students (Zeller & Pianta, 2004). These teachers report their relationships with students as being a source of emotional support and comfort. Little is known about the consequences of this type of emotional investment on the part of teachers, but an extensive body of research on parenting suggests that a lack of boundaries can be harmful to children's social development.

Just as teachers bring features of themselves into the classroom, students begin to make impressions on a teacher from the moment they enter a classroom, impressions that are important in the formation of the relationships that develop over the course of the school year. Some characteristics, such as gender, are both static and readily apparent to teachers, whereas others are more psychological or behavioral in nature.

Students' relationships with teachers change from elementary to junior high school. Relationships between teachers and students become less personal, more formal, more evaluative, and more competitive (Harter, 1996; Lynch & Cicchetti, 1997). These changes can lead to more negative self-evaluations and attitudes toward learning because the impersonal and evaluative nature of the relational context in junior high does not match well with the students' relational needs (Roeser & Galloway, 2002). This disparity applies particularly to students who have lower levels of intrinsic motivation, in that teacher–student relationships (typically viewed as potential resources)

can actually exacerbate risk if they either are not positive or do not match the developmental needs of the student (Harter, 1996).

Across grade levels, girls tend to form closer and less conflictual relationships with their teachers than do boys (e.g., Bracken & Craine, 1994; Ryan, Stiller, & Lynch, 1994). Unfortunately the disproportionately female teaching workforce in elementary and middle schools makes it difficult to determine whether this consistent finding is a reflection of gender bias. Findings from the adolescent literature suggest that relational closeness may be higher for gender-matched dyads (Drevets, Benton, & Bradley, 1996) but absent a major shift in staffing of elementary and middle schools, the consequence remains the same: Boys are at greater risk of relational difficulties in schools.

Other student characteristics that may be linked to the relationships students develop with teachers include their own social and academic competencies and problems. In particular, disruptive behavior (observed, self-reported, and teacher-reported) is consistently associated with formation of less supportive and more conflictual relationships (Hamre & Pianta, 2001; Ladd Birch, & Buhs, 1999; Murray & Greenberg, 2000). According to Ladd et al., this connection between behavior and relationships may be the result, in part, of the relational style of the student (moving toward, away, or against), as discussed later in this chapter.

***Information exchange processes: Feedback loops between student and teacher.*** As with any system, the components of the student–teacher relationship interact in reciprocal exchanges, or loops, in which feedback is provided across components, allowing information to be calibrated and integrated in the feedback loops. In one way, dyadic relationships can be characterized by these feedback processes. This view of interaction as *carrying information* is somewhat broader than that of interaction as *reinforcing* or not. This perspective makes explicit the link between interaction and the participants' interpretation of the information embedded in the interaction, which is consistent with the focus on relational units of analysis. Furthermore, the qualities of information or how it is exchanged (tone of voice, posture and proximity, timing of behavior, or contingency or reciprocity of behavior) may be even more important than what is actually said or done.

Research on student–teacher interactions as they relate to student motivation provides some insight into associations between these interactions and the quality of student–teacher relationships. For example, a study of upper elementary teachers found that students had positive perceptions of the teacher when teachers were more involved with students within the social environment (Skinner & Belmont, 1993). A reciprocal association was found between teacher and student behavior: Teacher involvement fostered students' classroom engagement, and that engagement, in turn, led teachers to become more involved. This study and others suggest that students who are



able to form strong relationships with teachers are at an advantage that may grow exponentially as the year progresses.

**External influences.** Teachers and students do not interact in isolation; they are a part of a larger school community that may support or constrain the development of positive relationships. It is difficult to disentangle the extent to which student–teacher relationships and school climate influence one another, and the extent to which the balance of influence shifts as students grow older and their experiences become more widely distributed within a school. Nonetheless, there is ample evidence that school climate and the quality of student–teacher relationships share a reciprocal association (e.g., Crosnoe et al., 2004).

One interesting line of research in this area has highlighted the increasing mismatch between students' continuing need for emotional support and schools' increasing departmentalization and impersonal climate as students move from elementary to middle school (e.g., Roeser et al., 1998). Teacher–student interactions that lead students to feel supported by their teachers, and smaller communities of teachers and students, are important in enhancing young adolescents' motivation and emotional well-being. Unfortunately, in most middle schools, students spend very little time each day with any one teacher, thus limiting their ability to form close connections. Furthermore, many middle schools approach students' social and instructional needs from a perspective in which management is the goal. The ensuing control-oriented organization and techniques often backfire, creating less motivation and increasing student disengagement and hostility. These school-level effects on student–teacher relations have important implications for school-wide intervention, as discussed in the next section.

In sum, in student–teacher relationships, both parties bring an assortment of goals, feelings, needs, and behavioral styles that will ultimately affect the quality of the relationship they form and, in turn, influence the value of their experiences with one another in the classroom. These relationships may be further enhanced or constrained by external factors such as the climate and physical features of schools and classrooms.

## PROBLEMS AND IMPLICATIONS

Over the past 10 years, research on student–teacher relationships has focused on the ways in which these relationships may affect students' peer relations, parent–child relationships, academic competence, and social and emotional adjustment (for review see Pianta, Hamre, & Stuhlman, 2003). In the previous section some of the ways in which relationships between students and teachers can promote more positive outcomes were considered. In contrast, students who have difficulty forming supportive relationships with teachers are at greater risk of school failure. Poor relationships may be conceptualized as

producing concurrent risk, with conflict between a student and teacher that leads to problems in the classroom during that school year, or chronic risk, with students developing a pattern of negative relationships with teachers over time. Unfortunately, most of the research on poor student–teacher relationships as a source of risk has focused on elementary school students. Research on student–teacher relationships with older students has generally focused on the supportive context of relationships (e.g., Harter, 1996; Wentzel, 1998).

At least for younger children, relational stressors, such as student–teacher conflict, may be more powerful predictors of school adjustment than relational supports (Ladd et al., 1999). For example, in a study of kindergartners (Birch & Ladd, 1998; Ladd et al., 1999), children with greater conflict with teachers displayed lower levels of classroom participation and achievement. For some children, these early relational problems develop into more long-standing, chronic risks. Children develop a generalized interpersonal style (moving toward, moving against, or moving away) that characterizes their interactions with peers and with teachers. That relational style, which crosses socioeconomic levels, is related in predictable ways to the quality of relationships children form with teachers and peers in the classroom during early elementary school (Birch & Ladd, 1998). Those children who display *moving against* behaviors in kindergarten, such as verbal and physical aggression toward teachers and peers, are more likely to form negative relationships with teachers in first and second grade (Ladd & Burgess, 1999). Also, chronic student–teacher conflict is associated with increased problems of attention and behavior and decreased cooperation, participation, and positive attitude toward school from kindergarten to first grade (Ladd & Burgess, 2001). Chronic student–teacher conflict is a particularly strong predictor of poor outcomes for aggressive children.

These findings suggest that early relational difficulties are important indicators of problems throughout students' school careers. Indeed, a study by Hamre and Pianta (2001) demonstrated that conflict in the student–teacher relationship reported by kindergarten teachers predicted achievement test scores, disciplinary infractions, and school suspensions through eighth grade. Conflict was a better predictor of sustained academic and disciplinary problems than were teacher ratings of students' behavior problems. That suggests that students' relational capacities may be more salient than behavior problems to students' ability to adjust to the classroom environment and thus a better indicator of future school difficulties.

Although we know something about how the nature of student–teacher relationships may change as students mature (Harter, 1996), we know almost nothing about the implications of the developmental changes on the function of student–teacher relationships within the school environment. For example, young children rely extensively on teachers to structure their daily experiences, regulate their emotions and behavior, and facilitate connections with peers. Consequently,

student–teacher relationships are likely to have a somewhat diffuse influence on many aspects of young children’s classroom experiences. As children get older and their ability to form relationships with teachers becomes more circumscribed, however, the function of these relationships may move toward providing links to resources outside of classroom.

To better understand these potential developmental shifts, researchers need to perform longitudinal studies that specifically examine changes in the nature and function of student–teacher relationships and to perform more studies on the consequences of negative relationships among older students and teachers.

## ALTERNATIVE ACTIONS FOR PREVENTION

In considering applications of knowledge about student–teacher relationships across the many levels of organization and processes in schools, researchers approach the task with a bias toward deploying resources (or techniques) before problems emerge, with the distinct goal of enhancing wellness and strengthening developmental competencies (Cowen, 2000). It is in that context that improved relationships between teachers and students are either (a) a focus of intervention efforts or (b) a by-product of other efforts directed at students, teachers, classrooms, or schools. Using Eccles’s and Roeser’s (1999) model of school processes and structure, researchers can discuss an assortment of educational and psychological applications that improve student–teacher relationships, either directly or indirectly, as a consequence of other improvements in the network of systems in which the relationship is embedded. Eccles’s and Roeser’s model of the context of schooling (Eccles & Roeser, 1999) is a helpful organizing framework because of its focus on understanding the multiple layers of school organization and processes. Below, applications are discussed related to (a) organizational ethos of the school, its structure, and its resources; (b) classroom ethos and structure and the characteristics of the teacher; and (c) social interactions between teachers and students.

### Influence of School-Level Approaches on Student–Teacher Relationships

In a comprehensive review of whole-school restructuring projects and their consequences for student mental health, Felner, Favazza, Shim, & Brand (2001) concluded that often there is a “mismatch between the conditions and practices students encounter in grades K–12 and the developmental needs, readiness, and capacities of students” (p. 3). One of these needs is to form functional, effective, supportive relationships with peers and with adults in the school setting. The structure or organization of a school community greatly affects the way students and teachers feel about the time they spend at school. An emotionally and socially positive school climate contributes

to the development of students’ self-confidence, teachers’ belief that they can be effective in their jobs, and an atmosphere of cordiality in student–teacher relationships. Results from several large studies that examined mechanisms for creating such “caring communities” suggest that schools would benefit from emphasizing the importance of building and maintaining supportive, caring relationships between teachers and students (Battistich, Solomon, Watson, & Schaps, 1997).

The ability of middle and high school students to form supportive relationships with teachers is often constrained by the structure of the school day. They have short periods of time with up to six or seven different teachers over the course of the day. Changes to that structure can foster relationships by increasing the amount of time that teachers and students spend together. In Felner et al.’s (2001) approach to that challenge (which is widely used in large schools), teams of 60 to 100 students have classes together and have consistent homeroom advisers and counselors. Time is allotted for all teachers to meet and discuss students, to integrate curriculum, and increase coherence and the support available to students. Such school restructuring efforts reduce complexity for students and build a sense of continuity and community, critically, increase and stabilize contact between students and a teacher or teachers. Schools report 40–50% declines in school dropout, maintenance of achievement levels, and fewer student- and teacher-reported behavioral or emotional problems. Not surprisingly, teachers also reported higher job satisfaction and less burnout. Table 1 presents some other practical steps that schools can take to create a more caring community.

One underlying goal of many of these strategies is to encourage staff members to learn more about students’ lives outside the classroom so that they can connect with students on a more personal level. These efforts communicate to students that adults are genuinely interested in them as individuals and that they care about what is going on in their students’ lives.

### Classroom Practices and Student–Teacher Relationships

Although the school-level preventions described above often contain classroom-level efforts, other prevention programs have focused exclusively on improving the classroom climate and the quality of interaction between students and teachers.

***Teaching teachers and students about social and emotional development.*** Explicit teaching of social and emotional skills and behavioral regulation fosters relational development by providing students with opportunities to talk about difficult feelings and situations in a safe and supportive environment. Social–emotional curriculums, such as PATHS (Promoting Alternative Thinking Strategies), as described in Greenberg, Kusche, Cook, & Quamma (1995), are designed to help students identify and label feelings and social interactions, reflect on these feelings and interactions, and generate

**Table 1** *School-Wide Steps to Supporting Positive Student–Teacher Relationships*

Goal	Steps
Increase the amount of time that students and teachers spend together.	<p>Organize nonacademic extracurricular activities for students and teachers to participate in together.</p> <p>Have students and teachers eat lunch together in small, consistent groups at least a few times a week.</p> <p>Have homeroom teachers act as advisers for students. Decrease the number of transitions and “pullouts” (e.g., art, P.E., library) during the school day</p> <p>Have parents and paraprofessionals in classrooms to facilitate more small-group and individual time between teachers and students.</p>
Expand the network of adults who are available to students.	<p>Create opportunities for nonclassroom staff, such as specialists, office staff, janitors, and others, to engage with students in fun, after-school activities</p>
Model caring relationships from the top down.	<p>Involve administrators in teachers’ planning and activities.</p> <p>Teachers who feel that administrators are genuinely interested and supportive of their work are likely to impart this same interest and support to their students.</p> <p>Have teams of teachers and administrators meet regularly to discuss problems and successes with individual students.</p>
Develop disciplinary policies that carry high expectations for students while fostering caring relationships.	<p>Use mediation strategies as alternatives to punitive discipline.</p> <p>Have teachers, parents, and administrators form collaborative teams to work together on comprehensive plans for students with chronic behavioral difficulties.</p> <p>Develop school-wide systems that reward positive behavior, rather than just punish misbehavior.</p>

solutions and alternatives for interpretation and behavior, and allow them to test such alternatives. Social–emotional programs are effective in altering the quality of the classroom climate and relationships within the classroom (Conduct Problems Prevention Research Group, 1999) by providing students with a larger emotional vocabulary, a more advanced ability to connect basic emotions to personal experiences, a more advanced understanding of emotional cues, and more confidence that they can manage their feelings (Greenberg et al., 1995). All of these factors are essential building blocks to the development of positive student–teacher relationships.

Student–teacher relationships, and the student–teacher interactions that promote them, may also be the specific target of intervention in professional development efforts involving teachers. Teachers can learn specific strategies and techniques that will help them form more supportive relationships with all students in their classroom. A few such strategies are discussed below.

***Engaging in frequent social conversation with students.*** Talking with students about their lives outside of school is one way teachers can show an interest in and appreciation for students. Teachers may ask students questions about how things are going in other classes, in their after-school activities, or at home. It is important for teachers to show genuine interest in students’ responses by spending time listening, asking follow-up questions, and remembering key information (such as the name of a sports team, or the class that the student

is having a hard time in) to ask about later. Such conversations are often made more comfortable by having them during fun activities such as playing a board game or shooting baskets with a student during recess. Young students, in particular, often initiate conversations with teachers at inopportune times, such as during the middle of a lesson. Teachers can easily convey interest without sacrificing productivity by saying something such as, “I’m really interested in hearing more about that. Let’s talk about it some more after we are done with this.”

***Being available to students who are having a hard time.*** Adults in schools can provide an important resource for students who are having difficulties, but often the school day is too busy for teachers to make themselves available to the students in that way. By letting students know that they are available 15 or 30 minutes before or after school, even if it is just a few days a week, teachers can provide an important opening for students who need to talk with an adult.

***Displaying regard for students’ perspectives and ideas.*** Teachers can work on establishing more positive relationships even during academic times of the school day. One way to do that is by actively seeking and facilitating opportunities for students to share their views and thoughts on academic subjects. Teachers who try to make curriculum meaningful to students, by incorporating aspects of their and the students’ real lives and going with the flow of students’ ideas during discussions, also indicate a greater regard for their students.

***Using behavior management strategies that clearly communicate expectations and caring.*** The way teachers choose to deal with misbehavior is key to developing supportive relationships in the classroom. From a relational perspective (Pianta, 1999), well-designed behavior management systems (a) provide clear limits and tolerances that help regulate students' behavior, (b) reinforce the idea that teachers will respond in expected (and fair) ways, (c) create opportunities to give students positive feedback about their behavior, and (d) are implemented in a way that communicates care and respect of students. A relational perspective of behavior management, as distinguished from a strict behavior modification framework, applies the notion that teachers can reduce behavior problems most effectively by spending more time with students. That is in contrast to some behavioral models, which suggest that students' misbehavior may be reinforced by attention from teachers.

These behavior management approaches are the centerpiece of an Internet-based tool that is currently being evaluated in a randomized field trial in prekindergarten classrooms (Pianta, Kinzie, Justice, Pullen, Fan, & Lloyd, 2003). The Internet resource MyTeachingPartner (<http://www.MyTeachingPartner.net>) offers teachers a two-level mechanism of professional development content and support. Using this resource, teachers can access hundreds of video examples of classroom interactions with students, along with detailed text descriptions of aspects of interaction that promote, among other things, more positive relationships. The resource provides a second layer of support to teachers who are in situations requiring intervention by giving them ongoing and individualized feedback on interactions in their own classrooms. Teachers can send in videotapes of their classrooms on a regular 2-week cycle. The MyTeachingPartner consultant edits the tapes and gives feedback, then makes the edited tape with feedback available on the teacher's private webpage. After the teacher has reviewed the edited tape and comments, the teacher and the consultant then meet face-to-face for conversation that takes place over the Internet. This 2-week cycle repeats continuously over the course of the academic year. In theory, this consulting process, because it is based on actual observations of the teachers' own classroom interactions, will provide them with a resource for professional development as well as lead to higher quality student–teacher interactions. This method of delivery needs further study but offers an innovative option for providing highly individualized feedback to teachers on a large scale.

## ALTERNATIVE ACTIONS FOR INTERVENTION

The prevention efforts described above focus largely on enhancing the promotive and protective relational resources available to students at the school and classroom level. However, even the best teachers struggle at times to form

positive relationships with certain students. These strained relationships begin to interfere with the learning environment, draining energy from teachers and leading to more frequent and serious disruptions in the classroom. Thus, even a single negative student–teacher relationship can affect many students in the classroom.

The most important components of a relationally based intervention with students who are having difficulties in the classroom include (a) conducting a thorough assessment, (b) creating time to spend with the student in which the focus is on building more positive interactions, and (c) finding ways to support the student throughout the day by creating and communicating consistent relational themes.

### Relational Assessment

Although it is beyond the scope of this chapter to describe in detail some options for assessing relationships between teachers and students (see Pianta, Hamre, & Stuhlman, 2003), we present here a few key points that will help teachers, psychologists, or others to create the most effective and responsive interventions for students with relational difficulties. When describing the quality of relationships, one must approach the task from multiple points of view using multiple assessments of relational components. Relationships can be described from the inside and from the outside, with data on both the student's and the teacher's perceptions, behaviors, and beliefs. Using any one source of information about relationships almost always results in an indirect and incomplete assessment; therefore, talking with the teacher and student and conducting observations in the classroom provide important and unique information for designing an intervention. Looking for and assessing potential resources in the student–teacher relationship are also important. Being able to identify times in which things go relatively well for the student and teacher may provide information about positive aspects of the teacher–student relationship or context that the teacher can draw on in more challenging times.

### Creation of Relational Capital

A number of interventions are designed specifically to create more positive interactions between teachers and the students with whom they have the most conflict. These interventions include Primetime (Hughes, Cavell, & Jackson, 1999); Teacher–Child Interaction Therapy (McIntosh, Rizza, & Bliss, 2000); and Students, Teachers and Relationship Support (STARS; Pianta & Hamre, 2001). Although the interventions are relatively new and need more research to demonstrate efficacy, each has a strong theoretical base and derives from well-validated student–teacher interventions.

Common to all of these interventions is a focus on helping teachers and students develop new and more supportive ways of interacting with one another throughout the school day. Banking Time, the technique used in STARS to improve student–teacher interactions (Pianta, 1999; Pianta & Hamre,

**Table 2** *Relational Themes and Ways to Communicate Them in the Classroom*

Relational Themes	Ways to Communicate Relational Themes in the Classroom
I am interested in you.	Take a few minutes out of class preparation time to watch the child during P.E., her forte.
I accept you.	When the teacher or adult brings the student to you for starting a fight on the playground for the second time in a day, make an effort to communicate your frustration with compassion and calmness.
Adults can be helpers.	During an activity that you know is hard for the student, make a point of telling him before he begins that if he is having trouble you are available to support him.
I am consistent.	Tell the student that you are always around for the last 5 minutes of lunch if he needs to talk. Make sure you are there.
I am safe.	When he comes to you in tears because other children are teasing him, you listen, provide support, and take appropriate action to prevent a recurrence.
You have competencies.	Praise the student the first time she is able to sit through circle time without being asked to keep her hands to herself.
I will be here even when things get tough.	Make a point of listening to his side even when he is to blame for starting a fight with a classmate.
I can read your signals and will respond to them.	Notice when the student comes in more quietly than usual from recess and take a moment to ask how she's doing.

2001), uses brief, regular, play and interaction sessions in which the teacher plays the role of follower and listener. Its name is derived from the idea that relationships can be a resource that teachers and students rely on during their day-to-day interactions. When interactions are positive, the relationship provides support or “capital” that can be drawn on in stressful circumstances.

In Banking Time sessions, the teacher’s behavior is highly constrained in order to produce changes in interaction style and in beliefs. The emphasis in Banking Time sessions is on the student’s choice of activities, the regular occurrence of sessions (not contingent on the student’s good behavior), neutral verbalizations from the teacher (not focused on the student’s performance), and relational messages that convey safety, support for exploration, or predictability, to help the student and teacher define their relationship. When implementing Banking Time with a target student (typically a student with whom the teacher reports high levels of relational conflict), teachers report changes in communication with the student (the student more readily shares personal information) and less relational conflict. They also feel more effective in their interactions with the student and report knowing the student better than before.

The Banking Time technique acts on nearly every component of a relationship between a student and an adult; thus, it is a powerful source of pressure on the relationship system. By constraining the adult’s behavior, a variant of the typical interaction is created that is reportedly viewed as different, novel, and better by most student and adult participants. The student is freed to display behaviors (and competencies) that are not typically seen in routine interactions between teacher and student. The student often explores interacting at a higher level and shows interest in the teacher and the teacher’s attention. In turn, the teacher may reexamine or change his or her

perceptions. Thus, new pathways or dimensions of feedback and communication between teacher and student become possible.

The STARS approach also involves a set of other procedures that act on teachers’ perceptions about students. The procedures include videotaping interactions with students in the classroom for review with the consultant, reflecting on relationships with students through directed interviews, and analyzing classroom instruction and disciplinary practices. In combination with Banking Time sessions, the techniques offer a comprehensive approach to interventions in student–teacher relationships.

### **Creation and Communication of Relational Themes**

Teachers have opportunities throughout the school day to help change the nature and quality of their relationships with the most difficult students. One way they can do this is to identify specific themes or messages that may need to be communicated to the student and then to seek opportunities to reinforce these themes throughout the school day. Relational themes that will help reinforce the work being done during one-on-one sessions include messages such as “You are important,” “Adults can be helpers,” and “I am consistent.” Table 2 lists some possible relational themes, along with examples of ways teachers can reinforce these throughout the school day (Pianta & Hamre, 2001).

## **SUMMARY**

Throughout this chapter it was argued that students’ relationships with teachers are fundamental to their success in school, and as such, these relationships should be explicitly targeted in school-based prevention and intervention efforts. Student–teacher relationships develop over the course of the school year

through a complex intersection of student and teacher beliefs, attitudes, behaviors, and interactions with one another. Forming strong and supportive relationships with teachers allows students to feel safer and more secure in the school setting, feel more competent, make more positive connections with peers, and make greater academic gains. In contrast, conflict with teachers may place students on a trajectory of school failure in which they are unable to connect to academic and social resources offered within classrooms and schools.

The theoretical and empirical study of student–teacher relationships has led to the development of programs designed to promote students’ school success by improving student–teacher relationships. Research is accumulating to support the efficacy of these efforts, but more empirical evidence is needed on aspects of these programs, such as the following: (a) the relative power of the student–teacher relationship to alter developmental trajectories in relation to the influence of the parents or peers; (b) the most effective ways to go to scale with intervention efforts targeting the student–teacher relationship; (c) how best to identify students and teachers in need of relationship support and thus target interventions; and (d) how to sustain these efforts over time and to effectively integrate them into the myriad programs for which schools are responsible. Answering these questions will refine our understanding of how teachers’ relationships with students may further positive social development and academic growth and, ultimately, help make schools and classrooms more responsive to the diverse needs of today’s students.

## RECOMMENDED RESOURCES

### Books and Other Printed Material

Eccles, J. S., & Gootman, J. A. (Eds.). (2002). *Community programs to promote youth development*. Washington, DC: National Academy Press.

This book discusses the features of community programs that can contribute to successful transition from adolescence to adulthood. It offers insight into ways adolescents’ relationships with teachers and other adults may facilitate that transition.

Pianta, R. C., Hamre, B., & Stuhlman, M. (2003). Relationships between teachers and children. In W. Reynolds and G. Miller (Eds.), *Comprehensive handbook of psychology: Vol. 7. Educational psychology* (pp. 199–234). Hoboken, NJ: Wiley & Sons, Inc.

This chapter provides a comprehensive review of the literature on teachers’ relationships with children. It summarizes historic trends in the research on child–teacher relationships and advances theoretical and applied efforts by organizing the available work that has been done across diverse areas.

Pianta, R. C. (1999). *Enhancing relationships between children and teachers*. Washington, DC: American Psychological Association.

This book aims to provide school psychologists, child psychologists, and other mental health professionals who work with children with the theoretical and technical basis for designing interventions that enhance relationships between children and teachers. The author draws on research in social development and relationship-systems theory to describe the role of child–adult relationships in the development of social and academic competencies and the potential of child–teacher relationships to promote healthy development.

### Websites

<http://www.casel.org>

This is the website for the Collaborative for Academic, Social, and Emotional Learning (CASEL). CASEL was founded in 1994 and works to establish social and emotional learning as an essential part of education, from preschool through high school. The website offers extensive resources for educators, school psychologists, and others, including reviews on the effectiveness prevention efforts in the field of social and emotional learning.

<http://www.myteachingpartner.org>

The MyTeachingPartner (MTP) website provides preschool teachers with web-based support and consultancy on effective teaching practice, with a focus on helping them develop students’ language, literacy, and social relationships. An evaluation on the effectiveness of MTP is currently under way with over 230 preschool teachers throughout Virginia.

<http://www.smhp.psych.ucla.edu>

The School Mental Health Project (SMHP) was created in 1986 to pursue theory, research, practice, and training related to addressing mental health and psychosocial concerns through school-based interventions. To these ends, SMHP works closely with school districts, local and state agencies, special initiatives, organizations, and colleagues across the country.

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# A Course on Effective Teacher-Child Interactions: Effects on Teacher Beliefs, Knowledge, and Observed Practice

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*Among 440 early childhood teachers, half were randomly assigned to take a 14-week course on effective teacher-child interactions. This course used the Classroom Assessment Scoring System (CLASS) as the basis to organize, describe, and demonstrate effective teacher-child interactions. Compared to teachers in a control condition, those exposed to the course reported more intentional teaching beliefs and demonstrated greater knowledge of and skills in detecting effective interactions. Furthermore, teachers who took the course were observed to demonstrate more effective emotional and instructional interactions. The course was equally effective across teachers with less than an associate's degree as well as those with advanced degrees. Results have implications for efforts to improve the quality of early childhood programs through the higher education system.*

**KEYWORDS:** early childhood education, professional development, teacher-child interactions, randomized-control trial, coursework

Despite substantial investments, the promise of early childhood education in the United States is not being realized—poor children continue to enter kindergarten far behind their more well-off peers (Jacobson-Chernoff, Flanagan, McPhee, & Park, 2007; Johnson, 2002; National Center for Education Statistics [NCES], 2000). Although there are many reasons, recent evidence suggests that the mediocre quality of teacher-child interactions within early childhood settings plays a significant role, particularly in relation to children's development of literacy and language skills (Dickinson & Brady, 2006; Howes et al., 2008; Jackson et al., 2006; Mashburn et al., 2008). Teacher-child interactions are the daily back-and-forth exchanges that teachers and children have with one another throughout each day, including those that are social and instructional in nature. Given the clear need for interventions that enhance the effectiveness of early childhood educational offerings in the United States (Moorehouse, Webb, Wolf, & Knitzer, 2008), how to most effectively and efficiently improve the

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quality and potential impact of teachers' daily interactions with children is a key focus for research.

The National Center for Research on Early Childhood Education (NCRECE) is engaged in a program of research on professional development for early childhood educators that tests the efficacy of two specific approaches to increasing teachers' effective use of social and instructional interactions. These interventions include: (a) a semester-long course for teachers focused on high-quality interactions with children and (b) an approach to coaching in which teachers receive regular and focused feedback and support to improve their interactions with children, based on shared observation and analysis of their own teaching practice. Both interventions focused explicitly on enhancing teacher-child interactions to foster children's language and literacy development. The study design randomizes teachers into one of four conditions: 1-no course/no consultancy, 2-no course/consultancy, 3-course/no consultancy, and 4-course/consultancy.

The current article reports results pertaining to the first phase of the study—the impacts of a course for early childhood teachers designed to enhance their use of effective teacher-child interactions. The study assesses the degree to which teachers who were randomly assigned to take a 14-week course differed from their peers who did not take the course in terms of their beliefs and knowledge about effective practices and interactions and the independently observed quality of their interactions with children in their classrooms. In the following, we discuss the conceptualization and rationale for this work.

### **Need for Professional Development Targeting Effective Teacher-Child Interactions**

Several factors contribute to a growing interest in targeting interventions toward improvements in the quality of teachers' interactions with children. First, there is now compelling empirical evidence that one of the most salient aspects of early childhood programs' effects on children's development is the nature and quality of teachers' interactions with children (Brophy-Herb, Lee, Nievar, & Stollak, 2007; Curby et al., 2009; Dickinson & Brady, 2006; Guo, Piasta, Justice, & Kaderavek, 2010; Howes et al., 2008; Jackson et al., 2006; Mashburn et al., 2008; McCartney, Dearing, Taylor, & Bub, 2007; Pianta, Barnett, Burchinal, & Thornburg, 2009). Second, national data suggest that the average pre-k child is likely to experience teacher-child interactions of mediocre to low quality (Phillips, Gormley, & Lowenstein, 2009; Pianta et al., 2005). One particular area for concern is teachers' use of effective interactions during the delivery of literacy and language instruction. Early childhood teachers rarely use effective strategies for explicitly teaching early literacy and language skills (Cunningham, Zibulsky, & Callahan, 2009; Hindman & Wasik, 2008; Justice, Mashburn, Hamre, &

Pianta, 2008), despite evidence that these practices are essential for children at risk of school failure (Farver, Lonigan, & Eppe, 2009; Girolametto & Weitzman, 2002; Hamre, Justice, et al., 2010).

One final factor promoting interest in interventions targeting improvements in teacher-child interactions is the inclusion of measures of teacher-child interactions in monitoring and quality improvement policies. For example, the Office of Head Start has adopted the Classroom Assessment Scoring System (CLASS; Pianta, LaParo, & Hamre, 2007) as a part of its triennial monitoring process, focusing on three broad domains of interaction—Emotional Support, Classroom Organization, and Instructional Support. Thus, every Head Start grantee across the country will be reviewed based in part on the quality of interactions observed within their classrooms. Several states are also including the CLASS or other measures of teacher-child interactions as one component of their Quality Rating and Improvement Systems (Tout et al., 2010) or other improvement efforts. Thus, not only is there strong conceptual and empirical justification for the value of teacher-child interactions for promoting young children's development, but in addition, the current policy context of accountability is pushing early childhood programs toward a focus on the interactions teachers have with children.

### **Defining Effective Teacher-Child Interactions**

Hamre and Pianta (2007) described three broad domains of teacher-child interaction that are hypothesized to facilitate children's developmental progress as a result of their experiences in classrooms (Emotional Support, Classroom Organization, and Instructional Support), including dimensions of teacher-child interaction that operate specifically on children's literacy and language development (see Table 1). This conceptualization of the nature and form of everyday interactions between teachers and children in classrooms is based on an accumulation of theory and empirical evidence about the specific types of classroom interactions that are most effective for promoting children's social and academic development. Importantly for the purposes of this work, there is evidence to suggest that each domain of interactions has either direct or indirect effects on children's language and literacy development (Downer, Sabol, & Hamre, 2010).

Within the social and emotional domain, the positive effects of exposure to warm, sensitive caregiving in child care and preschool settings are well documented (McCartney et al., 2007; McDonald-Connor, Son, Hindman, & Morrison, 2005), while children exposed to more child-focused and autonomy supportive instruction report more positive feelings about school, display more motivation, and are more engaged in classroom activities (de Kruif, McWilliam, Ridley, & Wakely, 2000; Gutman & Sulzby, 2000; Pianta, LaParo, Payne, Cox, & Bradley, 2002; Valeski & Stipek, 2001). In contrast, children

*Table 1*  
**Classroom Assessment Scoring System (CLASS) Framework for Early Childhood and Elementary Classroom Quality**

Domain	Dimension	Description
Emotional Support	Positive climate	Reflects the overall emotional tone of the classroom and the connection between teachers and students. Considers the warmth and respect displayed in teachers' and students' interactions with one another as well as the degree to which they display enjoyment and enthusiasm during learning activities
	Negative climate	Reflects the overall level of expressed negativity in the classroom. The frequency, quality, and intensity of teacher and peer negativity are key to this scale.
	Teacher sensitivity	Encompasses teachers' responsiveness to students' needs and awareness of students' level of academic and emotional functioning. The highly sensitive teacher helps students see adults as a resource and creates an environment in which students feel safe and free to explore and learn.
Classroom Organization	Regard for student perspectives	The degree to which the teacher's interactions with students and classroom activities place an emphasis on students' interests, motivations, and points of view, rather than being very teacher-driven. This may be demonstrated by teachers' flexibility within activities and respect for students' autonomy to participate in and initiate activities.
	Behavior management	Encompasses teachers' ability to use effective methods to prevent and redirect misbehavior by presenting clear behavioral expectations and minimizing time spent on behavioral issues.
	Productivity	Considers how well teachers manage instructional time and routines so that students have the maximum number of opportunities to learn. Not related to the quality of instruction, but rather teachers' efficiency.

*(continued)*

**Table 1 (continued)**

Domain	Dimension	Description
Instructional Support	Instructional learning formats	The degree to which teachers maximize students' engagement and ability to learn by providing interesting activities, instruction, centers, and materials. Considers the manner in which the teacher facilitates activities so that students have opportunities to experience, perceive, explore, and utilize materials.
	Concept development	The degree to which instructional discussions and activities promote students' higher-order thinking skills versus focus on rote and fact-based learning.
	Quality of feedback	Considers teachers' provision of feedback focused on expanding learning and understanding (formative evaluation), not correctness or the end product (summative evaluation).
	Language modeling	The quality and amount of teachers' use of language-stimulation and language-facilitation techniques during individual, small group, and large group interactions with children. Components of high-quality language modeling include self and parallel talk, open-ended questions, repetition, expansion/extension, and use of advanced language.
Literacy focus <sup>a</sup>	Reflects the quality with which teachers deliver activities focusing children on "code units" of early literacy (e.g., letters, words, phonemes).	

<sup>a</sup>Literacy focus is not a part of the published version of CLASS, but is available from authors upon request for those who have attended CLASS training.

in more teacher-directed classrooms have higher levels of maternal-reported internalizing problems (NICHD Early Child Care Research Network, 2003).

With regard to organizationally supportive interactions, more positive student behavior is associated with the provision of consistent behavioral expectations and proactive use of monitoring and behavioral/emotional supports (Emmer & Stough, 2001) and teachers' efficient use of time. Children learn more when they are more consistently exposed to instructionally rich activities; this is important given that the average preschool child spends about 44% of their time in noninstructional activities, such as waiting in line to wash hands or eating (Early et al., 2010).

Finally, teachers' provision of cognitively stimulating opportunities to learn and feedback about learning are key elements of instructional support derived from research on children's cognitive and language development (e.g., Catts, Fey, Zhang, & Tomblin, 2001; Fujiki, Brinton, & Clarke, 2002; Romberg, Carpenter, & Dremock, 2005; Taylor, Pearson, Peterson, & Rodriguez, 2003; Vygotsky, 1991; Wharton-McDonald & Pressley, 1998). This domain of teacher-child interactions appears to be most closely linked to young children's development of early literacy and math skills (Burchinal et al., 2008; Guo et al., 2010; Mashburn et al., 2008).

In addition to these broad domains of effective teacher-child interactions, a specific set of content-related interactions appears to foster children's language and early literacy development. For example, the use of open-ended questions, expansions, advanced linguistic models, and recasts are associated with positive language achievements in young children (e.g., Baker & Nelson, 1984; Vasilyeva, Huttenlocher, & Waterfall, 2006; Wasik, Bond, & Hindman, 2006; Yoder, Spruytenburg, Edwards, & Davies, 1995). High-quality literacy instruction in the preschool classroom is characterized by instruction that explicitly teaches children the code-based characteristics of written language, including both phonological and print structures (Justice et al., 2008). Although this instruction may be embedded purposefully within contextualized routines and activities (e.g., dramatic play, arts and crafts, writing), it frequently features a relatively teacher-directed orientation so as to ensure systematicity and explicitness (Byrne & Fielding-Barnsley, 2000; Justice, Chow, Capellini, Flanigan, & Colton, 2003; van Kleeck, Gillam, & McFadden, 1998). Intervention studies indicate that children's exposure to systematic and organized approaches to literacy-promoting interactions can accelerate skill development (e.g., Hamre, Justice, et al., 2010; Justice et al., 2003; van Kleeck et al., 1998).

### **Approaches to Encouraging More Effective Teacher-Child Interactions**

There is not much evidence that the typical professional development opportunities in which teachers engage (e.g., courses, workshops) produce improvements or sustained changes in the types of teacher-child interactions



described previously. In fact, a considerable point of contention for many years has been whether or not a bachelor's degree should be a minimal requirement for teaching in an early childhood classroom. The failure to find systematic associations between degree status and program quality or child outcomes suggests that simply requiring a bachelor's degree will not guarantee positive outcomes for children in early childhood programs (Early et al., 2007). However, recent work suggests professional development that directly targets improvements in teacher-child interactions can be effective (Bierman, Nix, Greenberg, Blair, & Domitrovich, 2008; Domitrovich et al., 2008; Hsieh, Hemmeter, McCollum, & Ostrosky, 2009; Pianta, Mashburn, Downer, Hamre, & Justice, 2008; Ramey & Ramey, 2008; Raver et al., 2008). Most of these newer, empirically supported approaches to professional development provide some combination of curriculum training and classroom-based coaching to teachers (Bierman et al., 2008; Domitrovich et al., 2008; Hsieh et al., 2009; Pianta et al., 2008; Raver et al., 2008). There is less evidence on the degree to which these interventions could be the focus of more formal coursework that would ultimately contribute to degree-related requirements that do produce more effective teaching.

Few studies have systematically tested the effects of courses on early childhood teacher-child interactions or child outcomes (see Dickinson & Caswell, 2007; Howes, Galinsky, & Kontos, 1998; Kontos, Howes, & Galinsky, 1996; Neuman & Cunningham, 2009, for exceptions), despite the assumption that exposure to teacher preparation courses or accumulation of course credits leads to more effective teaching. Here we use the word *course* to refer to a unit of teaching that typically lasts one academic term, is led by an instructor, has a fixed roster of students, and includes formal evaluation (e.g., grades, exams, projects). Thus, courses are different from the typical workshops delivered during in-service training. However, courses can be delivered as a part of either pre-service or in-service training and have the potential to be scaled through the higher education system in ways that are unlikely to occur in the context of curricular or coaching-based interventions (Scott-Little et al., in press).

Although there are a few other examples of effects of courses on early childhood practice, the current study offers a unique contribution in a number of ways. First, courses often focus either on social-emotional teaching practices (e.g., Howes et al., 1998) or instructional practices (e.g., Dickinson & Caswell, 2007). In this study we examine the ability to change both social and instructional teaching interactions within the context of a 14-week course. Second, there are few examples in which teachers have been randomly assigned to a course (see Dickinson & Caswell, 2007, for exception), and there is a need for further documentation of effects on coursework using this more rigorous experimental design. Third, this study was conducted among a very large and diverse population of teachers in 10 sites across the country. Teachers in the study had widely varying levels of

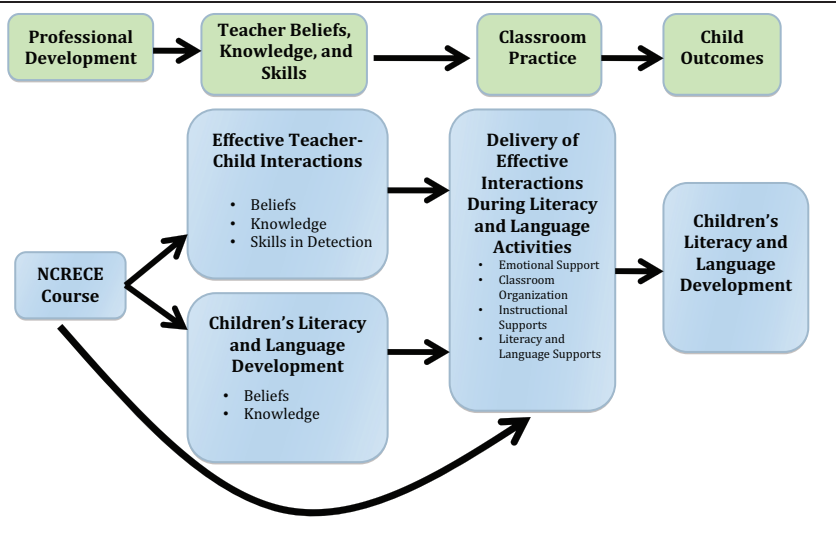


Figure 1. Theory of change model for coursework on effective teacher-child interactions.

Note. NCRECE = National Center for Research on Early Childhood Education.

education and experience. Thus, findings of this study can be generalized to a larger population of teachers than previous studies conducted with smaller, more homogenous samples of teachers. One final way in which this study is different from previous research is that it explicitly tests a theory of change in which changes in belief and knowledge are anticipated to mediate effects on practice. This theory of change is discussed in the following.

### Theory of Change: Beliefs, Knowledge, and Skills Related to Effective Interactions

In their review of research on professional development in early childhood, Sheridan and colleagues (Sheridan, Edwards, Marcin, & Knoche, 2009) suggest that professional development studies be designed to understand the “dynamic and transactional teacher and learning processes underlying effects.” Key to this aim is a theory of change that articulates the proximal targets of an intervention, which in turn should be linked to child learning gains in a particular domain. In prior work on a coaching intervention, we describe this as a process of aligning professional development inputs to teachers with the behaviors in the classroom that advance children’s learning (Pianta, Hamre, & Downer, 2011).

Figure 1 presents the theory of change model that guided the development of the NCRECE course—one designed to improve teacher-child

interactions linked to children's language and literacy performance. One goal of this course was to help teachers understand that all interactions, whether social, organization, or instructional, serve as a foundation for early language and literacy development. For example, although emotional support is linked most closely to social development, there is also evidence that emotionally supportive teaching and positive teacher-student relationships are either directly or indirectly related to children's early academic development (Downer et al., 2010). Therefore, as described in greater detail in the method section, the first units of the course focused on these more generalized, foundational interactions but also explicitly brought teachers' attention to the relevance of these interactions for children's development of language or literacy skills.

A second goal was to provide teachers with knowledge about and examples of instructional interactions and activities that are focused *directly* on enhancing children's development of language and literacy skills. The latter sections of the course taught teachers about the major areas of language and literacy development and provided them with examples of classroom activities intended to target these skills. Here again an attempt was made to help teachers see that intentional use of instructionally supportive interactions can facilitate children's learning of language and literacy content. For example, we demonstrated how evidence-based literacy lessons were much more effective when infused with rich, back-and-forth feedback loops with children.

The theory posits two potential pathways for changing these interactions. In one pathway, the course promotes teacher learning in two domains of belief, knowledge, and skill that hypothetically mediate change in classroom behavior—one domain focused on generalized teacher-child interactions and the other on specific instructional strategies for developing literacy and language skills. We also posit a direct pathway in which teachers imitate effective behaviors viewed in course videos. As suggested by social learning theory (Bandura, 1986), teachers may learn how to behave in large part through observation of others. Dynamic memory theory (Schank, 1982) extends this work by suggesting that the schemas and scripts that people develop based on watching others are an important component of learning how to behave in a particular moment. This work suggests that teachers should learn a lot about how to teach from watching examples of teaching—an idea that has been validated by work on “teacher noticing” (e.g., Van Es & Sherin, 2002). In contrast to the mediated pathway, this direct pathway suggests that teacher knowledge, belief, and skills in the aforementioned domains may be inconsequential to changes in practice or may come after teachers make changes to practice.

The literature connecting beliefs to practices has led to varying conclusions about the centrality of beliefs in leading to behavioral change (e.g., Pajares, 1992; Sigel & McGillicuddy-De Lisi, 2002). However, there are a number of studies in early childhood that provide evidence that teacher beliefs

may be an important target for interventions that ultimately aim to change teacher behavior (LaParo et al., 2009; McMullen et al., 2005; Pianta et al., 2005; Spear-Swerling & Brucker, 2004; Stipek & Byler, 1997).

With regard to beliefs about teacher-child interactions, the course was designed to advance the belief that teachers need to be actively engaged in interactions with children in order for learning to occur. Teachers who believe they should take a more passive role in children's learning are unlikely to engage in intentional teacher-child interactions, particularly instruction. Although definitions of "developmentally appropriate practice" suggest the importance of active involvement (National Association for the Education of Young Children, 2009), many early childhood professionals assert beliefs that downplay the active role of adults in children's learning. Thus, the course materials provided examples from research and video highlighting how cognitive and language development was enhanced through intentional teacher-child interactions.

The course also provided very specific knowledge about effective interactions and used the CLASS (Pianta et al., 2008), a validated observational measure, as the framework for this knowledge. Teachers were taught to make explicit links between teachers' behavioral actions and intended consequences for children. For example, when learning about behavior management, teachers were encouraged to watch and analyze videos that highlighted the ways in which specific teacher actions led to more or less positive behaviors among students in the classrooms. The course also targeted teachers' skills in *detecting* effective teacher-child interactions through video analysis. We hypothesized that it was not sufficient for teachers to be able to gain knowledge *about* effective interactions; they needed *actual skills* involving identification of effective interactions with a high degree of specificity in order to be most likely to transfer the coursework into changes in their practice.

The second domain of belief, knowledge, and skill targeted in the course concerned children's literacy and language skills. For example, teachers must know that young children who gain pre-literacy and early language skills during the preschool year are much more likely to be successful in kindergarten. And although early childhood teachers tend to endorse the importance of systematically and intentionally developing children's language skills, they tend to not endorse active teaching of early literacy (Hindman & Wasik, 2008). Importantly, these beliefs are amenable to intervention (e.g., Cunningham et al., 2009; Dickinson & Caswell, 2007). Relatedly, the course enhanced teachers' knowledge about six areas of literacy and language development that are "high-priority" instructional targets (e.g., Gallagher, Frith, & Snowling, 2000; Hammill, 2004; National Early Literacy Panel [NELP], 2008; Schatschneider, Fletcher, Francis, Carlson, & Foorman, 2004; Storch & Whitehurst, 2002). Three targets (phonological awareness, alphabet knowledge, print awareness) are "code-based" literacy skills (e.g., Justice & Ezell, 2002; Ukrainetz, Cooney, Dyer, Kysar, & Harris, 2000; van Kleeck et al.,

1998), whereas the others (vocabulary/linguistic concepts, narrative, social communication/pragmatics) are “meaning-based” language skills (Pankratz, Plante, Vance, & Insalaco, 2007; Storch & Whitehurst, 2002).

## Current Study

The current study examined the efficacy of this 14-week course among a diverse group of early childhood teachers. We examined the extent to which teachers who participated in the course (compared to a control group) displayed greater positive changes in their: (a) beliefs emphasizing the central role of the teacher in facilitating children’s development of social, literacy, and language skills; (b) knowledge of effective teacher-child interactions; (c) skill to detect effective interactions in video; (d) beliefs about importance of teaching early literacy and language skills; (e) knowledge of the major domains of literacy and language development; and finally (f) use of effective teacher-child interactions (independently coded from videotapes of their classroom interactions). We also examined the extent to which the effects of the course were greater or less depending on teacher or program features (e.g., teacher education, years teaching experience, type of program, etc.), although we did not anticipate finding such effects. Finally, we examined the extent to which differences between course and control teachers’ observed classroom interactions could be explained by changes in belief, knowledge, and skills. We anticipated that differences between groups in belief and knowledge would partially mediate differences in observed teaching practice.

## Method

### Participants

This study included 440 preschool teachers who participated in an 18-month study of two forms of professional development—a 14-week course and a yearlong consultation. Data for this study include those collected during the course phase of the study. The recruitment process for the professional development study targeted large community preschool and Head Start programs across the country. This resulted in five sites for Cohort 1 starting in spring 2008: New York City; Hartford, CT; Chicago, IL; Stockton, CA; and Dayton, OH. Five additional sites joined the study in Cohort 2, starting in spring 2009: Columbus, OH; Memphis, TN; Charlotte, NC; Providence, RI; and a second set of programs in Chicago, IL. Program administrators and teachers were invited to attend recruitment meetings in each location to learn about the study details. Additional follow-up was done with liaisons and directors by phone and e-mail. Teachers were considered eligible for participation if they were the lead teacher in a publicly funded classroom in which the majority of children were: (a) eligible for kindergarten the following school year and (b) did not have an IEP at the start

*Table 2*  
**Descriptive Statistics for Covariates by Treatment Group**

	Course Condition			Control Condition		
	<i>N</i>	%	<i>M (SD)</i>	<i>N</i>	%	<i>M (SD)</i>
Teach in Head Start program	160	61		174	66	
Teach in a public school building	159	32		173	35	
Teacher education	159			177		
Associate's degree or less		42			37	
Bachelor's degree		45			46	
Master's degree or higher		13			16	
Years of experience: pre-kindergarten	163		11.09 (7.67)	176		11.30 (8.12)

of the current school year. In addition, in eligible classrooms instruction was in English for the majority of the school day, and high-speed Internet access was available for the teachers' use at the program site. Once teachers agreed to participate, they were randomized at the site location level into the course or control group for the first phase of the study so that approximately half of the teachers participated in each group.

In the final analysis group of 440 teachers, there were 217 teachers in the control condition and 223 teachers in the course condition. The majority of teachers (63%) worked in Head Start programs, and a significant portion worked in public schools (33%). Teachers were experienced, with an average of 11.2 years of experience teaching preschool-age children. Teachers were diverse in terms of educational backgrounds (A.A. degree or less = 40%, B.A. degree = 46%, M.A. degree or higher = 15%). Most of the teachers were African American (47%) or White (31%), with a smaller number of Latino (9%), Asian (3%), and other ethnicities (9%). Descriptive statistics are presented in Table 2 by condition. There were no significant differences in these demographic or work characteristics between the course and control groups.

### Intervention Description

The course, entitled Support of Language and Literacy Development in Preschool Classrooms Through Effective Teacher-Child Interactions and Relationships, was designed to increase teachers' knowledge about the vital role that teacher-child interactions play in learning and skill acquisition and to build specific skills for observing teacher-student interactions that contribute to language and literacy skills. The course was delivered in 14, 3-hour-

long sessions through collaborations with local colleges and universities in each site. In most sites teachers who took the course received 3 units of college credit. There were between 5 and 15 teachers in each course section. Instructors ( $n = 15$ ) were hired from the local early childhood (EC) community and were typically experienced EC teachers with some experience teaching in a higher education context. A few instructors were officially affiliated with 2-year or 4-year institutions of higher education; most were not. They were provided with instructor manuals, which included PowerPoint presentations, videos, and written assignments for each course section. Instructors attended a weeklong training and were provided with ongoing implementation support by NCRECE staff, including weekly phone calls from course developers. Videotape coding of course sections indicated high levels of implementation fidelity (LoCasale-Crouch et al., 2011).

The first three sessions provided teachers with information on the framework for the course and covered materials such as why preschool experiences are important for long-term development, the importance of teacher-child interactions and relationships for promoting children's development, and introduction to the three broad domains of the CLASS—Emotional Support, Classroom Organization, and Instructional Support. Sessions 4 and 5 focused on Emotional Support, Session 6 focused on Classroom Organization, and Sessions 7 and 8 focused on Instructional Supports. Within each of these sessions, teachers were introduced to the types of interactions that demonstrate effective interactions and exposed to videos in which they analyzed the extent to which these interactions were present or absent. Homework included readings and watching and analyzing additional videos online. Sessions 9 through 11 focused on language development and instruction—introducing teachers to the main domains of language development (vocabulary, pragmatics and social language, and narrative) and spending time watching videos highlighting effective language instruction. Teachers were also provided with sample language activities and asked to enact these in their classrooms. Sessions 12 and 13 focused on literacy development (print concepts, alphabet knowledge, and phonological awareness) and instruction, following a framework similar to that described previously for language development. In the final session, teachers were asked to film themselves delivering a literacy and language activity and shared their video with fellow teachers—highlighting examples of effective (or ineffective) interactions throughout.

Work by LoCasale-Crouch et al. (2011) demonstrates that the course was delivered with high levels of fidelity. Videotapes of course sessions were scored by NCRECE staff, and all instructors covered material as suggested. Instructors reported completing 95% of course materials. Furthermore, teachers reported that instructors delivered material with very high levels of quality.

Teachers in the control condition received business as usual supports and were not exposed to any of the coursework provided in this study, though they may have been taking other courses at the time.

## Measures

Beliefs About Intentional Teaching is an 11-item scale to assess teacher beliefs that children's learning is contingent upon teachers being actively involved with children and providing some opportunities for explicit teaching of literacy skills (Hamre & Downer, 2007). This scale includes items such as "Preschool children are too young to benefit from explicit instruction in early literacy" and "Young children learn all the vocabulary they need from their peers in the context of play." Items are rated on a response scale from 1 (*strongly disagree*) to 5 (*strongly agree*). The internal consistency of this scale for the current study was .67. Despite the lower than ideal internal consistency, expert review of items provided face validity of the construct under study, and this measure is related in expected ways to a similar measure of teacher beliefs consistently linked with effective teaching.

Teachers' Knowledge of Effective Teacher-Child Interactions is a 14-item scale that tests a teacher's understanding of and knowledge about interactions that lead to positive development. The scale consists of multiple-choice items requiring a response to a classroom scenario. Correct answers are based on effective interactions using the CLASS framework for defining (Hamre & Pianta, 2007) and measuring (Pianta et al., 2007) high-quality interactions. One sample item was: "A child in class is shy and does not talk very much. Since this child rarely engages in conversations with either teacher or peers, one way the teacher can facilitate his language development would be: a. Always give each child a turn to share in circle time; b. Model language by describing what she is doing and what other children are doing; c. Enthusiastically engage him in the lesson using a variety of materials; d. Ask him questions which he can answer by nodding or shaking his head." In this case the correct answer was b, as this strategy is most likely to lead to increased language use by the child.

Multiple steps went into development of this measure. First, items were generated and reviewed by experts in this content area to assure face validity of items. Then, items were piloted with existing teachers to assure readability and range in responses. Among the control group only, individual items were examined to assure adequate range of response options. Results indicated that while individual items ranged in difficulty, they all fell within the acceptable range of correct responses ratio to the number of those who answered the question (51%–90%). Additionally, items were examined for discrimination ability by looking at the difference in percentage correct by items for two groups: the highest 27% based on the total score and the lowest 27%, per recommended practice in multiple-choice item discrimination work (Kelley, 1939). On all items, the higher total scoring group exceeded the lower scoring group, meaning each item was able to discriminate between the two groups. Item discrimination ranged from 17% to 61%.



The Video Assessment of Interactions and Learning (VAIL) assessed teachers' skills in detecting effective interactions. Respondents watch two short videos (2–3 minutes each). After each video, participants can identify up to five *strategies* the teacher is using, such as strategies to engage the students in the lesson and hold their attention. Responses are coded for *accuracy* in relation to a standard identified in the CLASS. In the case that a strategy was coded as correct, a *breadth* score was also assigned, to indicate the number of CLASS indicators for a specific dimension that were mentioned in the response. For example, for the CLASS Instructional Learning Formats dimension, there are four indicators: effective facilitation, variety of modalities, student interest, and clarity of learning objectives. The breadth score measures the number of indicators that might be noted within a given dimension.

Research assistants participated in a half-day training session that included viewing the same video clips the NCRECE participants watched, reading and discussing the CLASS manual, practicing and discussing video assessment responses, and independently coding two complete video assessments. Reliability was assessed by comparing the exact matches between the research assistants' codes and the master codes derived from scoring of protocols by three VAIL experts. Research assistants were considered reliable if at least 80% of their codes matched exactly to the master codes. Coders demonstrated strong agreement, with an average exact agreement level of 82.5% on the 20% of the VAILS that were blindly double coded.

Beliefs About Importance of Literacy and Language Skills asks teachers to rate the importance of 12 skills for children as they enter kindergarten, such as "Blend syllables into words." Items are rated on a response scale from 1 (*not important*) to 4 (*essential*). Cronbach's alpha on this instrument for the current study was .87. Results from a prior study of pre-kindergarten teachers indicated that results on this scale are internally consistent with self-reported language and literacy practices (Burgess, Lundgren, Lloyd, & Pianta, 2001).

Knowledge About Language/Literacy Skills was assessed through 12 items in which teachers had to categorize particular skills (e.g., recognize letters in his/her name, use adjectives to modify nouns in conversations, blend syllables into words) into one of six language/literacy domains: alphabet knowledge, print concepts, vocabulary and linguistic concepts, pragmatics and social language, narrative skills, and phonological awareness. For this study, teachers' overall total correct for language and literacy skills was used. In addition to expert review and piloting with teachers prior to use in this study, items were examined in the control group. In examining individual items, the ratio of correct responses to completed items fell within an acceptable range (54%–85%), except for one item. Teachers were highly consistent (93%) in matching identification of the letters of the alphabet to the domain of alphabet knowledge. Nevertheless, this item was kept in the composite because of the theoretical importance of this knowledge. Additionally, items were examined for discrimination ability by looking at

the difference in percentage correct by items for the highest and lowest performing groups. On all items, the higher total scoring group exceeded the lower scoring group, meaning each item was able to discriminate between the two groups (item discrimination ranged from 27% to 58%).

*Classroom Assessment Scoring System.* CLASS measures 11 dimensions of interactions using 7-point scales: (a) positive climate, (b) negative climate, (c) teacher sensitivity, (d) regard for student perspectives, (e) behavior management, (f) productivity, (g) instructional learning formats, (h) concept development (i) quality of feedback, (j) language modeling, and (k) literacy focus. The CLASS served both as an outcome measure and as a focus of the intervention; more detailed descriptions are in Table 1. A principal components analysis across over 4,000 preschool and early elementary classroom reveals a three-factor solution: Emotional Support (positive climate, negative climate-reversed, teacher sensitivity, and regard for student perspectives), Classroom Organization (behavior management, productivity, and instructional learning formats), and Instructional Support (concept development, quality of feedback, and language modeling), with alphas of .81 to .89 (Hamre, Pianta, et al., 2010), respectively. The literacy focus dimension does not load with any of these CLASS domains and is thus analyzed separately here. CLASS instructional scales predict growth in language and literacy skills in pre-k (Howes et al., 2008; Mashburn et al., 2008) and first grade (Hamre & Pianta, 2007). Literacy focus, as measured by CLASS, is also associated with growth in children's early literacy skills (Hamre, Justice, et al., 2010). Emotional support and classroom organization have been linked to self-regulatory and social outcomes (Mashburn et al., 2008; Rimm-Kaufman, Curby, Grimm, Nathanson, & Brock, 2009).

Coders attended a 2-day CLASS training and had to pass the CLASS reliability test, which requires scoring five segments and demonstrating consistently with master codes (80% of codes within 1 point of master code). Average reliability for the Reliability I test was 84%, with a range of 60% to 100%. Coders who did not pass this initial test were provided with feedback and given a second test. Coders who did not pass this second test were assigned to other responsibilities. Throughout the coding period, all coders attended weekly meetings that focused on assessing progress and reliability, as well as addressing issues of potential drift. During these meetings 89% of codes were within 1 point of the master code.

## Procedures

Teachers completed an online questionnaire within the month following the end of the course. This questionnaire included all teacher belief, knowledge, and skill measures described previously. Teacher use of effective-teacher child interactions was coded from videotapes teachers submitted to the research team. All teachers were provided with a digital video camera and digital video (DV) cassettes at the teacher training and with detailed

documentation and training on how to use the camera. Teachers sent in four DVs during the course phase of the study, each recording 30 minutes of class time focused on literacy and language instruction. Two 15-minute segments were CLASS coded from each 30-minute DV. The first segment was always from minutes 00:00 to 15:00 and the second from minutes 15:01 to 30:00. If tapes did not run for the full 30 minutes CLASS codes were assigned if at least 8 minutes of video were available. Coding was randomly assigned to raters at the segment level. Each segment was double-coded. The segments that were selected for this study were taped by teachers during the end-of-course time frame for each site. End-of-course was defined as tapes that were taped between the midterm date of the course and 2 weeks after the last day of class. This time frame is not ideal for capturing post-course differences because some of the segments were taped prior to teachers completing the course. Post-midterm content focused primarily on instructional supports, with a heavy focus on literacy and language instructional strategies. Although we anticipate that the use of this time frame for videos may decrease effect sizes on observed practices, previous work has suggested that using more than one video of classroom practices can enhance the reliability of estimates of teacher's use of effective practices (Mashburn, Downer, Rivers, Martinez, & Brackett, 2010).

### **Data Analysis**

Analysis focused on whether, compared to teachers in the control condition, teachers in the course condition had stronger beliefs regarding the importance of intentional teaching of literacy and language skills, higher levels of knowledge about effective teacher-child interactions and language and literacy domains, and higher quality of observed teaching practices. All teachers assigned to a treatment condition ( $n = 440$ ) were included in these intent-to-treat analyses, including a number of teachers who signed up for the study but never participated. Using data from all teachers assigned to a treatment condition provides the most robust test of treatment effects. Most teachers had outcome data on the teacher report measures (67%). Slightly fewer (56%) had data on the video assessment (VAIL) due to some problems viewing the video online. There were also fewer teachers with observational data (56%) due in part to the fact that one course section was run during the summer and those teachers were not currently teaching. Finally, 75% to 79% of the teachers had data on the demographic and background measures. The most common reasons for missing data were teachers who dropped out of the study due to other time commitments.

Due to the high rates of missing data, all analyses described in the following were performed on 10 imputed complete data sets ( $N = 440$ ). Multiple imputation (MI) or data augmentation was carried using the MI procedure in SAS. All analytic variables, including nine dummy variables

indicating study site, were used in the imputation, and all teachers ( $n = 440$ ) were included in the multiple imputation procedure. In addition to the analytic variables discussed previously, we also included CLASS measures collected at the beginning of the school year. The MI procedure uses Bayesian simulation methods to perform the imputation, and the Monte Carlo Markov Chain algorithm used a single chain for each of the 10 imputed data sets. Five thousand burn-in iterations of the algorithm were performed before the first imputation and 1,000 iterations were used between imputations.

As noted previously, in one of the sites the course was given in the summer and therefore did not occur during a period in which they could be observed teaching. Preliminary analysis of the data revealed that the values for the CLASS measures imputed for these teachers resulted in large and highly variable between imputation site effects. This suggested that for these teachers, the imputation procedure did not have enough information to produce plausible values for the missing CLASS measures. Although we included these teachers in the imputation procedure and in other analyses presented in the article, teachers from this site were excluded from all analyses that involved CLASS measures.

Mixed effects, multiple regression/ANCOVA analyses were conducted and included as covariates teacher education and experience and whether the program was located in a public school or was a Head Start program. In addition, a set of dummy variables was entered that captured variation in each outcome across the sites included in our study. In most cases, teachers within the same site were invited to attend one of two courses. Although we include site as a fixed effect, we took an additional precaution of allowing the residuals among teachers within the same course to be correlated. For teachers in the same course their residual variance covariance matrix was assumed to have a block diagonal structure with a variance that was constant throughout the sample (diagonal elements) and constant covariance terms (off-diagonal elements). This structure was repeated for every course and the covariance estimates across courses were constrained to be equal. Teachers in the control condition were assumed to have uncorrelated error terms and a constant variance—we effectively assigned them to their own course. Some of the teachers in the treatment condition did not attend a course, either because of a time conflict or because they dropped out of the study entirely. We treated these teachers in the same manner as the teachers in the control condition and assumed that their errors were independent. The analysis on the multiple imputed samples was carried out using the MIXED procedure in SAS. We used the REPEATED statement to model the residual correlations among teachers within the same course. For some of the imputed data sets (~6%), the mixed models did not converge. In these cases, we dropped the REPEATED statement and assumed independent errors. The estimates obtained from each imputed sample were integrated using the MIANALYZE procedure in SAS.

The overall analysis strategy involved first estimating treatment effects using these factors as covariates and then asking whether they moderated the anticipated treatment effects on knowledge and practice. To assess the degree to which differences in observed teaching practice may be mediated by differences in teachers' beliefs and knowledge, we tested each indirect path between treatment and the individual measures tapping knowledge separately. These knowledge and belief measures were entered separately because they were not highly correlated with one another and could not be reliably combined into a single factor. The estimates for the indirect effects were obtained using path analysis and are a product of two coefficients. The first coefficient, the "a path," is the coefficient for the treatment effect on the mediator. This coefficient comes from a regression of the mediator on treatment as well as the set of covariates (e.g., teacher education) discussed previously. The second coefficient, the "b path," is the coefficient for the effect of the mediator on the outcome, controlling for treatment status. It comes from a regression of each outcome on the treatment indicator variable and the mediator. The set of covariates are also included in the estimation of b paths.<sup>1</sup> The level of statistical significance of the indirect paths, "a  $\times$  b," were based on a Sobel test.

## **Results**

The results for the regression/ANCOVA models that included treatment, educational setting, and teacher education and experience are presented in Tables 3 and 4. The first two columns report the number of non-missing values, unadjusted means, and standard deviations for the treatment and control groups. The third column reports the effect size and *p* value from the treatment coefficient in the ANCOVA analysis conducted on the multiply imputed data. The effect size is calculated as the ratio of the regression coefficient for the treatment group indicator variable (numerator) and the square root of the error variance (denominator) obtained from the estimated residual variance-covariance matrix and averaged over the 10 imputed data sets.

### **Effects of Course on Teachers Belief, Knowledge, and Skills**

As can be seen in Table 3, the teachers in the course treatment group endorsed more intentional teaching beliefs (effect size = .43), displayed better knowledge about effective interactions (effect size = .77), and were better able to specifically identify multiple aspects of effective instruction in video (effect size = .60). Teachers in the course condition also were more likely to report that language and literacy skills were essential to young children's development (effect size = .65) and displayed greater knowledge about these skills (effect size = .49).<sup>2</sup>

**Table 3**  
**Course Effects on Teachers' Beliefs, Knowledge, and Skills**

	<i>N</i>	Course <i>M</i> ( <i>SD</i> )	Control <i>M</i> ( <i>SD</i> )	Effect Size
Beliefs about intentional teaching	296	3.74 (.65)	3.53 (.59)	.43***
Knowledge of effective interactions (multiple choice)	297	79.19 (15.23)	69.05 (14.37)	.77***
Ability to identify effective interactions (VAIL breadth score)	248	5.72 (3.41)	3.91 (2.68)	.60***
Beliefs about importance of literacy and language skills	297	3.49 (.40)	3.22 (.49)	.65***
Knowledge about literacy and language skills	297	76.93 (16.61)	69.08 (19.15)	.49***

*Note.* The first two columns report the number of non-missing values, unadjusted means, and standard deviations for the treatment and control groups. The third column reports the effect size and *p* value from the treatment coefficient in the ANCOVA analysis conducted on the multiply imputed data. VAIL = Video Assessment of Interactions and Learning.

\*\*\**p* < .001.

**Table 4**  
**Course Effects on Observed Teacher-Child Interactions (Classroom Assessment Scoring System; CLASS)**

	Course <i>M</i> ( <i>SD</i> )	Control <i>M</i> ( <i>SD</i> )	Effect Size
Emotional Support composite	5.44 (0.43)	5.24 (0.56)	0.41*
Positive climate	5.54 (0.63)	5.32 (0.78)	0.31
Negative climate	1.19 (0.28)	1.23 (0.37)	-0.22
Teacher sensitivity	5.02 (0.66)	4.82 (0.72)	0.29
Regard for student perspectives	4.38 (0.65)	4.04 (0.82)	0.45***
Classroom Organization composite	5.48 (0.51)	5.31 (0.65)	0.28
Behavior management	5.71 (0.73)	5.58 (0.85)	0.15
Productivity	6.04 (0.57)	5.89 (0.72)	0.19
Instructional learning formats	4.7 (0.57)	4.47 (0.75)	0.35*
Instructional Support composite	3.00 (0.62)	2.59 (0.64)	0.66***
Concept development	2.68 (0.74)	2.22 (0.69)	0.68***
Quality of feedback	3.11 (0.62)	2.76 (0.72)	0.49***
Language modeling	3.2 (0.77)	2.77 (0.77)	0.57***
Literacy focus	2.22 (0.82)	2.09 (0.80)	0.19

*Note.* The first two columns report the number of non-missing values, unadjusted means, and standard deviations for the treatment and control groups. The third column reports the effect size and *p* value from the treatment coefficient in the ANCOVA analysis conducted on the multiply imputed data.

\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

### **Effects of Course on Observed Teacher-Child Interactions**

Table 4 reports on results of the ANCOVA for observed teacher practices, using the CLASS. Analyses conducted at the CLASS domain level demonstrated effects of the course on teachers' provision of emotionally supportive interactions (effect size = .41) and instructionally supportive interactions (effect size = .66). There were not significant effects on observations of teachers' use of classroom organization and management interactions.

Because the course provided content specific to each of the CLASS dimensions, these analyses were also run at the dimension level. Results indicate that within the Emotional Support domain teachers in the course condition demonstrated more child-focused and autonomy supportive interactions (regard for student perspectives, effect size = .45). Although the Classroom Organization domain results were not significant, teachers in the course condition did display a greater ability to engage children in instructional opportunities (instructional learning formats, effect size = .35). Within the Instructional Support domain, teachers in the course demonstrated more effective use of strategies that encourage higher-order thinking skills (concept development, effect size = .68), more frequent and intensive feedback (quality of feedback, effect size = .49), and more effective use of language facilitation strategies such as open-ended questions, contingent conversations, and expansion of child talk (language modeling, effect size = .57).

### **Is the Course More Effective for Certain Types of Teachers?**

The second set of analyses tested whether teacher characteristics or type of program moderated the treatment effects. None of the interactions were statistically significant; thus, the course was equally effective across teachers with a diverse range of educational backgrounds and across those working in Head Start and other types of early childhood programs.

### **Are Differences in Observed Teacher-Child Interactions Explained by Differences in Teacher Belief, Knowledge, and Skills?**

We conducted path analysis examining the extent to which differences in course and control teachers' belief, knowledge, and skill in detecting effective interactions mediated the differences in observed teaching. Separate analyses were conducted for each CLASS domain and potential mediator. There was very limited evidence to support the hypothesized mediational models. We observed one statistically significant indirect path, and it involved the Instructional Support domain and the VAIL breadth score—a teacher's ability to describe a broad range of effective interactions from the video ( $z = 2.02, p < .05$ ). Figure 2 provides a visual representation of the mediational pathway, including standardized coefficients for each path.

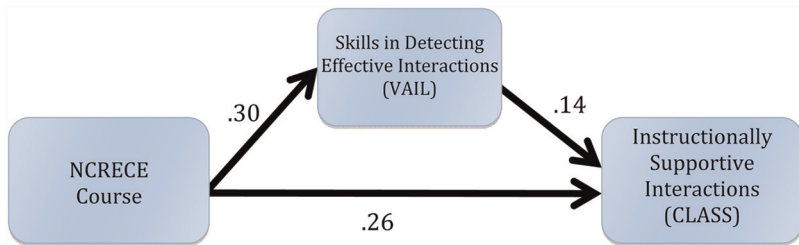


Figure 2. Skills in detecting effective interactions (VAIL) partially mediate association between treatment assignment and observed Instructional Support (CLASS).

Note. Paths represented by standardized coefficients, all  $p < .05$ . NCRECE = National Center for Research on Early Childhood Education; VAIL = Video Assessment of Interactions and Learning; CLASS = Classroom Assessment Scoring System.

## Discussion

Recent research and policy initiatives focus attention on the importance of teachers' daily interactions with children in early childhood settings and point out the general low levels of such assets (Dickinson & Brady, 2006; Howes et al., 2008; Jackson et al., 2006; Mashburn et al., 2008). The present study demonstrates that an in-service course can improve the quality of teachers' interactions with children, without providing any feedback or coaching on teachers' own classroom practice. Among a group of 440 early childhood teachers, half were randomly assigned to take a 14-week course on effective teacher-child interactions. This course used the Classroom Assessment Scoring System to organize, describe, and demonstrate effective interactions and how interactions can promote language and literacy skills. Compared to teachers in a control condition, those who took the course reported more intentional teaching beliefs and demonstrated greater knowledge of and skills in detecting effective teacher child-interactions. Teachers in the course also reported stronger beliefs about the importance of teaching children early literacy and language skills and demonstrated greater knowledge about these skills. And importantly, teachers who took the course demonstrated more effective emotional and instructional practices in interactions with children. These results add to the growing literature on effective interventions for early childhood professionals that documents explicit efforts to change teachers' classroom practices (Bierman et al., 2008; Domitrovich et al., 2008; Hsieh et al., 2009; Pianta et al., 2008; Raver et al., 2008). Because the course was equally effective across teachers with less than an associate's degree as well as those with advanced degrees, it



could meet a broad set of needs in the professional workforce. And there was limited, but suggestive, evidence that a portion of the benefits of the course for improving teachers' interactions was a function of its impact on teachers' skill in detecting effective interactions in video.

### **Effects of Course on Teachers' Beliefs, Knowledge, Skills, and Practice**

NCRECE designed a course to improve teachers' beliefs, knowledge, and skills in two broad domains—effective teacher-child interactions and children's language and literacy development. Across domains, the study indicated significant effects of the course on all measures of belief, knowledge, and skill, with moderate effect sizes ranging from .41 to .72. Teachers in the course were more likely to endorse the importance of teachers taking an active role in children's learning and demonstrated better knowledge of specific interactional strategies. They also were better able to identify effective teacher-child interactions in video. Given evidence that teachers who use these practices in the classroom have children that make greater academic and social gains, this type of knowledge may be important (Howes et al., 2008; Mashburn et al., 2008).

The second broad domain of belief and knowledge that the course targeted was in relation to young children's language and literacy skills. Research has indicated great variability in teachers' beliefs about the developmental appropriateness of teaching young children literacy and language skills in early childhood settings (Hindman & Wasik, 2008). Within this study, teachers were asked to rate the importance of a set of skills for children entering kindergarten, including skills such as blending syllables into words, recognizing the letters in their names, and mapping spoken word to print. Although all teachers tended to report these skills as important, teachers in the course condition reported these skills as more important than did teachers in the control group. Teachers' knowledge about children's literacy and language skills was also assessed, and teachers in the course group displayed significantly greater knowledge.

Most importantly, the course improved the quality of teachers' emotional and instructional interactions with children. Effects sizes are comparable to those from intervention studies using coaching and/or curricular models (e.g., Domitrovich et al., 2008; Pianta et al., 2008; Raver et al., 2008). In relation to teachers' use of emotionally supportive interactions, teachers who participated in the course were observed to display more support for children's autonomy. These types of emotional supports are important to the development of children's motivation and social adjustment (Gutman & Sulzby, 2000; McCartney et al., 2007; Valeski & Stipek, 2001). Although differences in observed practice were relatively small, there is evidence that small, incremental differences within the moderate to high end of these emotional support dimensions are associated with more positive social

development among children (Burchinal, Vandergrift, Pianta, & Mashburn, 2010). There were not significant changes in the other dimension within Emotional Support, but all differences were in the expected direction. It may be that regard for student perspectives, which focuses on providing children with more choices, leadership opportunities, and freedom in the classroom, is easier to change based on didactic course-based instruction than are climate aspects of the classroom or teachers' sensitivity, which may be more closely tied to psychological characteristics of teachers. Interestingly, coaching interventions have demonstrated significant changes in these aspects of teacher-child interactions, suggesting, perhaps, that teachers need more individualized support in the context of a relationship to change these types of emotionally supportive interactions (Pianta et al., 2008; Raver et al., 2008).

Stronger effects were observed in the teachers' use of effective *instructional* interactions. Teachers who participated in the course were observed to use more strategies that facilitate children's higher-order thinking skills, provided more intensive and frequent feedback, and better supported children's language development. It is these aspects of the classroom environment that appear to have the strongest associations with children's early literacy, language, and cognitive development (Mashburn et al., 2008). Effect sizes were moderate, and Instructional Support scores for the course condition were in the range that recent threshold analyses suggest are required to produce positive early academic and cognitive outcomes for children (Burchinal et al., 2010).

There were not significant differences between the course and control groups on the extent to which they used effective classroom organization and management techniques. It may be that there was not sufficient time spent on this area of practice. There was only one course session covering all dimensions with Classroom Organization, whereas there were multiple sessions for Emotional Support and Instructional Support. Alternatively, it may be that the data collection methods in this study inhibited our ability to detect significant differences in this domain. Overall mean scores were high, particularly in relation to observed behavior management and teachers' effective use of time. Because teachers were asked to send in brief (30 minute) tapes, it may be that it was relatively easy to score high on these dimensions for such a short period. This possibility is supported by evidence that mean scores on these dimensions of teacher-child interactions are slightly higher than those observed in national samples of live observational data of pre-k classrooms (Pianta et al., 2005). Several other studies examining the effects of teacher-focused interventions on classroom interactions similarly have failed to show changes in classroom organization as measured by CLASS (e.g., Brown et al., 2010; Domitrovich et al., 2008; Raver et al., 2008). Future work might include other observational measures of these types of interactions to help determine the extent to which these elements

of interactions are simply harder to change or whether the CLASS Classroom Organization domain is not as sensitive to intervention effects.

We also did not detect significant differences between course and control teachers' use of explicit and purposeful literacy interactions—both groups were observed to use these types of interactions very infrequently. Other interventions targeting teachers' use of these strategies have demonstrated effectiveness (Justice, Kaderavek, Fan, Sofka, & Hunt, 2009); however, studies have also suggested that getting teachers to consistently adopt these strategies is challenging (Hamre, Justice, et al., 2010), particularly in the context of a diverse set of teachers with very disparate beliefs regarding the extent to which this type of instruction is developmentally appropriate.

Within this sample, there was considerable range in teachers' beliefs about explicit instruction in literacy. Examination of item-level data on beliefs measures suggests that among control teachers, 49% strongly disagreed with the item "Preschool children are too young to benefit from explicit instruction in early literacy." However, 23% of control teachers either agreed or strongly agreed with this statement. Within the course condition, only 8% of teachers agreed or strongly agreed with this statement at the end of the course. So, as noted earlier, we seem able to change beliefs in this area, but these changes in belief may not be sufficient to change practice. It is important to note that this dimension of teaching was the very last to be covered in the course and thus the limitation, discussed in more detail in the following, that tapes coded for this study included any tape received between the midterm and 2 weeks after the final may have minimized observed impacts on this dimension of teaching.

Given that the course explicitly taught teachers the CLASS, we must be concerned with the possibility that the observed improvements in interactions are the result of "teaching to the test" rather than representing more meaningful changes in practice. Our experience suggests that because the CLASS describes broad dimensions of teaching practice that require intentional engagement of teachers with children over time, rather than providing a simple checklist (e.g., asks four open-ended questions), it would be hard for teachers to demonstrate improvements on CLASS scores without making meaningful changes to their practice. Our ability to test this hypothesis is limited at this time but will be addressed in later phases of the NCRECE study. We will assess evidence of long-term changes in practice (1 and 2 years after the course) as well as examine the potential impact of the course on gains in children's learning and social development. We do have evidence from previous coaching research suggesting that an explicit focus on CLASS can lead to improvements in child outcomes (Downer et al., in press; Mashburn et al., 2010), but whether the course will demonstrate similar effects is yet untested.

An encouraging pattern of findings across all beliefs, knowledge, and skill outcomes is the fact that course effects were consistent across sites, teacher education level, program type, and program location. In other words, teachers benefited from participating whether they were from one

part of the country or another, had a B.A. or not, worked in Head Start or under some other auspice, and had classrooms in a school or not. Thus, this type of course may be useful to a broad subset of the current early childhood education workforce.

### **Teacher Beliefs, Knowledge, and Skills as Mediators of Course Effects on Teachers' Interactions With Children**

Although we found evidence of changes in beliefs, knowledge, and practice, we also wanted to test the theory of change model by assessing whether changes in teacher beliefs and knowledge mediated effects on observed changes in teaching practice. We found limited support for this mediational pathway. There was evidence that teachers' skill in detecting effective interactions in videos partially mediated course effects on instructional interactions. Although these results are preliminary, they are among the first to provide empirical evidence regarding a potential pathway through which courses may have impacts on teachers' practice. It is possible that the portions of the course that focused on having teachers analyze classroom video in very specific ways were among the most important for helping teachers use these practices in their classrooms. This finding is consistent with a large body of work on "teacher noticing" that has documented the importance of video analysis for helping teachers to view and enact practices in their classrooms (e.g., Star & Strickland, 2008; Van Es & Sherin, 2002). It is also important to note that the mediator was not randomized, thus we cannot infer causal associations (MacKinnon, Fairchild, & Fritz, 2007).

None of the other measures of belief or knowledge were significant mediators of the course effects. There are several potential reasons for this lack of findings. First, it may be that connections between teacher beliefs, knowledge, and practice are too weak to support the proposed theory of change. That is, interventions that primarily target beliefs and knowledge may have limited impacts on teachers' practice unless they directly focus on practice. This course did impact teachers' use of effective practice, but findings suggest that this may be because much of the course content focused explicitly on observing and reflecting on practice. The fact that the only aspect of beliefs, knowledge, and skill that did show some evidence of mediation was the measure of teacher skill in detecting effective interactions provides some support to this interpretation.

However, it may also be that our measures are too imprecise to effectively model connections between course participation, teacher belief and knowledge, and teacher observed practices. Most of the measures of belief and knowledge used in this study were newly developed, and some have less than ideal psychometric proprieties. It is possible that there would be a stronger association detected among these constructs if there were less measurement error.

## **Limitations**

Although this randomized, controlled study demonstrated effects of a course on teachers' belief, knowledge, and practice, there are several notable limitations. First, the study relied on videotapes of teachers practice collected between the midterm and 2 weeks after the final. Although this study does confirm that significant intervention effects can be observed using this video-based methodology (Pianta et al., 2008), in which teachers do their own filming and are able to be selective in what areas of practice are observed, we expect that it may limit our ability to detect significant changes in practice, particularly among the dimensions of teacher-child interactions, which may be most susceptible to this methodology. For example, although ratings on negative climate are low across national samples, ratings in this sample were extremely low and there was very little variability. It may be that if teachers filmed segments in which they got angry or frustrated with children that they decided not to send these in or to erase the segment and film again. Live observations were conducted in the school year following the course, so future analyses will test the extent to which this hypothesis is supported.

A second limitation of the videotape methodology concerns the timing of the videotapes. Because the course was typically offered during the spring, just as teachers were finishing teaching for the year, there was limited opportunity to observe teaching after the full treatment was delivered. Based on previous evidence suggesting that it is important to observe on multiple days to provide a reliable estimate of teacher-child interactions using this video methodology (Mashburn et al., 2010), we determined that it was necessary to create composite scores based on two tapes, whenever possible. This meant that for most teachers at least one of the two tapes coded for this study was filmed shortly after the midterm, before they had much introduction to the Instructional Support domain or effective literacy and language instruction. Given this significant limitation, the moderate effect sizes observed on teachers' use of effective instructional interactions are notable. That said, examining the extent to which these practices are enacted in a cleaner sample of postintervention teaching would be preferable.

These intent-to-treat analyses were conducted using all participants, including a number of teachers assigned to the course condition who rarely, if ever, attended the course. Subsequent treatment-on-the-treated analyses that examine the extent to which particular elements of participation (e.g., attendance, class participation, homework completion) were associated with changes in teachers' belief, knowledge, and practices will provide us with much more detailed information about the active ingredients of the intervention.

A final set of limitations concerns the selection and treatment of teachers in this study. Teachers volunteered to participate in this study. We cannot assess the extent to which these teachers varied from the larger population of teachers in each site or the ways in which volunteering may alter the

effects of the course as compared to teachers who were required to take it. Additionally, the control teachers were assigned to business as usual and not assigned to any of the specific coursework provided in this study. Future studies should test the effects of this course against a group of teachers receiving different coursework to more fully demonstrate the unique effects of this particular course and guard against the potential of a Hawthorne effect. Finally, this course was delivered with in-service teachers, and we cannot assume that similar results would be obtained with pre-service teachers. Pre-service teachers would have a different set of educational background than the current participants and those without significant teaching experience may need a different set of resources to help them make meaning of the types of interactions described and displayed in this course. Scott-Little et al. (in press) report on the implementation of this course in a pre-service context and suggest that instructors and teachers in these contexts find the course useful while highlighting some of the unique challenges to implementing in these higher education contexts.

## Conclusion

This study is among the few to show direct effects of a course on early childhood teachers' use of effective teaching practices. Consistent with arguments made by Neuman and Cunningham (2009) and Zaslow, Tout, Halle, and Starr (2010), findings from this study provide support for the efficacy of *practice-focused* professional development. However, definitions of practice-focused professional development, which have thus far typically been defined as occurring "one-on-one or in small teams within the early educators own classrooms" (Zaslow et al., 2010, p. 426), should extend to include courses that have an explicit focus on practice. This is important because as the field looks for ways to improve the quality of teacher-child interactions at scale, there is a need for professional development opportunities that can be disseminated broadly. Courses offer an advantage over more intensive options such as coaching in that they are less expensive to implement and easier to integrate into existing systems for teacher licensure. For example, the Head Start Act requires 50% of Head Start teachers to have a B.A. degree by 2013—thus many current Head Start teachers are enrolling in B.A. programs. For this and similar policy interventions to be successful in producing the intended positive outcomes for children, it is important that the courses teachers take actually change the ways they approach classroom teaching. Learning more from this study and other similar efforts to use courses to lead to meaningful and sustained changes in teachers practice should help inform the way the field moves forward in the broader context of early childhood quality improvement efforts.

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### Notes

<sup>1</sup>Although causal inferences regarding the effect of treatment assignment are not dependent on the “no confounders” assumption because of random assignment, the mediators of treatment, teacher knowledge and beliefs, were not randomly assigned. Thus, the covariates in the model estimating the b path can be considered control variables, and their presence in the model strengthens causal inference.

<sup>2</sup>Teachers in Cohort 1 of the study completed all knowledge and belief measures prior to the course. These pre-course measures were eliminated from the study for Cohort 2 due to concerns from teachers regarding the length of the survey. However, among Cohort 1 we tested the extent to which treatment assignment was associated with increases in knowledge and significant changes in belief. Results from these analyses parallel those reported here on post-treatment differences—teachers in the course condition gained more knowledge and reported an increase in beliefs about the importance of language and literacy skills and intentional teaching practices. Results are available upon request.

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