EXPLORING THE ROLE OF MATERNAL COGNITIONS, PARENTING PRACTICES AND NEIGHBORHOOD OPPORTUNITIES IN PRESCHOOLERS' DEVELOPMENT

A Dissertation

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APPROVAL OF THE DISSERTATION

This dissertation, ("Exploring the Role of Maternal Cognitions, Parenting, Practices and Neighborhood Opportunities in Preschoolers' Development"), has been approved by the Graduate Faculty of the School of Education and Human Development in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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Linking Document

In this document, I describe the conceptual and theoretical linkages among my dissertation studies. First, I briefly describe the theoretical approaches that guided my reasoning across all documents. Second, I summarize key aspects of children's development during the preschool years. Next, I present evidence that supports the important role that family resources, parents, and neighborhoods have on preschoolers' development. Also, I describe the limitations of prior work related to these constructs, as well as gaps in the field. Then, I provide an overview of the three papers that comprise my dissertation. Finally, I discuss how this dissertation contributes to the development of the field and the design of future interventions.

Theoretical Perspective on Human Development and Parenting

This dissertation is grounded in ecological and dynamic systems perspectives of human development (Bronfenbrenner & Morris, 1998; Witherington, 2015). According to these theories, children's development is influenced by the dynamic and transactional interactions they have with their surrounding and distal contexts, and relationships among these contexts (Rimm-Kaufman & Pianta, 2000). Families and neighborhoods are proximal systems that provide some of the human and economic resources children need to thrive. For instance, parents may promote children's healthy development through responsive interactions, which can be facilitated and enhanced by stimulating environments available in neighborhoods (e.g., green areas, absence of noise or toxins). Other aspects of more distal contexts, such as the opportunities offered through policies and interventions led by government agencies or non-profit organizations, also can enhance children's outcomes and support the systems in which children are embedded.

Ecological theories provide a holistic view that integrates the child, processes, and contextual concepts. However, one of the main limitations of these theories is the lack of specificity around the influence that culture and social mechanisms such as racism, prejudice, discrimination, and oppression, have on minority children's development (García Coll et al., 1996). Although through this dissertation I do not actively tackle any of the listed social mechanisms, I do recognize they generate unique detrimental conditions for children from low-socioeconomic status (SES) and their families. Also, I acknowledge families from low-SES are diverse, and it is important to understand better their strengths to truly support children's development. Aiming for this understanding is a core component of my research.

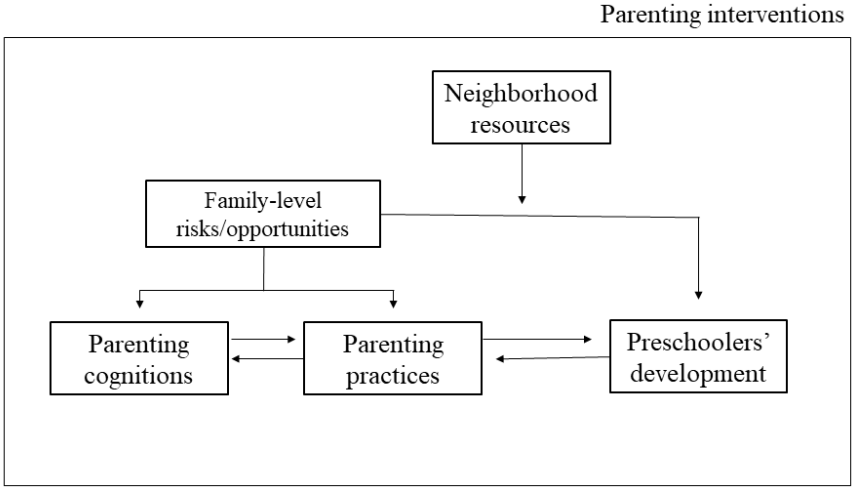
Other theories that explain some of the specific processes that the ecological and dynamic systems approaches broadly describe also informed the conceptualization of this dissertation. For instance, the important role parents have on children's emotional competence through the climate of the family and emotion-focused parenting practices (via modeling or more direct practices) is drawn from emotion socialization theory (Denham & Liverette, 2019; Morris et al., 2017). More specifically, attachment theory, which highlights the importance of early affectional bonds between children and caregivers on development (Marvin et al., 2016), shapes the definition of responsive parent-child interactions utilized in this dissertation. Further, the potential linkages between poverty, family risk, parenting, and children's development stem from the experiential canalization theory that describes how biology and environmental conditions intertwine and determine child development (Blair & Raver, 2012). Finally, I use Bandura's theory of self-efficacy (Bandura, 1977) and the Psychologically Wise

Intervention approach (Walton & Wilson, 2018) to conceptualize and provide initial evidence of an online intervention that aims to increase parents' beliefs in their competence to influence their children's development and future success (i.e., parenting self-efficacy - PSE).

Leveraging these multiple theories, Figure 1 displays the conceptual model guiding this dissertation. The empirical body of work presented here aims to deepen our understanding of the contextual factors that influence preschoolers' development. Below I describe key aspects of preschooler's development, the opportunities families provide for child development (including parenting practices and cognitions), and neighborhood resources, as well as the gaps in the literature that this dissertation aims to fill.

Figure 1

Conceptual Model



Child Development during the Preschool Years

The importance of the preschool years (3–5 years of age) is well-recognized in the literature (National Research Council & Institute of Medicine, 2000). During this time, children have high brain plasticity and emerging skills across social, emotional, and

cognitive domains that have significant implications for their well-being (Shonkoff, 2010). For instance, during preschool, children develop executive function (EF) skills and theory of mind, become more independent from caregivers and start to recognize and regulate their own emotions, improve their narrative skills, and increase their vocabulary (Carlson et al., 2013; Hoff, 2008; Thompson, 2015). In the short term, healthy development of these skills contributes to the adaptation and adjustment in school settings, comprising what researchers have defined as school readiness (Sabol & Pianta, 2017). In addition, consistent with the hypothesis of "skills beget skills," there is persuasive evidence that these early preschoolers' skills are related to more distal skills and adult outcomes (Duncan et al., 2007; Heckman et al., 2013). Thus, this age range represents an important period to study due to both the short- and long-term implications for development.

In addition to the preschool years being a time of heightened intrapersonal changes, it also is a time where often children are exposed to early childhood education opportunities out of the home (e.g., attendance to early child care centers, schools, etc.). This experience involves a child's immersion into new ecologies that demand adjustment to unfamiliar settings and interactions with different people. Even though preschoolers are beginning to become more independent and are in the process of developing skills to navigate these new challenges, however, preschoolers still require external supports from adults and systems around them (e.g., families, neighborhoods) for optimal development.

Family Influences on Preschoolers' Development

Family is one of the proximal contexts that influence preschoolers' development through the provision of key resources and interactions (Bronfenbrenner & Morris,

1998). For instance, family poverty (defined as the lack of family economic resources to satisfy basic needs) has been one of the most studied sociodemographic risks and has been consistently associated with children's lower school readiness, lower school achievement, behavioral problems, and poorer health (Magnuson & Duncan, 2019). Poverty usually co-occurs with other risks that also negatively interfere with children's development. Two of the mechanisms through which poverty and other risks may affect children's development is the alteration of stress hormones that can compromise brain development and are associated with morbidity outcomes; and the limited competencies parents have to support their children when they themselves face poverty-related stress (Blair, 2009).

Parents or primary caregivers represent a key resource preschoolers depend on to set and continue a path of healthy development and school adjustment. Specifically, child-parent interactions that are warm, attend to children's needs, and have a high level of closeness (i.e., responsive interactions) have shown benefits for children's development and may act as a protective factor under negative contextual circumstances, such as poverty (Britto et al., 2017; Magnuson & Schindler, 2019). Little work, however, has explored the heterogeneity of families with low resources and the associated factors that might support, or inhibit, child development in these varying experiences. Thus, family income and the other sociodemographic factors associated to poverty are something that I intentionally attend to throughout this dissertation.

Given the critical role parents play in shaping young children's development, many parenting interventions have been created. The strong evidence that supports the efficacy of parenting interventions is vast. However, less is known about the mechanisms

and the specific components through which these interventions achieve the desired outcomes (Powell, 2019). For instance, although from a theoretical perspective parents' cognition (e.g., parenting self-efficacy) are recognized as a key construct that shapes parents' practices, few interventions have targeted them directly as a source of change. Additionally, implementing parenting interventions can be challenging. Sometimes they are perceived as too complicated by policymakers and participants and are costly, which limit impact and raises scaling-up issues (Gennetian, 2021). In this dissertation, I aim to contribute to a venue of research that, through novel intervention designs, has the potential to address these limitations.

The Role of Neighborhoods in Children's Development

Neighborhoods are one of the larger contexts in which families and children are embedded and, as such, influence their interactions and well-being in multiple ways. For instance, a neighborhood's institutions and physical resources can provide cognitively stimulating environments and support parents' capacities to care for their children (Leventhal & Brooks-Gunn, 2000). The empirical literature points to compelling associations between neighborhood resources (mainly identified by SES or poverty at the neighborhood level) and a variety of children's well-being outcomes, including school readiness, earnings, and social mobility (Chetty et al., 2016; Chetty & Hendren, 2018; McCoy et al., 2015; Minh et al., 2017). However, the field still lacks a strong understanding of the multiple aspects that vary within and between neighborhoods as well as more generalizable neighborhood-level measures that provide a comprehensive picture of this context. Additionally, the synergistic effects of neighborhood resources and family risks remain unexplored. These limitations have led to an incomplete

assessment of children's developmental risk which prevents the design and implementation of policies that properly target the most vulnerable children (Hardy et al., 2021).

Overview of the Dissertation

In the three papers that comprise this dissertation, I analyze paths through which family, neighborhood resources, and parenting interventions may influence preschoolers' development. In Paper 1 (*Parenting Profiles at Pre-Kindergarten and Kindergarten Entry: Stability and Association with School Readiness, under review*), I examined the extent to which parenting practices and home environment changed between pre-kindergarten entry and kindergarten entry, and whether these aspects of parenting were related to children's school readiness (parenting practices → preschooler's development, Figure 1). To address this aim, I used data from a two-cohort longitudinal study that followed children who were predominantly from families with low-SES (family income at or below 200% of the federal poverty guidelines) and attended state-funded and Head Start pre-kindergarten classrooms.

Findings from Latent Profile Analyses (LPA) indicated that, although most parents were engaged in responsive parenting practices, two parenting profiles were identified at pre-kindergarten entry, each related to highly or moderately enriching parenting practices. At kindergarten entry, however, a third profile characterized by having less-desirable parenting practices emerged. Children whose parents were likely to be classified in the most positive parenting profile were mainly African-American, lived in households that have a lower annual income, and were more likely to experience poverty. Their mothers were also younger, less likely to be married, and more likely to be

working in the last 12 months. Results from cross-tabulation analyses showed that, between pre-kindergarten entry to kindergarten entry, around 32% of parents transitioned to profiles characterized by lower enriching practices and more chaotic home environments. Finally, results from linear regressions indicated there were no statistically significant mean differences in school readiness skills by parenting profile membership.

Results from Paper 1 contrasted with those of previous studies (Carpenter & Mendez, 2013; Cook et al., 2012; Paschall et al., 2015) that indicated more positive parenting practices are associated with better child outcomes. I hypothesized two potential explanations for these results. First, although the LPA suggested identification of different patterns, parenting practices mean values were high overall with limited variability, implying that perhaps parenting practices were not different enough to generate statistically significant mean differences on children's development. Second, it is possible these findings could be the result of a compensatory effect between low-SES and more enriching parenting practices, whereby parents of lower SES and underrepresented groups implement more desirable parenting practices that compensate for SES-related risks and the multiple social challenges membership in an underrepresented group in the U.S. may impose.

This finding made me wonder whether there might be other compensatory experiences that might be happening in these children's more distal systems. Families do not experience monetary poverty in isolation; it usually co-occurs with other sociodemographic risks (e.g., parents with low levels of education and single parenthood) that jointly may impact children's development (Evans & Kim, 2013). Thus, in Paper 2 (*Does Neighborhood Resources Mitigate Family Risk to Preschool Children's Executive*

Function Skills Growth? Revise and resubmit, Prevention Science) I explored the relationship between children's family-level cumulative risk and EF growth trajectories. Aligning with ecological and dynamic systems perspectives of human development (Bronfenbrenner & Morris, 1998; Witherington, 2015), I examined the extent to which neighborhood resources moderated this relationship (family level risks – neighborhood resources – preschoolers' development, Figure 1). Using the same sample from paper 1 and conditional growth curve models, I found that, whereas family cumulative risk was negatively related to baseline EF skills and the rate of their growth, overall neighborhood resources, and more specifically social and economic factors, were positively associated with the initial, but not linear, growth of EF skills. Also, there was no evidence of moderator effects, which means that, for the sample under study, family risks and neighborhood resources seemed to influence children's EF growth in an additive way, rather than in a multiplicative way. Interventions that aim to better target and support the potentially most vulnerable children, then, should consider the unique contribution family factors and neighborhood resources have on children's development, mainly before children enter pre-K.

After learning about the associations between aspects of proximal contexts such as parenting practices, family cumulative risk, neighborhood resources, and preschoolers' developmental outcomes, I started to wonder how parenting interventions provide parents with opportunities to engage in cognitive processes that lead them to engage in interactions that foster healthy growth and learning. In investigating this, the literature pointed to two main conclusions. First, while impact evaluations have shown the effectiveness of parenting interventions, less is known about *how* changes in children's

outcomes and parents' well-being are achieved (Powell, 2019). Second, traditional parenting interventions have adopted situation-centric or person-centric approaches to change. Both approaches start with the assumption that there is an initial negative situation or people have poor qualities that need to be changed permanently. This overlooks that people's cognitive appraisals of themselves and conditions significantly influence their behaviors (Walton & Wilson, 2018).

The persistent deficit approach of previous parenting interventions and the lack of understanding of the influence of parenting cognitions on children's development led me to conduct a pilot study of an online intervention for Paper 3 (*Facilitating Mothers' Reinterpretation of Their Interactions Around Children's Emotional Competence: A Pilot Study).* This study built on Bandura's theory of self-efficacy and the Psychologically Wise Interventions (PWIs) approach. By extrapolating from Bandura's general theory of self-efficacy (Bandura, 1977), parenting self-efficacy (PSE) refers to parents' beliefs in their competence to influence their children's development and success (Aldert & Eccles, 2001) and is one of the key cognitions that may influence parenting practices. Among other sources, PSE is also influenced by parents' cognitive appraisals of themselves and their conditions, which offer an opportunity to implement a PWI—a relatively new approach between basic and applied research that emphasizes that individual's maladaptive views of themselves or their circumstances can undermine people's ability to take advantage of opportunities already available to them (Walton & Wilson, 2018). By altering "negative" appraisals through brief, targeted exercises, it may be possible to alter people's behavior and engage them in a self-enhancing cycle that works as a self-fulfilling prophecy.

Whereas the influence of parenting practices on child development has been widely documented in empirical studies, the recognition of parents' cognitions as sources of change in determining their own well-being and children's development remains elusive and in the realm of theoretical models. Thus, the intervention I designed and implemented aimed to promote parents' sense of self-efficacy in their role as parents, with the long-term intention of influencing children's emotional competence development. Specifically, I provided mothers the opportunity to write advice to a hypothetical parent who was facing a challenge in supporting their child's emotional development. The challenge was related to a negative interaction mothers experienced and described before giving advice. Informed by the PWIs approach, the theory of change of this advice-giving intervention indicated that, by asking mothers to provide advice, this intervention offers them the opportunity to reassess previous experiences and modify their beliefs in their competence to influence their children's emotional development (i.e., PSE). Consequently, higher levels of PSE should lead parents to be involved in parenting practices that, lastly, affect preschoolers' emotional competence (parenting interventions → parenting cognitions → preschoolers' development, Figure 1).

Results from the pilot study that aimed to provide evidence of the feasibility (i.e., acceptability and limited-efficacy) of the advice-giving intervention showed that mothers participated actively and PSE was malleable to a PWI. Contrary to my hypothesis, though, participation in the intervention was negatively associated with PSE. These findings, however, should be interpreted with caution for several reasons. First, the study was underpowered. Second, despite the efforts to conduct the study in an applied setting

that included a wide representation of mothers, those who ultimately participated were more highly educated than the general population. Last, the high initial scores of PSE mothers reported and specific aspects of the design of the intervention such as the sequence and the content of the prompts, the absence of aversive consequences of giving advice, and the amount of time and space to reflect and give advice, could have influenced the results and undermined the occurrence of a presupposed cognitive dissonance. Thus, more research with demographically diverse samples and different variations of aspects of the same intervention are necessary to identify the design of an intervention that could lead to the desired outcomes.

Significance

Despite limitations to each study presented, they contribute to the field and the design and implementation of interventions and public polices by advancing our understanding of how parents may contribute to preschool-aged children's development. In Paper 1, I highlighted the multi-dimensional and dynamic nature of parenting, two aspects that rarely have been studied simultaneously during children's transition to formal schooling. The results from Paper 2 provided insights into the unique influence family risks and neighborhood opportunities have on preschoolers' EF development. In addition, Paper 2 utilized a novel approach by using a comprehensive measure of neighborhood resources to overcome the lack of generalizable neighborhood-level measures that provide a more complete picture of the context. Finally, informed by PWIs' approach, Paper 3 provided initial evidence of the acceptability and promising nature of an online intervention that aimed to increase mothers' sense of self-efficacy in their role as parents

through their participation in an advice-giving exercise. To my knowledge, this is the first study to test the feasibility of this type of intervention using a sample of mothers.

Collectively, these studies fill gaps in the field on aspects of parenting and its relationship with other family and contextual resources that previously limited our understanding of the best ways to support children's development and design more effective interventions. Only recently has the empirical literature recognized and explored parenting as an evolving and complex construct. This explains why there is still a lack of longitudinal studies that allow us to follow parents, the changes they experience in their role as parents, and how those changes relate to the developing child. Also, despite the theoretical recognition of the multiple nested contexts that influence children's development, identifying and measuring aspects within and between them remains in an early stage. More effort needs to be made to capture how factors of the macrosystems, such as culture, intersect with factors at the community level and explain differences in children's development. Last, although cognitions (including parenting cognitions) are complex and interrelated in several ways, future research should examine further how they operate and the mechanisms to modify them. A starting point could be conducting qualitative studies to understand how parents think about themselves and the mental processes they experience when asked to participate in interventions. Only by conducting rigorous, meaningful, and innovative research can we contribute to closing these gaps and, ultimately, positively influence all children's development.

References

Aldert, M., & Eccles, J. S. (2001). Effects of mothers' parental efficacy beliefs and promotive parenting strategies on inner-city youth. *Journal of Family Issuesurnal of Family Issues*, *22*(8), 944–972. https://doi.org/10.1177/019251301022008001

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, *84*(2), 191–215. https://doi.org/10.1037/0033-295X.84.2.191

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. https://doi.org/10.1037/a0027493

Britto, P. R., Lye, S. J., Proulx, K., Yousafzai, A. K., Matthews, S. G., Vaivada, T., Perez-Escamilla, R., Rao, N., Ip, P., Fernald, L. C. H., MacMillan, H., Hanson, M., Wachs, T. D., Yao, H., Yoshikawa, H., Cerezo, A., Leckman, J. F., & Bhutta, Z. A. (2017). Nurturing care: promoting early childhood development. *The Lancet*, *389*(10064), 91–102. https://doi.org/10.1016/S0140-6736(16)31390-3

Bronfenbrenner, U., & Morris, P. A. (1998). The ecology of developmental processes. In W. Damon & R. M. Lerner (Eds.), *Handbook of child psychology: Theoretical models of human development* (pp. 993–1028). John Wiley & Sons Inc.

Carlson, S. M., Zelazo, P. D., & Faja, S. (2013). Executive Function. In P. D. Zelazo (Ed.), *The Oxford Handbook of Developmental Psychology, Vol. 1: Body and Mind* (Vol. 1, Issue October, pp. 705–743). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199958450.013.0025

Chetty, R., & Hendren, N. (2018). The Impacts of Neighborhoods on Intergenerational Mobility. *Quarterly Journal of Economics*, *133*(3), 1107–1162.

https://doi.org/10.1093/qje/qjy007.Advance

Chetty, R., Hendren, N., & Katz, L. F. (2016). The effects of exposure to better neighborhoods on children: New evidence from the moving to opportunity experiment. *American Economic Review*, *106*(4), 855–902. https://doi.org/10.1257/aer.20150572

Denham, S. A., & Liverette, K. H. (2019). The Emotional Basis of Learning and Development in Early Childhood Education. In B. Spodek & O. N. Saracho (Eds.), *Handbook of Research on the Education of Young Children* (4th ed., pp. 43–64). Routledge. https://doi.org/10.4324/9781315045511-13

Duncan, G. J., Dowsett, C. J., Claessens, A., Magnuson, K., Huston, A. C., Klebanov, P., Pagani, L. S., Feinstein, L., Engel, M., Brooks-Gunn, J., Sexton, H., Duckworth, K., & Japel, C. (2007). School Readiness and Later Achievement. *Developmental Psychology*, *43*(6), 1428–1446. https://doi.org/10.1037/0012-1649.43.6.1428

Evans, G. W., & Kim, P. (2013). Childhood Poverty, Chronic Stress, Self-Regulation, and Coping. *Child Development Perspectives*, *7*(1), 43–48. https://doi.org/10.1111/cdep.12013

García Coll, C., Lamberty, G., Jenkins, R., Mcadoo, H. P., Crnic, K., Wasik, B. H., García, H. V., Coll, C. G., Jenkins, R., & Mcadoo, H. P. (1996). An Integrative Model for the Study of Developmental Competencies in Minority Children Published by : Wiley on behalf of the Society for Research in Child Development Stable URL : https://www.jstor.org/stable/1131600 REFERENCES Linked references are availa. *Child Development*, *67*(5), 1891–1914.

Gennetian, L. A. (2021). How a Behavioral Economic Framework Can Support Scaling

of Early Childhood Interventions. In J. A. List, D. Suskind, & L. H. Supplee (Eds.), *The Scale-Up Effect in Early Childhood and Public Policy. Why Interventions Lose Impact at Scale and What We Can Do About It* (pp. 58–75). Taylor & Francis. https://doi.org/10.4324/9780367822972-4

Hardy, E., Joshi, P., Leonardos, M., & Acevedo-garcia, D. (2021). *Advancing Racial Equity Through Neighborhood-Informed Early Childhood Policies: A Research and Polivy Review* (Issue September). https://www.diversitydatakids.org/research-library/research-report/advancing-racial-equity-through-neighborhood-informed-early

Heckman, J., Pinto, R., & Savelyev, P. (2013). Understanding the mechanisms through which an influential early childhood program boosted adult outcomes. *American Economic Review*, *103*(6), 2052–2086. https://doi.org/10.1257/aer.103.6.2052

Hoff, E. (2008). Language Experience and Language Milestones During Early Childhood. In *Blackwell Handbook of Early Childhood Development* (pp. 232–251). Blackwell Publishing Ltd. https://doi.org/10.1002/9780470757703.ch12

Magnuson, K. A., & Duncan, G. J. (2019). Parents in poverty. In M. H. Bornstein (Ed.), *Handbook of parenting* (3rd ed., pp. 301–328). Routledge. https://doi.org/https://doi.org/10.4324/9780429398995

Magnuson, K., & Schindler, H. (2019). Supporting Children's Early Development by Building Caregivers' Capacities and Skills: A Theoretical Approach Informed by New Neuroscience Research. *Journal of Family Theory and Review*, *11*(1), 59–78. https://doi.org/10.1111/jftr.12319

Marvin, R. S., Britner, P. A., & Rusell, B. S. (2016). Normative development: The

ontogeny of attachment. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications.* (Third edit, pp. 273–290). The Guilford Press.

McCoy, D. C., Connors, M. C., Morris, P. A., Yoshikawa, H., & Friedman-Krauss, A. H. (2015). Neighborhood economic disadvantage and children's cognitive and social-emotional development: Exploring Head Start classroom quality as a mediating mechanism. *Early Childhood Research Quarterly*, *32*, 150–159. https://doi.org/10.1016/j.ecresq.2015.04.003

Minh, A., Muhajarine, N., Janus, M., Brownell, M., & Guhn, M. (2017). A review of neighborhood effects and early child development: How, where, and for whom, do neighborhoods matter? *Health and Place*, *46*(November 2016), 155–174. https://doi.org/10.1016/j.healthplace.2017.04.012

Morris, A. S., Criss, M. M., Silk, J. S., & Houltberg, B. J. (2017). The Impact of Parenting on Emotion Regulation During Childhood and Adolescence. *Child Development Perspectives*, *11*(4), 233–238. https://doi.org/10.1111/cdep.12238

National Research Council (US), & Institute of Medicine (US) Committee on Integrating the Science of Early Childhood Development. (2000). *From Neurons to Neighborhoods: The Science of Early Childhood Development* (J. P. Shonkoff & D. A. Phillips (eds.)). The National Academies Press. https://doi.org/10.17226/9824

Powell, D. R. (2019). Parenting Interventions. In M. H. Bornstein (Ed.), *Handbook of Parenting* (3rd ed., pp. 618–649). Routledge. https://doi.org/https://doi.org/10.4324/9780429398995

Rimm-Kaufman, S. E., & Pianta, R. C. (2000). An Ecological Perspective on the

Transition to Kindergarten: A Theoretical Framework to Guide Empirical Research. *Journal of Applied Developmental Psychology*, *21*(5), 491–511. https://doi.org/10.1016/S0193-3973(00)00051-4

Sabol, T. J., & Pianta, R. C. (2017). The State of Young Children in the United States. In E. Votruba-Drzal & E. Dearing (Eds.), *The Wiley Handbook of Early Childhood Development Programs, Practices, and Policies* (pp. 3–16). John Wiley & Sons, Inc. https://doi.org/10.1002/9781118937334.ch1

Shonkoff, J. P. (2010). Building a new biodevelopmental framework to guide the future of early childhood policy. *Child Development*, *81*(1), 357–367. https://doi.org/10.1111/j.1467-8624.2009.01399.x

Thompson, R. A. (2015). Richard M. Lerner (Editor-in-Chief), Michael E. Lamb. In R. M. Lerner & M. E. Lamb (Eds.), *Handbook of Child Psychology and Developmental Science* (7th ed., Vol. 3, pp. 201–246). John Wiley & Sons, Inc. https://doi.org/10.1002/9781118963418.childpsy306

Walton, G. M., & Wilson, T. D. (2018). Wise interventions: Psychological remedies for social and personal problems. *Psychological Review*, *125*(5), 617–655. https://doi.org/10.1037/rev0000115

Witherington, D. (2015). Dynamic systems in developmental science. In R. M. Lerner, W. F. Overton, & P. C. Molenaar (Eds.), *Handbook of Child Psychology and Developmental Science, Theory and Method: Volume 1* (7th ed., pp. 63–112). Wiley.

PAPER 1: Parenting Profiles at Pre-Kindergarten and Kindergarten Entry: Stability and Association with School Readiness

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(Under review)

Abstract

This study examined parenting practices profiles at pre-kindergarten entry and kindergarten entry, including the extent to which profiles differ at these time points, and how they relate to school readiness skills. Data were drawn from a two-cohort longitudinal study that followed children who attended state-funded and Head Start pre-kindergarten classrooms. *Research Findings:* Latent profile analysis suggested two distinct parenting practice profiles were evident at pre-kindergarten entry and a third profile emerged at kindergarten entry. Cross-tabulation analysis indicated around 32% of parents transitioned to a less positive parenting profile from pre-kindergarten entry to kindergarten entry. However, linear regressions revealed there were no statistically significant mean differences in school readiness skills by profile membership at pre-kindergarten entry or kindergarten entry. Contrary to prior research findings, parents more likely to be classified in the most positive parenting profile were from Low-socioeconomic status (SES) households. *Practice or Policy*: These findings exemplify the dynamic nature of parenting and suggest that the relationship between parenting practices and SES is not unique among families from low-SES backgrounds. Public policies designed to improve school readiness by promoting positive and supportive parenting practices may be a promising way to build on parents' existing strengths in this regard.

Parenting Profiles at Pre-Kindergarten and Kindergarten Entry: Stability and Association with School Readiness

Early childhood includes rapid development in several foundational skills and competencies that enable young children to learn and thrive in school contexts (Boivin & Bierman, 2014; Institute of Medicine & National Research Council, 2000; Peterson et al., 2018). This cluster of skills, often referred to as school readiness, serves as an early marker of long-term development and school success. Many children, however, exhibit low levels of school readiness – an issue that is particularly prevalent for children from low-socioeconomic status (SES) families as compared to children from higher-SES families (e.g., Duncan et al., 2015). For example, fewer than 50% of children from low-income families are considered to be adequately prepared for school at age five as compared to roughly three-quarters of children from higher-income families (Isaacs, 2012).

Extant literature indicates that parents are one of the most important contributors of children's development, particularly during early childhood (Yelverton & Mashburn, 2018). Further, the pre-kindergarten and kindergarten years represent a time of important change and adjustment for both children and families. For example, this period encompasses a heightened focus on academic skills and increasing expectations by teachers for children's learning, development, and behavior (Bassok, Latham, et al., 2016). As another example, parents own identities may shift, as they become parents of a school-age student, which implies changes in their agency, decisions, choices, and practices in response to children's identities as students and expectations and demands from schools and communities (Dockett et al., 2017). Recent studies have tried to better

understand which parenting practices and interactions best support early development (Ansari & Crosnoe, 2015; Cook et al., 2012) but have been limited in capturing this multi-dimensional and dynamic process as it connects to development when it intersects with early schooling. As such, the field would benefit from a greater understanding of parenting practices during this period, and of how parenting practices are associated with children's school readiness. The present study, then, aims to explore parenting practices during the pre-kindergarten and kindergarten years for children of diverse, low-SES families. Specifically, this study examines the extent to which parenting practices change between pre-kindergarten entry and kindergarten entry, and how parenting practices relate to children's school readiness. Given the opportunity for change between pre-kindergarten entry and kindergarten entry, examining this intersection holds significant promise for identifying malleable practices to support children's developmental trajectories and for interventions that have the potential to mitigate existing gaps.

The Multi-dimensional and Dynamic Aspects of Parenting: Contributions to Children's Development

Children's development is determined by intrapersonal processes and by their interactions with the proximal and larger systems in which they are embedded (Bronfenbrenner, 1977; Rimm-Kaufman & Pianta, 2000). Parenting is a complex, multi-faceted, and dynamic process of socialization aimed to provide children with what they need to grow and thrive (Kuczynski & De Mol, 2015; National Academies of Sciences Engineering and Medicine, 2016). Extensive research shows that home and family are the most impactful system for children's development in early childhood, a window of time that is crucial for brain and skills development (Yelverton & Mashburn, 2018). Multiple

studies highlight the key components necessary to promote healthy child development, stressing that interactions characterized by positivity, consistency, and responsiveness to children's needs and developing skills are most beneficial across children from diverse backgrounds (Cprek et al., 2015; National Academies of Sciences Engineering and Medicine, 2016; Yamaoka & Bard, 2019).

Several methodologies have attempted to capture the complexity of parenting with varying analytical approaches such as variable-centered approaches, cumulative risk indices, and non-longitudinal person-centered approaches, with varying success and limitations. For example, variable-centered strategies operationalize parenting using individual measures of knowledge, attitudes, or practices at a single point in time. Although this line of research provides some understanding of the separate effect that the characteristic under analysis has on children's outcomes, it constitutes a simplification by overlooking the multi-dimensional nature of parenting (Cook et al., 2012). To address this limitation, some research has utilized a cumulative risk index to combine variables that jointly describe parenting. Risks are broadly defined as potential threats to children's development and range from poverty to the lack of sensitive care (Evans et al., 2013). Previous studies show that the higher the number of risks children experience early in life, the lower children perform in reading and mathematics outcomes, self-regulation skills and behavioral outcomes at kindergarten and elementary school years (Rouse et al., 2020). The most common critique of cumulative risk approaches is that it assumes each additional risk has the same effect, limiting some of the conclusions that can be drawn (Pratt et al., 2016).

Other options offered to better reflect the complex nature of parenting include Latent Class Analysis (LCA) and Multistage Euclidean Grouping, person-centered approaches that also aim to capture the multidimensional nature of parenting by explaining the heterogeneity of a population through the identification of unobserved subgroups according to response patterns in a set of observed variables (Lanza & Cooper, 2016). For example, in a sample of 274 African American biological mothers of Head Start children, Carpenter and Mendez (2013) identified five parenting profiles and concluded that uninvolved and vulnerable parenting profiles were associated with the highest levels of child aggression at the beginning and the end of the school year. Likewise, Paschall et al. (2015) identified three parenting profiles at age 36 months - "sensitive," "harsh," and "detached" - based on four measures of parenting behaviors. Results showed that detached parenting, in comparison to sensitive parenting, was associated with higher levels of child classroom aggression and lower levels of positive teacher-child interactions in preschool. While these approaches do better capture several aspects of parenting, they are limited in providing insights into changes of parenting over time.

To address the limitation noted, Latent Transition Analysis (LTA) and cross-tabulation analysis between classes identified using LCA over time permit examination of both multidimensional and dynamic characteristics of parenting. For instance, Cook and colleagues (2012) used LTA and identified three parenting profiles among parents of children that participated in the Early Head Start Research and Evaluation Project (EHSREP). Notably, all profiles were stable at different child ages (14, 24, and 36 months), but only the “unsupportive parenting” and “negative parenting” profiles were

associated with children's lower scores in all behaviors. Relatedly, using cross-tabulation analysis, Ansari and Crosnoe (2015) identified and examined changes of five parenting profiles at age 2 based on three sets of parenting practices: Involvement, television watching, and spanking. For children at the highest risk (i.e., low involvement, some television, and high score in spanking), (a) parents' support for school readiness evolved as children grew (some moved from "at-risk" to more positive behaviors), and (b) children from higher SES backgrounds were more likely to elicit changes in parenting behaviors. Thus, utilizing these approaches to better account for the multi-dimensional, dynamic nature of parenting show promise.

The Pre-kindergarten and Kindergarten Years as a Critical Period for Children and Families

Children's earliest experiences in educational contexts (i.e., the pre-kindergarten and kindergarten years) align with a period characterized by high plasticity of the brain and the establishment of the foundations for later development of cognitive, language, physical, and socioemotional skills (Institute of Medicine & National Research Council, 2000). For instance, there is ample evidence about the development of executive function from four to six years (Helm et al., 2020; Hughes et al., 2009). Specific to language, children complete their phonological inventory, improve their narrative skills, and increase their vocabulary, achieving, on average, 14,000 words by the age of 6 (Hoff, 2008). In considering the socioemotional domain, children between 3 and 5 years show some evidence of their understanding of situational determinants of emotions, but it is not until age 6 and 7 when children are able to recognize the connection among thoughts and emotions (Thompson & Lagattuta, 2008).

In addition to the intrapersonal changes, the transitions from home to school also include the child's immersion in new ecologies that demand interactions with people out of the home. Experiences with peers and teachers provide novel opportunities not only to develop cognitive and socioemotional skills, but also to have gains in approaches to learning skills (Bustamante et al., 2017). For instance, while children are learning to work and share with others, they also need to remain motivated and persistent to overcome the challenges that learning imposes (Welsh et al., 2010).

The majority of studies that analyze children's experience during the school transition focus on their individual experiences and recognize that the family provides a context for child development. It is important to note that, although parents indeed experience continuity of their role in children's development, they also experience role changes as they establish their identity as parents of a school student and interact with other contexts such as schools, other parents in the community, or other institutions involved in the schooling process (Dockett et al., 2017). In response to these interactions and the expectations that schools have on parents and children, parents may modify home dynamics and practices, impacting child development directly. Thus, recognizing and analyzing parenting as an evolving construct is critical to better support children's development.

School Readiness as a Key Predictor of Long-Term Development

As noted, early development forecasts children's development over time. When children reach school age, development begins to shift in its terminology to acknowledge the intersection with this new, influential system on children's development. Just as parenting represents a complex construct with multiple dimensions, school readiness also

reflects a combination of a diverse set of skills across multiple domains. Most researchers agree school readiness refers to skills and behaviors that are related to children's cognitive, language, socioemotional, approaches to learning, and health domains (Sabol & Pianta, 2017). Across domains, research indicates that individually and collectively, these early skills have implications for children's long-term development. Here we provide a brief review of the four school readiness domains this study examines.

School readiness skills related to the cognitive domain can be classified as either content-specific or learning- and processing-related (Sabol & Pianta, 2017). Early academic skills in the areas of reading and math are examples of the former, whereas executive function is an example of the latter. Duncan et al. (2007) analyzed data from six longitudinal studies and concluded that the strongest predictors of later academic performance are early math, reading skills, and attention. Executive function refers to response inhibition, attention control, cognitive flexibility, and working memory skills. However, the term *executive function* may also refer to regulation-related skills such as self-control, emotion regulation, and grit (Jones et al., 2016). Acknowledging this lack of clarity, Jacob and Parkinson (2015) conducted a meta-analysis and concluded that, broadly defined, executive function skills are associated with achievement for different age groups that range from 3 to 18 years old.

Language skills concern the ability to understand information (receptive language) and to communicate one's thoughts (expressive language). Early language skills are not only associated with later vocabulary growth and math and reading scores in elementary school (Duncan et al., 2007; Rowe et al., 2016), but also predict concurrent and later self-regulation and behavioral skills (Fuhs & Day, 2011). For instance, poor

receptive vocabulary at school entry increases the probability of facing peer rejection and developing externalizing behavior problems in 4th grade (Menting et al., 2011).

Socioemotional skills pertain to how children experience and understand emotions and relationships with others. Evidence supporting the predictive validity of early socioemotional skills to later cognitive and socioemotional skills is mixed (e.g., Duncan et al., 2007; La Paro & Pianta, 2000). However, some research has highlighted the unique contributions of socioemotional skills to children's academic achievement in kindergarten and 5th grade (Nix et al., 2013; Sabol & Pianta, 2012). As another example, socioemotional skills have been identified as the mechanism through which early interventions such as the Perry Preschool program promote labor market and health behavior outcomes during adulthood (Heckman et al., 2013).

Finally, approaches to learning are a set of domain-general skills that reflect children's persistence, attention, curiosity, flexibility, and engagement (Bustamante et al., 2017). Positive behaviors that account for competence motivation and attentional persistence at the entrance of Head Start are associated with math, literacy, and science knowledge during the same school year (Bustamante et al., 2017; Vitiello et al., 2011). McDermott et al. (2014) provides some evidence of this set of skills as predictors of second-grade academic proficiency. Thus, across these domains, evidence points to their importance as key early indicators of children's future success.

Despite the well-recognized long-lasting effects of school readiness, significant SES based gaps in academic and non-academic skills continue to exist among children at kindergarten entry. Isaacs (2012) documented fewer than 50% of children from low-income families are considered to be adequately prepared for school at age five as

compared to roughly three-quarters of children from higher-income families. García and Weiss (2017) found a difference over one deviation standard in reading and math scores and 0.5 standard deviations in approaches to learning scores between children in the highest and lowest fifths of the SES distribution. Two opposite factors have emerged to potentially affect the relationship between children's development and family-SES: An increase in economic inequality and positive changes in the involvement of low-SES parents in their children's education and learning experiences in and out home (Ansari & Markowitz, 2021; Bassok, Finch, et al., 2016; García & Weiss, 2017). Thus, having a more comprehensive understanding of linkages between parenting and school readiness among low-SES families will further shed light on malleable factors that could facilitate children's development among low-resourced families.

The present study

This study addresses the conceptualization and methodological limitations of prior research examining relations between parenting practices and children's school readiness during the pre-kindergarten and kindergarten years. To this end, we use data from a two-cohort longitudinal observational study of pre-kindergarteners from low-SES backgrounds. Specifically, this study aims to:

1. Identify profiles of parenting practices for pre-kindergarteners of low-SES families.
2. Determine the extent to which parenting practice profiles change from pre-kindergarten entry to kindergarten entry and whether socio-demographic factors vary across them.

3. Examine if children's school readiness at pre-kindergarten entry and kindergarten entry across four domains (i.e., cognitive, language, social emotional, and approaches to learning) differ by parenting profile membership.

Methods

Participants

Data come from a staged, two-cohort study of children's experiences from pre-kindergarten through kindergarten. The study focused on children enrolled in state-funded and Head Start preschool programs eligible to matriculate into kindergarten in 2017-2018 for cohort 1 (380 children) or 2019-2020 school year for cohort 2 (387 children) in a geographic region of the southeastern United States. These programs serve children from families who are low-SES (family income at or below 200% of the federal poverty guidelines), experience homelessness; or parents/guardians lack a high school diploma. Classrooms were eligible if they served primarily 4-year-old children, and the teacher signed an informed consent form. Teachers in approximately 50 classrooms were randomly selected for participation in each cohort. Up to 8 consented children per classroom were randomly selected to participate after blocking by gender. See Reilly and Downer (2019) and Turnbull et al. (2020) for additional detail on the overarching study design.

The present analytic sample included 412 children whose main caregivers (around 97% identified as child's parents) completed a family survey during the first month of the pre-kindergarten and kindergarten school year. Analyses revealed the percentage of

White-non-Hispanic children and the average math reasoning score were higher for children in the present analytic sample than for those in the excluded sample ($p<0.05$).

For the analytic sample, children's average age at the start of the study was 52.63 months (SD=3.56, R=[40, 58]). In terms of race/ethnicity the largest percentage of children were identified as Black or African-American (47%), followed by White-non-Hispanic (26%), two or more races or other race (15%), or Hispanic/Latino of any race (12%). Additionally, 49% of mothers reported having a technical certificate or a higher level of education, and the average family income was US$38,080 (SD=27,191). Thirty-nine percent of families had an average income-to-needs ratio below the federal poverty line and 8% of children were enrolled in Head start (see Table 1).

Measures

Parenting Practices

To create profiles of parenting practices, we used data from three widely-used and validated measures that parents completed as part of the family survey at pre-kindergarten entry and kindergarten entry. First, we included *the Alabama Parenting Questionnaire–Preschool Revision (APQ-PR),* a 24-item instrument that has been validated with preschoolers with and without hyperactive-impulsive symptoms (Clerkin et al., 2007). Items are rated on a 5-point Likert-type scale ranging from 1 (never) to 5 (always) and reflect three distinct factors: positive parenting (12 items, e.g., "you have a friendly talk with your child"), negative/inconsistent parenting (7 items, e.g., "you threaten to punish your child and then do not actually punish him/her"), and punitive parenting (5 items, e.g., "you spank your child with your hand when he/she has done something wrong"). Cronbach's alphas for the present study sample were acceptable at

both timepoints (0.79, 0.66, and 0.57, at pre-kindergarten entry; and 0.83, 0.60, and 0.58 at kindergarten entry).

In addition, we used data from the Home-Based Involvement scale of the *Family Involvement Questionnaire (FIQ*). This 13-item subscale measures the frequency of parents' involvement in children's early education experiences through items such as "I talk to my child about how much I love learning new things." Each item is rated on a 4-point Likert-type scale where 1 indicates rarely and 4 indicates always (Fantuzzo et al., 2000). The alpha coefficient equals 0.85 at pre-kindergarten entry and 0.84 at kindergarten entry.

Finally, we included data from the *Confusion, Hubbub, and Order Scale (CHAOS),* a six-item measure of environmental confusion in the home. Parents rate each item on a 5-point Likert-type scale ranging from 1 (definitely untrue) to 5 (definitely true). Items capture chaotic, disorganized, and hurried characteristics of the home through items such as "*you can't hear yourself think in our home", "we are usually able to stay on top of things*," etc. For the current sample the Cronbach's alpha is 0.55 at both pre-kindergarten and kindergarten entry.

Because of the low Cronbach's alphas for some measures and the low variability of some items, we conducted Confirmatory Factor Analyses (CFA) to analyze fit to the published measurement model for each of the subscales under analysis. In this study, we included items that, according to the CFA best fit the data. Specifically, we retained 12 items from the APQ-R, 8 items form the Home-Based Involvement subscale of the FIQ, and 4 items from the CHAOS scale. In the analyses described below, we included these items individually as items had different factor loadings, which suggests each of them

contribute differently to the constructs being measured (McNeish & Wolf, 2020). More details are reported in Appendix A.

School readiness

The project administered direct assessments and teacher-report instruments at the beginning of pre-kindergarten and kindergarten across four domains: cognitive (i.e., literacy, mathematics, and executive functioning skills), language, social-emotional, and approaches to learning. Table 1 shows the descriptive statistics for all school readiness measures at the entrance of pre-kindergarten.

Language*:* Two instruments measured language. The Peabody Picture Vocabulary Test, 4th edition (PPVT-4: Dunn et al., 2006) assesses receptive vocabulary as children identify the individual picture a specific word best describes. The PPVT-4 was normed on a nationally representative sample of children and adults of various ages, allowing raw scores to be converted to age-adjusted, standardized scores with a mean of 100 and a standard deviation of 15. Standard scores indicate how an individual's score compares to the average score of same-age peers.

The Woodcock Johnson-III (WJ-III) Tests of Achievement Picture Vocabulary (PV) subtest (Woodcock et al., 2001) measures expressive vocabulary as students name each word depicted. Like the PPVT-4, the WJ-III PV subtest permits raw scores to be converted to age-adjusted, standardized scores with a mean of 100 and a standard deviation of 15. Both the PPVT-4 and the WJ-III PV subtest were conducted at pre-kindergarten entry, but not at the beginning of kindergarten.

Literacy*:* The project administered two WJ-III subtests measuring literacy: The Letter-Word Identification (LWID) subtest measures letter and word identification skills

as students read individual letters and words fluently (smoothly). The Word Attack (WA) subtest measures phonics and decoding skills as students produce letter sounds and read nonsense (made-up) words fluently (smoothly). Scores from the LWID subtest and the WA subtest form a Basic Reading cluster standardized score (M=100, SD=15). Both measures forming the Basic Reading score were conducted at pre-kindergarten entry.

Mathematics: The WJ III Applied Problems (AP) and the WJ III Quantitative Concepts (QC) subtests were administered to measure mathematics. These subtests assess application of math knowledge, quantitative reasoning, calculation skills, and symbol recognition. A Math Reasoning composite standardized score (M=100, SD=15) between AP and QC accounts for math skills.

Executive functioning*:* Two tasks measured executive functioning. The Head-Toes-Knees-Shoulders task (HTKS; Ponitz et al., 2008) measures inhibitory control, working memory, and attention shifting and mental flexibility skills, as children touch the body part opposite of what the assessor says (e.g., head vs. toes; shoulders vs. knees). Advanced trials include all four body parts and involve rule changes. Children receive two points for each correct response, one point for each self-correction, and zero points for each incorrect response, with possible scores ranging from 0 to 60 across 20 trials. The HTKS is a reliable and valid measure of executive functioning for children ages 3 to 6 years (Ponitz et al., 2008).

The Pencil Tap subtest of the Preschool Self-Regulation Assessment; PSRA; Smith-Donald et al. (2007) measures inhibitory control as children tap a pencil once when the assessor taps twice, and tap a pencil twice when the assessor taps once. Scores

represent the percentage of correct responses. The Pencil Tap task exhibits acceptable concurrent and construct validity (Smith-Donald et al., 2007).

Social-Emotional*:* Teachers rated children's emotion regulation competencies using the Emotion Regulation Checklist (ERC; Shields & Cicchetti, 1997) which includes 24 items pertaining to observable classroom behaviors reflecting children's emotion regulation. Teachers rate each item on a 4-point scale corresponding to the following descriptors: *rarely/never*; *sometimes*; *often; always*. ERC factor-derived subscale scores include *positive emotion regulation* (8 items; e.g., *Can say when s/he is feeling sad, angry or mad, fearful or afraid*) and *negative emotion regulation/lability* (15 items; e.g., *Is prone to angry outbursts/tantrums easily*). A total of 32 points are possible on the positive emotion regulation subscale, with higher scores indicating greater emotion regulation, and a total of 60 points are possible on the negative emotion regulation/lability subscale, with higher scores indicating greater dysregulation.

Teachers also rated children's socioemotional regulation competencies using the Teacher-Child Rating Scale (T-CRS; Perkins & Hightower, 2002). The T-CRS includes 32 items, which teachers rate on a 5-point scale corresponding to the following descriptors: *strongly disagree*; *somewhat disagree*; *neither agree nor disagree; somewhat agree; strongly agree*. T-CRS factor-derived subscale scores include *behavior control* (8 items; e.g., *Tolerates frustration*); *assertiveness* (8 items; e.g., *Expresses ideas willingly*), and *peer social skills* (8 items; e.g., *Classmates like to sit near this child*). A total of 40 points are possible on each subscale, with higher scores indicating greater socioemotional regulation. We used scores for a fourth factor-derived subscale, *task orientation,* to measure approaches to learning skills.

Approaches to Learning*:* Teachers rated children's approaches to learning skills using the Preschool Learning Behaviors Scale (PLBS; McDermott et al., 2002). The PLBS includes 29 learning-related items that reflect observable classroom behaviors, and is intended for use of children between ages 3.0 years to 5.6 years. Teachers rate each item on a 3-point scale corresponding to the following descriptors: *most often applies*; *sometimes applies*; *doesn't apply*. PLBS factor-derived subscale scores include *competence motivation* (11 items; e.g., Shows a lively interest in activities), *attention/persistence* (9 items; e.g., Sticks to an activity for as long as can be expected for a child of this age), and *attitude toward learning* (7 items; e.g., Is willing to be helped), in additional to a total summary score (29 items). For the purposes of this study, we used the PLBS total score.

Covariates

Parents provided information about themselves and their children, including gender, age, and race. Parents also informed about household income, the number of individuals living in the home, parent age, parent marital status, parent level of education, and parent labor participation in the last 12 months. As a global measure of distress, anxiety, and depressive symptoms, parents completed the 10-item Kessler Psychological Distress Scale developed for the redesigned US National Health Interview Survey (Kessler et al., 2002; 2003). A score above 19 is considered likely to have a mental health disorder. The alpha coefficient is above 0.86 for both school years.

Analytic strategy

The data analysis proceeded in three steps. First, to identify parenting practice profiles through the different combinations of items from *the Alabama Parenting*

Questionnaire–Preschool Revision (APQ-PR), the Family Involvement Questionnaire (FIQ and the Confusion, Hubbub, and Order Scale (CHAOS), we estimated a series of Latent Profile Analyses (LPA) in Mplus version 8 (Muthén & Muthén, 2017). LPA is a person-centered analytical approach that allows for explaining the heterogeneity of a population through the identification of unobserved subgroups according to responses patterns in a set of variables (Lanza & Cooper, 2016). Specifically, we used 24 items that, according to the CFA, fit the data best for the different scales. To determine the optimal number of profiles, we evaluated the following criteria: (i) the Akaike information criterion (AIC), the Bayesian information criterion (BIC), and the Adjusted Bayesian Information Criterion (ABIC), where lower values indicated a better model fit; (ii) the adjusted Lo-Mendell-Rubin likelihood ratio test (LMR; Lo et al., 2001) and the Bootstrapped likelihood ratio test (BLRT; Peel & McLachlan, 2000), which compare a k-1 profile model to k profile model with a significant p-value favoring the k-1 profile model (Nylund et al., 2007); and (iii) the entropy (range from 0 to 1), values above 0.8 indicate clear delineation of classes (Celeux & Soromenho, 1996).

Profiles are interpreted and labeled by examining the means and standard deviations of the parenting items included in the analyses. Then, we conducted a cross-tabulation analysis to examine changes in parenting profiles from pre- kindergarten entry to kindergarten entry. Last, we estimated linear regressions to test for differences in children's school readiness outcomes by parenting profiles membership. To account for missing data and the nested nature of the information, all analyses were estimated by a full information maximum likelihood method, and standard errors were clustered at classroom level.

Results

Parenting Practice Profiles at Pre-kindergarten Entry and Associated Socio-demographic Factors

To determine if parenting profiles can be detected at pre-kindergarten and kindergarten entry, a series of LPA models were estimated, starting with one-profile. Considering all fit statistics together (see Table 2), the two-solution model fit the data best at pre-kindergarten. The AIC, BIC, and ABIC all gradually declined from the one- to the two-solution model. The entropy was above 0.8, and the LMR and the BLRT indicated that a two-solution model fit the data better.

Figure 1 shows standardized mean scores for all items for each profile at pre-kindergarten. Compared with the second profile, the first profile consistently has values above average for items of the APQ - positive parenting and FIQ- Home-Based Involvement subscales, and scores below average for items of the APQ – punitive parenting subscale and Chaos scale. Thus, the first profile is labeled as "*Highly Enriching Parenting"* and the second profile as "*Moderately Enriching Parenting*." It is important to notice that although there are some differences between these profiles, the means values for most of the items are in the same rank for both profiles. For instance, the mean for items of APQ - positive parenting and FIQ- Home-Based Involvement subscales include values between the two highest numbers of the scales, which means parents reported that these positive behaviors happen at their homes often or always. Consequently, in this study, we use the terms "*highly*," "*moderately*," and "*less*" to facilitate the comparison among profiles, but we acknowledge that most of the parenting

practices are in what could be considered the positive end of the distribution of desirable parenting.

The "*Highly Enriching Parenting*" profile comprised 55% of the sample. Children whose parents were likely to be classified in this profile were mainly African-American (54%), lived-in households that have a lower annual income ($3,3841), and were more likely to experience poverty (46%). Also, their mothers were younger (30.5 years), less likely to be married (41%), and more likely to be working in the last 12 months (80%) or looking for a job if they were not working in the last 12 months (41%). All these differences were statistically significant and indicate that, as compared to children in the "*Moderately Enriching Parenting*" profile, children in the "*Highly Enriching Parenting*" profile were from a lower SES (i.e., lower-income and lower educational attainment levels) and have mothers with more characteristics that other studies have traditionally identified as negatively correlated with parenting practices. One exception was the distress score; interestingly, mothers of children classified in the first profile reported lower scores than mothers of children classified in the second profile.

Parenting Practice Profiles at Kindergarten Entry and Associated Socio-demographic Factors

Following the children and families into kindergarten and utilizing the same procedures with the same sample, three profiles emerged at kindergarten entry (Table 2). Figure 2 illustrates that the standardized mean scores for the first and second profiles followed the same patterns identified at pre- kindergarten. Thus, the labels, "*Highly Enriching Parenting*" and "*Moderately Enriching Parenting*," remained. The key difference between the third profile and the "*Moderately Enriching Parenting*" is that the

former has lower standardized mean scores for items from the APQ - positive parenting subscale and the FIQ- Home-Based Involvement subscale than the latter. Thus, the third profile was labeled "*Less Enriching Parenting*."

At kindergarten entry, the "*Highly Enriching Parenting*" profile comprised 42% of the sample, whereas the "*Moderately Enriching Parenting*" and the "*Less Enriching Parenting*" represented 42% and 16% of the sample, respectively. There was a gradual increase in the proportion of male (from 49% to 57%) and White non-Hispanic children (from 16% to 37%) from the first to the third profile. The same pattern was also observed for average household income ($34,209 to $49,537), mother's age (30.5 to 32.6 years old), the percentage of married mothers (41% to 62%), and the percentage of mothers with a technical certificate or higher level of education (40% to 56%). Similar to pre-kindergarten, the statistically significant mean differences in these variables indicated that children in the "*Highly Enriching Parenting*" profile had lower SES and mothers with more characteristics that other studies have traditionally identified as negatively correlated with parenting practices than their peers in the two other profiles. Again, the only exception was the average score of the distress scale. Although there were some differences between the "*Moderately Enriching Parenting*" and "*Less Enriching Parenting*," none reached statistical significance (Table 3).

Changes in Parenting Practice Profiles between Pre-kindergarten Entry and Kindergarten Entry

Table 4 illustrates the cross-tabulation analysis results that allowed examining changes in parenting practice profiles from pre-kindergarten entry to kindergarten entry. The more stable profile was the "*Highly Enriching Parenting*" profile. Sixty-two percent

of children classified in this profile at pre-kindergarten entry were also classified in this profile at kindergarten entry, whereas the remaining children moved to being classified in the "*Moderately Enriching Parenting*" (31%) and "*Less Enriching Parenting"* (8%) profiles at kindergarten entry. In contrast, for children classified in the "*Moderately Enriching Parenting"* profile at pre-kindergarten entry, 25% moved to being classified in the "*Less Enriching Parenting*" profile and 18% moved to being classified in the "*Highly Enriching Parenting*" profile at kindergarten entry. Overall, parents who were classified in a less desired parenting profile in kindergarten were more likely to be White, non-Hispanic; have a technical certificate or higher level of education; have a higher family income, and not have their children enrolled in a Head Start program at pre-kindergarten, than parents who stayed in the same profile across both school years. In contrast, parents classified into a more desired parenting profile at kindergarten were more likely to be Black or African-American; have a level of education below technical certificate; and have a lower family income than parents who did not change profile membership.

Differences In Children's School Readiness by Parenting Practice Profiles

We estimated linear regressions to examine if mean differences in children's school readiness outcomes between parenting profiles were statistically significant. As table 1 shows, at pre-kindergarten entry, children in the "*Highly Enriching Parenting*" profile have lower average scores in all outcomes than their peers in the "*Moderately Enriching Parenting*." However, none of these mean differences were significant. Likewise, Table 3 reveals only a single statistically significant mean difference at kindergarten entry: children in the "*Highly Enriching Parenting*" scored lower than their peers in the "*Moderately Enriching Parenting*" and "*Less Enriching Parenting*" profiles

on the HTKS raw score ($p<0.05$). These results contrast with the statistically significant differences in socio-demographic variables identified across profiles.

Discussion

The present study identified patterns in parenting practices for children of diverse, low-SES families as measured at pre-kindergarten and kindergarten entry, examined the extent to which parenting practice profiles changed between these timepoints, and examine mean differences in children's school readiness outcomes by parenting practice profiles membership. Three key findings arose. First, two parenting profiles were identified at pre-kindergarten entry. Second, at kindergarten entry three parenting profiles emerged; between pre-kindergarten entry to kindergarten entry, approximately 32% of parents transitioned to profiles characterized by lower enriching practices and more chaotic home environments. Finally, there were no significant mean differences in children's school readiness at pre-kindergarten entry or kindergarten entry in relation to parenting practice profiles. However, statistically significant differences were identified for socio-demographic variables across profiles. We elaborate on each of these findings in the following sections.

Two Distinct Parenting Practice Profiles Evident at Pre-kindergarten Entry

Using LPA and measures of distinct parenting practice constructs, this study provides a more comprehensive understanding of patterns that exist with regard to parenting practices and of the diversity in practices present among low-SES families. Important to note, despite the economic hardships families in the study sample faced, the parenting practice profiles identified through the LPA reflect relatively desirable parenting practices ("*Highly Enriching Parenting*") or relatively moderate levels of

undesirable parenting practices ("*Moderately Enriching Parenting*"). Further, contrary to previous research finding that parents of lower SES backgrounds (i.e., lower-income and lower educational attainment levels) are more likely than their higher-SES counterparts to engage in punitive parenting, offer more chaotic environments, and provide less stable routines (Evans et al., 2005; Fiese et al., 2013; Roubinov & Boyce, 2017), parents in the present low-SES sample were more likely to be classified in the "*Highly Enriching Parenting*" profile than the "*Moderately Enriching Parenting*" profile. These findings suggest that the relationship between SES and parenting is not unique among families from low-SES backgrounds. Future research should further explore the processes and factor that influence this association.

A Less-Desirable Parenting Practice Profile Emerged at Kindergarten Entry

In addition to the two parenting profiles identified at pre-kindergarten entry, 16% of the sample was classified by a third profile, "*Less Enriching Parenting*" at kindergarten entry. The emergence of this profile is the first indicator of the dynamic nature of parenting. The inverse relationship between SES and parenting profiles was consistent, meaning that higher levels of enriching parenting practices were associated with indicators of lower SES.

The cross-tabulation analysis allowed us to test the dynamic nature of parenting. Results from the cross-tabulation analysis indicated that at kindergarten entry, 32% of parents were classified by profiles characterized by less enriching parenting practices and more home chaos relative to their profile classification at pre-kindergarten entry. Comparatively, only 8% of parents were classified by a more desirable parenting practice profile. Interestingly, parents who transitioned to less desired parenting profiles were

more likely to be White, non-Hispanic and had better socioeconomic conditions than parents who stayed in the same profile they were classified at pre-kindergarten. The overall findings contradict those reported by Ansari and Crosnoe (2015) for children at the highest risk, whose parents' support for school readiness evolved as children grew (some moved from "at-risk" to more positive behaviors). The discrepancy in study findings may be attributable to differences in the items included in the LPA, differences in children's age, and differences in the hypothesized source of changes in parenting practices. Such changes may also relate to changes in one's roles and responsibilities as the parent of an elementary school-aged child or differences between the amount and types of interactions families experience in pre-kindergarten and kindergarten program classroom contexts (Dockett et al., 2017). Findings from the present study suggest that parenting is highly dynamic during a key period of child development. However, additional research is needed to better understand the reasons underlying changes in parenting practices between pre-kindergarten and kindergarten.

No Statistically Significant Mean Differences in School Readiness Skills by Parenting Practice Profiles Membership

Linear regressions indicated no statistically significant mean differences in children's school readiness measured at pre-kindergarten entry and kindergarten entry by parenting profile membership. These results contrasted with those of previous studies (Carpenter & Mendez, 2013; Cook et al., 2012; Paschall et al., 2015) indicating that more positive parenting practices are associated with better child outcomes. We hypothesized two potential explanations for these results. First, although the LPA suggested identification of different patterns, parenting practices mean values were high overall,

implying that perhaps parenting practices were not different enough to generate statistically significant mean differences on children's outcomes.

Second, it is possible these findings could be the result of a compensatory effect between low-SES and more enriching parenting practices, whereby parents of lower SES and underrepresented groups implement more desirable parenting practices that compensate for SES-related risks and the multiple social challenges membership in an underrepresented group in the US may impose. This hypothesis is consistent with the historical national trends identified in other studies (Ansari & Markowitz, 2021; Bassok, Finch, et al., 2016; García & Weiss, 2017). However, more information is necessary to test these interpretations.

Limitations and Future Directions

Although the present study provides a more comprehensive and dynamic understanding of patterns in parenting practices at pre- kindergarten and kindergarten entry, as well as their relationship with school readiness, there are some limitations to consider. First, data were drawn from a study that was not designed to examine changes in parenting practices; the present study used secondary data and it is thus possible we did not measure or capture information that would provide a greater understanding of parenting practices and children's school readiness. For instance, no observed measures of parenting practices was collected. Instead, parents reported on all practices, meaning all results may be subject to social desirability bias. Additionally, the family survey response rate at kindergarten entry was around 53%. Thus, findings of this study are only valid for parents who reported information at both timepoints. Also, even though we selected the best combination of available items to explore parenting practice profiles and

associations with school readiness, prospective studies with an eye toward these concepts are needed. Further, although person-centered approaches such as LPA help provide a comprehensive understanding of the construct under analysis, the profiles are dependent on the sample size and the variables included (Ansari & Crosnoe, 2015; Pratt et al., 2016). As such, our results cannot be generalized to all low-SES families. Replications of parenting practice profiles using more representative samples and observational measures of parenting could enrich our understanding of these practices.

Finally, we advise some caution in interpreting the results. All analyses are correlational, and no causal conclusions can be drawn from the data. Additionally, it is important to recognize that the study's measures have been validated largely for and by white populations, which biases the field's lens for interpreting "optimal" or "desirable" parenting practices and child development. Research that better accounts for ethnic, racial, and social diversity in measuring and analyzing parenting practices and school readiness is required to better support children of low-income families.

Despite these limitations, the present study provides some insight into parenting practice patterns, how those patterns change between pre-kindergarten entry and kindergarten entry, and how parenting practice profiles relate to school readiness outcomes. These findings exemplify the dynamic nature of parenting and suggest that the relationship between parenting practices and SES is not unique among families from SES backgrounds. It is clear that parents of low-SES backgrounds report implementing desirable parenting practices with their pre-kindergarten and kindergarten-age children. Public policies designed to improve school readiness by promoting positive and

supportive parenting practices may be a promising way to build on parents' existing strengths in this regard.

References

Ansari, A., & Crosnoe, R. (2015). Children's elicitation of changes in parenting during the early childhood years. *Early Childhood Research Quarterly*, *32*, 139–149. https://doi.org/10.1016/j.ecresq.2015.03.005

Ansari, A., & Markowitz, A. J. (2021). Can parents do it all? Changes in parent involvement from 1997 to 2009 among Head Start families. *Children and Youth Services Review*, *120*(August 2020), 105780. https://doi.org/10.1016/j.childyouth.2020.105780

Bassok, D., Finch, J. E., Lee, R., Reardon, S. F., & Waldfogel, J. (2016). Socioeconomic Gaps in Early Childhood Experiences: 1998 to 2010. *Http://Dx.Doi.Org/10.1177/2332858416653924*, *2*(3), 233285841665392. https://doi.org/10.1177/2332858416653924

Bassok, D., Latham, S., & Rorem, A. (2016). Is Kindergarten the New First Grade? In *AERA Open* (Vol. 2, Issue 1). https://doi.org/10.1177/2332858415616358

Boivin, M., & Bierman, K. L. (Eds.). (2014). *Promoting school readiness and early learning: Implications of developmental research for practice*. The Guilford Press.

Bronfenbrenner, U. (1977). Toward an experimenatl ecology of human development. *American Psychologist*, *32*(7), 513–531.

Brown, T. (2015). *Confirmatory factor analysis for applied research* (Second). The Guilford Press.

Bustamante, A. S., White, L. J., & Greenfield, D. B. (2017). Approaches to learning and school readiness in Head Start: Applications to preschool science. *Learning and Individual Differences*, *56*, 112–118. https://doi.org/10.1016/j.lindif.2016.10.012

Carpenter, J. L., & Mendez, J. (2013). Adaptive and Challenged Parenting Among African American Mothers: Parenting Profiles Relate to Head Start Children's Aggression and Hyperactivity. *Early Education and Development*, *24*(2), 233–252. https://doi.org/10.1080/10409289.2013.749762

Celeux, G., & Soromenho, G. (1996). An entropy criterion for assessing the number of clusters in a mixture model. *Journal of Classification*, *13*(2), 195–212. https://doi.org/10.1007/BF01246098

Clerkin, S. M., Marks, D. J., Policaro, K. L., & Halperin, J. M. (2007). Psychometric properties of the Alabama parenting questionnaire-preschool revision. *Journal of Clinical Child and Adolescent Psychology*, *36*(1), 19–28. https://doi.org/10.1080/15374410709336565

Cook, G. A., Roggman, L. A., & D'zatko, K. (2012). A person-oriented approach to understanding dimensions of parenting in low-income mothers. *Early Childhood Research Quarterly*, *27*(4), 582–595. https://doi.org/10.1016/j.ecresq.2012.06.001

Cprek, S. E., Williams, C. M., Asaolu, I., Alexander, L. A., & Vanderpool, R. C. (2015). Three Positive Parenting Practices and Their Correlation with Risk of Childhood Developmental, Social, or Behavioral Delays: An Analysis of the National Survey of Children's Health. *Maternal and Child Health Journal*, *19*(11), 2403–2411. https://doi.org/10.1007/s10995-015-1759-1

Dockett, S., Griebel, W., & Perry, B. (2017). *Transition to School: A Family Affair* (pp. 1–18). https://doi.org/10.1007/978-3-319-58329-7_1

Duncan, G. J., Dowsett, C. J., Claessens, A., Magnuson, K., Huston, A. C., Klebanov, P., Pagani, L. S., Feinstein, L., Engel, M., Brooks-Gunn, J., Sexton, H., Duckworth, K.,

& Japel, C. (2007). School Readiness and Later Achievement. *Developmental Psychology*, *43*(6), 1428–1446. https://doi.org/10.1037/0012-1649.43.6.1428

Duncan, G. J., Magnuson, K., & Votruba-Drzal, E. (2015). Children and socioeconomic status. In R. M. Lerner, M. H. Bornstein, & T. Leventhal (Eds.), *Handbook of Child Psychology and Developmental Science* (7th ed., pp. 534–573). John Wiley & Sons, Inc.

Evans, G. W., Gonnella, C., Marcynyszyn, L. A., Gentile, L., & Salpekar, N. (2005). The role of chaos in poverty and children's socioemotional adjustment. In *Psychological Science* (Vol. 16, Issue 7, pp. 560–565). SAGE PublicationsSage CA: Los Angeles, CA. https://doi.org/10.1111/j.0956-7976.2005.01575.x

Evans, G. W., Li, D., & Whipple, S. S. (2013). Cumulative risk and child development. *Psychological Bulletin*, *139*(6), 1342–1396. https://doi.org/10.1037/a0031808

Fantuzzo, J., Tighe, E., & Childs, S. (2000). Family involvement questionnaire: A multivariate assessment of family participation in early childhood education. *Journal of Educational Psychology*, *92*(2), 367–376. https://doi.org/10.1037/0022-0663.92.2.367

Fiese, B. H., Rhodes, H. G., & Beardslee, W. R. (2013). Rapid changes in American family life: Consequences for child health and pediatric practice. *Pediatrics*, *132*(3), 552–559. https://doi.org/10.1542/peds.2013-0349

Fuhs, M. W., & Day, J. D. (2011). Verbal Ability and Executive Functioning Development in Preschoolers at Head Start. *Developmental Psychology*, *47*(2), 404–416. https://doi.org/10.1037/a0021065

García, E., & Weiss, E. (2017). *Education inequalities at the school starting gate Gaps,*

trends, and strategies to address them Report •.

Heckman, J., Pinto, R., & Savelyev, P. (2013). Understanding the mechanisms through which an influential early childhood program boosted adult outcomes. *American Economic Review*, *103*(6), 2052–2086. https://doi.org/10.1257/aer.103.6.2052

Helm, A. F., McCormick, S. A., Deater-Deckard, K., Smith, C. L., Calkins, S. D., & Bell, M. A. (2020). Parenting and Children's Executive Function Stability Across the Transition to School. *Infant and Child Development*, *29*(1), 1–19. https://doi.org/10.1002/icd.2171

Hoff, E. (2008). Language Experience and Language Milestones During Early Childhood. In *Blackwell Handbook of Early Childhood Development* (pp. 232–251). Blackwell Publishing Ltd. https://doi.org/10.1002/9780470757703.ch12

Hughes, C., Ensor, R., Wilson, A., & Graham, A. (2009). Tracking executive function across the transition to school: A latent variable approach. *Developmental Neuropsychology*, *35*(1), 20–36. https://doi.org/10.1080/87565640903325691

Institute of Medicine, & National Research Council. (2000). From Neurons to Neighborhoods. In *From Neurons to Neighborhoods: The Science of Early Childhood Development.* The National Academies Press. https://doi.org/10.17226/9824

Isaacs, J. B. (2012). Starting School at a Disadvantage : *Center of Children and Families at Brookings*, *MARCH*, 22.

Jacob, R., & Parkinson, J. (2015). The Potential for School-Based Interventions That Target Executive Function to Improve Academic Achievement: A Review. *Review of Educational Research*, *85*(4), 512–552.

https://doi.org/10.3102/0034654314561338

Jones, S. M., Bailey, R., Barnes, S. P., & Partee, A. (2016). *Executive Function Mapping Project: Untangling the Terms and Skills Related to Executive Function and Self-Regulation in Early Childhood.* (Issue OPRE Report # 2016-88).

Kessler, R. C., Andrews, G., Colpe, L. J., Hiripi, E., Mroczek, D. K., Normand, S. L. T., Walters, E. E., & Zaslavsky, A. M. (2002). Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological Medicine*, *32*(6), 959–976. https://doi.org/10.1017/S0033291702006074

Kessler, Ronald C., Barker, P. R., Colpe, L. J., Epstein, J. F., Gfroerer, J. C., Hiripi, E., Howes, M. J., Normand, S. L. T., Manderscheid, R. W., Walters, E. E., & Zaslavsky, A. M. (2003). Screening for serious mental illness in the general population. *Archives of General Psychiatry*, *60*(2), 184–189. https://doi.org/10.1001/archpsyc.60.2.184

Kuczynski, L., & De Mol, J. (2015). Dialectical models of socialization. In R. M. Lerner, W. F. Overton, & P. C. M. Molenaar (Eds.), *Handbook of Child Psychology and Developmental Science* (7th ed., pp. 63–112). John Wiley & Sons, Inc.

La Paro, K. M., & Pianta, R. C. (2000). Predicting children's competence in the early school years: A meta-analytic review. *Review of Educational Research*, *70*(4), 443–484. https://doi.org/10.3102/00346543070004443

Lanza, S. T., & Cooper, B. R. (2016). Latent Class Analysis for Developmental Research. *Child Development Perspectives*, *10*(1), 59–64. https://doi.org/10.1111/cdep.12163

Lo, Y., Mendell, N. R., & Rubin, D. B. (2001). Testing the number of components in a

normal mixture. *Biometrika*, *88*(3), 767–778. https://doi.org/10.1093/biomet/88.3.767

McDermott, Paul A., Rikoon, S. H., & Fantuzzo, J. W. (2014). Tracing children's approaches to learning through head start, kindergarten, and first grade: Different pathways to different outcomes. *Journal of Educational Psychology*, *106*(1), 200–213. https://doi.org/10.1037/a0033547

McDermott, Paula Ann, Leigh, N. M., & Perry, M. A. (2002). Development and validation of the Preschool Learning Behaviors Scale. *Psychology in the Schools*, *39*(4), 353–365. https://doi.org/10.1002/pits.10036

McNeish, D., & Wolf, M. G. (2020). Thinking twice about sum scores. *Behavior Research Methods*, *52*(6), 2287–2305. https://doi.org/10.3758/s13428-020-01398-0

Menting, B., van Lier, P. A. C., & Koot, H. M. (2011). Language skills, peer rejection, and the development of externalizing behavior from kindergarten to fourth grade. *Journal of Child Psychology and Psychiatry*, *52*(1), 72–79. https://doi.org/10.1111/j.1469-7610.2010.02279.x

Muthén, L., & Muthén, B. (2017). *Mplus* (No. 8). Muthén & Muthén.

National Academies of Sciences Engineering and Medicine. (2016). Parenting matters: Supporting parents of children ages 0-8. In *Parenting Matters: Supporting Parents of Children Ages 0-8*. National Academies Press. https://doi.org/10.17226/21868

Nix, R. L., Bierman, K. L., Domitrovich, C. E., & Gill, S. (2013). Promoting Children's Social-Emotional Skills in Preschool Can Enhance Academic and Behavioral Functioning in Kindergarten: Findings From Head Start REDI. *Early Education and Development*, *24*(7), 1000–1019. https://doi.org/10.1080/10409289.2013.825565

Nylund, K. L., Asparouhov, T., & Muthén, B. O. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study. *Structural Equation Modeling*, *14*(4), 535–569. https://doi.org/10.1080/10705510701575396

Paschall, K. W., Gonzalez, H., Mortensen, J. A., Barnett, M. A., & Mastergeorge, A. M. (2015). Children's negative emotionality moderates influence of parenting styles on preschool classroom adjustment. *Journal of Applied Developmental Psychology*, *39*, 1–13. https://doi.org/10.1016/j.appdev.2015.04.009

Peel, D., & McLachlan, G. J. (2000). Robust mixture modelling using the t distribution. *Statistics and Computing*, *10*(4), 339–348. https://doi.org/10.1023/A:1008981510081

Perkins, P. E., & Hightower, A. D. (2002). *T-CRS 2.1 teacher child rating scale: Examiner's manual*. Children's Institute.

Peterson, J. W., Loeb, S., & Chamberlain, L. J. (2018). The Intersection of Health and Education to Address School Readiness of All Children. *Pediatrics*, *142*(5), 20181126.

Ponitz, C. C. E., McClelland, M. M., Jewkes, A. M., Connor, C. M. D., Farris, C. L., & Morrison, F. J. (2008). Touch your toes! Developing a direct measure of behavioral regulation in early childhood. *Early Childhood Research Quarterly*, *23*(2), 141–158. https://doi.org/10.1016/j.ecresq.2007.01.004

Pratt, M. E., McClelland, M. M., Swanson, J., & Lipscomb, S. T. (2016). Family risk profiles and school readiness: A person-centered approach. *Early Childhood Research Quarterly*, *36*, 462–474. https://doi.org/10.1016/j.ecresq.2016.01.017

Reilly, S. E., & Downer, J. T. (2019). Roles of executive functioning and language in developing low-income preschoolers' behavior and emotion regulation. *Early Childhood Research Quarterly*, *49*, 229–240. https://doi.org/10.1016/j.ecresq.2019.07.006

Rimm-Kaufman, S. E., & Pianta, R. C. (2000). An Ecological Perspective on the Transition to Kindergarten: A Theoretical Framework to Guide Empirical Research. *Journal of Applied Developmental Psychology*, *21*(5), 491–511. https://doi.org/10.1016/S0193-3973(00)00051-4

Roubinov, D. S., & Boyce, W. T. (2017). Parenting and SES: relative values or enduring principles? *Current Opinion in Psychology*, *15*, 162–167. https://doi.org/10.1016/j.copsyc.2017.03.001

Rouse, H. L., Choi, J. Y., Riser, Q. H., & Beecher, C. C. (2020). Multiple risks, multiple systems, and academic achievement: A nationally representative birth-to-five investigation. *Children and Youth Services Review*, *108*(September 2019), 104523. https://doi.org/10.1016/j.childyouth.2019.104523

Rowe, M. L., Denmark, N., Harden, B. J., & Stapleton, L. M. (2016). The role of parent education and parenting knowledge in children's language and literacy skills among white, black, and latino families. *Infant and Child Development*, *25*, 198–220. https://doi.org/10.1002/icd.1924

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. https://doi.org/10.1111/j.1467-8624.2011.01678.x

Sabol, T. J., & Pianta, R. C. (2017). The State of Young Children in the United States. In

E. Votruba-Drzal & E. Dearing (Eds.), *The Wiley Handbook of Early Childhood Development Programs, Practices, and Policies* (pp. 3–16). John Wiley & Sons, Inc. https://doi.org/10.1002/9781118937334.ch1

Shields, A., & Cicchetti, D. (1997). Emotion regulation among school-age children: the development and validation of a new criterion Q-sort scale. *Developmental Psychology*, *33*(6), 906–916. https://doi.org/10.1037/0012-1649.33.6.906

Smith-Donald, R., Raver, C. C., Hayes, T., & Richardson, B. (2007). Preliminary construct and concurrent validity of the Preschool Self-regulation Assessment (PSRA) for field-based research. *Early Childhood Research Quarterly*, *22*(2), 173–187. https://doi.org/10.1016/j.ecresq.2007.01.002

Sörbom, D. (1989). Model modification. *Psychometrika*, *54*(3), 371–384. https://doi.org/10.1007/BF02294623

StataCorp. (2017). *Stata Statistical Software: Release 15*. StataCorp LLC.

Thompson, R. A., & Lagattuta, K. H. (2008). Feeling and Understanding: Early Emotional Development. In *Blackwell Handbook of Early Childhood Development* (pp. 317–337). Blackwell Publishing Ltd. https://doi.org/10.1002/9780470757703.ch16

Turnbull, K. L. P., Alamos, P., Williford, A. P., & Downer, J. T. (2020). An Exploration of Electronic Media Use Profiles for Preschoolers of Low-Income Families. *Academic Pediatrics*, *20*(7), 934–941. https://doi.org/10.1016/j.acap.2020.03.007

Vitiello, V. E., Greenfield, D. B., Munis, P., & George, J. (2011). Cognitive flexibility, approaches to learning, and academic school readiness in head start preschool children. *Early Education and Development*, *22*(3), 388–410.

https://doi.org/10.1080/10409289.2011.538366

Welsh, J. A., Nix, R. L., Blair, C., Bierman, K. L., & Nelson, K. E. (2010). The Development of Cognitive Skills and Gains in Academic School Readiness for Children From Low-Income Families. *Journal of Educational Psychology*, *102*(1), 43–53. https://doi.org/10.1037/a0016738

Yamaoka, Y., & Bard, D. E. (2019). Positive Parenting Matters in the Face of Early Adversity. *American Journal of Preventive Medicine*, *56*(4), 530–539. https://doi.org/10.1016/j.amepre.2018.11.018

Yelverton, R., & Mashburn, A. J. (2018). A Conceptual framework for understanding and supporting children's development during the kindergarten transition. In *Kindergarten Transition and Readiness: Promoting Cognitive, Social-Emotional, and Self-Regulatory Development* (pp. 3–29). Springer International Publishing. https://doi.org/10.1007/978-3-319-90200-5_1

Table 1

Descriptive Statistics for the Full Sample and Profiles at Pre-kindergarten

Variable	Total		Profile 1		Profile 2		z-test
	Mean	SD	Mean	SD	Mean	SD	
Demographics							
First cohort	0.48		0.46		0.50		-0.73
Age (months) at start of study	52.46	3.56	52.16	3.57	52.82	3.53	-1.77
Gender: 1=Male	0.53		0.51		0.55		-0.95
Black or African-American	0.47		0.54		0.39		**3.26**
Hispanic of any race	0.12		0.11		0.15		-1.33
White, non-Hispanic	0.26		0.20		0.34		**-3.12**
Other race	0.04		0.04		0.04		-0.11
Two or more races, non-Hispanic	0.10		0.12		0.09		0.73
Maternal age at start of the study	31.45	6.38	30.50	6.44	32.57	6.15	**-3.01**
Family income	38080.48	27190.89	33841.46	27076.15	43074.71	26543.95	**-3.22**
Income to needs ratio	1.52	1.11	1.39	1.13	1.68	1.07	**-2.55**
Income-to-needs ratio<1	0.39		0.46		0.31		**2.94**
Mother is married	0.47		0.41		0.56		**-3.07**
Mother's education (Technical certificate or higher)	0.49		0.47		0.52		-0.99
Likely to have some psychological distress	0.17	0.38	0.12	0.32	0.23	0.42	**-2.56**
Mother worked in past 12 months	0.73		0.80		0.66		**3.23**
If no, has child's mother been looking for job	0.32		0.41		0.24		**2.50**
Family has moved in the past 12 months	0.32		0.34		0.29		1.12
Other regular child care besides primary	0.50		0.52		0.47		1.05

Head start	0.08		0.09		0.05		1.45
Children's outcomes at prekindergarten							
PPVT (standard score)	96.63	16.34	96.13	16.10	97.23	16.65	-0.66
WJ-III Picture Vocabulary (Standard score)	100.15	11.63	100.09	11.86	100.23	11.37	-0.12
WJ-III Basic Reading (Standard score)	99.63	16.65	98.92	16.23	100.48	17.15	-0.97
WJ-III Math Reasoning (Standard score)	98.33	14.57	97.63	14.00	99.17	15.23	-1.12
HTKS	10.41	14.40	10.27	14.05	10.58	14.85	-0.21
Pencil tap	8.88	5.76	8.49	5.95	9.36	5.50	-1.53
ERC-Lability/Negativity	23.60	8.25	23.58	7.58	23.62	9.01	-0.05
ERC-Emotion Regulation	26.17	4.48	25.80	4.56	26.62	4.35	-1.84
T-CRS - Behavior Control	30.31	7.49	29.99	7.37	30.69	7.63	-1.03
T-CRS - Assertiveness	30.92	6.35	30.56	6.55	31.37	6.09	-1.19
T-CRS - Peer Social Skills	23.79	2.02	23.66	2.12	23.94	1.88	-1.46
T-CRS - Task orientation	30.29	7.91	30.00	7.75	30.64	8.10	-0.85
PLBS	70.57	10.29	70.15	10.54	71.08	9.97	-1.08

Note: PPVT - Peabody Picture Vocabulary Test, WJ-III - Woodcock Johnson-III, HTKS - Head-Toes-Knees-Shoulders task, ECR - Emotion Regulation Checklist, T-CRS - Teacher-Child Rating Scale, PBLS - Preschool Learning Behaviors Scale.

Table 2

LPA Fit Indices (N=412)

Index	Profile solutions			
	1	2	3	4
Pre-kindergarten				
AIC	23790.67	22615.29	21863.61	21351.40
BIC	23983.68	22908.82	22257.67	21845.98
Adj. BIC	23831.36	22677.18	21946.70	21455.68
Entropy		0.85	0.91	0.93
LRT p value		0.00	0.73	0.98
BLRT p value		0.00	0.73	0.98
% Profile 1	1	0.55	0.47	0.47
% Profile 2		0.45	0.42	0.10
% Profile 3			0.11	0.42
% Profile 4				0.02
Kindergarten				
AIC	23345.5	22132.8	21127.0	20931.5
BIC	23538.5	22426.4	21521.1	21426.1
Adj. BIC	23386.2	22194.7	21210.1	21035.8
Entropy		0.87	0.92	0.92
LRT p value		0.00	0.00	0.17
BLRT p value		0.00	0.00	0.17
% Profile 1	1	0.46	0.42	0.38
% Profile 2		0.54	0.42	0.15
% Profile 3			0.15	0.12
% Profile 4				0.34

Note: AIC=Akaike information criterion, BIC=Bayesian information criterion, ABIC=Adjusted Bayesian Information Criterion, LMR=Adjusted Lo-Mendell-Rubin likelihood ratio test, and BLRT=Bootstrapped likelihood ratio test.

Table 3

Descriptive Statistics for Profiles at Kindergarten

Variable	Profile 1		Profile 2		Profile 3		z-test 1	z-test 2	z-test 3
	Mean	SD	Mean	SD	Mean	SD			
Demographics									
First cohort	0.47		0.50		0.43		-0.67	0.47	0.95
Age (months) at start of study	52.34	3.61	52.78	3.52	51.87	3.49	-1.19	0.73	1.69
Gender: 1=Male	0.49		0.55		0.57		-1.30	-1.02	-0.14
Black or African-American	0.60		0.38		0.35		**3.98**	**3.33**	0.37
Hispanic of any race	0.11		0.12		0.17		-0.30	-1.17	-0.92
White, non-Hispanic	0.16		0.34		0.37		**-3.49**	**-2.79**	-0.25
Other race	0.02		0.05		0.03		-1.44	-0.36	0.68
Two or more races, non-Hispanic	0.11		0.11		0.08		0.00	0.61	0.64
Maternal age at start of the study	30.53	6.52	31.93	6.51	32.55	5.35	**-2.17**	**-2.54**	-0.68
Family income	34208.86	25806.06	44642.86	26128.57	49537.04	32411.40	**-2.68**	**-2.56**	-0.75
Income to needs ratio	1.32	1.01	1.65	1.02	1.79	1.20	**-2.30**	**-2.20**	-0.57
Income-to-needs ratio<1	0.44		0.27		0.30		**2.21**	1.32	-0.23
Mother is married	0.41		0.61		0.52		**-2.48**	-1.00	0.84
Mother's education (Technical certificate or higher)	0.40		0.53		0.56		-1.60	-1.44	-0.23
Likely to have some psychological distress	0.18	0.38	0.28	0.45	0.18	0.39	**-2.14**	-0.03	1.54
Mother worked in past 12 months	0.79		0.74		0.81		0.76	-0.32	-0.81
If no, has child's mother been looking for job	0.34		0.18		0.17		1.59	1.20	0.10

Family has moved in the past 12 months	0.28		0.19		0.21		1.64	0.97	-0.31
Other regular child care besides primary	0.44		0.48		0.46		-0.33	-0.09	0.13
Head start	0.00		0.03		0.02		0.00	0.00	0.00
Children's outcomes at kindergarten									
HTKS	31.75	19.83	34.32	18.46	37.55	18.77	-1.39	-2.22	-1.13
Pencil tap	13.43	3.78	13.90	3.11	13.53	3.20	-1.42	-0.24	0.80
ERC-Lability/Negativity	23.84	7.86	24.13	8.45	24.26	9.43	-0.32	-0.33	-0.10
ERC-Emotion Regulation	25.92	3.90	26.08	3.88	25.91	4.76	-0.34	0.02	0.25
T-CRS - Behavior Control	30.41	7.41	30.59	7.46	30.98	8.18	-0.22	-0.48	-0.33
T-CRS - Assertiveness	31.75	5.99	31.55	6.24	32.06	6.18	0.31	-0.30	-0.50
T-CRS - Peer Social Skills	23.64	2.09	23.86	2.07	23.74	2.16	-0.98	-0.32	0.36
T-CRS - Task orientation	30.23	8.73	29.92	8.64	30.43	9.58	0.31	-0.14	-0.36
PLBS	71.96	8.57	70.94	9.12	70.81	10.37	0.94	0.71	0.07

Note: PPVT - Peabody Picture Vocabulary Test, WJ-III - Woodcock Johnson-III, HTKS - Head-Toes-Knees-Shoulders task, ECR - Emotion Regulation Checklist, T-CRS - Teacher-Child Rating Scale, PBLS - Preschool Learning Behaviors Scale. z-test 1 = z-test profile 1 and 2; z-test 2 = z-test profile 1 and 3; z-test 1 = z-test profile 2 and 3.

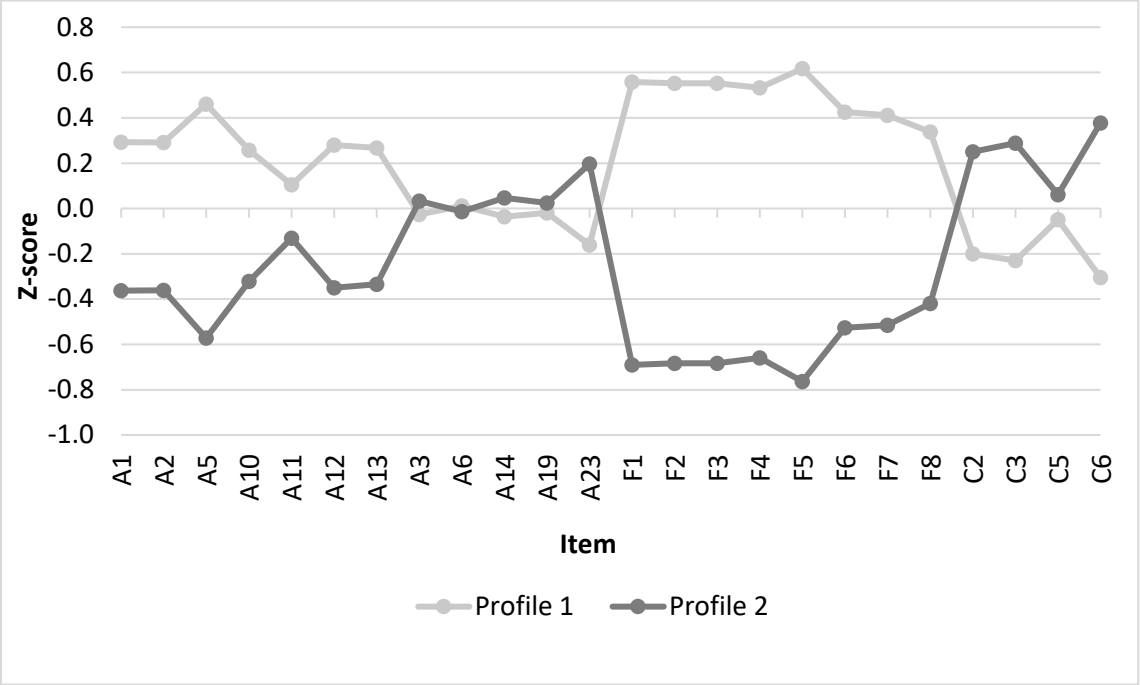
Table 4

Changes in Parenting Profiles

		Kindergarten			
		High Enriching Parenting (N=174)	Moderate Enriching Parenting (N=175)	Low Enriching Parenting (N=63)	Overall (N=412)
Pre-K	High Enriching Parenting (N=226)	61.95%	30.53%	7.52%	100%
	Moderate Enriching Parenting (N=186)	18.28%	56.99%	24.73%	100%

Figure 1

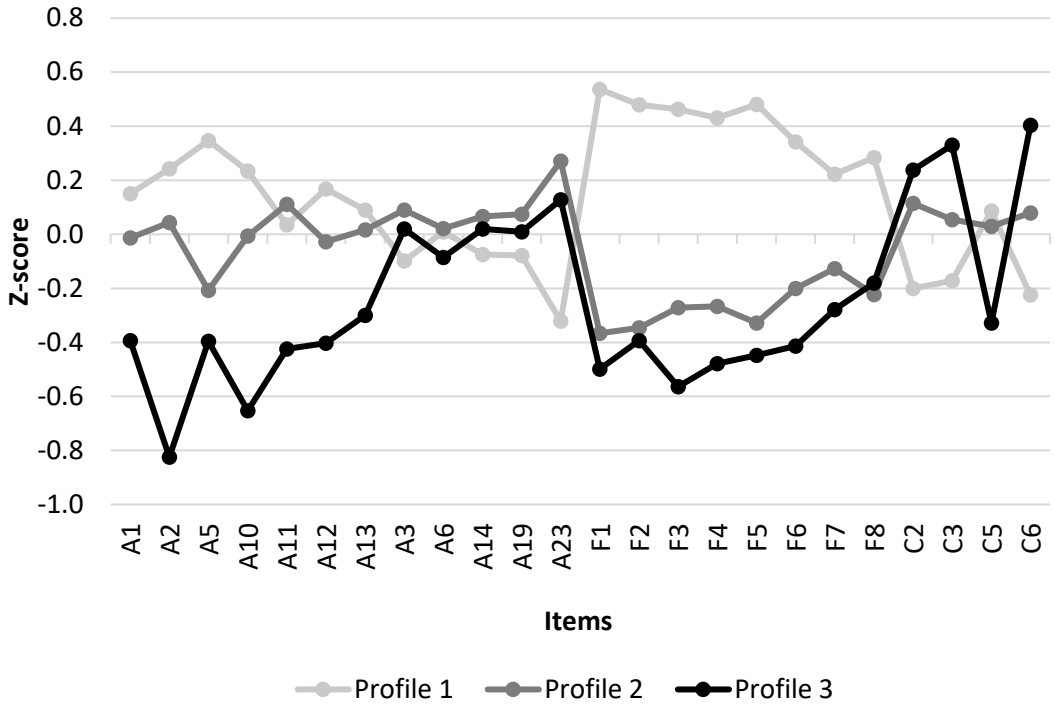
Standardized Mean Scores for Parenting Items for Each Profile at Pre-kindergarten



Note: A1-A13: APQ - positive parenting; A3-A14: APQ - Inconsistent parenting; A19-A23: APQ - Punitive parenting; F1-F8: FIQ - Home involvement; C2-C6: CHAOS - Environment at home. Profile 1 – "High Enriching Parenting," Profile 2 – "Moderate Enriching Parenting"

Figure 2

Standardized Mean Scores for Parenting Items for Each Profile at Kindergarten



Note: A1-A13: APQ - positive parenting; A3-A14: APQ - Inconsistent parenting; A19-A23: APQ - Punitive parenting; F1-F8: FIQ - Home involvement; C2-C6: CHAOS - Environment at home. Profile 1 – "High Enriching Parenting," Profile 2 – "Moderate Enriching Parenting," Profile 3 – "Low Enriching Parenting"

Appendix A

Results from Confirmatory Factor Analyses

Because of the low Cronbach's alpha for some measures and the low variability of some items, Confirmatory Factor Analyses (CFA) were conducted to analyze fit to the published measurement model for each of the subscales under analysis. To evaluate the model's goodness of fit, several indices were used: the root mean square error of approximation (RMSEA), which is a parsimony correction index, where values equal to or less than 0.05 indicate a close fit; the comparative fit index (CFI) and the Tucker-Lewis index (TLI), both with a zero to one range, where values close to zero indicate a good fit of the model; and the Akaike information criterion (AIC) as a measure of relative quality—that is, a measure that allows for a comparison of models and the model with the lowest AIC is preferred (Brown, 2015).

CFA Results at Pre-kindergarten

CFA estimations were conducted using the Structural Equation Modeling (SEM) command of Stata/SE version 15.1 (StataCorp, 2017). Measurement models were defined a priori based on the hypothesized factor structure set forth by the instruments' authors. Then, items with factor loadings below 0.5 were excluded and omitted paths were added according to improvements in chi-squared that Modification Indices (MI) suggested (Sörbom, 1989). All paths with MI above .2 were examined. Also, to correct for missing information, for all estimates the maximum likelihood with missing values (mlmv) method was used. In Table A1, the Goodness-Of-Fit Statistics for the model proposed by Clerkin et al. (2007) and the alternative structure (meaning after dropping items with low factor loadings and adjusting based on MI) for the APQ subscales are presented. The

RMSEA, TLI, CFI, and AIC, jointly suggest that the alternative structure model has the best fit for the data. According to the alternative structure model, the three subscales of the APQ are still identified, but the reduction in the number of items is substantial (Figure A1). Perhaps this can be explained by the low variability of the items, meaning they added limited information about punitive parenting practices.

Figure A 1

APQ – Alternative Structure Model

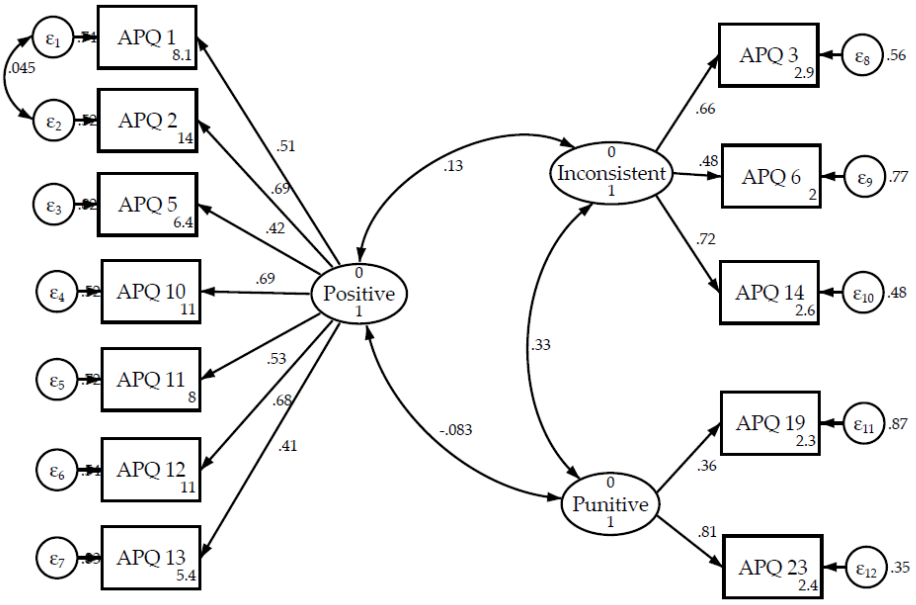


Table A 1

APQ - Confirmatory Factor Analysis, Goodness-Of-Fit Statistics, Clerkin et al. (2007) Model and Alternative Model

MODEL	N	Chi-square	Df	RMSEA	TLI	CFI	AIC
Structure proposed by Clerkin et al.	410	764.10	249	0.07	0.66	0.69	20584.90
Alternative structure	410	121.51	51	0.06	0.89	0.92	9671.85

Note: RMSEA=Root mean square error of approximation; TLI=Tucker-Lewis index; CFI=Comparative fit index; AIC=Akaike information criterion.

According to RMSEA, TLI, CFI, and AIC, the alternative structure model for the Home-based involvement subscale of the FIQ fit the data better in comparison with the Fantuzzo et al. (2000) model (Table A2). The alternative structure model suggests only eight items of the thirteen included initially should be considered for parents of pre-kindergarteners (Figure A2). The results for the Chaos scale are similar (Figure A3 and Table A3). It is important to notice that the differences regarding the construct validity of the subscales can emerge because the items are not measuring the underling constructs, and because of systematic differences among the sample under analysis and the norming samples researchers used to validate the original scales. For instance, Fantuzzo et al. (2000), Clerkin et al., (2007), and Matheny et al., (1995), used more diverse samples of children in terms of their socioeconomic background. In contrast, the data we used were drawn from a study that followed children from low socioeconomic status families in two counties of a Mid-Atlantic state. Also, two of the scales were validated more than 20 years ago. Hence, it is possible that environmental and societal changes have also contributed to modifying parent-child interactions. Table A4 shows the set of items that were used in Latent Profile Analysis to identify parenting practices profile. All CFA results hold for the total sample, and the alternative structure of each of the scales also fits the data collected at the beginning of kindergarten. The authors can share the results under request.

Figure A 2

Home-Based Involvement - FIQ – Alternative Structure Model

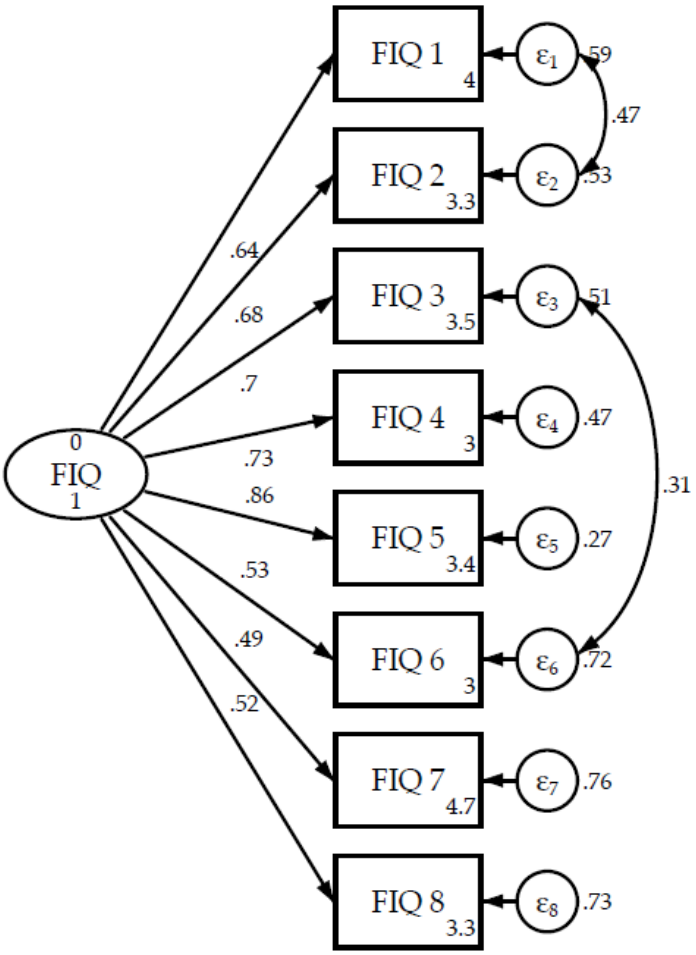


Table A 2

FIQ - Confirmatory Factor Analysis, Goodness-Of-Fit Statistics, Fantuzzo et al. (2000) Model and Alternative Model

MODEL	N	Chi-square	Df	RMSEA	TLI	CFI	AIC
Structure proposed by Fantuzzo et al.	405	302.69	65	0.10	0.82	0.85	11557.15
Alternative structure	405	25.45	18	0.03	0.99	0.99	7100.30

Note: RMSEA=Root mean square error of approximation; TLI=Tucker-Lewis index; CFI=Comparative fit index; AIC=Akaike information criterion.

Figure A 3

Chaos scale – Alternative structure model

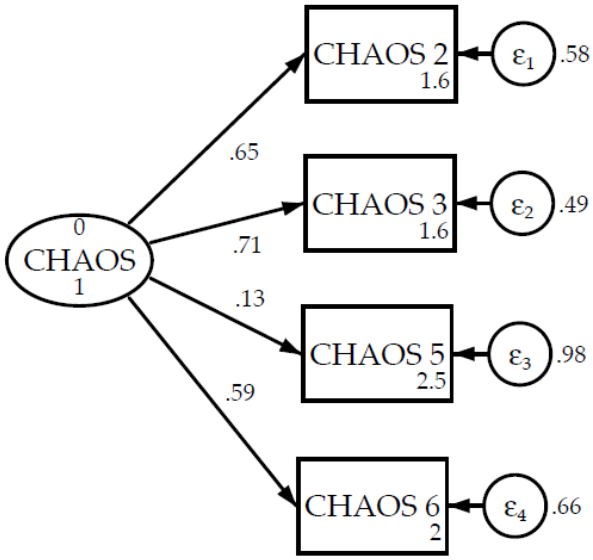


Table A 3

Chaos Scale - Confirmatory Factor Analysis, Goodness-Of-Fit Statistics, Matheny et al. (1995) Model and Alternative Model

MODEL	N	Chi-square	Df	RMSEA	TLI	CFI	AIC
Structure proposed by Matheny et al. (1995)	406	30.70	9	0.08	0.85	0.91	6914.03
Alternative structure	406	2.29	2	0.02	1.00	1.00	4817.53

Note: RMSEA=Root mean square error of approximation; TLI=Tucker-Lewis index; CFI=Comparative fit index; AIC=Akaike information criterion.

Table A 4

Descriptive Statistics of Parenting Items at Pre-kindergarten and Kindergarten

Subscale	Item	Pre-kindergarten		Kindergarten	
		Mean	SD	Mean	SD
APQ - positive parenting	A1 - You have a friendly talk with your child	4.64	0.57	4.67	0.55
	A2 - You let your child know when he/she is doing a good job with something	4.87	0.34	4.83	0.43
	A5 - You play games or do other fun things with your child	4.42	0.69	4.34	0.71
	A10 - You compliment your child when he/she does something well	4.86	0.42	4.83	0.41
	A11 - You praise your child if he/she behaves well	4.75	0.59	4.72	0.57
	A12 - You hug or kiss your child when he/she has done something well	4.80	0.46	4.77	0.51
	A13 - You talk to your child about his/her friends	4.41	0.82	4.41	0.76
APQ - Inconsistent parenting	A3 - You threaten to punish your child and then do not actually punish him/her	2.76	0.96	2.66	0.99
	A6 - Your child talks you out of being punished after he/she has done something wrong	2.32	1.18	2.34	1.25
	A14 - You let your child out of a punishment early	2.65	1.03	2.55	0.93
APQ - Punitive parenting	A19 - You spank your child with your hand when he/she has done something wrong	2.12	0.93	2.12	0.93
	A23 - You yell or scream at your child when he/she has done something wrong	2.31	0.92	2.31	0.92
FIQ - Home involvement	F1 - I spend time working with my child on number skills	3.08	0.77	3.13	0.76
	F2 - I spend time working with my child on reading/writing skills	2.92	0.88	3.27	0.70
	F3 - I talk to my child about how much I love learning new things	3.12	0.90	3.22	0.85
	F4 - I bring home learning materials for my child	2.83	0.96	2.84	0.91
	F5 - I spend time with my child working on creative activities.	2.95	0.88	3.00	0.81

	F6 - I share stories with my child about when I was in school	2.91	0.98	3.08	0.88
	F7 - I see that my child has a place for books and school materials	3.51	0.75	3.59	0.62
	F8 - I take my child places in the community to learn special	3.01	0.91	3.03	0.85
CHAOS (Environment at home)	C2 - You can't hear yourself think in our home	1.96	1.20	1.96	1.18
	C3 - It's a real zoo in our home	1.59	0.99	1.52	0.88
	C5 - There is usually a television turned on somewhere in our home	3.49	1.38	3.42	1.42
	C6 - The atmosphere in our house is calm (reverse)	2.04	1.01	1.99	0.98

RUNNIG HEAD: NEIGHBORHOOD, FAMILY, AND EXECUTIVE FUNCTION

PAPER 2. Do Neighborhood Resources Mitigate Family Risk to Preschool Children's Executive Function Skills Growth?

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(Revise & Resubmit, Prevention Science)

Abstract

Despite previous studies showing that children's development of executive function (EF) skills is associated with the differing contexts in which children live, evidence about the independent and synergistic effects of families and neighborhoods is limited. Using a sample from a two-cohort longitudinal study of preschoolers from low-income families, we examined whether neighborhood resources (measured with the Child Opportunity Index – COI) moderated the relationship between family cumulative risk and the growth trajectory of children's EF skills. Results from conditional growth curve models indicate family cumulative risk was negatively related to baseline EF skills and the rate of EF skill growth. In contrast, the overall COI and the COI social and economic domain z-score were positively associated with the initial, but not linear, growth of EF skills. We found no evidence of moderator effects. Policies that aim to better target and support the most vulnerable children should consider the unique contribution of family risks and neighborhood resources to child development.

Keywords: Executive function, Neighborhoods, Child Opportunity Index, Preschool, Family risks

Do Neighborhood Resources Mitigate Family Risk to Preschool Children's Executive Function Skills Growth?

Executive function (EF) skills refer to a set of cognitive skills that are positively associated with children's academic achievement and health outcomes in the short and long term (Last et al., 2018). From a bioecological perspective, these and other skills are determined by the interactions between children and settings they live in, as well as the interrelations among these settings (Bronfenbrenner & Morris, 1998). For instance, children develop in proximal environments such as homes, where they may experience poverty and other sociodemographic risks (e.g., parents with low levels of education and single parenthood) that account for lower performance on EF skills through associated stressors (Evans et al., 2013; Evans & Kim, 2013). In turn, homes are nested and interconnected within neighborhoods (a larger societal context) that may offer resources that amplify or counteract the effect that home factors have on child development. Previous studies have widely documented the potential individual contributions that family and neighborhood factors have on children's development (Evans et al., 2013; McCoy et al., 2015). However, less is known about how the interaction of resources available in these two environments may affect child development. Further, previous research has focused on SES measures or a limited number of neighborhood factors, overlooking the multiple aspects that characterized neighborhoods. These two aspects have limited the understanding of the multiple risks children experience simultaneously and prevents advances on designing policies and interventions that comprehensively support the most vulnerable children (Hardy et al., 2021). Thus, this study aims to fill these gaps by using the Child Opportunity Index (COI, a census tract-level index

comprising 29 neighborhood features related to children's development) to examine whether or not a comprehensive set of neighborhood resources moderate the association between children's family-level risks and EF skills growth trajectories.

Executive Function Skills Serve as a Critical Early Developing Skill

EF is a construct that refers to a set of cognitive skills underlying self-regulation and goal-directed problem solving, comprising working memory, inhibitory control, and mental flexibility (Carlson et al., 2013). EF skills support children to regulate emotions, restrict impulsive reactions, and delay gratification (Blair, 2016). Thus, EF skills are believed to support learning by enabling children to pay attention, persist during challenging tasks, hold information in memory, solve problems flexibly, and plan (Blair, 2016; Zelazo et al., 2016).

EF skills emerge early in life and continue to develop throughout childhood and into adulthood (Carlson et al., 2013). Specifically, the preschool years are characterized by rapid improvements in EF skills. For instance, over time, preschool-aged children have shown more strategic approaches to error detection, more advanced development in their capacities to use rules, and more proactive planning in addressing problems across different tasks (Best & Miller, 2010). Further, measures of self-regulation during early childhood have been identified as predictors of health, wealth, and academic outcomes during adulthood (McClelland et al., 2013; Moffitt et al., 2011). Thus, a better understanding of factors that contribute to EF skill development is critical to support key outcomes across lifespan.

Family Risk Factors are Consistently Linked to Children's Executive Function Skills

From a bioecological perspective, family is one of the proximal settings that influence children's EF skill growth. Family poverty level during childhood is one the most studied sociodemographic risks (i.e., a factor that increases the probability of the realization of unfavorable outcomes) and has been consistently linked to decrements in children's EF skills (Lawson et al., 2018). One of the mechanisms through which poverty affects EF skill development is through the alteration of stress hormones that can compromise synaptic activity and the development of brain regions associated with EF skills (Blair, 2016). For instance, children in poverty present high levels of allostatic load, an indicator of chronic stress that reflects repeated activation of multiple regulatory systems in response to changing environmental demands (Evans & Kim, 2013). Other mechanisms through which poverty may affect children's EF skills include the alteration of genes involved in response to chronic stress and the limited competencies parents have to support their children when they themselves experience poverty-related stress (Blair & Raver, 2012). This last mechanism has been well-documented through the empirical evidence that support the Family Stress Model, which established that economic hardship and other environmental stressors influence child development through parent psychological distress, disrupted parenting, and interparental relationship problems (Masarik & Conger, 2017).

Poverty, however, usually does not occur in isolation. Instead, low-income children are likely to experience multiple sociodemographic risks that also interfere with EF skill development (Evans et al., 2012). For example, in the US, relative to their more economically-advantaged peers, poor children are more likely to grow up in single-parent families and have mothers with lower levels of education or who became mothers during

adolescence (Lawson et al., 2018). The empirical literature has documented the association between each of these family-level sociodemographic risks and young children's reduced EF skills as evidenced by lower performance on tasks of planning, working memory, inhibitory control, and mental flexibility (Hackman et al., 2015; Nesbitt et al., 2013; Noble et al., 2007; Sarsour et al., 2011).

In an effort to account for the multiple risks that children can experience simultaneously, previous studies have used a cumulative risk approach. The main assumption underlying cumulative risk is that the higher the number of risks children experience, the poorer the developmental outcomes (Evans et al., 2013). Several empirical studies provide evidence for this assumption. For instance, preschoolers experiencing greater levels of cumulative risk showed lower inhibitory control (Giuliano et al., 2018) and poorer delayed gratification ability than their peers experiencing lower levels of risk (Lengua et al., 2014). Thus, this method offers a relatively easy-to-implement approach to identifying children most in need and who may benefit from interventions that target children's proximal developmental contexts.

Neighborhood Resources Are Likely to Influence Executive Function Skills

According to structural theories, the institutions and physical resources available within neighborhoods influence children's development (Leventhal & Brooks-Gunn, 2000). Residential neighborhoods, thus, represent a larger societal context that also influence the development of EF skills. For instance, the access to quality childcare centers, the availability of green spaces, and lack of pollutants such as noise or lead, are neighborhood factors that influence children's development through providing

cognitively stimulating environments and by supporting parents' capacities to care their children.

Across the empirical literature, low SES and poverty are the most frequently analyzed neighborhood-level factors, exhibiting consistent negative associations with multiple aspects of child development, including school readiness outcomes, academic achievement, and child health. Such findings persist after controlling for family- and school-level confounders, indicating neighborhoods have a unique influence on children's developmental outcomes (Leventhal et al., 2015; McCoy et al., 2015; Sharkey & Faber, 2014). Research that specifically examines linkages between neighborhood factors and EF skills, however, is mixed and scarce. For example, in a study using a sample of predominantly low-income children, Wei et al., (2021) found that, whereas high neighborhood SES was positively associated with the performance on an inhibitory control task, neighborhood resources were not. In contrast, other studies including more economically diverse samples of older children have found mixed results. Roy and colleagues (2014), for example, found that neighborhood poverty moderated the association between residential mobility and fifth graders' EF response times. These results contrasted with the null effect of neighborhood disadvantage on working memory and growth between ages 10 and 13 (Hackman et al., 2014). Thus, more research is needed to better identify the neighborhood factors that can positively contribute to the development of EF skills.

By only focusing on SES measures or a limited number of neighborhood factors, however, previous research has overlooked the evidence that suggests there is considerable variability of resources between neighborhoods, including lower SES

neighborhoods (Wei et al., 2021). To address this, Acevedo-Garcia and colleagues (2020) put forth the Child Opportunity Index (COI) as a way to bridge this gap. The COI capitalizes on 29 measures of neighborhood-based resources available in open-source datasets that facilitate child development and grouped them in three domains: education, health and environment, and social and economic opportunity, as well as an overall COI. The overall COI is strongly correlated with measures of intergenerational economic mobility from the Opportunity Atlas and measures of health and life expectancy (Aris et al., 2021; Beck et al., 2017; Hardy et al., 2021). Thus, the COI seems to be a promising way to examine the association between a more complete view of neighborhood resources and the development of children's skills.

Interaction of Family Risks and Neighborhood Resources

According to the typology proposed by Roche and Leventhal (2009), neighborhood factors may exacerbate, buffer, or compensate the effects of family factors on children's development. The direction of the moderator effect depends on whether or not neighborhood resources contribute to the cumulative exposure to risks, which affect EF skills thorough mechanisms such as alterations of stress hormones or quality of parenting. For instance, the effect of having a high educated mother who engages in responsive interactions can be lower in neighborhoods with high levels of physical disorder or concentrated economic disadvantage (Lima et al., 2010).

Despite the recognition that children's development does not take place in an isolated context, literature analyzing the synergistic effects of family risks with neighborhoods is limited, particularly with regard to EF skills. Previous studies have focused on other developmental domains, analyzed family risks from a different

approach, or focused on interactions with other contexts such as schools. For instance, using a sample of racially diverse first graders, Lima and colleagues (2010) found that parents' perceived neighborhood negative social climate appeared to exacerbate the relationship between a family risk index and children's behavioral problems. Similarly, St. John and Tarullo (2020) reported that parents' perception of neighborhood chaos moderated the relationship between a standardized score that captures family SES and children's performance in working memory and inhibitory control tasks. Surprisingly, the authors found that children who lived in high-SES families and experienced high-neighborhood chaos exhibited better EF performance. Thus, this limited scope of previous studies has led to an incomplete assessment of children's developmental risk, preventing the design and implementation of policies that properly target the most vulnerable children (Hardy et al., 2021).

The Current Study

Using a sample of predominantly low-income pre-kindergarteners from two counties in the southeastern United States, and accounting for child characteristics and classroom quality, this study aims to: (1) describe the relationship between children's family-level cumulative risk and EF skill growth trajectories; and (2) determine the extent to which neighborhood resources (i.e., education, health and environment, social and economic opportunity, and overall COI) moderate the association between children's family-level cumulative risk and EF skill growth trajectories. Consistent with a compensatory effect of neighborhoods, we hypothesize family-level cumulative risk has a negative association with EF skill growth trajectories. We anticipate that the strength of this association, however, will be lower in the presence of higher resourced

neighborhoods, both at the overall and domain specific level. By examining education, health, and environmental neighborhood resources, this study expands on previous literature focused on neighborhood effects with children's development. By exploring the potential moderating effect of neighborhood opportunity, this study has the potential to provide a more complete assessment of children's developmental risks and inform policies that properly target the most vulnerable children.

Methods

Participants

Data are from a larger study of children enrolled in a two-cohort longitudinal observational study. Following Institutional Board approval, data were collected from 767 children enrolled in 103 state-funded and Head Start preschool classrooms in the southeastern United States. Children were eligible to attend these programs if they satisfied at least one of the following criteria: family income at or below 200% of the federal poverty guidelines, experience of homelessness, or parents/guardians lack a high school diploma. Children were taught in classrooms that primarily served 4-year-olds and whose teacher signed an informed consent form. Up to eight consented children per classroom were randomly selected to participate after blocking by gender. Additional study details can be found in Reilly and colleagues (2022).

Parental consent and a questionnaire of household characteristics (including home addresses) were collected at the beginning of the preschool year (Fall 2016 for cohort one and Fall 2018 for cohort two). Executive function child direct assessments and the Classroom Assessment Scoring System Pre-K (CLASS Pre-K; Pianta et al., 2008) were administered at three time points: Fall, Winter, and Spring of each preschool year. After

dropping two outliers (age was 2 SD below or above the mean), at baseline, on average, children were 52.63 months (*SD* = 3.54). As reported by parents, children's racial/ethnic composition was: 50% Black or African-American, 22.52% White-non-Hispanic, 12.73% Hispanic/Latino of any race, and 14.75% two or more races or other race. Around 27% of mothers reported a level of education equal or below high school, and the average family income was US$36,338.53 (*SD* = $26,071.30). Forty-one percent of families had an average income-to-needs ratio below the federal poverty line (see Table 1). We were able to match census tracts and COI 2.0 information to 90.7% of the sample using the Census Geocoder tool; children's homes were located in 73 census tracts.

Measures

Executive Function Standardized Score

The standardized EF score used in this study reflects the findings of confirmatory factor analyses (CFA) that examined the covariation between five well-recognized and validated measures that assess EF skills, and the invariance over time of the EF construct. The first three tasks are part of the EF Touch battery (Willoughby et al., 2016) and were administered in a computer-based format. 1) The EF Touch Pig task measures inhibitory control in a standard go no-go format. Children are presented with a button on the screen and are instructed to touch it every time they see an animal (go response), unless it is a pig (no-go response). 2) The EF Touch Pick the Picture task measures working memory. Children are presented with progressively larger (2, 3, 4, and 6) sets of pictures and are instructed to touch a new picture that had not been previously selected so that all pictures get a turn. Each set is repeatedly presented in a randomized order. 3) The EF Touch Something's the Same task measures attention shifting as children identify a new

dimension (content, color, or size) that a third picture has in common with one of two initially presented pictures that were similar along a different dimension.

Two additional tasks included in the EFA were administered in an interactive format. 1) The Head-Toes-Knees-Shoulders (HTKS; Ponitz et al., 2009) measures inhibitory control, working memory, and attention-shifting skills. Children are instructed to do the opposite of what the experimenter says. For instance, when the experimenter instructs children to touch their head, they should touch their toes. 2) The Pencil Tap subtest of the Preschool Self-Regulation Assessment measures inhibitory control as children tap a pencil once when the assessor taps twice and tap a pencil twice when the assessor taps once (Smith-Donald et al., 2007).

Results from the CFA indicated that the different EF measures fit well a single factor model. However, a longitudinal CFA showed that the factor loading for the Pencil Tap was not invariant over time (see Reilly et al., 2022, for more details). Because we are interested in examining change in EF skills, we used the standardized scores from the CFA which includes model parameters that are invariant over time.

Family Cumulative Risk Index

Four family indicators were created by recoding existing variables collected through parent questionnaires. Each variable was coded as a dichotomous indicator of either "1" (presence of risk) or "0" (no risk). 1) *Poverty*: A household was defined as poor if the household income reported by parents was below 100% of the federal poverty line. 2) *Teen mother*: Mothers who were age 19 years or younger at the child's birth were identified as teenage mothers. 3) *Single mother*: Mothers who reported not being married at baseline were considered single mothers. 4) *Low maternal education*: Mothers were

classified as having low education if they reported they had completed a high school or lower level of education at baseline. The four risks were summed to create a cumulative risk index that could range from 0 to 4.

Neighborhood Resources

Neighborhood resources were assessed using the overall COI and three domain z-scores of the COI 2.0 for 2015. This measure captures residential neighborhood resources and conditions relevant to children's healthy development available for about 72,000 census tracts (an area covering approximately 4,000 inhabitants). The overall COI score groups 29 indicators drawn from different open datasets across three domains: education, health and environment, and social and economic opportunity. The educational domain groups 11 measures related to schooling and neighborhood-level education-related resources (e.g., percentage of third graders scoring proficient on standard reading tests). Ten measures that account for neighborhood features that influence healthy development (e.g., access to healthy food) make up the health and environment domain. Finally, the social and economic domain groups eight items that capture access to job (i.e., employment rate and percentage of workers commuting more than one hour one way) and economic and social resources.

The domain z-scores represent weighted averages between reversed and nationally standardized indicators whose higher values indicate more opportunity. Each weight represents the strength between each indicator and two outcomes of intergenerational economic mobility from the Opportunity Atlas and two health outcomes from the 500 Cities Project. A similar weighting approach was followed to combine the domain z-scores into an overall COI index z-score.

Covariates

Child characteristics included as covariates are child's gender, child's age in months at baseline, and child's race. Cohort and program type were also included in the analyses. Finally, we used the average score of three domains of CLASS Pre-K (Pianta et al., 2008) to account for pre-K teacher-child interaction quality. These variables account for factors that are likely to influence the relationship between the two main variables of interest. Then, they are included to get more accurate estimates.

Analytical Plan

We implemented three-level growth curve modeling to account for the nested structure of the data: Time (level 1) child level (level 2), and classroom level (level 3). In this study, the level-1 model represented the individual change in EF skills across time and included random components (i.e., intercept and slope) that are allowed to vary among children. The intercept represents children's EF score at pre-K entry, and the slope represents children's EF skill rate of change through pre-K. The level-2 model estimated the variation of EF skill intercept and slope within a classroom. The level-3 model estimated the variation of EF skill intercept and slope across classrooms. We used classrooms as level-3 because they were considered part of the sampling design. Although classrooms were nested in census tracts, we did not use a four-level model because there was not an exact nesting between these level units. Nor did we use cross-classified multilevel models because the number of observations per cross-classified unit (i.e., any combination of classroom and neighborhood) was low.

We estimated three different sets of growth models in Stata 15.1 version (Stata, 2018) using robust maximum likelihood estimation. First, to identify patterns of EF skill

growth trajectories, we estimated unconditional growth models (i.e., models with time linear and quadratic terms of time as the only predictors). To facilitate interpretation, the time variable was coded as 0 for Fall (i.e., pre-K entry), 1 for Winter, and 2 for Spring of the pre-K year. The slope refers to EF skill growth over approximately three months. Goodness of fit was assessed using the Akaike information criterion (AIC), and the likelihood ratio test (LR) based on Log Likelihood (LL) values. Lower AIC values and higher LL values indicate a better model fit.

Second, we examined the unique associations between family cumulative risk and neighborhood resources (overall COI and domains z-scores, one model per each) with children's EF skill growth by adding these variables and covariates at child and classroom level to the unconditional model that best describe EF skill growth trajectories. Finally, we examined the extent to which neighborhood resources moderate the association between family cumulative risk and EF skill growth; we included an interaction term between neighborhood resources variables and the family cumulative risk index to the previous models. As these models involve variables (independent and dependent) with missing rates that ranged from 0% to 12.2%, we used fully Bayesian model-based imputation (BIM) estimated in the Blimp version 3.0.49 software (Enders et al., 2021) to handle missing data. The convergence of the model and the burn-in iterations were diagnosed through Potential Scale Reduction factors (PSR; Gelman & Rubin, 1992). PSR values reached acceptable levels (i.e., <1.05) and 20 separate imputed datasets were created following conventional guidelines (Graham, 2009). The cumulative risk was retained in its initial scale of zero to five. All other continuous control variables were grand-mean centered to facilitate the interpretation.

Results

Identifying Patterns of Growth Trajectories

To examine EF skill growth trajectories during pre-K, we tested unconditional growth curve models separately for overall COI and each of the COI domains. The goodness of fit statistics presented in Table 2 indicate that the three-level model with the quadratic term fits the data better than other specifications of the model (i.e., two-level growth models, and three-level models without the random components or with the linear random term). However, the random effect variance estimates from this model were unstable. Thus, we preferred the simpler three-level growth curve model with a linear term. The figure in Appendix 1 shows that linearity is reasonable.

Findings from the preferred model indicated that there was a positive statistically significant linear growth pattern ($\beta = 0.36, p \leq .01$) of EF skills. This growth was not accelerated or deaccelerated during the pre-K year. The random effects indicate there was inter-child variability in initial status ($S^2 = 0.33$) and growth ($S^2 = 0.04$), as well as some inter-classroom variability ($S^2 = 0.03$). Finally, results showed a significant correlation between initial EF skill scores and the linear growth ($cov = 0.03\ , CI = 0.01{,}0.06$), which indicates that children's growth in EF skills is related to their initial EF skills.

Associations between EF skill growth, Family Cumulative Risk, and Neighborhood Resources

Models that simultaneously examined the associations between neighborhood resources (i.e., overall COI and COI domains scores), family cumulative risk, and EF skills trajectories are presented in Table 3. After including all these variables, the linear

growth remained significant ($\beta \sim 0.35, p \leq .01$), and the unexplained child-level initial EF score and classroom-level variation decreased by 24.24% and 33.33%, respectively. Besides, the family cumulative risk was negatively related to baseline EF skills ($\beta = -0.08, p \leq .01$) and the rate of their growth ($\beta = -0.03, p \leq .05$). These results indicate that children who initially presented lower risks showed higher EF skills at pre-K entry and these initial gaps were likely to increase over time. In contrast, the overall COI ($\beta = 2.32, p \leq .05$) and the social and economic domain z-score ($\beta = 0.40, p \leq .01$) were positively associated with the initial EF skills, but not linear growth of EF skills. Education and Health domain scores were not associated with either initial or linear growth of EF skills. These findings suggest children who lived in neighborhood with more resources as measured through the overall COI, and more specifically, more social and economic resources at neighborhood level, showed higher EF skills at pre-K entry and the initial gap associated with these neighborhood resources is likely to remain constant over time.

Despite the statistically significant associations of family cumulative risk, overall COI, and social and economic domain scores, with EF skills trajectories, there was no evidence that neighborhood resources moderate the relationship between family cumulative risk and EF skills growth trajectories (Column 2, Table 3).

Discussion

Study findings show that, whereas family cumulative risk was negatively related with both initial EF skills and the rate of their growth, neighborhood resources were only related to the initial EF skills. Additionally, results suggest that neighborhood resources do not moderate the relationship between family cumulative risk and EF skills growth

trajectories for the sample under analysis. These results point to the need to consider factors at the family and community level as critical inputs to the development of EF skills, which have been identified as predictors of health, wealth, and academic outcomes across the lifespan (Blair, 2016; McClelland et al., 2013; Moffitt et al., 2011).

These study findings add to the growing research base on the pervasive effects family risks may have on children's developmental outcomes (McCoy et al., 2015; Minh et al., 2017). Prevention efforts should provide families the opportunities to overcome some of the sociodemographic risks early on in children's lives. For instance, policies should continue to focus on preventing adolescent pregnancy and eradicating prolonged- and short-term child poverty. The negative association between family cumulative risk and EF growth, as well as the positive correlation between initial EF scores and the linear trajectories identified, suggest these approaches have the potential to prevent EF gaps from existing and persisting over time.

Aligned with the empirical analysis reported by Wei and colleagues (2021) and Roy and colleagues (2014), results also highlight the importance of providing neighborhood resources, specifically social and economic resources, to children before they enter pre-K. For instance, interventions and policies that increase economic opportunities (e.g., employment) for parents could benefit EF skills development by reducing parents' stress derived from financial hardship and making more resources available to directly satisfy children's physiological needs. Contrary to hypothesized expectations, COI domains related to education and health did not have a statistically significant relationship with EF skills growth trajectories. One potential explanation for these findings is that, at the neighborhood level, the most relevant factors for children's

EF skills growth are related to socioeconomic resources. Another explanation could be that, despite all the efforts to create the COI to represent the multidimensional nature of neighborhoods, progress is still needed to include variables that account for other health and educational factors relevant for children's EF skills. Future studies analyzing different samples or using more innovative measures could help to clarify this.

Last, no evidence was found that supported the hypothesis that neighborhood resources moderate the relationship between family cumulative risk and EF growth trajectories for this sample. Instead, family risks and neighborhood opportunities as measured through the COI seemed to influence children's EF growth in an additive way, rather than in a multiplicative way. These results are similar to those reported by St. John and Tarullo (2018) around the lack of significance with a neighborhood quality index using census tract as a moderator between family SES and children's EF performance. However, findings here are different from those reported by studies that analyzed parents' perceptions of neighborhood safety or negativity. Thus, it is possible that, beyond resources, parents' perception of their neighborhood or other neighborhood factors not captured by the COI such as social capital are what actually is important to mitigate the negative influence of family risks on children's development.

Limitations and Future Directions

This study has several strengths, including its focus on EF growth trajectories during a key developmental period, the use of a multi-dimensional measure of neighborhood opportunities, and a racially diverse sample. However, important limitations also exist. First, although a conditional three-level growth curve modeling was used to account for the nested structure of the dataset and control for some characteristics

related to selection factors, the analysis remains only correlational. It is possible that the results about neighborhood associations can be biased due to the nonrandom selection process families follow when they choose to live in a particular neighborhood. Quasi-experimental research and longitudinal data available at all context levels under analysis could help to address this bias and allow causal conclusions. Second, although the COI represents an effort to capture resources at the neighborhood level that are relevant for children's development, it still is limited in the inclusion of measures of neighborhood social processes (e.g., social exchange, cohesion). In order to better target and support the most vulnerable children based not only on individual differences but also on neighborhood unique characteristics, future measures should consider incorporating contextual-level observations that account for these factors. Finally, there are other specific measurement concerns. For instance, the selected family cumulative risks were not exhaustive, and may not have captured other risks that can influence children's development (i.e., maternal depression). Also, although census tracts are a good proxy for neighborhoods, they do not necessarily represent what parents consider communities or contextual factors. Despite these limitations, the findings shed light on critical pathways that support young children's development. Identifying risks children face early in life beyond household low-income–the main inclusion criteria that federal early-care and education policies use to target populations–is important in allocating resources to children who are at the highest risk in order to achieve their full potential.

References

Acevedo-Garcia, D., Noelke, C., McArdle, N., Sofer, N., Hardy, E. F., Weiner, M., Baek, M., Huntington, N., Huber, R., & Reece, J. (2020). Racial and ethnic inequities in children's neighborhoods: Evidence from the new child opportunity index 2.0. *Health Affairs*, *39*(10), 1693–1701. https://doi.org/10.1377/hlthaff.2020.00735

Aris, I. M., Rifas-Shiman, S. L., Jimenez, M. P., Li, L. J., Hivert, M. F., Oken, E., & James, P. (2021). Neighborhood child opportunity index and adolescent cardiometabolic risk. *Pediatrics*, *147*(2). https://doi.org/10.1542/peds.2020-018903

Beck, A. F., Huang, B., Wheeler, K., Lawson, N. R., Kahn, R. S., & Riley, C. L. (2017). The Child Opportunity Index and Disparities in Pediatric Asthma Hospitalizations Across One Ohio Metropolitan Area, 2011-2013. *Journal of Pediatrics*, *190*, 200-206.e1. https://doi.org/10.1016/j.jpeds.2017.08.007

Best, J. R., & Miller, P. H. (2010). A Developmental Perspective on Executive Function. *Child Development*, *81*(6), 1641–1660. https://doi.org/10.1111/j.1467-8624.2010.01499.x

Blair, C. (2016). Developmental Science and Executive Function. *Current Directions in Psychological Science*, *25*(1), 3–7. https://doi.org/10.1177/0963721415622634

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. https://doi.org/10.1037/a0027493

Bronfenbrenner, U., & Morris, P. A. (1998). The ecology of developmental processes. In W. Damon & R. M. Lerner (Eds.), *Handbook of child psychology: Theoretical models of human development* (pp. 993–1028). John Wiley & Sons Inc.

Carlson, S. M., Zelazo, P. D., & Faja, S. (2013). Executive Function. In P. D. Zelazo (Ed.), *The Oxford Handbook of Developmental Psychology, Vol. 1: Body and Mind* (Vol. 1, Issue October, pp. 705–743). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199958450.013.0025

Evans, G. W., Chen, E., Miller, G., & Seeman, T. (2012). How Poverty Gets Under the Skin: A Life Course Perspective. In *The Oxford Handbook of Poverty and Child Development* (Vol. 9780199769, Issue March). https://doi.org/10.1093/oxfordhb/9780199769100.013.0001

Evans, G. W., & Kim, P. (2013). Childhood Poverty, Chronic Stress, Self-Regulation, and Coping. *Child Development Perspectives*, *7*(1), 43–48. https://doi.org/10.1111/cdep.12013

Evans, G. W., Li, D., & Whipple, S. S. (2013). Cumulative risk and child development. *Psychological Bulletin*, *139*(6), 1342–1396. https://doi.org/10.1037/a0031808

Giuliano, R. J., Roos, L. E., Farrar, J. D., & Skowron, E. A. (2018). Cumulative risk exposure moderates the association between parasympathetic reactivity and inhibitory control in preschool-age children. *Developmental Psychobiology*, *60*(3), 324–332. https://doi.org/10.1002/dev.21608

Hackman, D. A., Betancourt, L. M., Gallop, R., Romer, D., Brodsky, N. L., Hurt, H., & Farah, M. J. (2014). Mapping the trajectory of socioeconomic disparity in working memory: Parental and neighborhood factors. *Child Development*, *85*(4), 1433–1445. https://doi.org/10.1111/cdev.12242

Hackman, D. A., Gallop, R., Evans, G. W., & Farah, M. J. (2015). Socioeconomic status and executive function: Developmental trajectories and mediation. *Developmental*

Science, *18*(5), 686–702. https://doi.org/10.1111/desc.12246

Hardy, E., Joshi, P., Leonardos, M., & Acevedo-garcia, D. (2021). *Advancing Racial Equity Through Neighborhood-Informed Early Childhood Policies: A Research and Polivy Review* (Issue September). https://www.diversitydatakids.org/research-library/research-report/advancing-racial-equity-through-neighborhood-informed-early

Last, B. S., Lawson, G. M., Breiner, K., Steinberg, L., & Farah, M. J. (2018). Childhood socioeconomic status and executive function in childhood and beyond. *PLoS ONE*, *13*(8), 1–12. https://doi.org/10.1371/journal.pone.0202964

Lawson, G. M., Hook, C. J., & Farah, M. J. (2018). A meta-analysis of the relationship between socioeconomic status and executive function performance among children. *Developmental Science*, *21*(2), 1–22. https://doi.org/10.1111/desc.12529

Lengua, L. J., Kiff, C., Moran, L., Zalewski, M., Thompson, S., Cortes, R., & Ruberry, E. (2014). Parenting mediates the effects of income and cumulative risk on the development of effortful control. *Social Development*, *23*(3), 631–649. https://doi.org/10.1111/sode.12071

Leventhal, T., & Brooks-Gunn, J. (2000). The Neighborhoods They Live in: The Effects of Neighborhood Residence on Child and Adolescent Outcomes. *Psychological Bulletin*, *126*(2), 309–337. https://doi.org/10.1037/0033-2909.126.2.309

Leventhal, T., Dupéré, V., & Shuey, E. A. (2015). Children in neighborhoods. In M. H. Bornstein, T. Leventhal, & R. M. Lerner (Eds.), *Handbook of child psychology and developmental science: Ecological settings and processes* (pp. 493–533). John Wiley & Sons, Inc.

Lima, J., Caughy, M., Nettles, S. M., & O'Campo, P. J. (2010). Effects of cumulative risk on behavioral and psychological well-being in first grade: Moderation by neighborhood context. *Social Science and Medicine*, *71*(8), 1447–1454. https://doi.org/10.1016/j.socscimed.2010.06.022

Masarik, A. S., & Conger, R. D. (2017). Stress and child development: A review of the Family Stress Model. *Current Opinion in Psychology*, *13*, 85–90. https://doi.org/10.1016/j.copsyc.2016.05.008

McClelland, M. M., Acock, A. C., Piccinin, A., Rhea, S. A., & Stallings, M. C. (2013). Relations between preschool attention span-persistence and age 25 educational outcomes. *Early Childhood Research Quarterly*, *28*(2), 314–324. https://doi.org/10.1016/j.ecresq.2012.07.008

McCoy, D. C., Connors, M. C., Morris, P. A., Yoshikawa, H., & Friedman-Krauss, A. H. (2015). Neighborhood economic disadvantage and children's cognitive and social-emotional development: Exploring Head Start classroom quality as a mediating mechanism. *Early Childhood Research Quarterly*, *32*, 150–159. https://doi.org/10.1016/j.ecresq.2015.04.003

Minh, A., Muhajarine, N., Janus, M., Brownell, M., & Guhn, M. (2017). A review of neighborhood effects and early child development: How, where, and for whom, do neighborhoods matter? *Health and Place*, *46*(November 2016), 155–174. https://doi.org/10.1016/j.healthplace.2017.04.012

Moffitt, T. E., Arseneault, L., Belsky, D., Dickson, N., Hancox, R. J., Harrington, H. L., Houts, R., Poulton, R., Roberts, B. W., Ross, S., Sears, M. R., Thomson, W. M., & Caspi, A. (2011). A gradient of childhood self-control predicts health, wealth, and

public safety. *Proceedings of the National Academy of Sciences of the United States of America*, *108*(7), 2693–2698. https://doi.org/10.1073/pnas.1010076108

Nesbitt, K. T., Baker-Ward, L., & Willoughby, M. T. (2013). Executive function mediates socio-economic and racial differences in early academic achievement. *Early Childhood Research Quarterly*, *28*(4), 774–783. https://doi.org/10.1016/j.ecresq.2013.07.005

Noble, K. G., McCandliss, B. D., & Farah, M. J. (2007). Socioeconomic gradients predict individual differences in neurocognitive abilities. *Developmental Science*, *10*(4), 464–480. https://doi.org/10.1111/j.1467-7687.2007.00600.x

Pianta, R. C., La Paro, K. M., & Hamre, B. K. (2008). *Classroom Assessment Scoring System, Pre-k.* Paul H. Brookes Publishing Co.

Ponitz, C. C., McClelland, M. M., Matthews, J. S., & Morrison, F. J. (2009). A structured observation of behavioral regulation and its contributions kindergarten outcomes. *Developmental Psychology*, *45*, 605–619. https://doi.org/10.1037/a0015365

Reilly, S. E., Downer, J. T., & Grimm, K. J. (2022). Developmental trajectories of executive functions from preschool to kindergarten. *Developmental Science*, *July 2021*, 1–14. https://doi.org/10.1111/desc.13236

Roche, K. M., & Leventhal, T. (2009). Beyond Neighborhood Poverty: Family Management, Neighborhood Disorder, and Adolescents' Early Sexual Onset. *Journal of Family Psychology*, *23*(6), 819–827. https://doi.org/10.1037/a0016554

Roy, A. L., McCoy, D. C., & Cybele Raver, C. (2014). Instability versus quality: Residential mobility, neighborhood poverty, and children's self-regulation. *Developmental Psychology*, *50*(7), 1891–1896. https://doi.org/10.1037/a0036984

Sarsour, K., Sheridan, M., Jutte, D., Nuru-Jeter, A., Hinshaw, S., & Boyce, W. T. (2011). Family socioeconomic status and child executive functions: The roles of language, home environment, and single parenthood. *Journal of the International Neuropsychological Society*, *17*(1), 120–132. https://doi.org/10.1017/S1355617710001335

Sharkey, P., & Faber, J. W. (2014). Where, when, why, and for whom do residential contexts matter? Moving away from the dichotomous understanding of neighborhood effects. *Annual Review of Sociology*, *40*, 559–579. https://doi.org/10.1146/annurev-soc-071913-043350

Smith-Donald, R., Raver, C. C., Hayes, T., & Richardson, B. (2007). Preliminary construct and concurrent validity of the Preschool Self-regulation Assessment (PSRA) for field-based research. *Early Childhood Research Quarterly*, *22*(2), 173–187. https://doi.org/10.1016/j.ecresq.2007.01.002

St. John, A. M., & Tarullo, A. R. (2020). Neighbourhood chaos moderates the association of socioeconomic status and child executive functioning. *Infant and Child Development*, *29*(1), 1–19. https://doi.org/10.1002/icd.2153

Wei, W. S., McCoy, D. C., Busby, A. K., Hanno, E. C., & Sabol, T. J. (2021). Beyond Neighborhood Socioeconomic Status: Exploring the Role of Neighborhood Resources for Preschool Classroom Quality and Early Childhood Development. *American Journal of Community Psychology*, *67*(3–4), 470–485. https://doi.org/10.1002/ajcp.12507

Willoughby, M. T., Blair, C. B., & The Family Life Project Investigators. (2016). Measuring executive function in early childhood: A case for formative

measurement. *Psychological Assessment, 28*(3), 319–330. https://doi.org/10.1037/pas0000152

Zelazo, P. D., Blair, C., & Willoughby, M. T. (2016). *Executive Function: Implications for Education (NCER 2017-2000)*. http://ies.ed.gov/.

Table 1

Descriptive Statistics

Variable	N	Percentage	Mean	SD	Min	Max
Demographics						
First cohort	765	49.41			0	1
Age (months) at start of study	762		52.63	3.54	45	59
Gender (1=male)	765	50.46			0	1
Black or African-American	746	50.00			0	1
Hispanic of any race	746	12.73			0	1
White, non-Hispanic	746	22.52			0	1
Other race	746	3.49			0	1
Two or more races, non-Hispanic	746	11.26			0	1
Other race different from White, non-Hispanic	746	77.48			0	1
Household annual income ($)	706		36338.53	26071.30	2500	87500
Cumulative risk						
Teen mother	720	9.31			0	1
Single mother	746	55.63			0	1
Low maternal education (High School or less)	743	27.32			0	1
Poverty (Income-to-needs ratio<1)	694	41.07			0	1
Cumulative risk	672		1.32	1.12	0	4
Neighborhood opportunity						
COI 2.0 - Overall z-score	694		-0.02	0.03	-0.08	0.04
COI 2.0 - Education domain z-score	694		-0.02	0.03	-0.10	0.04
COI 2.0 - Health and environment domain z-score	694		0.00	0.04	-0.11	0.07
COI 2.0 - Social and economic domain z-score	694		-0.12	0.19	-0.58	0.26
EF standardized scores						
Fall	721		-0.30	0.72	-2.80	1.96
Spring	734		0.12	0.86	-2.60	2.21
Winter	715		0.43	0.89	-2.43	2.23
Classroom variables						
Head start	103	9.71			0	1
CLASS - Fall	101		4.34	0.67	1.96	5.42
CLASS - Winter	101		4.42	0.80	2.54	5.79
CLASS - Spring	98		4.41	0.72	1.99	5.83

Note: Two observations were dropped because the children's reported age was 2 SD below or above the mean. They were considered outliers.

Table 2

Results From Unconditional Models - Patterns of Growth Trajectories

	2-level models			3-level models		
	(1)	(2)	(3)	(1)	(2)	(3)
Initial status	-0.28***	-0.28***	-0.30***	-0.28***	-0.28***	-0.30***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Rate of change	0.36***	0.36***	0.48***	0.36***	0.36***	0.47***
	(0.01)	(0.01)	(0.04)	(0.01)	(0.01)	(0.04)
Change in slope: quadratic term			-0.06***			-0.06***
			(0.02)			(0.02)
Between classroom variance				0.03	0.03	0.03
Within-person variance (residual)	0.23	0.19	0.14	0.23	0.19	0.16
Variance in initial status	0.45	0.37	0.37	0.42	0.33	0.33
Variance in rate of change		0.04	0.35		0.04	0.26
Variance in change in slope			0.07			0.05
Slope-intercept covariance		0.03	0.10		0.03	0.09
Quadratic term-intercept covariance			-0.04			-0.04
Slope-quadratic term			-0.10			-0.10
Goodness of fit						
LL	-2198.90	-2162.56	-2149.31	-2194.48	-2157.76	-2145.20
AIC	4405.81	4337.12	4318.62	4398.96	4329.52	4310.39
BIC	4428.54	4371.21	4375.45	4427.37	4369.30	4367.22
df	4	6	10	5	7	10
X^2	925.12	997.81	1021.81	933.97	1007.41	1030.04
p-value (X^2)	0.00	0.00	0.00	0.00	0.00	0.00
N	658	658	658	658	658	658

N. Clusters	103	103	103

Note: Column (1) - Models with fixed effects. Column 2 - Models with linear random effects. Column 3 - Models with linear and quadratic random effects. Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01

Table 3

Factors predicting EF skills growth trajectories

	Panel A		Panel B		Panel C		Panel D	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Fixed effects								
Intercept								
Intercept (average initial status)	0.22***	0.22***	0.23***	0.22***	0.27***	0.25***	0.21***	0.21***
	(3.07)	(2.96)	(3.01)	(2.82)	(3.45)	(3.17)	(2.93)	(2.89)
Cumulative risk	-0.08***	-0.08***	-0.08***	-0.08***	-0.09***	-0.09***	-0.07***	-0.07***
	(-2.89)	(-2.88)	(-3.10)	(-3.07)	(-3.26)	(-3.27)	(-2.77)	(-2.78)
COI	2.32**	2.58						
	(2.30)	(1.62)						
Cumulative risk * COI		-0.15						
		(-0.18)						
Health domain			1.11	1.80				
			(1.41)	(1.42)				
Cumulative risk * Health domain				-0.48				
				(-0.70)				
Education domain					-0.22	2.00		
					(-0.21)	(1.23)		
Cumulative risk * Education domain						-1.56*		
						(-1.89)		
Socioeconomic domain							0.44***	0.43*
							(2.75)	(1.74)
Cumulative risk * Socioeconomic domain								0.01

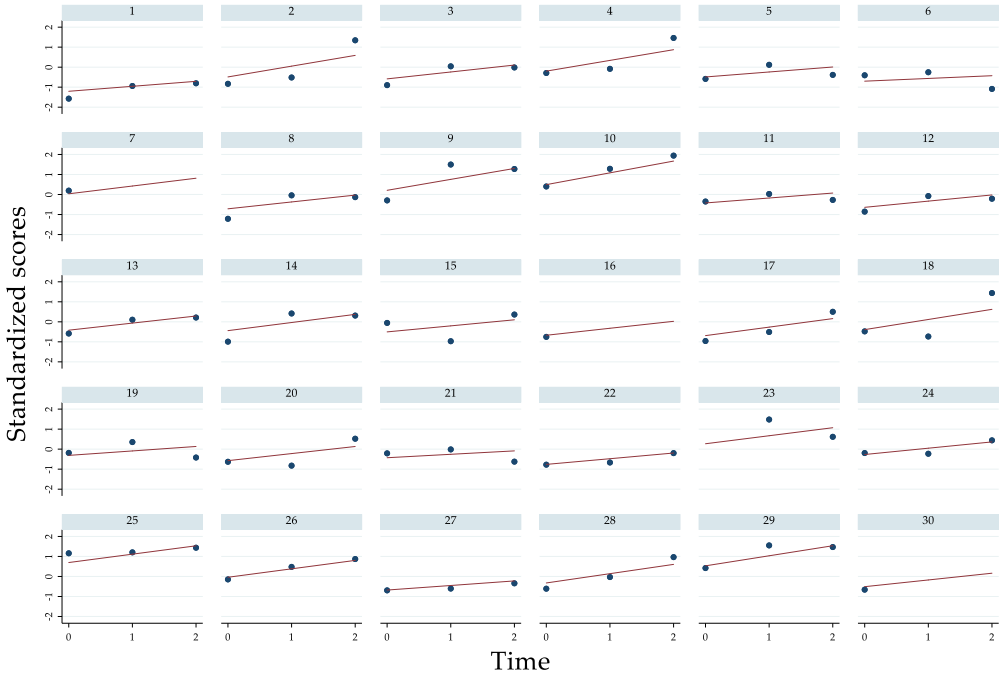
								(0.06)
Linear growth								
Average linear growth (3 months)	0.36***	0.38***	0.38***	0.38***	0.35***	0.35***	0.36***	0.38***
	(9.14)	(9.18)	(9.09)	(8.99)	(8.40)	(8.61)	(9.50)	(9.58)
Cumulative risk	-0.04***	-0.04***	-0.03**	-0.03**	-0.03**	-0.03*	-0.04***	-0.04***
	(-2.68)	(-2.70)	(-2.28)	(-2.30)	(-1.96)	(-1.95)	(-2.64)	(-2.63)
COI	-1.00*	-2.07**						
	(-1.68)	(-2.18)						
Cumulative risk * COI		0.70						
		(1.33)						
Health domain			-0.76*	-1.11				
			(-1.80)	(-1.59)				
Cumulative risk * Health domain				0.24				
				(0.61)				
Education domain					0.11	-1.05		
					(0.20)	(-1.27)		
Cumulative risk * Education domain						0.82*		
						(1.81)		
Socioeconomic domain							-0.15*	-0.29**
							(-1.71)	(-2.15)
Cumulative risk * Socioeconomic domain								0.09
								(1.28)
Random effects								
Between classroom variance	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Variance in initial status	0.25	0.25	0.28	0.28	0.28	0.28	0.25	0.25
Variance in rate of change	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04

Slop-intercept covariance	0.03	0.03	0.02	0.02	0.02	0.02	0.03	0.03
Within-person variance (residual)	0.19	0.19	0.18	0.18	0.18	0.18	0.19	0.19
N	765	765	694	694	694	694	765	765

Note: Panel A: Results for the overall COI. Panel B: Results for the health and environment COI domain. Panel C: Results for education COI domain. Panel D: Results for the social and economic COI domain. Column (1) Model with control variables, Column (2) Model with control variables and interactions. Standard errors in parentheses. * p<0.10, ** p<0.05, ***p<0.01

Figure 1

Individual Growth Curves



Note: 30 children were randomly selected.

PAPER 3: Facilitating Mothers' Reinterpretation of Their Interactions Around Children's Emotional Competence: A Pilot Study

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Abstract

The aim of the present pilot study was to provide initial evidence of the feasibility of an online advice-giving intervention that aimed to increase mothers' beliefs in their competence to influence their preschoolers' development and future success (i.e., parenting self-efficacy - PSE). The study followed a randomized control trial design. Eighty-six mothers were randomly assigned to participate in an advice-giving or a routine description task (comparison condition). Results indicated mothers' participation in the study was good. The enrollment and retention rates were high, and mothers wrote pieces of advice that varied in length and had a positive tone. However, mothers assigned to the advice-giving experienced decreases in their general and domain-specific PSE compared to their baseline reported scores and the scores reported by mothers in a comparison condition. This pilot study provides evidence for the malleability of PSE through the advice-giving intervention but further rigorous research and evaluations are needed to identify the design with the potential to generate changes in the desirable direction.

Facilitating Mothers' Reinterpretation of Their Interactions Around Children's Emotional Competence: A Pilot Study

During the preschool years, children experience more complex emotions and have higher demands from the increasing interactions they have with peers and adults out of the home (Denham & Liverette, 2019). Emotional competence (i.e., skills related to the expression, knowledge, and regulation of emotions) plays a key role in successfully negotiating and understanding these new social interactions and emotions, which in turn have significant implications for children's school experiences and academic achievement (Herndon et al., 2013). Cumulative research has documented that parents contribute to the development of children's emotional competence through their behaviors, reactions, and instruction (Zinsser et al., 2021). Accordingly, many parenting interventions have focused on childrearing practices as a means to promote children's positive outcomes. While they have proven effective in some cases, the specific components and mechanisms through which these interventions achieve the desired outcomes remain understudied (Powell, 2019; Sanders et al., 2014). Also, they often are complicated, face implementation issues and come with a high cost. This limits impact and raises scaling-up issues within parenting interventions (Gennetian, 2021).

Another gap in the parenting intervention literature involves the exploration of parental cognitions in shaping parenting practices. Cognitions refer to the mental processes that, among other functions, allow people to make sense of themselves and determine how to behave. For instance, self-efficacy (i.e., beliefs in one's capabilities to achieve a goal) has been identified as a key cognition in determining human self-

regulation, motivation, resilience, and agency (Maddux & Gosselin, 2012). All these constructs are related to processes by which people interpret, control, and execute their behaviors. Despite theoretical models recognizing the important influence people's cognitions and cognitive appraisals have on their behaviors (Bornstein et al., 2018; Walton & Wilson, 2018), traditional parenting interventions, with only few exceptions, have mainly focused on providing opportunities for changing parents (e.g., enhancing skills) or their situations (e.g., providing resources) to influence children's development via parenting practices. Although these interventions are important, they are limited in the comprehensive understanding of parenting.

This lack of understanding of parenting cognitions and parents' subjective appraisals as a source of change, combined with limited examination of simple, scalable interventions, could prevent us from achieving new levels of efficacy, accessibility, and successful implementation of parenting interventions. Psychological Wise Interventions (PWIs), defined as an approach to basic theory and applied research that aims to alter the subjective meaning people have about themselves, others, and their situations, may help to address this gap (Walton & Wilson, 2018). Evaluations of PWIs have shown their effectiveness and, as they may generate self-sustaining and embedded changes in people's lives, are promising in terms of their cost-effectiveness (Walton & Wilson, 2018). Thus, informed by PWIs' approach, in this study I present evidence of a pilot study examining the feasibility of an online intervention that aimed to increase parents' beliefs in their competence to influence their children's development and future success (i.e., parenting self-efficacy - PSE). Specifically, this intervention provided parents the opportunity to reinterpret their previous experiences by asking them to write a piece of

advice. To my knowledge, this is the first study that examines whether or not parents may benefit from participating in this type of intervention.

Preschoolers' Emotional Competence Develops through Interactions with Caregivers

Emotional competence refers to three interconnected skills: Emotion expression, emotion regulation, and emotion knowledge (Zinsser et al., 2021). During the preschool years, the development of these skills is necessary and possible. Children experience more complex emotions and have higher demands from the increasing interactions they have with peers and adults out of the home (Denham & Liverette, 2019). At the same time, preschoolers have more developed language skills and experience significant advances of executive functions and theory of mind that facilitate the development of emotional competence (Thompson, 2015). Children who express a variety of emotions, regulate the intensity and temporal features of their emotional reactions, and understand others and their own emotions, can successfully negotiate social interactions and establish healthy relationships with others. In turn, these social interactions have important implications for children's school adjustment and academic achievement in the short and long-term (Herndon et al., 2013; Jones et al., 2015).

In addition to the maturation of many biological systems and developmental processes, preschoolers' emotional competence skills are shaped by the interpersonal processes provided by their parents. For example, some evidence points to family climate components, such as secure attachment, authoritative parenting styles, and positive relationships, as having a positive association with young children's developing emotional competence (Morris et al., 2017). Theoretical models suggest parents can

influence children's emotional competence specifically in three primary ways. First, parents can teach children to regulate their emotions via modeling. This refers to parents display of intentional (or unintentional) observable behaviors and expressions. By observing modeling, children learn how, when, and which emotions to express under different contexts (Denham & Liverette, 2019). The second set of practices incorporate parents' contingent reactions to children's expression of emotions. Through their responses, parents encourage (or discourage) children's display of emotions. Last, parents can explicitly provide children information about the nature and content of emotion, as well as advise emotional regulation strategies under specific circumstances (Denham & Liverette, 2019).

Caregiver Interactions May Be Shaped by Their Cognitions

Parenting cognitions are a unique type of social cognition as they take place in the context of a long-term, close and emotional relationship with an individual (the young child) who is developing and changing quickly. Although these cognitions have been studied as discrete constructs, they are in service of cognitive processes such as decision-making and information processing (Holden & Smith, 2019). For instance, on a daily basis, parents make multiple decisions that have important consequences for their children's development and find themselves in situations that involve a problem-solving process, which in turn requires the activation of parents' schema (mental representation affected by cognitions that allow assessing events) to elicit behavioral responses.

Theory posits that parents' cognitions provide a guiding framework for the interactions they establish with their children and, consequently, influence children's development (Bornstein et al., 2018). This three-part pathway is a common theory of

change assumed in parenting interventions; however, it has seldom been tested (Bornstein et al., 2018). Further, the link between parenting cognitions and parenting practices is understudied (Holden & Smith, 2019). Some of the empirical studies that have examined parental cognitions as an avenue for generating and motivating parents' practices have found mixed results. For instance, Meunier and colleagues (2011) found parents who felt more efficacious were more likely to be more responsive and empathic. In contrast, Lansford and Deater-Deckard (2012) reported that, on average, 29% of parents believed corporal punishment is necessary for childrearing, which contrasted with the higher percentage who reported using it (63%). This lack of consensus can be due to the weak conceptual alignment between cognitions and practices under study and the complex interconnections that can coexist between these constructs. When constructs are measured in a general way, the relationships are weak or absent (Bornstein et al., 2018). Further, from a transactional system perspective, the relationship between some cognitions and parenting practices can be bidirectional and influenced by many situational variables. Thus, there is a need for studies that carefully consider the underlying theory and best ways to capture parents' cognitions to truly understand how they relate to practices that shape children's development.

Parenting Self-Efficacy Serves as a Key Cognition

PSE can be understood as parents' beliefs in their competence to influence their children's development and success (Aldert & Eccles, 2001). PSE is conceptualized as a key aspect of parents' motivation, resilience, and agency in their role as parents. By extrapolating from Bandura's general theory of self-efficacy (Bandura, 1977), PSE beliefs could influence the goals parents choose; the tasks they decide to be involved in; and

their choices of goal-directed parenting activities such as allocation of resources, effort, or persistence in the face of challenges (Maddux & Gosselin, 2012).

Because of its presumed malleability, high potential to influence behavior, and its conceptualization as an essential source of change, PSE has been one of the most studied parenting cognitions. Empirical studies on PSE, however, have differed in the extent to which they have operationalized parenting to assess self-efficacy. For instance, whereas some studies have focused broadly on self-efficacy in the parenting role (i.e., general or trait PSE measures), others have analyzed narrow-domain PSE measures that encompass age-specific and situation-specific items related to one specific aspect of parenting (i.e., breastfeeding or toilet training; Coleman & Karraker, 2000). Regardless of the measurement approach, PSE conceptualization across studies revolve around three mains ideas: PSE as a mediator of risk and protective factors (Dix & Meunier, 2009; Jackson et al., 2009); the transactional relationship between PSE, child development and parenting practices (Jones & Prinz, 2005); and PSE as a guiding aspect of parents' goal setting and pursuit (Bandura et al., 2001).

Despite the multiple differences in measurement and conceptualization across studies, there is some evidence that PSE is related to parenting competence and preschoolers' development. For instance, Bojczyk et al. (2018) and Heerman et al. (2017) found PSE was positively associated with parenting competence measured through variables that account for home learning environment, learning activities, and healthy routines. Other studies provided evidence that support PSE and maternal depression symptoms as contributors to children's problem behavior and internalizing problems (Weaver et al., 2008; Ahun et al., 2018; Jackson and Huang, 2000). PSE has also been

found as a mediator between children's temperament and externalizing behavior and parenting competence (e.g., positive parenting, monitoring rules, inconsistent discipline, involvement, etc. Meunier et al. 2011; Giallo et al. 2013) as well as between mother's socioeconomic status and children's behavioral and cognitive functioning (Jackson et al., 2009). Although none of these studies focused on children's emotional competence specifically, the reported findings warrant a hypothesis that the association between PSE and a child's emotional competence may be mediated by the quality of emotion-focused parenting practices. Also, they suggest other variables that account for the emotional climate of the family, such as parents' mental health and knowledge, as important to consider in disentangling the relationship between these constructs.

Interventions Focused on Caregivers Interactions to Enhance Children's Emotional Competence Rarely Consider Parenting Self-Efficacy

Parenting interventions typically focus on changing parenting practices, with less attention to PSE. Instead, parenting interventions that aim to support the development of preschoolers' emotional competence usually provide parents opportunities to engage in desired behaviors which in turn lead to positive child outcomes. For instance, programs such as Adults and Children Together-Raising Safe Kids (ACT-RSK, Knox et al., 2011), Triple P-Positive Parenting Program (PPP, Sanders et al., 2014), and the Incredible Years (IY) Preschool Basic Program (Pidano & Allen, 2015), are group-based interventions that train parents on positive parenting practices to prevent and reduce child behavior and emotional problems. The PPP and IY do, however, explicitly aim to increase PSE (also labeled as parents' confidence). Sanders et al. (2014) conducted a meta-analysis to examine the impacts of the multilevel PPP system and concluded that participating in the

PPP was associated with significant effects on PSE, parenting satisfaction, parental adjustment, and parental relationship. Similar findings have been reported by Seabra-Santos and colleages (2016) for the IY intervention. Yet, as these programs have multiple components, it is unclear how the results were obtained. Further, although these interventions have been effective in promoting preschoolers' outcomes, they still put a lot of emphasis on conduct and behavioral problems, overlooking a strength and child well-being approach.

In addition to the lack of a strength-based approach and the limited understanding of the mechanisms and specific components that cause change, some of the most common challenges that parenting interventions face are low enrollment and attendance, and high levels of attrition (Gennetian, 2021; Powell, 2019). For instance, although more than 50% of parents intended to participate in a parenting intervention delivered at family courts in the US, only about 10% of the parents attended one or more of the program sessions (Wolchik et al., 2009). Similarly, Brotman and colleages (2013) reported that only 42% of eligible parents enrolled in a group-based program and most parents attended less than one-half of the sessions. Some of these implementation and scaling-up issues could be addressed by incorporating behavioral economic insights in the design of interventions and delivery of interventions in a digital format (Gennetian, 2021; Powell, 2019). Although promising, more evidence is needed to verify the effectiveness of these strategies.

Parenting Self-Efficacy May Be Amenable to Psychologically Wise Interventions

Psychologically Wise Interventions (PWIs) may address some of the implementation and scaling-up challenges parenting interventions have faced and

generate sustainable effects on parents' well-being and children's development. Different from interventions that aim to change people (e.g., enhancing skills) or their situations (e.g., providing resources), PWIs focus on the influence that people's meanings of themselves and their social environment have on their behavior. Specifically, PWIs work under two assumptions. First, people's subjective-meanings are malleable and can be altered through target exercises. Second, malleability of people's interpretations is higher at key times (e.g., transitions), and changes can be self-sustaining and embedded in people's lives through recursive processes. Also, PWI capitalizes on motives that shape how people make sense on themselves, others, and social situations (Walton & Wilson, 2018). One of these motives is the need for self-integrity, which is understood as people's desire to think well about themselves (e.g., perceived adequacy of the self, beliefs of being competent and coherent; Aronson, 2019; Cohen & Sherman, 2014). Thus, PSE might be a particularly malleable cognition to PWIs.

The literature has widely documented four proximal sources of information people use to judge their sense of self-efficacy (Bandura, 1997): Enactive mastery experience (i.e., own previous experience), vicarious experience or learning via modeling, verbal persuasion, and emotional arousal. However, less attention has been paid to the influence that cognitive appraisals can have on attenuating these sources of information. How people process and transform information depends on social, situational, and temporal circumstances. For instance, aspects such as safeguards, self-attributional process (vs perceived effects of unusual circumstances or external aids), and appraisals of difficulty of a task, may prevent even successful experiences from impacting self-efficacy positively (Bandura, 1997).

Advice giving specifically is one type of PWIs that could influence PSE by providing opportunities for parents to modify cognitive appraisals of previous experiences. Advice giving has been studied across different disciplines and is characterized with five prototypical elements. Advice 1) addresses a target behavior, 2) focuses on the future 3) delivers a message that reflects an actual or apparent intention to guide the behavior, 4) helps the recipient of the message and 5) the influence of the intention is placed in the context that the issue under consideration takes place (MacGeorge & Van Swol, 2018). Consistent with the two assumptions that characterize PWIs, advice-giving is a target exercise that generates opportunities for people to modify their maladaptive interpretations and then be involved in behaviors that confirm a new hypothesis, creating a snowball effect that allows change to be self-sustained. When people are asked to provide advice, their self-efficacy can increase via the implicit recognition of a position of having some wisdom to share and the biases search of memory of past productive, successful behavior and information to make recommendations that people would find useful for themselves. This customized advice generates a "saying-is-believing effect" and, consistent with the cognitive dissonance theory, people then are more likely to try the advice themselves to keep their sense of self-integrity and coherence (Milkman, 2021). Additionally, by giving advice, people can form specific intentions, lay out plans of action, and feel powerful and influential (Blunden & Gino, 2018; Eskreis-Winkler et al., 2019).

Most studies have focused on the advice receivers' perspective, ignoring the benefits derived for people that give advice. To my knowledge, the only exceptions are the studies conducted by Eskreis-Winkler and colleagues (2018, 2019). Across different

experiments, the authors found that, compared to those assigned to a comparison condition that received expert advice, people who gave advice related to a self-regulatory domain in which they struggle themselves reported being more motivated to save money, control their tempers, lose weight, and seek employment (Eskreis-Winkler et al., 2018). Similarly, using a sample of about 2,000 middle-school students and through 14 open-ended questions about advice, Eskreis-Winkler and colleagues (2019) found that individuals who gave motivational advice earned higher third-quarter grades in a self-selected target class and also math. Despite promising evidence of giving advice, however, no studies have examined whether or not parents benefit from participating in this type of PWIs.

Description of the Intervention

Given the gaps identified in the previous literature, I designed an online intervention that aimed to promote PSE, with the long-term intention of influencing children's emotional competence development, utilizing a PWIs approach. Specifically, in one session, I provided mothers of preschoolers the opportunity to write advice to a hypothetical mother who was facing a challenge in supporting their child's emotional development. This gave them a chance to unlock and reinterpret wisdom they already possess, and thus improve their PSE. Different from other interventions, I did not provide mothers new information, training, resources, or changed their situations.

Before prompting mothers to write advice, I asked them to describe an interaction they felt their response was positive and supported their children's emotional competence development, and one negative interaction they felt their response was negative and they would like to change to better support their children's emotional competence. These

descriptions ensured mothers revised their previous experiences and aimed to improve their children's emotional competence. Additionally, by asking mothers to provide advice related to the negative interaction they described, I sought to facilitate an experience of cognitive dissonance (i.e., the psychological discomfort derived from facing two cognitions that were dissonant) to motivate changes in their PSE (a belief) to keep their sense of self-integrity. Specifically, they may have believed they did not have the competencies to support the development of their children's emotional skills, whereas, at the same time, they engaged in advising a mother facing similar challenges. This is consistent with the induced-compliance paradigm that states that people do not engage in a behavior that is contrary to a prior belief to avoid the arousal of dissonance. However, when people are induced to engage the "counter attitudinal behavior," they will modify their beliefs or attitude to correspond more to what they do and reduce the dissonance (Harmon-Jones & Mills, 2019). The magnitude of the dissonance depends on factors such as the number and importance of cognitions that justify the behavior, the number of choices to engage in the behavior, the production of aversive consequences of the behavior, and the length of space/time to engage in the behavior (Harmon-Jones & Harmon-Jones, 2019; Harmon-Jones & Mills, 2019).

The Current Study

From a theoretical perspective, parenting cognitions and parents' cognitive appraisals influence parenting practices and, as a result, shape children's development. However, these constructs rarely have been the focus of parenting interventions, limiting the possibility of elevating the effectiveness, accessibility, and successful implementation of parenting interventions. Thus, I conducted a pilot study that aimed to provide evidence

of the acceptability, and promising nature of a PWI that provides mothers of preschoolers the opportunity to write a piece of advice in an applied setting. The research questions were:

1) How do mothers participate in an advice-giving intervention?
2) Do mothers who participated in an advice-giving intervention report a higher sense of general and domain-specific PSE?

I anticipate mothers will participate and engage in providing advice. Also, I expect mothers will report a higher sense of general and domain-specific PSE compared to their baseline levels and those reported by mothers in a comparison condition.

Method

Research Design

I designed and implemented a pilot study that followed a randomized control trial design to provide evidence of the acceptability and promising nature of an advice-giving intervention in an applied setting. Following IRB approval, this study took place from mid-April to mid-June 2022 and was conducted online. Dissemination of flyers to inform mothers about the study took place through directors of programs serving preschoolers, local family support providers, and posting on bulletin boards in public spaces (i.e., libraries, museums). One hundred and three mothers contacted me to inquire about the study. Eighty-six mothers of preschoolers, who mainly reported they lived in Central Virginia, US, were randomly assigned to participate in an advice-giving or a routine description task (comparison condition). Participants completed a baseline survey and then, 2-3 weeks later, completed a second survey. Participants were compensated $20 for each survey they completed.

Participants

Mothers of children aged 3–5 years who indicated they were interested in participating in the study were enrolled after (i) confirming they recognized themselves as the mother of a 3-to-5-year-old, (ii) reporting they lived in the same household with the child, (iii) consenting to participate in the study, and (iv) taking a baseline survey. No additional eligibility or exclusion criteria were employed. If mothers indicated they had more than one child in the age range, they were asked to focus on only one of them. All participants were women. As seen in Table 1, the mean age of mothers was 36.78 years (*SD* = 5.69). Ninety-one percent of mothers reported they were born in the U.S. Regarding racial background, mothers identified as follows: 77% White, 14% multiracial or other, 7% Black, and 2% Hispanic. Mothers were highly educated, with the majority having completed a college (45%) or a graduate degree (34%). Around 80% of mothers were married, and 76% worked during the week prior to taking the survey.

In terms of the household characteristics, 60% of mothers had an annual household income above $75,000, 20% had between $45,000 and $74,999, and the remaining 20% had less than $45,000. The average household size was 4.21 (*SD* = 1.14). Also, 16% of mothers reported they lived in homes that spoke any language other than English. Participants were mothers of a 3-to-5-year-old (*M* = 53.93 months, *SD* = 9). Children were slightly less likely to be boys (48%), 44% were the first-born child, and 98% attended school or a preschool program.

Procedure

Recruitment took place over seven weeks, and a rolling enrollment design was used to maximize mothers' participation in the study. Interested mothers contacted the

principal investigator via email or phone and were invited to take a baseline survey. After informed consent and some eligibility criteria questions were filled in, a questionnaire about the household, child, and mother was completed. PSE scales and the date and time mothers planned to take a follow-up survey were some of the collected data. Then, mothers were randomly assigned to an advice-giving (intervention condition) or a routine description (comparison condition) group. The randomization was conducted in two-week intervals. Each interval was treated as a blocking factor; 50% of mothers were randomly assigned to the intervention condition and 50% to the comparison condition within each interval.

Baseline and second surveys were at least two weeks apart (*M = 18.93 days*, *SD = 4.82*). Two days before accessing the second survey, mothers received a reminder email. At the beginning of the second survey, all mothers were asked to think about the last week and identify one interaction with their children during which they felt their response was positive and supported the development of their children's emotional competence. Then, they described and explained why they considered their response positive. The same procedure was followed around an interaction mothers felt was negative and they would like to change to better support their children's emotional competence.

After reflecting on and describing the positive and negative interactions, participants assigned to the intervention condition wrote a piece of advice to a hypothetical mother facing a challenge with her child's emotional competence development that was closely related to the negative interaction mothers described. By asking mothers to provide advice related to the negative interaction they described, the

intention is for them to experience cognitive dissonance. In contrast, no-intervention control participants wrote a list of all activities they participated in with their children during the previous week (for full details on prompts, see Appendix A). At the conclusion of the second survey, all mothers reported PSE scales.

Measures

Parents' Self-Efficacy

Two subscales measured PSE. The efficacy scale of the *Parenting Sense of Competence Scale* (PSOC, Johnston & Mash, 1989) was used to assess general PSE. The PSOC has been validated with different samples in the U.S. and has demonstrated good psychometric properties (Wittkowski et al., 2017). The seven items (e.g., "I honestly believe I have all the skills necessary to be a good mother to my child") that make up the efficacy subscale are rated on a 6-point Likert-type scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). For the current sample, the Cronbach's alphas were 0.77 at baseline and second surveys. A sum score was created and used for the analyses.

To assess parents' domain-specific self-efficacy, mothers took the nurturance subscale of the *Self-Efficacy for Parenting Tasks Index* (SEPTI, Coleman & Karraker, 2000). This seven-item subscale includes items such as "I meet my own expectations in terms of providing emotional support for my child" with six possible responses ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). To generate a composite score, items scores were summed and divided by the total number of items (Cronbach's alpha were 0.81 and 0.83 at baseline and follow-up, respectively).

Covariates

Sociodemographic Characteristics. Mothers provided information pertaining to their race/ethnicity, family income, level of education, marital status, household composition, and employment status.

Mother's Well-Being and Cognitions. Given that previous studies have found that mother's well-being and other cognitions are highly correlated with PSE, I included brief scales to account for this. For instance, mothers reported about their depression (*Center for Epidemiological Studies Depression Scale*–CES-D; Levine, 2013), parental aggravation (*Aggravation in Parenting Scale;* Murphey et al., 2014), and beliefs about children's emotions (P*arents' Beliefs About Children's Emotions*–PBACE; Halberstadt et al., 2013). Composite scores for these scales were calculated according to the user manuals.

Children's Language and Emotional Skills. Mothers reported whether or not a health professional has evaluated their child because of concerns about their ability to pay attention or learn and whether or not their child was understandable when talking to a stranger. Also, to assess children's social-emotional skills, mothers completed the *Emotional Regulation Checklist* (ERC; Shields & Cicchetti, 1997).

Data Analysis

Mothers' Participation in the Intervention

To provide evidence on mothers' acceptability of the advice-giving intervention, I estimated attrition rates and checked treatment compliance. Also, as a proxy of mother's engagement with the intervention, I calculated the length of the advice (i.e., the number of words excluding stop words such as the, a, how, etc., included in the list from the Snowball stemmer project in English and supported by the text mining package in R)

mothers provided, and conducted a simple sentiment analysis in R (R Core Team, 2019) to determine the emotional tone of the advice. Specifically, I used the *syuzhet*, *bing*, and *AFFIN* lexicons (Naldi, 2019) to analyze whether mothers' tone was positive, negative, or neutral. Also, the No-Commercial Research Use emotion lexicon (NCR, Mohammad & Turney, 2013) was used to examine the associations of words with the eight basic emotions (anger, fear, anticipation, trust, surprise, sadness, joy, and disgust). All these lexicons categorize words individually but generate sentiment scores with different scales. The `syuzhet` method generates a sentiment score that is decimal and ranges from –1 (indicating most negative) to +1 (indicating most positive). The *bing* method categorize words between positive and negative in a binary fashion (-1 and +1). The `AFINN` lexicon assigns words with a score that runs between -5 and 5 (the higher the score the more positive the sentiment). Last, the `nrc` lexicon categorizes words in a binary fashion ("yes" and "no") into the eight emotions listed above.

Changes to Mothers' PSE

Even with random assignment, it is possible the advice-giving and comparison groups differ on chance alone. Therefore, I first examined whether there were significant differences between treatment and control groups on baseline characteristics (e.g., covariates, including PSE measures). To this end, I ran a series of regressions in which each baseline covariate was regressed on the indicator of intervention status and block fixed effects. Next, I used matched pairs t-tests to examine pre/post changes in PSE scales within each group. Last, to determine if mothers who were assigned to the advice-giving condition experienced greater increases in their sense of PSE than mothers in the comparison condition, I regressed each PSE measure at follow-up on the indicator of

treatment assignment, block fixed effects, and covariates that were not equivalent between groups at baseline.

Results

Evidence of Mothers' Participation

Study attrition rates were low for both groups. The overall retention rate was 94.19%, with a study retention rate of 90.71% in the intervention condition and 97.67% in the comparison condition. In terms of treatment non-compliance, as this study was online and distributed through individual links, I did not observe "cross-over" cases (i.e., mothers who were assigned to the advice-giving condition but instead participated in the routines description condition and vice versa). However, two "no-show" cases were identified—two mothers assigned to the treatment condition did not write a piece of advice. All mothers in the control condition described some routines.

Mothers wrote advice that varied in length. The average number of total words was 132.3 (*SD* = 86.04, range = 31–417). When excluding stop words, the average was 47 (*SD* = 37.55, range = 13–162). The summary statistics of the syuzhet, bing, and AFFIN vectors (i.e., the sum of the sentiment scores of all meaningful words per response) are presented in Table 2. They show the median value of the sentiment score was above zero in all cases, which indicated the overall sentiment across all the advice mothers provided was positive. Regarding the associations between words and emotions, using the nrc lexicon, I found that around 62% of the meaningful words were associated with the positive emotions of trust (23.80%), joy (20.21%), and anticipation (19.31%). In contrast, negative emotions such as anger, sadness, fear, and disgust represented less than

10% each (Figure 1). Table 3 contains several examples and the corresponding AFFIN sentiment scores.

Changes in PSE Associated with the Intervention

Table 4 shows the results from regressions that examined equivalence on baseline characteristics. I found that the intervention group had some statistically significant mean differences in the scores of the efficacy subscale of the PSOC and the autonomy subscale of the PBACE ($p < 0.05$). Specifically, mothers assigned in the advice-giving condition reported higher scores than mothers in the routines description condition at baseline. To correct for the baseline differences and get more robust results, I included the efficacy subscale of the PSOC as a covariate in the last set of regressions. I did not include the autonomy subscale of the PBACE as a covariate because of the small sample size and because this difference was likely to exist by chance as I was testing multiple hypotheses simultaneously, and none of the other subscales of the same instrument presented differences.

Mothers reported relatively high baseline PSE scores. The median of the efficacy subscale of the PSOC was 31 (on a scale of 1 to 42) and the nurturance subscale of the SEPTI was a 5 (on a scale from 1 to 6). Findings from the matched pairs t-tests I used to examine pre/post changes in mothers' PSE measures indicated that mothers assigned to the intervention experienced decreases in general and domain-specific PSE ($p < 0.05$, Table 5). In contrast, mothers in the comparison group did not experience statistically significant changes in PSE measures (Table 6). Last, after controlling for block fixed effects and the efficacy subscale of the PSOC, linear regression results suggested being

assigned to the intervention condition was associated with decreases in PSE. However, the associated coefficients were not statistically significant.

Discussion

The main goal of this study was to provide evidence of the acceptability and the potential efficacy of an online advice-giving intervention that aimed to increase mothers of preschoolers' PSE. This is a novel and important venue of research due to the lack of studies that design and assess interventions that target parenting cognitions as a source of change in parents' practices that influence preschoolers' emotional development. Two key findings emerged. First, mothers actively participated. This suggests the format utilized here could be an avenue of conducting PWI parenting interventions at scale. Second, participation in the intervention was associated with decreases in PSE, leading to new questions about PSE mechanisms. Findings and implications will be further explored below.

Mothers' Actively Participated in an Advice-giving Intervention

Findings indicated mothers' acceptability of the advice-giving intervention was good. First, most mothers who expressed their intent to participate took both the baseline and the second survey. This result contrasts with the less than 10% first session attendance rates reported by other parenting interventions that have not been conducted online and is between the wide range (41.7% to 99.2%) reported by interventions that have used digital formats (Gennetian, 2021; Powell, 2019; Wolchik et al., 2009). Aspects of the design of the study, such as asking mothers to write down the date and time they intended to take the second survey, giving them some flexibility to complete the surveys, and delivering the intervention on a digital platform, may have contributed to the high

participation and "attendance" rates. Although more research is necessary to disentangle the specific contribution of each of these aspects, future efforts to scaling up parenting interventions should consider using the internet, structured but less rigid schedules, and nudges that have proven effective in supporting people to follow their plans (Gennetian, 2021). In doing so, however, it is also important to acknowledge these elements could have some limitations in reaching demographically diverse populations.

Another way mothers showed active participation with the advice-giving intervention was through the length and thoughtful, positive comments provided. After describing a negative interaction supporting the development of children's emotional competence, mothers were willing to write and share their experiences with others facing similar challenges. This is consistent with the induced-compliance paradigm (Harmon-Jones & Harmon-Jones, 2019; Harmon-Jones & Mills, 2019). Thus, the intervention seemed to successfully allow mothers to wrestle with two competing ideas that may lead to some cognitive dissonance: identifying a negative behavior they would like to change to better support their children and recognizing they have some wisdom to share. However, further research should clarify if this is the change-generating mechanism behind the intervention.

Questions Arise about the Mechanisms Behind PSE Malleability

The pre/post changes analysis indicated that mothers assigned to the advice-giving condition experienced overall decreases in both general and domain-specific PSE, whereas mothers in the comparison condition did not. Additionally, although not statistically significant, results from the linear regressions suggest that being assigned to the intervention condition was negatively associated with PSE scores. These findings

indicate that PSE is malleable and asking mothers to write about daily routines seems to serve well as a comparison condition for the intervention. However, patterns were not in the anticipated direction. Some of the aspects that could explain why the intervention did not work as expected and warrant further exploration in future studies are discussed below.

From a statistical perspective and with this small sample, mothers assigned to the advice-giving condition reported higher scores in the subscale self-efficacy of the PSOC than mothers in the control condition at baseline. This violated the baseline equivalence assumption of an RCT and further limited the interpretability of the results. Further, all mothers reported initial scores that were close to the maximum possible scores on PSE subscales, which raises construct measurement concerns. Specifically, this finding indicates the presence of a ceiling effect, which makes the identification of differences among this group of mothers and the true average PSE score difficult. This challenge aligns with Wittkowski and colleagues' (2017) review that called for the creation of more sensitive measures. A good starting point could be incorporating items that match better the tasks mothers are involved in currently.

Several features of the design of the intervention can also explain the results. First, consistent with the induced-compliance paradigm of cognitive dissonance (Harmon-Jones & Harmon-Jones, 2019; Harmon-Jones & Mills, 2019), by asking mothers to reflect on a negative experience, we aimed to help them to increase their PSE by engaging in a behavior (i.e., giving advice) that could have been inconsistent with a prior belief (i.e., low PSE in supporting the socioemotional competence in their child). However, given mothers in this study reported high initial scores of PSE, it is possible the

advice-giving exercise, instead of generating a cognitive dissonance, allowed mothers to reflect and reappraise their PSE in a way that matched better with other cognitions (i.e., parenting knowledge) and the challenges of being a mother. This recalibration can be desirable, for instance, for mothers to keep realistic expectations. Also, an intervention design based on a reflection exercise that focuses on positive experiences may be a suitable design for mothers with high initial PSE. This could help mothers to cultivate the positive beliefs they already have about themselves and further reinforce it.

Second, although the sequence and the content of the prompts were designed to make the advice-giving a more relevant task for mothers and to facilitate mothers' recall of previous experiences, the one-week time frame of the prompts may be too short for mothers to process a relatively new challenge, and they could have felt they did not have enough resources to provide advice. Further, the prompts may not have been specific enough to narrow mothers' examination of previous successful experiences (e.g., the hypothetical mother faced "a similar challenge"), which could derive in a weak cognitive dissonance and null results. Future pilot studies could consider an approach like the study conducted by Eskreis-Winkler and colleagues (2019). The authors aimed to increase college student performance in math through 14 open-ended questions about advice on study locations and strategies. While more prescriptive, this longer, one-session approach resulted in enhanced self-efficacy. Other aspects of the design such as the absence of aversive consequences of giving advice (i.e., the advisee mother was hypothetical) and the amount of time and space to reflect and give advice, can also trigger different responses, and deserve further exploration.

Last, the novelty of the experience of providing advice could have also influenced the results. For some mothers, giving advice in this applied setting could have been a new task, and it is possible they experienced what the literature on professional development has called "implementation dip" in their general sense of self-efficacy (Tschannen-Moran & Chen, 2014). This might suggest the need for several opportunities for advice giving as part of the intervention before mothers begin to experience a positive impact on their PSE. Some evidence exists for this idea in an experiment in which Eskreis-Winkler and colleagues (2018) had college students participate in three advice sessions. In this case, students benefited not only from reflecting on their role as advisers but also from the chance to put into practice some of the recommendations they wrote. Thus, the reinforcement effect of successful experience may lead to changes in self-efficacy.

Limitations and Future Directions

This initial study of asking mothers to give advice has several strengths, including the novelty of the intervention, the effort to test the intervention in an applied setting, the inclusion of general and domain-specific PSE, and the rigor of the implementation and the analysis. However, there are important limitations of this study that should be kept in mind when interpreting the results and should be addressed by future research. First, mothers were predominantly White and from high socioeconomic status (i.e., high levels of education and annual household income). Then, the enrollment and response rates and the content of the advice may be different for more demographically diverse samples. Second, it still is important to understand whether mothers experienced some cognitive dissonance and the strength of that experience. A complete text analysis and in-depth qualitative analysis of all responses mothers provided (i.e., description of the experiences,

mothers' responses, and advice) could shed more insights into this. Third, this pilot study only assessed one intervention condition and one comparison group. Future pilot studies should consider modifications of the aspects of the intervention discussed above as different arms of the RCT and bigger samples to avoid significant differences in participants' pre-existing characteristics across groups. Thus, while some study limitations exist, these findings lay the groundwork for advancing our understanding of scalable interventions that may have the potential to foster maternal cognitions that lead to desirable parenting practices in support of preschoolers' emotional competence development.

References

Ahun, M. N., Consoli, A., Pingault, J. B., Falissard, B., Battaglia, M., Boivin, M., Tremblay, R. E., & Côté, S. M. (2018). Maternal depression symptoms and internalising problems in the offspring: the role of maternal and family factors. *European Child and Adolescent Psychiatry*, *27*(7), 921–932. https://doi.org/10.1007/s00787-017-1096-6

Aldert, M., & Eccles, J. S. (2001). Effects of mothers' parental efficacy beliefs and promotive parenting strategies on inner-city youth. *Journal of Family Issuesurnal of Family Issues*, *22*(8), 944–972. https://doi.org/10.1177/019251301022008001

Aronson, E. (2019). Dissonance, hypocrisy, and the self-concept. In E. Harmon-Jones (Ed.), *Cognitive dissonance: Reexamining a pivotal theory in psychology* (pp. 141–157). American Psychological Association. https://doi.org/https://doi.org/10.1037/0000135-007

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, *84*(2), 191–215. https://doi.org/10.1037/0033-295X.84.2.191

Bandura, A. (1997). *Self-efficacy: The exercise of control*. W.H. Freeman and Company.

Bandura, A., Barbaranelli, C., Caprara, G. V., & Pastorelli, C. (2001). Self-efficacy beliefs as shapers of children's aspirations and career trajectories. *Child Development*, *72*(1), 187–206. https://doi.org/10.1111/1467-8624.00273

Blunden, H., & Gino, F. (2018). How the Other Half Thinks : The Psychology of Advising. In E. L. MacGeorge & L. M. Van Swol (Eds.), *The Oxford Handbook of Advice*. Oxford University Press. https://doi.org/10.1093/oxfordhb/9780190630188.013.3

Bojczyk, K. E., Haverback, H. R., & Pae, H. K. (2018). Investigating Maternal Self-Efficacy and Home Learning Environment of Families Enrolled in Head Start. *Early Childhood Education Journal*, *46*(2), 169–178. https://doi.org/10.1007/s10643-017-0853-y

Bornstein, Marc H., Putnick, D. L., & Suwalsky, J. T. . (2018). Parenting cognitions → parenting practices → child adjustment? the standard model. *Development and Psychopathology*, *30*(2), 399–416. https://doi.org/10.1017/S0954579417000931

Brotman, L. M., Dawson-McClure, S., Calzada, E. J., Huang, K. Y., Kamboukos, D., Palamar, J. J., & Petkova, E. (2013). Cluster (school) RCT of parentcorps: Impact on kindergarten academic achievement. *Pediatrics*, *131*(5), 1521–1529. https://doi.org/10.1542/peds.2012-2632

Cohen, G. L., & Sherman, D. K. (2014). The psychology of change: Self-affirmation and social psychological intervention. *Annual Review of Psychology*, *65*, 333–371. https://doi.org/10.1146/annurev-psych-010213-115137

Coleman, P. K., & Karraker, K. H. (2000). Parenting Self-Efficacy Among Mothers of School-Age Children: Conceptualization, Measurement, and Correlates*. *Family Relations*, *49*(1), 13–24. https://doi.org/https://doi.org10.1111/j.1741-3729.2000.00013.x

Denham, S. A., & Liverette, K. H. (2019). The Emotional Basis of Learning and Development in Early Childhood Education. In B. Spodek & O. N. Saracho (Eds.), *Handbook of Research on the Education of Young Children* (4th ed., pp. 43–64). Routledge. https://doi.org/10.4324/9781315045511-13

Dix, T., & Meunier, L. N. (2009). Depressive symptoms and parenting competence: An

analysis of 13 regulatory processes. *Developmental Review, 29*(1), 45–68. https://doi.org/10.1016/j.dr.2008.11.002

Eskreis-Winkler, L., Fishbach, A., & Duckworth, A. L. (2018). Dear Abby: Should I Give Advice or Receive It? *Psychological Science, 29*(11), 1797–1806. https://doi.org/10.1177/0956797618795472

Eskreis-Winkler, L., Milkman, K. L., Gromet, D. M., & Duckworth, A. L. (2019). A large-scale field experiment shows giving advice improves academic outcomes for the advisor. *Proceedings of the National Academy of Sciences of the United States of America*, *116*(30), 14808–14810. https://doi.org/10.1073/pnas.1908779116

Gennetian, L. A. (2021). How a Behavioral Economic Framework Can Support Scaling of Early Childhood Interventions. In J. A. List, D. Suskind, & L. H. Supplee (Eds.), *The Scale-Up Effect in Early Childhood and Public Policy. Why Interventions Lose Impact at Scale and What We Can Do About It* (pp. 58–75). Taylor & Francis. https://doi.org/10.4324/9780367822972-4

Giallo, R., Treyvaud, K., Cooklin, A., & Wade, C. (2013). Mothers' and fathers' involvement in home activities with their children: Psychosocial factors and the role of parental self-efficacy. *Early Child Development and Care, 183*(3–4), 343–359. https://doi.org/10.1080/03004430.2012.711587

Halberstadt, A. G., Dunsmore, J. C., Bryant, A., Parker, A. E., Beale, K. S., & Thompson, J. A. (2013). Development and validation of the parents' beliefs about children's emotions questionnaire. *Psychological Assessment, 25*(4), 1195–1210. https://doi.org/10.1037/a0033695

Harmon-Jones, Eddie, & Harmon-Jones, C. (2019). Understanding the motivation

underlying dissonance effects: The action-based model. In Eddie Harmon-Jones (Ed.), *Cognitive dissonance: Reexamining a pivotal theory in psychology* (pp. 69–89). American Psychological Association. https://doi.org/https://doi.org/10.1037/0000135-004

Harmon-Jones, Eddie, & Mills, J. (2019). An introduction to cognitive dissonance theory and an overview of current perspectives on the theory. In Eddie Harmon-Jones (Ed.), *ognitive dissonance: Reexamining a pivotal theory in psychology* (pp. 3–24). American Psychological Association. https://doi.org/https://doi.org/10.1037/0000135-001

Heerman, W. J., Taylor, J. L., Wallston, K. A., & Barkin, S. L. (2017). Parenting Self-Efficacy, Parent Depression, and Healthy Childhood Behaviors in a Low-Income Minority Population: A Cross-Sectional Analysis. *Maternal and Child Health Journal*, *21*(5), 1156–1165. https://doi.org/10.1007/s10995-016-2214-7

Herndon, K. J., Bailey, C. S., Shewark, E. A., Denham, S. A., & Bassett, H. H. (2013). Preschoolers' emotion expression and regulation: Relations with school adjustment. *Journal of Genetic Psychology*, *174*(6), 642–663. https://doi.org/10.1080/00221325.2012.759525

Holden, G. W., & Smith, M. M. (2019). Parenting cognitions. In M. H. Bornstein (Ed.), *Handbook of parenting: Being and becoming a parent* (pp. 681–721). Routledge/Taylor & Francis Group. https://doi.org/10.4324/9780429433214-20

Jackson, A. P., Choi, J. K., & Bentler, P. M. (2009). Parenting efficacy and the early school adjustment of poor and near-poor black children. *Journal of Family Issues*, *30*(10), 1339–1355. https://doi.org/10.1177/0192513X09334603

Jackson, A. P., & Huang, C. C. (2000). Parenting stress and behavior among single mothers of preschoolers: The mediating role of self-efficacy. *Journal of Social Service Research*, *26*(4), 29–42. https://doi.org/10.1080/01488370009511335

Johnston, C., & Mash, E. J. (1989). A Measure of Parenting Satisfaction and Efficacy. In *Journal of Clinical Child Psychology* (Vol. 18, Issue 2, pp. 167–175). https://doi.org/10.1207/s15374424jccp1802_8

Jones, D. E., Greenberg, M., & Crowley, M. (2015). Early social-emotional functioning and public health: The relationship between kindergarten social competence and future wellness. *American Journal of Public Health*, *105*(11), 2283–2290. https://doi.org/10.2105/AJPH.2015.302630

Jones, T. L., & Prinz, R. J. (2005). Potential roles of parental self-efficacy in parent and child adjustment: A review. *Clinical Psychology Review*, *25*(3), 341–363. https://doi.org/10.1016/j.cpr.2004.12.004

Knox, M. S., Burkhart, K., & Hunter, K. E. (2011). Act against violence parents raising safe kids program: Effects on maltreatment-related parenting behaviors and beliefs. *Journal of Family Issues*, *32*(1), 55–74. https://doi.org/10.1177/0192513X10370112

Lansford, J. E., & Deater-Deckard, K. (2012). Childrearing discipline and violence in developing countries. *Child Development*, *83*(1), 62–75. https://doi.org/10.1111/j.1467-8624.2011.01676.x

Levine, S. Z. (2013). Evaluating the seven-item Center for Epidemiologic Studies Depression Scale short-form: A longitudinal US community study. *Social Psychiatry and Psychiatric Epidemiology*, *48*(9), 1519–1526. https://doi.org/10.1007/s00127-012-0650-2

MacGeorge, E. L., & Van Swol, L. M. (2018). Advice across disciplines and contexts. In E. L. MacGeorge & L. M. Van Swol (Eds.), *The Oxford Handbook of Advice* (pp. 3–17). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780190630188.013.1

Maddux, J. E., & Gosselin, J. T. (2012). Self-Efficacy. In M. R. Leary & J. P. Tangney (Eds.), *Handbook of Self and Identity* (Second, pp. 198–224). The Guilford Press.

Meunier, J. C., Roskam, I., & Browne, D. T. (2011). Relations between parenting and child behavior: Exploring the child's personality and parental self-efficacy as third variables. *International Journal of Behavioral Development*, *35*(3), 246–259. https://doi.org/10.1177/0165025410382950

Milkman, K. (2021). *How to Change: The Science of Getting from Where You Are to Where You Want to Be*. Penguin.

Mohammad, S. M., & Turney, P. D. (2013). Crowdsourcing a word-emotion association lexicon. *Computational Intelligence*, *29*(3), 436–465. https://doi.org/10.1111/j.1467-8640.2012.00460.x

Morris, A. S., Criss, M. M., Silk, J. S., & Houltberg, B. J. (2017). The Impact of Parenting on Emotion Regulation During Childhood and Adolescence. *Child Development Perspectives*, *11*(4), 233–238. https://doi.org/10.1111/cdep.12238

Murphey, D., Tawana, B., Anderson, K., & Cooper, M. (2014). *Do Parents Feel More Aggravated? Parental Aggraviation in the U.S., 1997 to 2012* (Vol. 14).

Naldi, M. (2019). *A review of sentiment computation methods with R packages*. http://arxiv.org/abs/1901.08319

Pidano, A. E., & Allen, A. R. (2015). The Incredible Years Series: A Review of the

Independent Research Base. *Journal of Child and Family Studies*, *24*(7), 1898–1916. https://doi.org/10.1007/s10826-014-9991-7

Powell, D. R. (2019). Parenting Interventions. In Marc H. Bornstein (Ed.), *Handbook of Parenting* (3rd ed., pp. 618–649). Routledge. https://doi.org/https://doi.org/10.4324/9780429398995

R Core Team. (2019). *R: A language and environment for statistical computing*.

Sanders, M. R., Kirby, J. N., Tellegen, C. L., & Day, J. J. (2014). The Triple P-Positive Parenting Program: A systematic review and meta-analysis of a multi-level system of parenting support. *Clinical Psychology Review*, *34*(4), 337–357. https://doi.org/10.1016/j.cpr.2014.04.003

Seabra-Santos, M. J., Gaspar, M. F., Azevedo, A. F., Homem, T. C., Guerra, J., Martins, V., Leitão, S., Pimentel, M., Almeida, M., & Moura-Ramos, M. (2016). Incredible Years parent training: What changes, for whom, how, for how long? *Journal of Applied Developmental Psychology*, *44*, 93–104. https://doi.org/10.1016/j.appdev.2016.04.004

Shields, A., & Cicchetti, D. (1997). Emotion regulation among school-age children: the development and validation of a new criterion Q-sort scale. *Developmental Psychology*, *33*(6), 906–916. https://doi.org/10.1037/0012-1649.33.6.906

Thompson, R. A. (2015). Richard M. Lerner (Editor-in-Chief), Michael E. Lamb. In R. M. Lerner & M. E. Lamb (Eds.), *Handbook of Child Psychology and Developmental Science* (7th ed., Vol. 3, pp. 201–246). John Wiley & Sons, Inc. https://doi.org/10.1002/9781118963418.childpsy306

Tschannen-Moran, M., & Chen, J. (2014). Focusing Attention on Beliefs about

Capability and Knowledge in Teachers' Professional Development. In L. E. Martin, S. Kragler, D. J. Quatroche, & K. L. Bauserman (Eds.), *Handbook of professional development in education: Successful models and practices, PreK-12* (pp. 246–264). Guilford Press.

Walton, G. M., & Wilson, T. D. (2018). Wise interventions: Psychological remedies for social and personal problems. *Psychological Review*, *125*(5), 617–655. https://doi.org/10.1037/rev0000115

Weaver, C. M., Shaw, D. S., Dishion, T. J., & Wilson, M. N. (2008). Parenting self-efficacy and problem behavior in children at high risk for early conduct problems: The mediating role of maternal depression. *Infant Behavior and Development*, *31*(4), 594–605. https://doi.org/10.1016/j.infbeh.2008.07.006

Wolchik, S. A., Sandler, I. N., Jones, S., Gonzales, N., Doyle, K., Winslow, E., Zhou, Q., & Braver, S. L. (2009). The New Beginnings Program for Divorcing and Separating Families: Moving From Efficacy To Effectiveness. *Family Court Review*, *47*(3), 416–435. https://doi.org/10.1111/j.1744-1617.2009.01265.x

Zinsser, K. M., Gordon, R. A., & Jiang, X. (2021). Parents' socialization of preschool-aged children's emotion skills: A meta-analysis using an emotion-focused parenting practices framework. *Early Childhood Research Quarterly*, *55*, 377–390. https://doi.org/10.1016/j.ecresq.2021.02.001

Table 1

Descriptive Statistics

Variable	N	Mean	Percentage	SD
Mothers' characteristics				
Mother's age (years)	86	36.78		5.69
Mother was born in the US	86		90.70	
White, non-Hispanic	86		76.74	
Black, non-Hispanic	86		6.98	
Hispanic	86		2.33	
Multiracial/other	86		13.95	
No post-secondary degree	86		20.93	
Associate's or Bachelor's degree	86		45.35	
A graduate degree	86		33.72	
Mother is married	85		78.82	
Mother worked during last week	86		75.58	
PSOC - Efficacy subscale	86	31.26		4.94
SEPTI - Nurturance subscale	86	5.01		0.71
Parental aggravation (score>=3)	86	0.44		0.50
At risk for clinical depression (CES-D-SF>=8)	86		25.58	
PBACE - Cost of positivity	84	8.48		2.44
PBACE - Value of anger	84	21.05		3.20
PBACE - Manipulation	84	10.10		3.25
PBACE - Control	84	12.63		2.70
PBACE - Parental knowledge	84	10.86		2.43
PBACE - Autonomy	84	16.64		4.28
PBACE - Stability	84	10.81		2.34
Children's characteristics				
Child's age (years)	86	4.51		0.76
Child's gender (boy)	86		46.51	
Child is first child	86		44.19	
Number of children that were born before	85	0.76		0.90
Child is attending school/preschool program	86		97.67	
Child has been evaluated by a health professional because of a concern about ability to pay attention or learn	86		9.30	
Child is understandable when talking to a stranger	85		96.47	
ERC - Total score	86	54.26		5.30
ERC - Liability subscale score	86	26.65		5.76
ERC - Emotion regulation subscale score	86	27.60		2.58
Household characteristics				
< $45,000	81		19.75	
Between $45,000 and $74,999	81		19.75	
>= $75,000	81		60.49	
Household size	86		420.93	

Any language other than English spoken at home	86		16.28	
SEFQ-SF - Negative subscale	85	2.29		0.40
SEFQ-SF - Positive subscale	85	4.13		0.51

Note: Self-Expressiveness in the Family Questionnaire-Short Form (SEFQ-SF). Parent Sense of Competency Scale (PSOC). Self-Efficacy for Parenting Tasks Index (SEPTI). Center for Epidemiological Studies Depression Scale (CES-D). Parents' Beliefs About Children's Emotions (PBACE). Emotion Regulation Checklist (ERC).

Table 2

Summary statistics of lexicon vectors

Vector	Min	1st quartile	Median	Mean	3rd quartile	Max
Syuzhet	-1.80	2.15	3.45	4.73	6.40	19.20
Bing	-3.00	1.00	2.00	3.11	5.00	15.00
AFFIN	-4.00	3.00	7.00	9.09	12.00	33.00

Table 3

Examples of Mothers' Advice and AFFIN Scores

Advice	AFFIN Score
We all have hard days, but taking a minute to remind myself that I'm such a good, kind, loving mama for my kiddos helps me reset. In my 10 years of being a mom, some of the best lessons have come from learning to listen well and validate my kids' thoughts, feelings, and needs. I've spent time beating myself up about situations that left me feeling like I should have done better, and I've (finally) learned that kids are so forgiving and generous with their love, so it's better to focus on how I can do it well next time than it is to focus on what I did wrong.. chances are my kids have already forgiven me far before I've forgiven myself, and being future focused helps me keep in mind the kind of mom I want to be for my daughters. Don't forget to take some time to yourself, especially on the tough days. Take deep breaths, drink cold water, go for a walk, or reach out to a friend who can offer a kind word or support. Needing time and space to refocus and reset is normal and necessary, even if it's just whatever you can manage while juggling mom life. ?? Keep on doing the thing, mama, you're doing a great job! love and hugs, J	33
First of all, I would like to applaud your request for advice. Being a mother is joyful but hard work. I feel most confident about my mothering when I have safe spaces to share how I am feeling and to ask questions about my interactions with my children. I also do best when I am well-rested and feel refreshed. Please make sure you are creating dedicated time to take care of yourself and to invest in affirming relationships. I want my little one to feel safe and confident to express her emotions while also continuing to learn to manage her behavior and be kind and considerate of others. I am still learning what this looks like and how to have reasonable expectations for her at four years old. From studying different resources, speaking to friends who I admire and some trial and error, I have adopted the idea that all behavior communicates something. Try considering what needs your child may be communicating and consider how you can respond to that need. Does she/he need connection, clearer boundaries, direction, more choice/autonomy, encouragement, time to reset, a glass of water...? This helps me to not take behaviors personally and to focus more on helping my little one instead. Please also be kind to yourself and determine to consider each present season with your child your favorite one yet. Best wishes, DS	32

Thank you for such a sweet note! To be honest, I've shared my own experiences in the same spirit ... of hoping that, by sharing, I would hear from others who have had the same challenges and perhaps learn some new tricks. I think the most comforting messages I've received on motherhood have been that it's okay just to do my best and that that will be good enough. Anyhow, I'd be happy to find some time to talk about kids, being a mom, and maybe just taking a break. Would you like to grab a coffee or tea, or go for a walk some time soon?	23
I've noticed in about every area of my life I'm 50/50. I do 50% of it "right' and 50% "not right". That's just the way of it. I'm human. The same goes with parenting. I've spent a lot of time focusing on the 50% "not right." The 50% where I've yelled too much, said "no" too much, or just "checked out" and let the TV or tablet babysit my kid because it was "too much". But if I really look at everything, there are other moments where I do a really good job with her. She is loved, cared for, and given opportunities to grow and flourish. I'm doing my best and sometimes my best falls short, and I think that's okay. I've really tried to drop the judgement. I know that I'm not going to do it right all the time and that's freeing. I'll have an opportunity to react "better" next time. So my recommendation is to "look for the good." For every time you think "I missed the mark", also think about a time where you hit the bullseye. We're never going to perfect, but if you're like me you're doing your best and learning how to be a little bit better each day. I think that's what matters. Best of luck, A fellow 50/50 Mom	20
Thanks for contacting me! Always try your best to take of your children. Be patient and responsible to them. However, take care of yourself is important too. Don't expect you and your kids will be perfect! When you get enough break and care, you will be more patient and thoughtful to think which way to deal with them better. Don't expect your children will be superheroes that once they fail on something, you would be so angry. Always think of why they do that and why they have the temptations. Try your best to communicate with them instead of ordering and yelling at them. You will be great as you have been already. Kind regards, J	18
First just know that it is normal to have your own emotions and responses come up when galling a child work through theirs. I would say that trying to make sure you are calm before responding is helpful. Also if you do end up yelling or getting frustrated then it can be helpful to talk to your child after everyone is calm to apologize and talk about how emotions impact us all.	1

We aren't perfect, and sometimes we make bad instant decisions and say things we don't mean. Sometimes our children are impossible and it's overwhelming especially when we are in a rush or just need to get out the door to get the day started. Take a deep breath and remember they have their struggles as well and getting frustrated at them doesn't always help them. But we love them and 99% of the time they don't remember the frustrations in that moment they remember the love.	1
I try to always remind myself that children have to learn behaviors. Weather that is happiness, anger or sadness. All emotions need to be guided so that the child knows how to react and conquer them. When you behave negatively, correct yourself infront of your child. Apologize and tell them that you were wrong. Grown-ups are not perfect and we make mistakes. Owning up to mistakes infront of our children can help them realize how to admit when their wrong. Set boundaries, and stick to them. It will never be perfect but don't beat yourself up. Being a mommy is hard work but it brings out the best in yourself if you can look at your reactions from a 3rd party view.	1
First of all, give yourself GRACE. It's hard! The amount of intentionality, time, and patience it takes to parent is a lot. So long as you prioritize showing love to your children in some form EVERY SINGLE DAY, you're doing ok. (Personally, my fave method for doing so is 1:1 convo without any screens around, and/or reading books together). Second, the more you can work on mastering your own self-control and modeling that for them, the better they will mimic that self-control. Third, (this BLEW my mind when I learned it) consequence should be about FORMATION of them as people, NOT as punishment. Punishing serves our own egos and it motivated by the worst of who we are as humans... but if formation of your child is your ultimate goal, your tone, spirit, and structure of consequences will still have an undercurrent of love--even when they make a mistake.	1
Please never feel guilty if your child does something wrong or embarrassing in public, such as, peeing in the wrong area for example. That does not say anything about you as a parent. Please remember that your kids are under training in every single aspect of their life, they will make tons of mistakes, and keep repeating their mistakes because they forget everything. You just have to keep reminding and repeating, please do not lose patience with them, they are so tender and they do not need yelling or spanking to learn, they need a great guide and coach. Please talk to them not just say: because I said so, the more you explain things, even-though it takes more effort, the more things they will know about and learn making them more intelligent. Let them choose things. Pick your battles. Everything is a phase, and before you know it, it will change into something new or end, so hang in there, never give up, never quit and never lose your sanity. You will connect the dots looking back someday. Teach them forgiveness because no one else seems to be doing that.	-4

Table 4

Baseline Covariate Balance

Baseline covariable	Advice-giving (mean)	Description of routines (mean)	Difference	T-statistic	p-val	N
Mothers' characteristics						
Mother's age (years)	36.49	37.07	-0.58	-0.48	0.63	86
Mother was born in the US	0.88	0.93	-0.05	-0.73	0.47	86
White, non-Hispanic	0.72	0.81	-0.09	-1.02	0.31	86
Black, non-Hispanic	0.07	0.07	0.00	0.00	1.00	86
Hispanic	0.02	0.02	0.00	0.00	1.00	86
Multiracial/other	0.19	0.09	0.09	1.24	0.22	86
No post-secondary degree	0.21	0.21	0.00	0.00	1.00	86
Associate's or Bachelor's degree	0.49	0.42	0.07	0.64	0.53	86
A graduate degree	0.30	0.37	-0.07	-0.68	0.50	86
Mother is married	0.77	0.81	-0.04	-0.48	0.63	85
Mother worked during last week	0.72	0.79	-0.07	-0.75	0.45	86
PSOC - Efficacy subscale	32.35	30.16	2.19**	2.07	0.04	86
SEPTI - Nurturance subscale	5.13	4.89	0.24	1.60	0.11	86
Parental aggravation (score>=3)	0.42	0.47	-0.05	-0.43	0.67	86
At risk for clinical depression (CES-D-SF>=8)	0.28	0.23	0.05	0.49	0.63	86
PBACE - Cost of positivity	8.52	8.43	0.10	0.18	0.86	84
PBACE - Value of anger	21.40	20.69	0.71	1.02	0.31	84
PBACE - Manipulation	10.50	9.69	0.81	1.13	0.26	84
PBACE - Control	13.02	12.24	0.79	1.36	0.18	84
PBACE - Parental knowledge	10.98	10.74	0.24	0.45	0.65	84
PBACE - Autonomy	17.74	15.55	2.19**	2.42	0.02	84
PBACE - Stability	10.88	10.74	0.14	0.28	0.78	84
Children's characteristics						

Child's age (years)	4.53	4.49	0.05	0.28	0.78	86
Child's gender (boy)	0.42	0.51	-0.09	-0.85	0.40	86
Child is first child	0.42	0.47	-0.05	-0.43	0.67	86
Number of children that were born before	0.81	0.71	0.10	0.52	0.61	85
Child is attending school/preschool program	0.98	0.98	0.00	0.00	1.00	86
Child has been evaluated by a health professional because of a concern about ability to pay attention	0.09	0.09	0.00	0.00	1.00	86
Child is understandable when talking to a stranger	0.98	0.95	0.02	0.60	0.55	85
ERC - Total score	54.05	54.47	-0.42	-0.36	0.72	86
ERC - Liability subscale score	26.00	27.30	-1.3	-1.04	0.30	86
ERC - Emotion regulation subscale score	28.05	27.16	0.88	1.59	0.12	86
Household characteristics						
< $45,000	0.22	0.18	0.04	0.49	0.63	81
Between $45,000 and $74,999	0.20	0.20	0	-0.05	0.96	81
>= $75,000	0.59	0.62	-0.04	-0.35	0.73	81
Household size	4.19	4.23	-0.05	-0.19	0.85	86
Any language other than English spoken at home	0.21	0.12	0.09	1.15	0.25	86
SEFQ-SF - Negative subscale	2.30	2.27	0.02	0.29	0.78	85
SEFQ-SF - Positive subscale	4.23	4.03	0.2*	1.80	0.08	85

Note: Self-Expressiveness in the Family Questionnaire-Short Form (SEFQ-SF). Parent Sense of Competency Scale (PSOC). Self-Efficacy for Parenting Tasks Index (SEPTI). Center for Epidemiological Studies Depression Scale (CES-D). Parents' Beliefs About Children's Emotions (PBACE). Emotion Regulation Checklist (ERC). * for $p < .1$, ** for $p < .05$, and *** for $p < .01$)

Table 5

Pretest and Posttest Scores for Interventions Groups

Variable	Advice-giving				Description of routines			
	N	Pretest Mean (SD)	Posttest Mean (SD)	Difference	N	Pretest Mean (SD)	Posttest Mean (SD)	Difference
PSOC - Efficacy subscale	39	32.82 (5.34)	31.84 (4.45)	-0.98**	42	30.21 (4.39)	30.57 (4.36)	0.36
SEPTI - Nurturance subscale	38	5.14 (0.6)	5.00 (0.59)	-0.13**	42	4.91 (0.81)	4.83 (0.82)	-0.08

Note: Parent Sense of Competency Scale (PSOC). Self-Efficacy for Parenting Tasks Index (SEPTI). * for $p < .1$, ** for $p < .05$, and *** for $p < .01$

Table 6

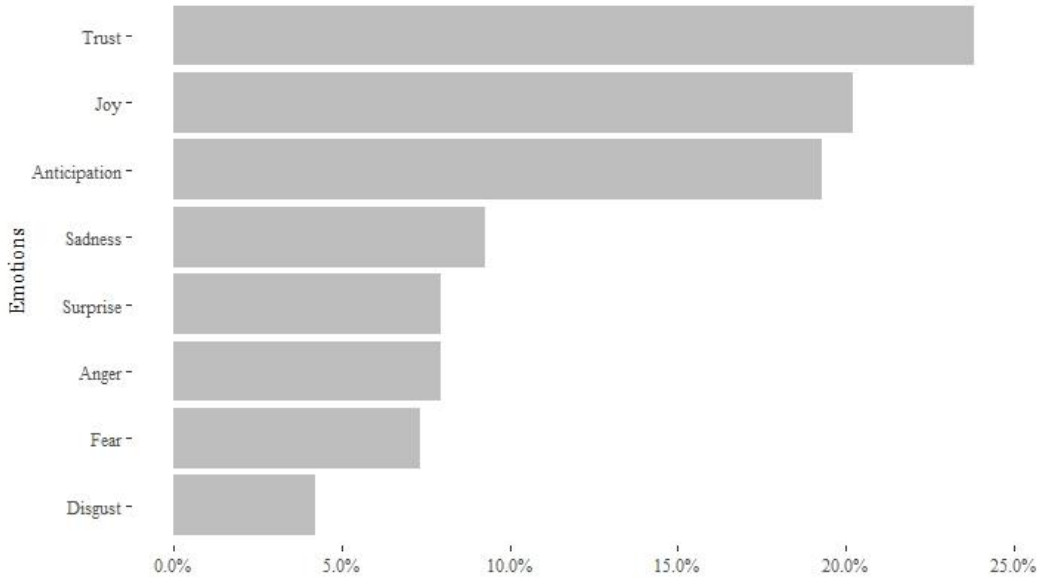
Associations Between Intervention Assignment and PSE Measures

	Global PSE (PSOC) Efficacy subscale		Domain-general PSE (SEPTI) Nurturance subscale	
	(M1)	(M2)	(M1)	(M2)
Assigned to advice-giving	0.270	-0.142	0.231	-0.058
	(0.220)	(0.140)	(0.218)	(0.192)
PSOC - Efficacy subscale		0.746***		0.543***
		(0.075)		(0.100)
Constant	80	80	81	81
	0.088	0.614	0.038	0.316
Randomization block	Yes	Yes	Yes	Yes
R^2	0.088	0.614	-0.421	-0.336
Adj. R2	0.052	0.594	(0.374)	(0.321)
N	80	80	81	81

Note. M1 includes randomization block fixed effects only. In M2, we added the Efficacy subscale of the PSOC at baseline. Coefficients in SD. * for $p < .1$, ** for $p < .05$, and *** for $p < .01$

Figure 1

Distribution of Words Among Some Emotions



Appendix A

Prompts to indicate a date and time to participate in the follow-up phase

The following prompt was presented after at the end of the baseline survey.

As part of this study, you are invited to participate in a follow-up activity in two weeks that will involve reflecting on the positive and negative interactions you have with your child and that are likely to influence her/his/their development of emotional skills. Many mothers find it helpful to make a plan to participate in this activity. You can write yours here:

_____, _____ _____ *at* _____
(Day of the week), *(month)* *(day)* *(time)*

We will send you a reminder to take the follow-up survey close to the date you indicate above.

Prompts to describe previous positive and negative experience

Prompt 1. *Being a parent can be a rewarding and a difficult job. Think about the last week. Identify one interaction with your child that felt your response was* ***positive*** *and supported the development of your child's skills to understand, express, and regulate their feelings (e.g., happiness, love, anger, sadness, fear, jealousy, etc.)*

Please describe that interaction and your response.

_____
_____
_____
_____

Please explain why you consider your response was positive.

_____
_____
_____
_____

Prompt 2. *Now, thinking about the* ***last week****, please, identify one interaction with your child in which you felt your response was* ***negative*** *and if you could, you would modify it to better support the development of your child's skills to understand, express, and regulate their feelings (e.g., happiness, love, anger, sadness, fear, jealousy, etc.)*

Please describe that interaction and your response.

_____
_____
_____
_____

Please explain why you consider your response was negative.

_____
_____
_____
_____

Prompts to provide advice and describe daily routines

[Mothers assigned to the treatment condition were invited to write a piece of advice.]

We are interested in creating learning opportunities among mothers. Here is a note a mother could write asking for advice on how to address challenges related to her interactions with her preschooler.

"Hi, Thanks so much for taking the time to read my message! As I was reading about some of the challenging interactions you described having with your child, I could really relate! I am experiencing similar challenges and often I missed the mark and my responses are negative. I'd love to learn more about what is working well for you and your child. I think hearing advice from another mother would help me do a better job of supporting my own child! Could you give me some advice from your experience as a mother?"

Please considering all your experiences, write a letter back with some advice.

Thanks for your response!

Dear mom,

_____
_____
_____
_____

[Mothers assigned to the control condition were invited to write a list of all activities they participated in during the previous week.]

We are interested in your weekly routines. Please write a list of activities you participated in with your child during the last week.

_____
_____
_____
_____