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Public preschool in a more diverse America:

Implications for next-generation evaluation research

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Abstract

The increasing diversity of young children enrolled in state pre-K and Head Start programs has prompted examination of varying impacts for identified subgroups of young children. We argue that questions of subgroup impacts and the processes that may account for them should be prioritized in future evaluations of these programs. Three subgroups at high risk of poor school performance provide the focus for our discussion: low-income children exposed to significant adversity, dual language learners, and children with special needs. We further draw upon new hypotheses regarding the kinds of processes most likely to support both short- and longer-term public preschool impacts as they apply to these subgroups. We conclude with a set of research recommendations aimed at identifying features of these programs that may render them especially effective in the context of today's increasingly diverse classrooms of young children.

Key words: public preschool; low-income; dual language learners; special needs

Public Preschool in a More Diverse America:

Implications for Next-Generation Evaluation Research

Examinations of short-term pre-Kindergarten (pre-K) and Head Start impacts, previously focused on overall treatment effects, are now turning to questions of variation in effects based on program features, counterfactual conditions, and child characteristics (1-3). This shift coincides with evidence that the population of young children enrolled in public preschool programs (including Head Start, state pre-K programs and child care centers accepting public subsidies) has become increasingly diverse. Spanish-speaking DLL's now constitute 23.6% of Head Start enrollments (4) and are as high as 58% to 62% of pre-K enrollments in some states (5). As of 2014, two-thirds of children with special needs were enrolled in early childhood classrooms with at least 50% of children without disabilities (6), up from 48% in 2009. Serving low-income children has historically been the focus of public early education programs; today, 33 of 57 state pre-K programs are income targeted, as are most Head Start slots. But public preschool programs are increasingly income diverse, with low-income children more likely to be enrolled alongside their less economically disadvantaged peers than in the past (7).

We argue that efforts to address this growing diversity need to be at the forefront of the next generation of research, practice, and policy on public preschool education. The questions of *for whom* Head Start and state pre-K works and through what processes demand far more attention than they have received to date. While highly pertinent to the U.S. context, these questions also carry important implications for early care and education programs in other countries facing influxes of immigrants and severe economic downturns. We focus our discussion on three subgroups of children at high risk of poor school performance: dual language learners (DLLs), children with special needs, and low-income children exposed to significant

adversity. With regard to low-income children, there is growing appreciation for heterogeneity within this population with special interest in those who have experienced highly unstimulating or stressful early environments (8, 9). We focus on these children insofar as they may form an especially high-risk population for whom preschool education may be particularly advantageous. We further focus on Head Start and state-funded pre-K programs, which together currently serve 43% of the nation's 4-year olds and 16% of 3-year olds (10). Following a brief review of the existing (but scant) evidence on both short- and longer-term subgroup impacts, we offer a discussion designed to steer next stage research on these impacts beyond the rather blunt "they have more room to grow" perspective to hypotheses tailored to our three subgroups that are ripe for empirical examination.

Public Preschool and Subgroup Impacts

Recent reviews of the evidence on differential subgroup impacts from studies of Head Start and state pre-K programs (1, 2, 3) converge on the conclusion that more economically disadvantaged children, as well as DLLs and Spanish-speaking children, experience larger short-term (and sometimes longer-term) impacts from Head Start and pre-K exposure than do their less disadvantaged and English proficient peers. DLL's appear to benefit especially when their language backgrounds are combined with other factors such as low baseline pre-academic skills or poorly educated mothers. The rare studies of children with special needs report that these children benefit from participation in state pre-K programs or Head Start as much, if not more than, typically developing children (1, 11, 12), although this finding is restricted to immediate (and for the NHIS [13], first grade) impacts.

Our own examination of the evaluation studies that informed a recent consensus statement on pre-kindergarten effects (14) revealed that of the 26 short-term studies, only 9

explored subgroup impacts for Hispanic/DLL/LEP children and only 2 examined children with special needs; of the 37 long-term studies, only 11 explored subgroup impacts by Hispanic/DLL/LEP status and only 1 examined children with special needs (results available from the first author). Differential effects by poverty status were more commonly examined: 12 short-term studies and 16 long-term studies. The majority of these studies focused on cognitive outcomes or measures of school progress (e.g., grade retention, special education placement). The pattern of outcomes replicates the prior summaries (see above), although the evidence on DLLs and Hispanic children is somewhat less consistent than previously portrayed. With regard to low-income children, there is a strong pattern of more pronounced short and longer-term benefits for lower-income pre-k participants enrolled in universal pre-K programs (that permit income group comparisons), with rare exceptions. A few studies of income-targeted programs, including the Tennessee pre-K program (15), have reported that low-income children who are relatively more disadvantaged (e.g., those living in a higher-risk neighborhood or having a more poorly educated mother) show stronger benefits.

Revisiting Preschool Impacts for Children at Risk of Poor School Performance

Two strands of inquiry are especially pertinent to next-stage efforts to explain the *why* behind this pattern of evidence: one exploring the conditions under which preschool participation would be expected to redirect early achievement trajectories (16) and another examining the specific developmental strengths and weaknesses of each of the subgroups on which we focus.

New hypotheses about the conditions under which preschool education would be most likely to show short- and longer-term impacts emphasize three processes: skill-building, foot-in-the-door, and sustaining environments (16). We focus on the first two of these processes. The skill-building function of preschool education has been central to economist's arguments for

investments in early education (17). More nuanced theories, now emerging, emphasize that the skills that preschool is designed to build need to be malleable, crucial building blocks for subsequent learning (foundational), and unlikely to develop in the absence of exposure to preschool education (16). This latter condition, which directs attention to children's development under counterfactual conditions and the potential for catch-up growth in school regardless of a child's history of preschool enrollment, is especially applicable to our subgroups of interest. Foot-in-the-door processes bring notions of developmental timing to considerations of preschool impacts. When activated, these processes can redirect developmental trajectories towards promising pathways, such as staying on track in school. For our subgroups, the challenge is to identify skills for which earlier acquisition via preschool education can redirect development away from outcomes associated with poorer school performance, such as poor attendance, grade retention, or special education placement.

We next consider these two processes as they may play out for low-income children exposed to significant adversity, DLLs, and children with special needs. We draw upon what is currently understood regarding the general profile of strengths and weaknesses that these children bring to preschool, in the context of wide within-group heterogeneity, as well as evidence regarding their counterfactual circumstances.

Low-Income Children Experiencing Significant Adversity

It is well documented that economically disadvantaged young children exhibit poorer language, math, memory, executive functioning, emotion regulation, and social-emotional processing skills relative to their more advantaged peers (9, 18, 19, 20, 21). These are thus strong candidates for the specific skills that preschool programs should nurture in these children. Early

interventions focused on these arenas of behavior have shown that they are both malleable and foundational for subsequent learning (22).

The growing literature on the impacts of early, extreme, and chronic adversity on brain and behavioral development further suggests that highly adverse early rearing circumstances establish counterfactual conditions, and set in motion neurobiological processes, that can interfere with efforts to restore normative development or "catch-up" for some children (23, 24, 25). Evidence at the intersection of neuroscience, behavioral development, and poverty impacts is pointing to two such circumstances: lower levels of language stimulation in children's homes and children's early experiences of stress (9, 26, 27). Chronic exposure to low levels of, less complex, and more directive speech, as well as to home- and/or neighborhood sources of toxic stress (e.g., persistent parental depression, violence, crowding), are emerging as influential pathways linking poverty to aberrant development of the neural regions and circuits that underlie language, memory, attention, emotion regulation, and social information processing (9, 20, 24). While far from causal in nature, this evidence suggests that counterfactual conditions characterized by early linguistic deprivation and chronic stress may have enduring impacts on development absent early intervention, whether in the form of preschool education or some other strategy.

With regard to foot-in-the-door processes, there is growing evidence that earlier experiences of linguistic deprivation and stress associated with poverty exert a more potent influence on life-course development than do subsequent exposures (9, 28). While the processes underlying this developmental pattern of influence are not well-understood, it is notable that children growing up under especially adverse socio-economic circumstances not only experience higher odds of delayed and less efficient brain development within the first year of life, but also

seem to be less likely to recruit alternative, possibly compensatory, neural networks to support skill development when more typical networks do not develop properly (9). On a behavioral level, compromised early capacities to communicate and understand language, to pay attention and remember, and to control strong impulses carry the potential to set in motion precisely the kinds of negative cascades, such as school expulsion or inappropriate special education placement that can produce worrisome educational trajectories.

Dual Language Learners

DLLs, relative to their monolingual peers, bring a unique mix of stronger inhibitory control, theory of mind and spatial reasoning skills to preschool classrooms, perhaps due to underlying neurocognitive advantages associated with bilingualism (29, 30). These children also, however, tend to present with delayed academic skill growth, which appears to be associated with growing up in homes with limited exposure to English. As we've noted, early language development is malleable and provides foundational skills for subsequent educational progress. Indeed, some findings indicate that upon exposure to strong English language instruction, Spanish-speaking immigrant/DLL children gain reading and oral language skills at a faster rate than their monolingual peers (31).

The evaluation evidence, discussed above, revealing enduring achievement gaps between DLLs with different histories of pre-K and Head Start participation suggests that absent such participation, these children's typical home and school environments do not provide sufficient English language supports for catch-up during elementary school. Secondary data work on the National Head Start Impact Study (NHIS), comparing hypotheses about why DLLs may show particularly strong English-language related benefits from preschool education (1), suggests that compensatory processes associated with exposure to English in Head Start classrooms are the

critical factor. Thus, the foot-in-the-door processes hypothesized above for low-income children who experience linguistically deprived early environments may also set in motion more promising pathways through school for DLLs.

Children with Special Needs

Young children with special needs have been documented to struggle with executive functions, such as working memory and attention skills (32), which likely contribute to the disability-related gap in mathematics achievement that emerges as early as kindergarten (33). Children with special needs also face social challenges associated with entering peer groups, sustaining reciprocal interactions, and social problem solving (34, 35). These challenges manifest in fewer friendships, being rated by peers as less desirable playmates, and thus social isolation and rejection (36), all of which affect adjustment to preschool classrooms.

Importantly, these are skills that preschool environments may be uniquely positioned to support. Both experimental and observational studies have found that children with special needs engage in more positive peer interactions, fewer negative interactions, and display more advanced levels of play when presented with opportunities to interact with more sophisticated, typically-developing peers (36, 37), revealing the malleability of peer interaction skills for these children. Similar impacts on these children's executive function (or math) skills related to inclusive settings have not been examined, although the high-quality, inclusive Boston pre-K program did have positive impacts on both executive function and math skills (as well as literacy and emotion regulation skills) of children with special needs (12).

Whether these skills would develop to the same extent eventually in children with special needs who have not attended inclusive preschool settings (the counterfactual question) is unknown given the lack of longitudinal data to inform this question. We also know virtually

nothing about how foot-in-the-door processes might operate for children with special needs. It is plausible that stronger social skills upon entry to formal schooling would support greater access to typical peers in kindergarten, thus initiating a positive cascade of reduced social isolation and exclusion, and associated social-emotional growth (38). In addition, stronger executive function skills, as well as improved performance in literacy and math, may enable children with mild to moderate special needs to avoid placement in special education in the early elementary grades.

Recommendations for Next Generation Research on Public Preschool Impacts

There is no reason to believe that the ingredients of high-quality preschool classrooms identified for all children – content-rich instruction based on learning trajectories, for example (14) – are any less important for the subgroups of children on which our discussion focuses. Our review of evidence regarding the early rearing circumstances and associated strengths and weaknesses that some low-income, DLL, and special needs children bring to their preschool classrooms, however, raises the possibility that additional, less-commonly studied dimensions of classroom processes may be more critical to examine in future efforts to ensure that young children at especially high risk for poor schooling outcomes benefit to the maximum extent from public preschool education. We call for six lines of research.

First, compensatory processes associated with early exposure to language-deprived environments imply that preschool settings that offer children explicit opportunities to initiate, model, and extend their pre-literacy, vocabulary, and oral language skills (39) may be especially important for the academic skill development of DLLs, as well as for low-income children who have experienced very low levels of language input. Observational instruments that capture these processes by assessing the focus, depth, and context of instruction within specific content areas (e.g., language, as well as math) are now available (40, 41) and offer important complements to

broader assessments of instructional quality. New assessments of preschool instructional (and non-instructional) environments specifically designed for DLLs (e.g., the CASEBA: 42) and children with special needs (e.g., the Inclusive Classroom Profile; 43) afford exciting opportunities to fill a large gap in our understanding of preschool features that may be especially important for these subgroups of children.

Second, evidence linking early chronic stress to neural and behavioral pathways associated with impaired early learning has produced calls to approach early educational settings not only as sources of support for emerging academic skills but also as sources of protection from the adverse consequences of toxic stress (44, 45). Developing executive function and emotion regulation capacities have emerged as important components of pertinent work given the brain regions and circuits that are undermined by chronic stress. As we have discussed, the development of executive functions has also been linked to the early learning of DLLs, in a facilitative role, and of children with special needs, as a domain that often exhibits impairment. A pressing challenge concerns the lack of causal evidence linking early executive function skills to subsequent achievement outcomes (46). One promising response to this challenge emphasizes the potential benefits of designing curricula and instructional strategies that simultaneously and explicitly develop academic proficiencies (e.g., math, language) and executive function skills (47) to set in motion hypothesized synergistic or bootstrapping processes. Additional features of preschool classrooms that we believe warrant study include explicit scaffolding of supportive and inclusive peer interactions (and thus reduced experiences of social threat), regular and predictable daily routines as well as minimal exposure to chaos (and thus increased opportunities for self-regulation), and deliberate opportunities to practice the specific memory, planning,

organizational, and attentional capacities that constitute effective executive function skills as part of daily routines (44).

Third, more detailed examination of peer processes as they affect the early learning of children who have experienced chronic stress, DLLs, and children with special needs may prove to elucidate ways in which the social environment in preschool classrooms, and teachers' management of this environment, affects the early learning of all young children. As noted above, attention to the role and management of instances of social threat, as well as to the emergence of peer hierarchies (38) may prove especially important for young children who struggle with stress-related social-emotional processing and self-regulation deficits. Contributions of and supports for English proficient peers to serve as practice partners and language role models in preschool classrooms that include DLLs also warrant study (48). With regard to children with special needs, examination of peer processes associated with exclusion versus inclusion, and explicit teacher supports for inclusive peer interactions, may be an especially important ingredient affecting preschool impacts.

Fourth, evidence that differing counterfactual conditions in preschool studies affect patterns of impact (49) combined with our emphasis on the potential role of these conditions for our subgroups of interest points to the vital need to address the lack of documentation of these conditions in future evaluation research. Especially important are efforts to document levels and sources of both adversity and support – in homes, neighborhoods, and intervention settings – that may explain differential impacts both across and within subgroups of young children.

Fifth, while we did not address the contribution of post-preschool environments as they may or may not sustain the initial boost that public preschool education appears to generate for our subgroups of interest, we agree with many in the field that this is among the most promising

avenues for future inquiry (14, 50). A productive starting point would explore question of whether sustaining environments for our subgroups entail more intensive and longer-term, but similar active ingredients as those that affect short-term preschool impacts or whether distinct features of post-preschool elementary classrooms (e.g., alignment with preschool settings) enable them to serve as "sustaining environments" for these children,

Finally, examination of public preschool impacts on subgroups of educationally at-risk children has typically been conducted in silos, with little thought given to children who experience multiple risks (e.g., low-income children with special needs) or to the potentially positive developmental repercussions of learning alongside children from different backgrounds, especially in our increasingly diverse world. We further urge efforts to consider the implications of this diversity, and of the issues we have highlighted, for the demands placed on preschool teachers who rarely receive training in special or bilingual education, or in identifying and supporting the development of children who have been exposed to toxic stress.

In summary, our hope is that research on public preschool, focused on impacts and explanatory processes for specific subgroups of vulnerable young children who are now populating these classrooms in record numbers and learning alongside each other, will lead to greater understanding of how best to ensure that all young children thrive in preschool programs and continue along strong learning trajectories in school.

References

1) Bloom, H. & Weiland, C. (March 2015). *Quantifying variation in Head Start effects on young children's cognitive and socio-emotional skills using data from the National Head Start Impact study.* New York: MDRC.
2) Ladd, H.F. (2017). Do some groups of children benefit more than others from pre-kindergarten programs? In K. Dodge (Ed.), *The current state of scientific knowledge on pre-kindergarten effects?* (pp. 31-36). Washington, DC: The Brookings Institution.
3) Morris, P.A., Connors, M., Friedman-Krauss, A., McCoy, D., Weiland C., et al., (under review). *New findings on impact variation from the Head Start Impact Study: Informing the scale-up of early childhood programs.* Washington, DC: AREA Open.
4) Office of Head Start (2017). *Head Start services snapshot: National (2015-16).* Washington, DC: U.S. HDDS, ACF. Retrieved from https://eclkc.ohs.adf.hhs.gov/hslc/data/psr/2016;service-snapshot-all-programs-2015-2016.pdf.
5) Barnett, W. S., Friedman-Krauss, A. H., Gomez, R. E., Horowitz, M., Weisenfeld, G. G., Clarke Brown, K. & Squires, J. H. (2016). *The State of Preschool 2015: State Preschool Yearbook*. New Brunswick, NJ: National Institute for Early Education Research.
6) U.S. Department of Education, Office of Special Education and Rehabilitative Services, Office of Special Education Programs. (2016). *38th Annual report to Congress on the implementation of the Individuals with Disabilities Education Act.* Washington, D.C.
7) Phillips, D., Datta, R., Kisker, E., & Anderson, S. (December 2015). *The changing landscape of publicly-funded center-based child care: 1990-2012.* Paper presented at the

meeting of grantees for the Secondary Analysis of Data on Early Care and Education, Office of Planning, Research and Evaluation, U.S. DHHS.

8) Dube, S.R., Felitti, V.J., Dong, M., Giles, W.H., & Anda, R.F. (2003). The impacts of adverse childhood experiences on health problems: Evidence from four birth cohorts dating back to 1990. *Preventive Medicine, 37(3)*, 268-277.
9) Ursache, A., & Noble, K.G. (2016). Neurocognitive development in socioeconomic context: Multiple mechanisms and implications for measuring socioeconomic status. *Psychophysiology, 53*, 71-82.
10) Barnett, W. S., Friedman-Krauss, A. H., Weisenfeld, G. G., Horowitz, M., Kasmin, R., & Squires, J. H. (2017). *The State of Preschool 2016: State Preschool Yearbook*. New Brunswick, NJ: National Institute for Early Education Research
11) Phillips, D. & Meloy, M.E. (2012). High-Quality School-Based Pre-K Can Boost Early Learning for Children with Special Needs. *Exceptional Children*, 78(4), 471-490.
12) Weiland, C. (2016). Impacts of the Boston prekindergarten program on the school readiness of young children with special needs. *Developmental Psychology, 52(11)*, 1763-1776).
13) Puma, M., Bell, S., Cook, R., Heid, C., Broene, P., Jenkins, F., Mashburn, A., & Jason, D. (2012). *Third Grade Follow-up to the Head Start Impact Study Final Report*, OPRE Report # 2012-45, Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services.
14) Phillips, D., Lipsey, M., Dodge, K., Haskins, R., Bassok, D., Burchinal, M., Duncan, G., Dynarski, M., Magnuson, K., & Weiland, C. (2017). Puzzling it out: The current state of

scientific knowledge on pre-kindergarten effects. A consensus statement. In K. Dodge (Ed.), *Issues in pre-kindergarten programs and policy.* (pp. 19-30). Washington DC: The Brookings Institution.

15) Pearman, F.A. (2017). *The Moderating Effect of Neighborhood Disadvantage on Preschool Effectiveness: Evidence from Tennessee.* Paper presented at the Society for Research on Educational Effectiveness Annual Conference, Washington, DC.
16) Bailey, D.H., Duncan, G., Odgers, C., & Yu, W. (2017). Persistence and fadeout in the impacts of child and adolescent interventions. *Journal of Research on Educational Effectiveness, 10,* 7-39.
17) Cunha, F. & Heckman, J. (2007). *The technology of skill formation*. (NBER Working Paper No. 12840). Washington, DC: National Bureau of Economic Research.
18) Perkins, S.C., Finegood, E.D., & Swain, J.E. (2013). Poverty and language development: Roles of parenting and stress. *Innovations in Clinical Neuroscience, 10,* 10-19.
19) Raver, C.C., Blair, C., & Willoughby, M.T., (2013). Poverty as a predictor of 4-year-olds' executive function: New perspectives on models of differential susceptibility. *Developmental Psychology, 49,* 292-304.
20) Evans, G.W., & English, K. (2002). The environment of poverty: Multiple stressor exposure, psychophysiological stress, and socioemotional adjustment. *Child Development, 73,* 1238-1248.
21) Noble, K.G., McCandless, B.D., & Farah, M.J. (2007). Socioeconomic gradients predict individual differences in neurocognitive abilities. *Developmental Science, 10,* 464-480.

22) Jones, S. (2017). Classroom-based early childhood interventions. In E. Dearing & E. Votruba-Drzal (Eds.), *Handbook of Early Childhood Programs, Practices, and Policies*. (pp. XXX-XXX). New York: Blackwell.

23) Blair, C., & Raver, C.C. (2012). Child development in the context of adversity: Experiential canalization of brain and behavior. *American Psychologist, 67(4),* 309-318.

24) Brito, N.H., & Noble, K.G. (2014). Socioeconomic status and structural brain development. *Frontiers in Neuroscience, 8,* 1-12.

25) Farrah, M.J., Shera, D.M., Savage, J.H., Betancourt, L., Giannetta, J.M., Brodsky, N.L.,…Hurt, H. (2006). Childhood poverty: Specific associations with neurocognitive development. *Brain Research, 1110,* 166-174.

26) Luby, J., Belden, A., Bottero, K., Marrus, N., Harms, M.P., Babb, C., et al (2013). The effects of poverty on childhood brain development: the mediating effect of caregiving and stressful life events. *JAMA Pediatrics, 167,* 1135-1142.

27) Johnson, S.B., Riis, J.L., & Noble, K.G. (2016). State of the art review: Poverty and the developing brain. *Pediatrics, 137(4),* 1-16.

28) Duncan, G.J., & Magnuson, K.A. (2003). Off with Hollingshead: Socioeconomic resources, parenting, and child development. In M.H. Bornstein (Ed.), *Socioeconomic Status, Parenting, and Child Development* (pp. 83-106). Mahwah, NJ: Erlbaum Associates.

29) Barac, R., Bialystok, E., Castro, D.C., & Sanchez, M. (2014). The cognitive development of young dual language learners: A critical review. *Early Childhood Research Quarterly, 29,* 699-714.

30) Buysse, V., Peisner-Feinberg, E., Páez, M., Hammer, C. S., & Knowles, M. (2014). Effects of early education programs and practices on the development and learning of dual language learners: A review of the literature. *Early Childhood Research Quarterly*, *29*(4), 765-785.

31) Mancilla-Martinez, J., and Lesaux, N. K. (2011). Early home language use and later vocabulary development. *Journal of Educational Psychology, 103,* 535-546. doi: 10.1037/a0023655

32) Schoemaker, K., Bunte, R., Weibe, S.A., Espy, K.A., Dekovic, M., & Matthys, W. (2012). Executive function deficits in preschool children with ADHD and DBD. *Journal of Child Psychology and Psychiatry, 53,* 111-119.

33) Pagliaro, C.M., & Kritzer, K.L. (2013). The math gap: A description of the mathematics performance of preschool-aged deaf/hard-of-hearing children. *Journal of Deaf Studies and deaf Education, 18,* 139-160.

34) Gresham, F.M., & MacMillan, D.L. (1997). Social competence and affective characteristics of students with mild disabilities. *Review of Educational Research, 67,* 377-415.

35) Guralnick, M. J., Gottman, J.M., & Hammond, M.A. (1996). Effects of social setting on the friendship formation of young children differing in developmental status. *Journal of Applied Developmental Psychology, 17(4),* 625-651.

36) Odom, S. L., Zercher, C., Li, S., Marquart, J., & Sandall, S. (2006). Social acceptance and social rejection of young children with disabilities in inclusive classes. *Journal of Educational Psychology, 98,* 807-82.

37) Odom, S.L., Buysse V., & Soukakou, E., (2011). Inclusion for young chidren with disabilities: A quarter century of research perspectives. *Journal of Early Intervention, 33,* 344-356.

38) Boyce, W.T., Obradovic, J., Bush, N.R., Stemperdahl, J., Kim, Y.S. & Adler, N. (2012). Social stratification, classroom climate, and the behavioral adaptation of kindergarten children. *Proceedings of the National Academy of Sciences, 109,* 17168-17173.

39) Bulotsky-Shearer, R. J., Manz, P. H., Mendez, J. L., McWayne, C. M., Sekino, Y., & Fantuzzo, J. W. (2012). Peer play interactions and readiness to learn: A protective influence for African American preschool children from low-income households. *Child Development Perspectives, 6,* 225–231.

40) Farran, D.C., Meador, D. M., Bilbrey, C., & Vorhaus, E. (2015). *Hybrid narrative record manual, 2015 Edition*. Nashville, TN: Vanderbilt University, Peabody Research Institute.

41) Connor, C.M., Spencer, M., Day, S.L., Giuliani, S., Ingebrand, S.W., McLean, L., & Morrison, F.J. (2014). Capturing the complexity: Content, type, and amount of instruction and quality of the classroom learning environment synergistically predict third graders' vocabulary and reading comprehension outcomes. *Journal of Educational Psychology, 106(3),* 762-778.

42) Freedson, M., Figueras-Daniel, A., Frede, E., Jung, K., & Sideris, J. (2009). *The Classroom Assessment of Supports for Emergent Bilingual Acquisition.* New Brunswick, NJ: National Institute for Early Education Research.

43) Soukakou, E., Winton, P., & West, T. (2012). *The Inclusive Classroom Profile (ICP): Report on preliminary findings of demonstration study in North Carolina*. Chapel Hill, NC: NPDCI, FP Child Development Institute.

44) Phillips, D. (2016). Integrating enriched learning and protection from toxic stress in early education settings. In S. Jones & N. Leseau (Eds.). *Leading Edge in Early Childhood Education,* (pp. 7-28). Cambridge, MA: Harvard University Press.

45) Shonkoff, P. Protecting brains, not simply stimulating minds. *Science, 333 (6045),* 982-983.

46) Jacobs, R., & Parkinson, J. (2015). The potential for school-based interventions that target executive function to improve academic achievement. *Review of Educational Research, 85(4),* 512-552.

47) Clements, D.H., Sarama, J., & Germeroth, C. (2016). Learning executive function and early mathematics: Directions of causal relations. *Early Childhood Research Quarterly, 36*, 79-90.

48) Justice, L. M., Mashburn, A. J., Hamre, B. K., & Pianta, R. C. (2008). Quality of language and literacy instruction in preschool classrooms serving at-risk pupils. *Early Childhood Research Quarterly, 23,* 51–68.

49) Feller, A., Grindal, T., Miratrix, L., & Page, L. (2016). Compared to what? Variation in the impact of early childhood education by alternative care type. *Annals of Applied Statistics, 110(3),* 1245–1285.

50) Stipek, D., Franke, M., Clements, D., Farran, D., & Coburn, C. (2017). PreK-3: What does it mean for instruction. *Social Policy Report, 30(2).*