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Caregiving across Contexts:
Exploring Children's Development and Caregiving at the Intersection of Home, School, and Neighborhood Settings

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Abstract

This dissertation examines caregiving contexts in early childhood. Specifically, I look at how caregiving contexts are related to or influenced by other caregiving contexts and broader social contexts. The dissertation is composed of an introductory chapter that provides a theoretical overview and summary of the dissertation followed by two additional empirical chapters. The second chapter, and first empirical chapter, examines how sensitivity and responsivity from caregivers in multiple contexts, home and early childhood care and education, cluster in a low-income sample. This study then uses profiles of harshness and responsivity across contexts to predict developmental outcomes through age 9. The third chapter seeks to understand the impact of deviations in community violent crime from average levels of violent crime on preschool teaching quality. Both empirical chapters use data from predominately children from minoritized racial and ethnic identities living in low-income contexts. This allowed for the exploration of variation in experiences within these communities, rather than comparisons with more privileged contexts. Together, this dissertation highlights the myriad of protective factors that exist in low-income contexts.

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Dedication

This dissertation is dedicated to my grandmothers, Ruth Milner and Joy Kinghorn.

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Chapter 1. Introduction

Burmese saying: Bad children? Guilty parents!

Ugandan (Lunyoro) saying: *Omwana takulila nju emoi.*
English translation: A child does not grow up only in a single home.

Colloquial wisdom the world over captures two important features of child-rearing: that caregivers play an important role in shaping the life of a child and that children are influenced by a variety of social environments. However, the wisdom of these concepts is not limited to casual conversation. Rather, patterns supporting these ideas can be seen in social data. Indeed, as the scientific study of child development expanded throughout the 20th century, nearly every major theorist from Freud to Ainsworth to Bowlby sought to understand the role that parents play in the development of children. In this dissertation I build on the foundation of child development research that seeks to understand how children's contexts shape their path of development. Specifically, I seek to understand how children's experiences with their closest caregivers are shaped by what happens in other contexts.

A central tenant of developmental theory is that children's development is embedded within multiple, interrelated contexts, including home, school, and neighborhood. Bioecological systems theory identifies children's most proximal contexts as the "primary engines of development (Bronfenbrenner & Morris, 2007)" wherein children interact directly with parents, teachers, or childcare providers. It is in these proximal contexts where attachment and attachment-like relationships are formed that provide children with a secure base from which to explore the world (M. S. Ainsworth, 1989), thus setting a foundation for healthy social and emotional development. It is also within these contexts that children receive stimulation and

engagement to promote cognitive development. However, these important proximal contexts do not operate in isolation; rather, they intersect with other proximal and more distal contexts to impact children's development.

One challenge is that researchers often study each of these contexts in isolation and rarely explore deeply the combinations of experiences that children have across contexts in their day-to-day lives (Crosnoe, 2015). In addition, developmental science has historically struggled to account for broader social and political contexts that shape how children from disadvantaged groups develop (García Coll et al., 1996; Spencer et al., 1997). To be certain, the last two decades has seen great progress in efforts to understand how social categories like socioeconomic status (e.g., McLoyd, 1998; Yeung et al., 2002) and race (e.g., Brooks-Gunn & Markman, 2005; C. Coll et al., 1996; Spencer et al., 1997) matter for children. However, the call remains to incorporate the derivatives of social stratification into developmental research with young children (García Coll et al., 1996; McLoyd, 2019) and to explore the implications of intersecting contexts of development (Crosnoe, 2015; García Coll & Szalacha, 2004).

Neighborhoods are also an important context of development for the ways that they directly impact children and through the affordances and constraints caregivers face from the broader community. The study of how neighborhoods impact development stands at the nexus of developmental psychology, which focuses on how children grow and change over time, and sociology, which provides context for how social processes shape developmental trajectories. Although most of the early neighborhood research focused on adults, a robust subset of research emerged over time on the effects of neighborhoods on children and adolescents. This research revealed that overall, neighborhood structural and social factors are related to parenting

behaviors (Cuartas, 2018; Cuartas et al., 2018; Pinderhughes et al., 2001), school experiences (Burdick-Will, 2018, p.; Jencks & Mayer, 1990; McCoy et al., 2013), and child factors such as cognitive (McCoy et al., 2015), emotional (McCoy et al., 2015, 2016), behavioral (Leventhal & Brooks-Gunn, 2011; Odgers et al., 2015), and physical and mental health (Burdette & Whitaker, 2005; Leventhal & Brooks-Gunn, 2003) outcomes. Developmental psychologists have established that neighborhoods matter for young children, but the field has yet to fully elucidate the role that caregivers may play in transferring neighborhood effects to children, especially for young children who do not yet interact independently with the neighborhood.

This dissertation focuses on caregiving across contexts, attempting to understand how the quality and pattern of caregiving intersects across home, school, and neighborhood contexts. I define caregivers as adults with whom young children form attachment-like relationships, whether parents, teachers, or childcare providers. Although these adults also perform roles beyond providing care (e.g., preschool teachers provide professional instruction), using a consistent term for important adult-child relationships in early childhood (i.e., caregiver) serves to support thinking about how experiences correspond across developmental contexts. To emphasize the important role that caregivers play in young children's lives, each of the studies described in this dissertation incorporates at least one context involving a child's caregiver. In addition, each paper of this dissertation offers insight into how contexts at various levels of proximity to children work together to influence development.

My data sources were all intentionally chosen to provide insight into the experiences of racially minoritized and socioeconomically disadvantaged children in the United States. When children from marginalized groups are compared to those with more privilege, the heterogeneity

in their experiences is often collapsed; however, in this dissertation I explore how various combinations of home, school, and neighborhood contexts combine to impact development among poor children of color. When considered together, the findings of this dissertation highlight the broad extent of positive, protective interactions that occur in disadvantaged settings. These findings also indicate that children and their caregivers experience strain and stress that diminishes wellbeing in response to stressful environments.

Chapter 2 Summary

The second chapter of this dissertation looks at the joint contribution of two proximal environments to children's development. This study first identifies profiles that encompass caregiving quality in both home and early childhood care and education (ECCE) settings at age three (n = 571). I describe how these profiles vary along sociodemographic factors. The study then uses these profiles to predict child language, executive functioning, and behavioral outcomes through age nine. The Fragile Families and Child Wellbeing Study (FFCWS), from which the data are drawn, provides a unique opportunity to study home and ECCE contexts jointly because it is a rare example of a study including identical measures of caregiving quality across these settings. Furthermore, the FFCWS draws from a sample that is predominately composed of children of color from urban, low-income settings. Findings from this study reveal five distinct profiles. One profile represents high quality caregiving across both settings. The other profiles are characterized by low quality in one caregiving dimension in one context and near-average quality across all other dimensions and contexts. Profiles with high harshness in any setting predict behavior problems. All profiles with inconsistency between home and ECCE environments predict lower receptive vocabulary throughout elementary school.

This study confirms the importance of considering multiple contexts of development and confirms the preeminent importance of the home environment in influencing child outcomes. The results of this study demonstrate that children with low-quality experiences in one context (home or school) are not necessarily experiencing low quality in their other contexts, suggesting the benefits of having high quality caregiving in at least one context. On the other hand, disadvantages in one context, even when the other context is of average quality, can have negative implications for children's development across childhood.

Chapter 3 Summary

The third chapter in this dissertation considers how preschool children teaching quality impacted by a more distal environment, the school neighborhood. Specifically, this paper seeks to determine the impact of school neighborhood violence on teachers. I linked crime data from the Chicago, New York, Stockton, Dayton, Columbus, Providence, and Hartford police departments with in-depth classroom observational data and child outcomes from the National Center for Research on Early Childhood Education Professional Development Study. To identify the causal effect of violent crimes surrounding preschools on teaching quality, I exploited variation in the timing and distance of violent crimes relative to classroom observations. I then created a z-score measure of violent crime that compared violent crime prior to observation to the typical pattern of violent crime in the school neighborhood. Teacher fixed effects allowed me to compare observations for the same teacher following periods of high and low violence. Results indicate that when I consider deviations in all violent crimes, teaching quality declines in respond to violence in the broader community, but when only homicides and assaults are considered, positive effects on teacher quality are shown only for closer distances. These

findings indicate that teachers may improve their teaching practices when they are aware of local community violence, but their teaching quality may decline when community violence occurs in the more distant neighborhood. Teachers' positive reactions to community violence may serve a protective role for children's academic skills.

The results of these analyses provide important insights into whether the broader neighborhood context impacts the more proximal caregiving environment with preschool teachers. Findings in chapter 2 indicate that teachers respond to violence in the school neighborhood. The pattern of results seems to indicate that teachers respond by increasing teaching quality following the most severe violent crimes (homicides and assaults) that occur near the school, while they decrease teaching quality in response to violent crimes that occur in the broader community. I hypothesize that teachers may increase nurturing behaviors when they are made aware of violence occurring near the school but respond negatively when affected children exhibit behavior changes that teachers are not able to associate with community violence. Future studies can shed light on whether this process exists for neighborhood factors that extend beyond violence.

This dissertation is organized into two main chapters with each chapter describing the studies I performed in detail. Each section begins with a review of the literature and contains a method, results, and discussion section. Following the two primary chapters for this dissertation is a reference section. The proposal ends with an appendix section that includes additional analyses not included in the body of the dissertation.

Chapter 2. Variation in Home-ECCE Caregiving Consistency for Children in Low-Income Families and Associations with Developmental Outcomes through Middle Childhood

In the United States, there has been a dramatic rise in preschool participation, particularly for children from low-income backgrounds (Barnett & Yarosz, 2007). In 2016, approximately three-fourths of US children participated in at least one weekly non-parental care arrangement prior to entering kindergarten (Corcoran & Steinley, 2017), a 15-percentage point increase from 2001 (Mulligan et al., 2005). As a result, more children than ever are experiencing multiple caregiving environments, namely home and early childhood care and education (ECCE). With increasing federal and state support for government-funded preschool, current trends indicate that children will continue to experience non-parental caregiving contexts in early childhood.

Decades of research suggests that the quality of caregiving is strongly related to children's development. Indeed, high levels of caregiver responsivity is related to positive academic and social wellbeing (Landry et al., 2006; Tamis-LeMonda et al., 2001), whereas harshness is often associated with increased behavior problems and poorer cognitive performance (Chang et al., 2003). Yet, surprisingly most of this research examines either the effect of home caregiver (i.e., parents) or school caregivers (i.e., teachers; Crosnoe, 2015). This bifurcation may miss the combinations of caregiving across home and school that children experience with its corresponding implications for their learning and development.

The present study seeks to address this gap by characterizing the quality of caregiving children contemporaneously experience with parents and ECCE providers. Specifically, I take advantage of data from The Fragile Families and Child Wellbeing Study (FFCW), a large-scale, longitudinal dataset, with unusually rich and identical measures of observed caregiving quality

for both home and ECCE contexts. I identify and describe patterns of two aspects of caregiving—responsivity and harshness—across these contexts for children at age 3 (referred to as "profiles"). I then use these profiles of home-ECCE caregiving to predict children's academic, language, executive functioning, and behavioral outcomes through middle childhood. To be consistent across contexts, I use the term "caregiving" to refer to practices that adults engage in to care for young children, regardless of whether they are parents or ECCE providers.

Elements of High-Quality Caregiving

Although children may experience differences in caregiving across contexts, theoretical and empirical evidence from developmental science suggests that consistent elements of high-quality caregiving exist across settings. For instance, attachment theory demonstrates how caregivers that are consistently sensitive and responsive provide a secure base from which children can explore the world around them (Bowlby, 2012). Although attachment begins with the primary caregiver in the home (e.g., parents), the benefits of forming a secure attachment in home settings extend throughout childhood (Ainsworth, 1989) and to caregiving domains outside of the home.

Children's relationships with their teachers have been described as attachment-like (Verschueren & Koomen, 2012). For instance, one study identified kindergarten teachers as serving as safe havens and secure bases for their students (Koomen & Hoeksma, 2003) while another found similar separation-reunion patterns for teachers and parents (Howes & Ritchie, 1999). In particular, teachers' sensitivity with children is associated with children's socio-emotional development (Ahnert et al., 2006). Although the teacher-child bond may not meet the definition of a fully formed attachment relationship (Ainsworth, 1989), teacher-child

relationships do exemplify many of the important features of attachment relationships, especially in early childhood (Verschueren & Koomen, 2012).

Research from an attachment perspective with parents and teachers has illuminated several aspects of high-quality caregiving that are consistently important across both home and ECCE contexts. Accordingly, responsive caregiving is one foundational element of high-quality caregiving. Responsivity is a multidimensional construct characterized by prompt responses to children's needs and interests that are contingent on children's signals (Ainsworth et al., 1974; Bornstein et al., 2008). Parent-child interactions characterized by high degrees of responsivity promote children's interest in and ability to explore their world, leading to language development (Brady et al., 2009) and a general orientation of trust and security (De Wolff & Van IJzendoorn, 1997).

In addition, low levels of harshness also indicate high-quality caregiving. Harsh caregiving includes coercive acts and negative emotion expressions that are embodied by behaviors such as threatening, yelling, and hitting (Chang et al., 2003). In particular, when coercive acts are coupled with negative emotionality, the deleterious effects for children are strongest (Deater-Deckard & Dodge, 1997). Children who experience high levels of harshness struggle with emotion regulation (Eisenberg et al., 1996) which leads to greater internalizing and externalizing (Chang et al., 2003; Zeman et al., 2002). As such, these harsh and aggressive interactions with parents form the foundation of children's later problematic behavior which can result in a lack of social competence and a display of behaviors considered to be anti-social (Sroufe & Fleeson, 1986).

Although there is general consensus that higher levels of responsiveness and lower levels of harshness in caregiving are linked to positive child outcomes, these practices vary across racial and SES groups in the United States (McLoyd, 1998; Sorkhabi & Mandara, 2013). Differences in parenting behaviors have been used to pathologize minoritized groups, making it essential to distinguish practices that are culturally specific from those that are equivalent across cultures. A comprehensive view of the parenting literature across cultural groups found consistent positive benefits across cultural groups from authoritative or directive parenting styles, which tend to be low in harshness, although African and Asian American expression of these styles tended to be lower in responsiveness without corresponding negative outcomes for children (Sorkhabi & Mandara, 2013). This highlights the importance of considering multiple dimensions of parenting when assessing children's caregiving experiences. In addition, studies that do not consider multiple caregivers may be missing a significant portion of children's caregiving experiences (Sperry et al., 2019) and by extension a full consideration of parents' contribution via selection of additional caregivers. The omission of caregivers beyond parents may also introduce bias differentially based on sociodemographic factors that are related to who is more likely to have their children in non-parental care (Tang et al., 2012) and to access high-quality childcare. Despite mean level differences in parenting practices between sociodemographic groups, it is important to consider the substantial variation within these groups to provide a complete picture of low-income and racially minoritized children's experiences with caregivers (e.g., Sperry et al., 2019).

Moving Toward a More Holistic Understanding of Caregiving Across Contexts

To date, the research on the effect of home and school quality has largely proceeded independently. Caregiving quality in the home is often evaluated using measures of specific parent practices and more broad parenting styles that capture the overall emotional climate of parent-child relationships (Darling & Steinberg, 1993). Responsivity and harshness have been considered important measures of the home environment (Caldwell & Bradley, 1984). In school settings, teacher sensitivity and emotional support are important predictors for child behavioral (Domínguez et al., 2011) and academic outcomes (Curby et al., 2013).

Not only are caregiving contexts with parents and ECCE providers independently important for children's development, but I propose that how children experience both environments together also matters for development. The ecological systems perspective supports an assumption that children will benefit most when their home and ECCE contexts are of consistently high quality (Bronfenbrenner, 1986). That is, ecological systems theory places emphasis not only on the quality of each context individually, but also that having multiple high-quality contexts would relate to children's development. In fact, one study found that considering the joint effects of family, neighborhood, and sociodemographic factors on child internalizing and externalizing was more predictive than considering any of the individual factors alone (Greenberg et al., 1999). Despite the known importance of caregiving quality in both home and ECCE contexts, past studies have typically focused on the role of one or the other in isolation (Crosnoe, 2015). However, from a child's perspective, navigating a variety of caregiving contexts shapes their experiences within and across each individual context (i.e., experiences in preschool should be considered in conjunction with experiences in the home).

The limitations of available measurements form an important impediment to considering both home and ECCE environments in analyses of child development. To compare caregiving, or any other construct, across contexts it is necessary to have comparable measures for both environments. However, disciplinary boundaries for education, child development, and family process research make it challenging to find data that includes commensurate measures across contexts (Crosnoe, 2015). Some studies have tried to overcome this by utilizing a single reporter to provide information on multiple contexts (e.g., Crosnoe, 2012; Crosnoe et al., 2010), while other studies have used similar measures of the same construct that were designed for each context (e.g., Watamura et al., 2011). An impartial, third-party observer for multiple contexts provides the ideal measurements for cross-contextual comparisons.

Previous research has also largely employed a variable-centered approach that does not fully capture experiences across contexts. Variable-centered approaches explore the constructs of interest in relation to the stated outcomes. For instance, a study might explore how ratings of caregiving in home and ECCE settings relate to child behavior. However, a focus on variables does not capture the ways that individuals experience a combination of settings nor how the combination of multiple experiences are related to outcomes over time. Crosnoe (2012) acknowledged that to explore development across contexts using a variable centered approach, higher-level interactions are typically employed that are difficult to interpret.

In contrast, a person-centered approach captures how children actually experience multiple caregiving contexts. This approach allows children to be grouped according to how they receive caregiving from both ECCE providers and parents, better capturing their holistic experience across contexts. Crosnoe (2012) employed a person-centered approach when he

created groupings based on family-school engagement and family-school symmetry. This study found that both family-school engagement and family-school symmetry were associated with reading gains in elementary school. Additionally, children from low-SES backgrounds experienced greater disadvantage from being in one-sided engagement group and children from high-SES backgrounds benefited more from symmetry. In a similarly structured study, Watamura et al. (2011) employed a person-centered analysis by dividing children into groups according to triadic splits of home and childcare caregiving quality. They found that children in poor quality home and childcare environments exhibited the highest levels of mother-reported problem behavior and the lowest levels of pro-social behavior. Furthermore, high-quality childcare served a compensatory role for children from low-quality home environments. The current study builds on this by allowing profiles of home and ECCE caregiving quality to emerge naturally from patterns in the data.

The Current Study

In this study, I explore how children's experiences with caregivers across home and ECCE environments shape their development over time. I examine three primary research questions: (1) how are home and ECCE caregiving environments jointly characterized? (2) how are profiles of parent-ECCE caregiving environments related to sociodemographic factors? and (3) how are profiles of parent-ECCE caregiving environments related to development throughout childhood?

This study capitalizes on data that allow me to compare home and ECCE caregiving quality by utilizing identical measures for both environments. I expand upon work by Crosnoe (2012) and Watamura et al. (2011) by using cluster techniques that allow me to identify how

these contexts actually co-occur, rather than by imposing cut-off points. Furthermore, I look at the elements of caregiving responsivity and harshness separately, allowing a more nuanced understanding of how children experience caregiving across contexts.

Finally, it is important that this study occur within an early childhood setting. Early environments are particularly important for children. Experiences in early childhood set the stage for experiences throughout childhood which makes focusing on this age particularly important for healthy outcomes throughout childhood. For instance, the quality of relationships that children establish with teachers in early childhood has shown to be relatively stable over time (Howes et al., 2000; R. C. Pianta & Stuhlman, 2004). Furthermore, independent of later environmental quality, the quality of early environments predicts child outcomes across childhood (Bridget K. Hamre & Pianta, 2001; Pettit et al., 1997).

Method

Participants

Data for this analysis come from the Fragile Families and Child Wellbeing Study (FFCWS). The study takes place in 20 U.S. cities with populations over 200,000. Mothers were recruited to participate in this longitudinal study in the hospital shortly after the birth of the focal child. Informed consent was reobtained for study participants at each wave of the study. Children in this sample were born between 1998 and 2000 and followed through age 9. A previous publication provides more details on the FFCWS sample and protocol (Reichman et al., 2001). I additionally access data from two add-on studies to the FFCWS. The *Child Care and Parental Employment Study* conducted surveys with ECCE caregivers and direct assessments of care quality at age 3. This portion of the study provided me with observational data for provider-child

interactions and additional information about the ECCE environment. I also use observation measures of parent-child interactions at age 3 from the *In-Home Observation Longitudinal Study of Preschool Aged Children* (FFCWS, 2009).

Of the nearly 5,000 families originally recruited for the FFCWS, these analyses focus on a subset of 571 families who participated in both the In-Home Observation and the ECCE Observation at age 3 and lived with their mother as the primary caretaker. Additional information for these analyses were drawn from the baseline survey that occurred shortly after the focal child's birth and the primary caregiver surveys are age 3 (Wave 3), age 5 (Wave 4), and age 9 (Wave 5).

Sample Characteristics

In the analytic sample, almost two-thirds of mothers (65%) report their race or ethnicity as Black, non-Hispanic, while equal proportions of mothers identify as White, non-Hispanic (16.6%) and Hispanic, any race (16.5%). At the time of the child's birth, most mothers (56%) indicated that they were married to or cohabiting with the biological father of the focal child. The sample is low-income with an average income-to-poverty ratio of 2.4. One-third of mothers (33.3%) report having less than a high school degree, while slightly more than one-third of mothers (36.7%) report having at least some college education. More details about sample characteristics are found in Table 2.1.

Measures

This study draws from direct observations in home and ECCE settings conducted at age 3 and direct assessments of children's receptive language, pre-reading skills, executive functioning, and parent report of children's externalizing, internalizing, and prosocial behavior collected at

Table 2.1.
Caregiving Quality Mean Score Patterns (Standard Deviations) and Demographic Characteristics of Core Profiles

Profile Types	Profile 1 High-Quality All (n=299)	Profile 2 Low Home Resp. (n=65)	Profile 3 High Home Harsh. (n=56)	Profile 4 Low ECCE Resp. (n=111)	Profile 5 High ECCE Harsh. (n=40)	Total (n=571)
Prevalence	52.4%	11.4%	9.8%	19.4%	7.0%	100.0%
Caregiving quality variables[a]						
Parent Responsivity	0.96 (0.07)	0.46 (0.22)	0.78 (0.26)	0.94 (0.13)	0.74 (0.24)	0.87 (0.22)
Parent Harshness	0.02 (0.06)	0.06 (0.11)	0.59 (0.17)	0.03 (0.08)	0.17 (0.27)	0.09 (0.20)
ECE Responsivity	0.96 (0.07)	0.86 (0.20)	0.76 (0.22)	0.47 (0.19)	0.63 (0.31)	0.81 (0.25)
ECE Harshness	0.01 (0.05)	0.01 (0.03)	0.04 (0.09)	0.02 (0.05)	0.58 (0.16)	0.05 (0.16)
Demographic variables[b]						
Mother's age	25.5 (5.9)	23.8 (5.1)	23.6 (5.3)	24.4 (5.2)	24.7 (6.5)	24.8 (5.7)
Household income-to-poverty ratio	2.7 (2.8)	1.5 (1.3)	2.2 (2.3)	2.2 (2.3)	2.2 (2.4)	2.4 (2.4)
Number of children in the home	2.3 (1.3)	2.6 (1.7)	2.6 (1.4)	2.4 (1.4)	2.2 (1.2)	2.4 (1.4)
Mother's education						
Less than high school	30.8%	40.0%	37.5%	29.7%	45.0%	33.3%
High school or equivalent	26.4%	35.4%	35.7%	35.1%	25.0%	29.9%
Some college	26.1%	24.6%	19.6%	26.1%	22.5%	25.0%
College graduate	16.7%	0.0%	7.1%	9.0%	7.5%	11.7%
Mother's Race/Ethnicity						
White, non-Hispanic	23.1%	0.0%	10.7%	14.4%	10.0%	16.6%
Black, non-Hispanic	53.8%	90.8%	75.0%	70.3%	77.5%	65.0%
Hispanic, any race	20.1%	9.2%	12.5%	14.4%	12.5%	16.5%
Mother born outside US	5.4%	3.1%	3.6%	8.1%	2.5%	5.3%
Mother relationship with father at birth						
Married	24.7%	4.6%	17.9%	16.2%	12.5%	19.3%
Cohabiting	35.5%	35.4%	37.5%	39.6%	12.5%	36.8%
Maternal depression	13.1%	20.6%	21.8%	23.9%	15.0%	17.6%
Early Care & Education (ECE) type						

Center-based care	43.6%	43.1%	40.7%	59.1%	35.9%	45.8%
Child's gender						
Male	51.8%	50.8%	51.8%	54.1%	52.5%	52.2%
Female	48.2%	49.2%	48.2%	45.9%	47.5%	46.2%

Note: [a]Means (and standard deviations) rounded to nearest hundredth. [b]Mean years of age, household income, and number of children in the home by profile type; other demographic variables, ECE type, and gender are percentages within a given profile type.

age 3, 5, and 9.

Home and ECCE Caregiving Environment

Primary caregiver responsivity and harshness were rated by observers using the Warmth/Responsivity and Harshness subscales of the Home Observation for Measurement of the Environment (HOME) Inventory (Caldwell & Bradley, 1984) at age 3. The interviewers for the in-home portion of the study rated responsivity and harshness in a post-observation form based on their observations of caregiver-child interactions during the In-Home Study interview and family assessment. ECCE providers were also rated using the Warmth/Responsivity and Harshness subscales of the HOME Inventory at age 3 using a similar post-observation form. From these observations, I created a measure of responsivity using the average of six items that indicate whether the interviewer observed certain behavior in the caregiver-child interactions (0=*no*, 1=*yes*; example item: did the parent/provider spontaneously vocalize to the child at least twice?) A higher score indicates a more responsive, higher-quality environment. To construct a measure of harshness, I averaged five binary items that assessed whether a parent or provider was observed engaging in an activity (example item: did the parent/provider shout at the child?) Items were then coded so that high scores on the harshness scale indicate more harsh, lower-quality contexts. Validation studies of the HOME Inventory have shown it to be cross-culturally relevant (Bradley et al., 1994) and valid for socioeconomically diverse environments (Leventhal et al., 2004). The HOME Maternal Warmth/Responsivity subscale also has shown sufficient predictive and concurrent validity for behavioral and cognitive outcomes for children (Leventhal et al., 2004).

Receptive Vocabulary

Children's receptive vocabulary and verbal ability was measured using the Peabody Picture Vocabulary Test (PPVT-III; α=0.95; Dunn & Dunn, 1997) at age 3, age 5, and age 9. Using an "easel" or activity book, the interviewer read words and then asked the child to identify the picture in the easel (among four pictures) that corresponded to that word. Only children who took the PPVT in English were included in these analyses. I utilize the standard score for these analyses.

Pre-Reading Skills

The Woodcock Johnson Letter Word Identification subtest was used to assess reading skills at age 5 (Woodcock et al., 2001). The children were asked to read aloud from an increasingly difficult list of vocabulary words. Pronunciation was also assessed. At age 9, the Woodcock Johnson Passage Comprehension subtest was used to rate the child's symbolic learning. Children were asked to match a rebus (pictograph representation of a word) with an actual picture of an object in a multiple-choice format. Additional items asked children to read a passage and select a missing key word that makes sense in the passage. The Applied Problems subtest measured the child's ability to analyze and solve math problems. Many of the problems include extraneous information that require the child to listen carefully to the problem, recognize the procedure, and perform simple calculations.

Executive Functioning

The Weschler Intelligence Scale for Children, Digit Span subtest (WISC-IV Digit Span) was used to measure children's auditory short-term memory, sequencing skills, attention, and concentration (Wechsler, 2012). The age 9 In-Home assessment included 16 items from the

WISC-IV Digit Span. Each item allowed children two trials or opportunities to repeat the span correctly. Each trial was different, but the trials for each item were equivalent. Interviewers read a number and, depending on the section, asked the child to repeat the number backward or forward. Interviewers then provided a score based on the child's answer (0=*incorrect*, 1=*correct*).

Social Skills

The Adaptive Social Behavior Inventory (ASBI; Hogan et al., 1992) was used to assess children's social competence. Positive behavior items were reported by parents. I used the abbreviated version of the prosocial items of the express subscale that were unique to this study and therefore did not report the psychometric properties of the full instrument which cannot be applied.

Behavior Problems

Child internalizing and externalizing were measured using the Child Behavior Checklist 2-3 (CBCL/2-3; Achenbach, 1992) at age 5, the Child Behavior Checklist 4-18 (CBCL/4-18; Achenbach, 1992) and the Child Behavior Checklist 6-18 (CBCL/6-18; Achenbach & Rescorla, 2001) at age 9. For each of these years, I used the externalizing and internalizing scales. Since the full instrument was not administered, the psychometric properties of these scales may differ from those reported by Achenbach and therefore I did not report alphas for the original measures here.

Controls

Several demographic factors were included from the baseline, or birth, portion of this study. These include maternal age, race, education, immigrant status, household income,

marital/cohabitation status with biological father at birth, and the number of children in the home at the focal child's birth. Major depression was also assessed for mothers at age 1 using self-reports on The Composite International Diagnostic Interview-Short Form (CIDI-SF), Section A (Kessler et al., 1998). Mothers were classified as depressed if they endorsed all the questions about having two weeks of dysphoric mood, endorsed all the questions about having two weeks of anhedonia, or indicated that they were taking medication for depression. Variables were also included in the analysis to indicate whether the observed ECCE setting was center-based or non-center-based, whether the child was cared for in their own home or elsewhere, and whether the caregiver was the biological father of the child or another non-maternal caregiver. Additional variables accounted for the number of hours per week the child spent in ECCE and the age at which the child began being cared for by a non-maternal provider. Sex of the child was also included in the analyses.

Data Analysis

Empirically Deriving Clusters

My first step in data analysis was to utilize a non-hierarchical cluster analysis technique to identify naturally occurring patterns of mother-ECCE caregiving environments. For both parent and ECCE environments, I added average subscale scores for responsivity/warmth and harshness for a total of four subscale scores for each observation. K-means cluster analysis requires the researcher to select the desired number of clusters before running the analysis. Random points are then chosen in the data which correspond to the number of pre-selected clusters. Starting points are re-randomized each time the analysis is run. Observations are matched to these points based on the shortest Euclidean distance.

The number of appropriate clusters was determined using the Calinski/Harabasz pseudo-F to identify a stopping point that allowed for the greatest level of differentiation between clusters (Caliński & Harabasz, 1974). The Calinski/Harabasz stopping point was utilized in this study because it has been shown to most accurately identify the correct number of clusters present in the data for non-hierarchical techniques (Milligan & Cooper, 1985).

To make the process of identifying a cluster solution through non-hierarchical methods more systematic, I first set three different randomly-generated seeds. I then ran models for 3, 4, 5, and 6 cluster solutions for each seed. I compared the Calinksi/Harabasz stopping point for each cluster solution to determine the combination with the highest level of differentiation. I settled on a five-cluster solution. The Calinski/Harabasz pseudo-F for the five-cluster solution was 284.80. In this paper, I refer to the clusters identified using this strategy as profiles of mother-ECCE caregiving environments.

Associations Between Profiles and Child Outcomes

The second step in data analysis was a multiple regression procedure to predict child cognitive functioning and behavior at age s 3, 5, and 9 from mother-ECCE caregiving profiles at age 3. A multiple regression analysis using robust standard errors was completed for each outcome at each time point. Sample size was restricted across outcomes within the same year. Outcome variables were standardized prior to inclusion in the analyses, meaning that all results can be interpreted as standard deviation differences. A vector of control variables, described above, were also included in the analyses.

Missing Data and Robustness Checks

To address the issues of missing data, I rely on multiple imputation. Data are missing for a variety of reasons which indicate that imputation would produce less-biased results than listwise deletion. I used 50 chained imputation iterations to predict missing control variables as a function of the larger set of control variables and other variables with low levels of missingness. Outcome variables and predictor variables were not imputed.

Pairwise Comparisons

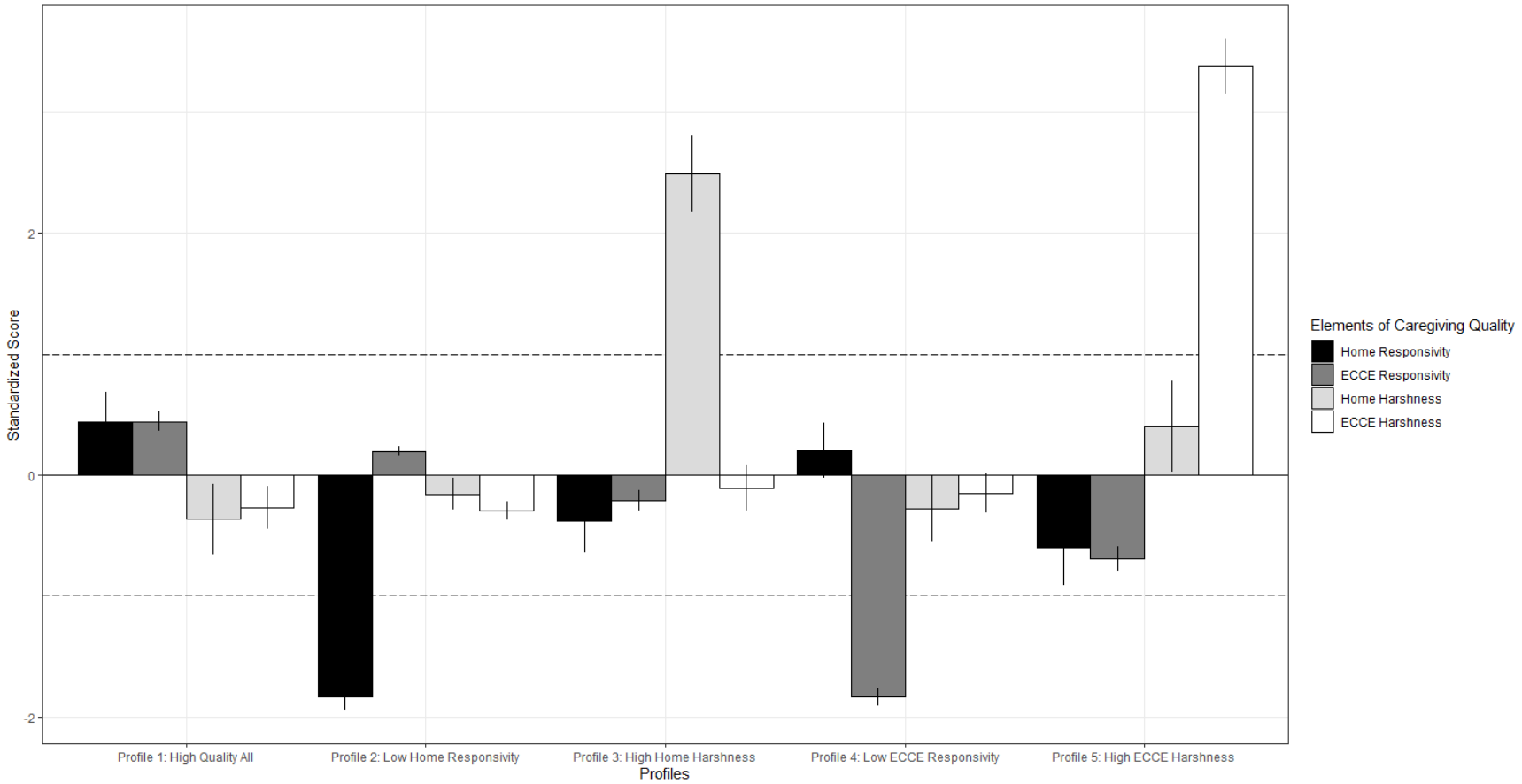
Additional tests of pairwise comparisons were performed following the regression analyses of imputed data. I corrected for the repeated comparisons with the Bonferroni correction. These tests allowed comparisons of outcomes to be made across all profiles, while controlling for demographic covariates and utilizing the power gained from multiple imputation.

Results

Profiles of Home-ECCE Caregiving Contexts and Sociodemographic Characteristics

Using cluster analysis, I identified five naturally-occurring patterns of home and ECCE caregiver responsivity and harshness for children at age 3 (see Table 2.1 and Figure 2.1). Profile names reflect the most distinguishing feature and imply average, or near average, caregiving environment across the three other dimensions. Overall, I identified one profile that was defined by consistent high quality across all domains and all environments (*Profile 1: High-Quality All*). I identified two profiles defined by high harshness in one environment and average quality across other caregiving dimensions (*Profile 3: High Home Harshness*; *Profile 5: High ECCE Harshness*). The remaining two profiles were typified by low responsivity in one environment and average quality in other caregiving domains (*Profile 2: Low Home Responsivity*; *Profile 4: Low ECCE Responsivity*). Notably, a consistently low-quality profile did not emerge from these

Figure 2.1.
Home and ECCE Caregiving Profiles by Elements of Caregiving Quality



Note. This figure presents bars for the standardized average scores of responsivity and harshness at home and in ECCE settings for each of the five identified profiles. The center, solid horizontal line represents the mean score for each element of caregiving quality. The dotted horizontal lines represent one standard deviation above and below the mean. Error lines for each bar show the 95% confidence interval around each estimate.

analyses. Below I describe the sociodemographic characteristics of each of these profiles.

Profile 1: High-Quality All (prevalence = 52.4%)

Children in this cluster experienced better-than-average environments for all four dimensions of home and ECCE caregiving environments. This profile is characterized by the greatest overall sociodemographic advantage within my low-income sample. Children in this profile came from households with the highest income and had the oldest mothers with the highest levels of education and highest rates of marriage. This group also had the highest proportion of White mothers.

Profile 2: Low Home Responsivity (prevalence = 11.4%)

Children in this profile experienced low levels of responsivity in the home environment, but near average levels of responsivity in ECCE settings and near-average harshness in both settings. Families of children in this profile had the lowest household income-to-poverty ratio and the mothers were some of the youngest in the sample with the most children. These mothers had very low rates of marriage yet similar cohabitation rates to mothers in the other profiles. This was the only profile with no White mothers and no mothers with a college degree.

Profile 3: High Home Harshness (prevalence = 9.8%)

Children in this group experienced high levels of harshness in the home environment and near-average caregiving quality levels across the other subscales. This profile includes the youngest mothers with more children per household than the other profiles. Other demographic characteristics follow similar patterns to the sample as a whole.

Profile 4: Low ECCE Responsivity (prevalence = 19.4%)

Children in this cluster had very low levels of responsivity in ECCE contexts. They were near average on their other caregiving quality scores. These children were the most likely to be enrolled in center-based care and mothers of these children were the most likely to experience maternal depression at when the child was 1. Otherwise, the demographic characteristics of this profile group match closely with the overall averages of participants.

Profile 5: High ECCE Harshness (prevalence = 7.0%)

Children in this group experienced very high levels of harshness in ECCE settings. They also experienced below-average levels of responsivity in home and ECCE settings and above-average levels of harshness at home. This was the least prevalent profile. Children in this profile also had low maternal education and their mothers were the least likely to be born outside of the United States. These children were also the least likely to be in center-based care.

Patterns of prevalence show that *Profile 1: High-Quality All* is the most prevalent, with over half of children. The two profiles indicating lower responsivity (*Profile 2* and *Profile 4*) follow in prevalence with the two profiles indicating higher harshness (*Profile 3* and *Profile 5*) being the least prevalent. This indicates that most children in this low-income setting are experiencing consistently high-quality caregiving and that children are more likely to be receiving low-quality care characterized by a lack of responsivity than a presence of harshness in both home and ECCE settings.

Prediction of Child Outcomes Using Profile Membership

I next explore the relations among Home-ECCE profiles and children's academic, language, executive functioning, and behavioral outcomes at ages 3, 5, and 9 (see Tables 2 and 3). For all analyses, I selected *Profile 1: High-Quality All* as the reference group because it was the most

prevalent and comprised children with the greatest sociodemographic advantage. Outcome variables are standardized for comparison across outcome domains.

Profile Membership and Child Behavior

As presented in Table 2.2, children in profiles characterized by high harshness, either in the home or ECCE, had higher behavioral problems at ages 3, 5, and 9 outcomes compared to the profile with children experiencing consistently high-quality caregiving (*Profile 1: High-Quality All*). Children in profiles characterized by low responsivity, in the home or in ECCE, had relatively similar behavioral outcomes compared to *Profile 1*. For profiles defined by high levels of harshness, I find that children in *Profile 3: High Home Harshness* and *Profile 5: High ECCE Harshness* had higher externalizing at ages 3 (β=0.596-0.643) and 5 (β=0.347-0.412) compared to children in *Profile 1*. Children in *Profile 5* continued to have higher externalizing compared to children in *Profile 1* at 9 (β=0.527). A similar pattern emerged for internalizing behaviors, with children in *Profile 3* and *Profile 5* exhibiting higher levels of internalizing at age 3 (β=0.388-0.544) compared to children in *Profile 1*. *Profile 3* continues to predict levels of internalizing at a marginally significant level at ages 5 (β=0.266) and 9 (β=0.254). *Profile 3* and *Profile 5* had similar prosocial skills compared to *Profile 1*. For profiles characterized by low levels of responsivity, I find that children have similar internalizing, externalizing, and prosocial outcomes compared with children in *Profile 1* at ages 3, 5, and 9. The only exception is that children in *Profile 2: Low Home Responsivity* have lower prosocial skills at ages 3 (β=-0.292; $p<0.1$) and 5 (β=-0.126; $p<0.1$) compared to *Profile 1*.

Profile Membership and Child Language, Academic, and Executive Functioning

Table 2.3 demonstrates that children in all profiles characterized by any type of inconsistency

Table 2.2.

Relations among Home-ECCE profiles and children's behavior at ages 3, 5, and 9

	Age 3			Age 5			Age 9		
	Internalizing	Externalizing	Pro-Social	Internalizing	Externalizing	Pro-Social	Internalizing	Externalizing	Pro-Social
Profile 2: Low Home Resp	0.145 (0.130)	0.124 (0.144)	-0.292^{+} (0.162)	0.122 (0.151)	0.264^{+} (0.146)	-0.126^{+} (0.074)	0.369 (0.225)	0.287 (0.194)	-0.112 (0.125)
Profile 3: High Home Harsh	0.388** (0.142)	0.596*** (0.152)	0.051 (0.135)	0.266^{+} (0.157)	0.347* (0.168)	-0.037 (0.072)	0.254^{+} (0.144)	0.218 (0.160)	-0.204 (0.144)
Profile 4: Low ECCE Resp	-0.056 (0.100)	-0.070 (0.108)	0.149 (0.113)	-0.118 (0.122)	-0.103 (0.124)	0.041 (0.057)	-0.017 (0.102)	-0.025 (0.108)	-0.042 (0.092)
Profile 5: High ECCE Harsh	0.544** (0.191)	0.643*** (0.180)	-0.236 (0.162)	-0.020 (0.168)	0.412* (0.206)	0.017 (0.078)	0.101 (0.159)	0.527** (0.193)	0.119 (0.117)
N	521	521	521	464	464	464	446	446	446

Note. Standard errors in parentheses. $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Regression of child behavior on profile membership and control variables at age 3, age 5, and age 9. Coefficients represent differences in standardized outcome variables from the comparison profile, Profile 1: High-Quality All.

across environments had lower receptive vocabulary at ages 3 and 5 when compared to children experiencing consistently high-quality caregiving (*Profile 1: High-Quality All*), a pattern that continues to age 9 for three of the profiles. No pattern emerged between profile membership and letter-word recognition, passage comprehension, applied problems, or executive functioning. For children in profiles that experienced low quality in any dimension, profiles that exhibited lower quality caregiving at home, rather than in ECCE settings (*Profile 2: Low Home Responsivity*, *Profile 3: High Home Harshness*) experienced greater decreases in receptive vocabulary (β=-0.061- -0.401) relative to children in profiles that exhibited lower quality caregiving in ECCE settings (*Profile 4: Low ECCE Responsivity*, *Profile 5: High ECCE Harshness*; β=-0.248- -0.234) at age 3. This same pattern of greater decreases in receptive vocabulary for lower quality home environments then lower quality ECCE environments holds at age 5 where *Profile 2* and *Profile 3* demonstrate greater decreases (β=-0.483- -0.352) then *Profile 4* and *Profile 5* (β=-0.318- -0.290) when compared to *Profile 1*. At age 9, *Profile 5* is no longer associated with a decrease in receptive vocabulary; however, *Profile 2* and *Profile 3* retain their significant negative relations with receptive vocabulary (β=-0.343- -0.336) when compared to *Profile 1* while *Profile 4* also demonstrates weaker decreases in receptive vocabulary (β=-0.284).

Post Hoc Analyses.

Following the regression analyses, I then calculated marginal means for the outcomes based on estimates from these regression estimates. Additional pairwise comparisons between profiles allow conclusions to be drawn about how profile groups differ from each other in addition comparisons to the reference group (*Profile 1: High-Quality All*) indicated in the regression analyses. Table 2.4 and Table 2.5 indicate how the profiles differ in the marginal standardized average means for each outcome variable at child age 3, 5, and 9. Overall, *Profile 2: Low Home*

Table 2.3.

Regression Results for Child Academic, Language and Executive Functioning Skills

	Age 3	Age 5		Age 9			
	Receptive Vocabulary	Receptive Vocabulary	Letter-Word Recognition	Receptive Vocabulary	Passage Comprehension	Applied Problems	Executive Functioning
Profile 2: Low Home Resp	-0.601***	-0.352**	0.292	-0.336*	-0.059	-2.490	-0.130
	(0.110)	(0.135)	(2.699)	(0.132)	(2.379)	(2.875)	(0.435)
Profile 3: High Home Harsh	-0.407**	-0.483***	-3.158	-0.343*	-5.508	-6.303+	0.018
	(0.127)	(0.141)	(2.164)	(0.146)	(4.457)	(3.616)	(0.436)
Profile 4: Low ECCE Resp	-0.234*	-0.290*	-1.846	-0.284*	0.727	-3.844	-0.368
	(0.111)	(0.118)	(1.664)	(0.118)	(1.783)	(2.352)	(0.320)
Profile 5: High ECCE Harsh	-0.248+	-0.318+	-3.628	-0.133	-2.099	-0.629	-0.068
	(0.149)	(0.164)	(2.353)	(0.168)	(2.742)	(2.900)	(0.465)
N	550	441	441	502	502	502	502

Note. Standard errors in parentheses. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Regression of child academic, language, and executive functioning skills on profile membership and control variables at age 3, age 5, and age 9. Coefficients represent differences in standardized outcome variables from the comparison profile, Profile 1: High-Quality All.

Responsivity and Profile 4: Low ECCE Responsivity consistently differ from each other in internalizing and externalizing through age 5. This indicates that not only does a lack of responsivity matter for children's development, but that it matters differently according to the context within which responsivity is deficient. *Profile 4: Low ECCE Responsivity* and *Profile 5: High Home Harshness* differ from each other in externalizing through age 9. This shows that while having low levels of important quality measures in ECCE is important for children's development, the specific areas of quality can also have important implications for children.

Discussion

This study identified naturally-occurring profiles of parent and ECCE caregiving quality in a sample of three-year-old children and then examined relations among the profiles and children's development. I identified five distinct profiles of parent-ECCE caregiving environments by using two elements of caregiving, responsivity and harshness, in two settings, with mothers and ECCE providers. One profile emerged that was characterized by high-quality across all caregiving dimensions. The other profiles were identified by having low quality in one dimension and near-average quality in the other three dimensions. Two profiles indicated low responsivity (one with parents, one with ECCE providers) and two profiles indicated low harshness (one with parents and one with ECCE providers).

These profiles, developed at age 3, predict cognitive and behavioral outcomes for children through age 9. Specifically, I found that (1) high harshness in any setting, even in the context of good quality in the other setting, predicted behavior problems at ages 5 and 9; (2) all profiles with low quality in either home or ECCE environments were related to decreased receptive vocabulary at ages 5 and 9; and (3) profiles where the home context is the lower-quality

Table 2.4.

Post-hoc Analyses for Child Behavior and Academic, Language, and Executive Functioning Skills

		P3 High Home Harshness vs P2 Low Home Responsivity	P4 Low ECCE Responsivity vs P2 Low Home Responsivity	P5 High ECCE Harshness vs P3 High Home Harshness	P5 High ECCE Harshness vs P4 Low ECCE Responsivity
	Behavioral Outcomes				
Age 3	Internalizing		X		X
	Externalizing	X	X	X	X
	Prosocial				X
Age 5	Internalizing		X		
	Externalizing		X		X
	Prosocial				
Age 9	Internalizing				
	Externalizing			X	X
	Prosocial				
	Academic, Language, and Executive Functioning Skills				
Age 3	Receptive Vocabulary	X		X	
Age 5	Receptive Vocabulary				
	Letter-Word Recognition				
Age 9	Receptive Vocabulary				
	Passage Comprehension				
	Applied Problems				
	Executive Functioning				

Note. Results of post-hoc analyses comparing marginal means on outcome variables for each profile derived from imputed regression model. An x indicates a significant ($\alpha<0.05$) difference in marginal means between the two profiles.

environments (but with average or high ECCE caregiving quality) were consistently related to lower receptive vocabulary compared to other profiles.

What is the Pattern of Children's Caregiving Environments at Home and ECCE?

Several distinct profiles of family-ECCE caregiving environments emerged from the data indicating that children experience different combinations of caregiving quality between their home and childcare environments in early childhood. Specifically, one profile indicated above-average quality in both caregiving elements with both parents and ECCE providers while the other four profiles demonstrated below-average quality in one element of caregiving in one environment and average-level quality for all other dimensions. Unsurprisingly, profile membership was related to sociodemographic characteristics, the same types of characteristics that independently predict both parent and ECCE caregiving environments in past research. For instance, demographic factors such as family income, number of children in the home, and maternal age, education, and race are known correlates of parenting practices (e.g., McLoyd, 1998), while factors such as higher-income parents' ability to stay home from work influence the quality of ECCE environments that families select for their children (Peyton et al., 2001).

It is important to note that profile analyses did not derive a *Low-Quality All* profile of children who experienced consistently low-quality environments for both parent and ECCE settings, despite the flexible modeling method that sought to draw out a low-quality group if it existed. This could be due to a variety of factors, including the fact that this sample is non-clinical or that the coordination required to complete observations in two settings, a requirement for inclusion in this sample, dropped the lowest-quality settings from these analyses. The lack of a low-quality profile highlights the value of using person-centered models that reveal how

measures of quality actually occur in the population, rather than imposing a hierarchy that requires designating some children in low-quality categories. In the present study, the person-centered analysis also allows for a strengths-based perspective on the role of early contexts in child development: even the children often considered most disadvantaged experience high-quality relational contexts upon which to build.

How do Home-ECCE Caregiving Environments in Early Childhood Predict Outcomes Across Childhood?

Three main findings emerge from the analyses of home-ECCE profile membership and child outcomes over time. First, membership in profiles characterized by low-quality in caregiving harshness is predictive of behavior problems throughout childhood. These findings are consistent with research showing parental and teacher harshness are both independently related to children's behavior over time (Howes & Smith, 1995; Silver et al., 2005). Harshness and hostility from caregivers, especially in the early years as children's burgeoning independence leads to normative changes in behavior, have been shown to strongly predict later conduct problems (Campbell et al., 1996). The results of the current study confirm that externalizing problems are the type of behavior problems most likely to persist over time. This finding aligns with research that finds that early problem behaviors are related both to continued problem behaviors and to a greater risk of developing behavioral disorders and mental health challenges (Odgers et al., 2008).

Second, low quality responsivity or harshness in any early childhood caregiving setting predicts reduced vocabulary abilities throughout childhood. This result is consistent across profiles and over time, likely reflecting the relationship between caregiver responsivity and

harshness and children's vocabulary development. For instance, much vocabulary development happens incidentally as children interact with caregivers (Hoff, 2003). In particular, harshness may be related to the use of more short, declarative language with the child that lacks a richness of vocabulary. For instance, when responding to child misbehavior, parents might only use phrases such as, "No! Stop!" rather than providing additional explanation for why the behavior is inappropriate. Additionally, more responsive caregiving is related to the back and forth of language, a call and response between parent and child, that is important for language and social development (Hirsh-Pasek et al., 2015).

It is also possible that in low-quality environments, even very young children spend more time attending to the emotional state of the caregiver, impeding development of vocabulary or other cognitive skills from their environment. For example, previous studies that have indicated that children who are exposed to family violence show heightened neural reactivity (McCrory et al., 2011) and increased vigilance leading to anxiety (Shackman et al., 2007) when exposed to angry cues. Even children who are not exposed to such extreme environments, but experience significant levels of household disorganization, experience deficits in both receptive and expressive language development (Vernon-Feagans et al., 2012).

The third main finding from the current study is that profiles where home is the lower-quality environment are more strongly related to decreased vocabulary over time than profiles where ECCE is the lower-quality environment. This result is consistent with the primacy of family relationships for the development of young children. Although, some studies have found that high-quality relationships with teachers can mitigate the risk of cognitive deficits and behavioral challenges for children with adjustment problems (Cicchetti & Lynch, 1993), research

also suggests that children who experience poor parenting practices do not receive the benefits of sensitive teachers (Burchinal et al., 2002).

Practice and Policy Implications

The current study suggests that policies or programs targeting only one caregiving context for children may fall short in achieving their goals when compared with interventions that seek to improve multiple caregiving contexts simultaneously for children. The results of this study show that children who experience differences in caregiving practices across contexts are at risk for behavior problems and reduced vocabulary throughout childhood. Therefore, programs and policy makers may seek to disburse funds for child improvement programs across multiple environments to maintain consistency across environments while also improving quality. School programs that seek to change behavior or to improve cognitive functioning that do not incorporate the family as a fundamental partner, may not achieve their intended results (Hill & Tyson, 2009).

Another implication of the present study is the importance of focusing on the interrelations of home and ECCE caregiving in early childhood. Based on the results of this study that show that experiences across settings in early childhood are related to development through age 9, intervening during children's early experiences with non-parental care providers has the potential to shift children's developmental trajectories through childhood.

In addition to focusing on early childhood, intervention efforts can also be more targeted toward the specific sub-domains of caregiving that are related to outcomes of interest. While composite measures of environmental quality can provide important information, they may not adequately capture disparities in sub-domains of quality that can have a major impact on

children' behavioral and cognitive outcomes. For instance, results from this study indicate that child externalizing across childhood is related to harsh caregiving in early childhood. When children exhibit deficits in cognitive development or externalizing or internalizing behaviors, attempts at locating the precursors to these outcomes, whether by parents or school personnel, would do well to consider not just which caregiver is contributing to undesirable outcomes, but also which aspects of caregiving may be exacerbating problems.

Limitations and Future Directions

This study has several limitations that serve as a foundation upon which other studies can build to provide greater insight into how various caregiving contexts relate to child development over time. First, this study was limited to examining responsivity and harshness as elements of caregiving quality. Other important characteristics of home and ECCE contexts were not considered in this study. Previous work by Crosnoe (2012) examined how school and home environments engaged in literacy practices and found that when both environments engaged in high-quality literacy practices, children experienced greater growth in reading scores from kindergarten through third grade. Another piece of research looked at ethnic-racial socialization across context (Davidson, 2016). This unpublished dissertation looked at ethnic-racial socialization in home and Head Start contexts and found that parents engaged in more ethnic-racial socialization practices than Head Start teachers and provides some preliminary connections with child self-regulation. Certainly, future work can build on these studies and expand the domains of caregiving that are examined.

Furthermore, this study does not consider multiple caregivers within the same environment. For instance, this study does not have observational measures for multiple parents

to show how differences in caregiving quality across parents in the same home may relate to children's developmental trajectories. Future research could include observations of multiple caregivers in the same environment such as multiple parents, other important caregivers such as grandparents or other relatives, and multiple ECCE providers.

Another limitation of this study is that I only have information about home and ECCE environments at one point in time. While this does show how experiences in early childhood predict experiences throughout childhood, I am not able to disentangle whether this relationship is due to similar environments persisting over time or whether the impact of early experience carries forward independently of subsequent environments.

Future research will collect detailed information of multiple aspects of caregiving from multiple environments, both home and ECCE, that will allow for comparisons across environments. These measures can be collected at various points in time so that quality across contexts can be examined as it changes over time. The measures collected in both environments can be selected for direct comparison across environments, rather than measuring adjacent or partially-overlapping constructs. Furthermore, measures across environments can be collected longitudinally so future research can account for changes in multiple environments across time. Better data practices will allow for future analyses to be more complex and to examine mechanisms and moderators for cross-context interactions.

Conclusion

Findings from this study indicate that children's early caregiving experiences across home and ECCE contexts have implication for their cognitive and behavioral development across childhood. Efforts to understand children's multiple contexts ultimately have the potential

to greatly improve our understanding of how contextual factors relate to children's development throughout childhood, especially for low-income and racially minoritized children. As these ideas are explored in subsequent research, it can expand our understanding of how to promote more equitable, high-quality experiences for children, regardless of their background.

Chapter 3. The Ebb and Flow of Violence: How Deviations in School Neighborhood Violent Crime Affect Preschool Teachers

While crime rates have been steadily decreasing across the United States for the past 20 years (Sharkey, 2018), the past year has seen a precipitous increase in violence across the United States (Rosenfeld et al., 2021). Exposure to violence has an especially large impact on children, and violence need not happen to children nor occur in their presence to be harmful. Beyond exposure to violence as a witness or victim, indirect exposure to violence in the community has also been shown to cause higher levels of stress hormones and difficulty sleeping (Heissel et al., 2018), reduced academic performance (Sharkey, 2010; Sharkey et al., 2012), and reduced cognitive performance (McCoy et al., 2015; Sharkey et al., 2012) for children. However, questions remain about the mechanisms through which community violence impacts children, especially young children who experience negative impacts despite lacking direct engagement with the broader community. This points to the potential role that adults, such as teachers, might play in transmitting the effects of violence to children.

In this chapter I examine how changes in violent crime in school neighborhoods impact the teaching quality of preschool teachers and cognitive and language outcomes for children. Specifically, I look at teachers and children in preschool centers that primarily serve low-income children in dense urban environments. Here I use the terms “community crime” and “local crime” to refer to crimes occurring near children’s homes since this is the default assumption in the literature. When referring to crimes occurring near schools, I add the modifier of school (i.e., “school neighborhood violence”).

The Role of Community Violence in Early Childhood

The effects of violent crime are felt beyond those who perpetrate, are victimized by, or witness the violence and extends to those who are otherwise connected to involved parties or who become aware of the occurrence of violence (Sharkey, 2018). In this chapter, I conceptualize community violence as the threat of physical harm to a member of the community (Foster & Brooks-Gunn, 2009).

Concerns may arise that preschool is too early to detect effects of community violent crime because, perhaps, children of this age are not able to understand the intentionality of violence or its full implications (Osofsky, 1999). However, prior research shows very young children are at risk for the impacts of violence in the broader community, even when presumably spending most of their time in the presence of adult caregivers (Shahinfar et al., 2000). In fact, the amount of exposure to community violence is not different for younger children than for older children (Stein et al., 2003). This exposure to violent crime in early childhood can have long-term impacts on children's development. One study showed that a 10% decline in children's exposure to violent crime near their home from ages 0-6 was related to a 0.03 SD increase in their 8^{th} grade ELA scores.

One potential pathway through which community violence impacts young children is through the behaviors of their adult caregivers in response to community violence. Although to date no studies have undertaken a causal approach to the effect of community violent crime on preschool teaching quality, results from studies of the effect of community violence on parents highlights how examining the effect of community violence on teacher behavior is a promising area of research. For instance, previous research has shown that parents decrease their

engagement with children (Cuartas et al., 2018) and increase harsh discipline (Cuartas, 2018) following acts of community violence. Parents also engage in protective behavior with children, including keeping children inside, defining neighborhoods and community as a hyper-local blockface, or "minding your own business" by being vigilant and disconnecting from social interactions (Jarrett, 1997; Rosenblatt & DeLuca, 2012). Although adaptive to contexts of high violence, these coping mechanisms also have the potential to disrupt the normal routine of children. It is an open question whether teachers change their behavior in response to community violence.

An "Ebb and Flow" Approach to Community Violence

This chapter takes what I term an "ebb and flow" conceptualization of community violence that is meant to evoke the imagery of the rising and falling of the tide as it varies from high tide to low tide. The ebb and flow approach recognizes that for many communities, community violence is a constant threat that varies in intensity from periods of high violence to periods of low violence. I term these fluctuations in the amount of violence relative to the community mean deviations. This approach capitalizes on the natural variation in the amount and distance of crime and relies on the assumption that when a teacher is observed is independent of patterns of violence in the neighborhood surrounding the school.

To establish the effect of these deviations in violent crime from the community norm, I first established a distribution of community violence for each school. To do this I created several distance cut points surrounding the school ranging from 0.125 miles to 1 mile. For each distance, I only considered crime that fell within that distance from the school. Within each distance I also established time periods that ranged from 4 days to 30 days. I then identified

distributions for each school according to the combination of distances and time-periods within which crimes occurred relative to the school over the entire course of the study. This allowed me to establish a mean level of violence for the school neighborhood and also the typical pattern of variation (i.e., deviation) in violent crime from that school's norm. For each teacher observation, I then considered the time period immediately prior to observation to see where it fell within the school's overall distribution.

How does this ebb and flow conceptualization of neighborhood violence influence community members? For the ebb and flow method, longer periods of violent crime deviation indicate a larger-scale deviation in violent crime or a more chronic period of deviation. In other words, a 7-day deviation in violent crime reflects how violent crime was relative to the community norm in the week prior to observation, while a 30-day deviation reflects violent crime in the month prior to observation. Community members may consider shorter deviations to be influenced by "random" or one-time acts of violence, whereas longer deviations can make violence more disruptive to daily living. Longer periods of high violence may mean that avoiding violence becomes engrained in daily routines, thus exerting a greater influence on children. It is also possible that longer deviations in violence encompass repeated activation of acute processes. In other words, repeated short-term shocks to teachers' stress response to individual acts of violence may build on each other over long time periods (e.g., 30 days), thus disrupting teaching quality.

This ebb and flow method stands in contrast to previous studies in the literature that treat violent crime as an acute shock to communities. Under this paradigm, specific acts of violence serve as stressors rather than the threat of the possibility of violence. The acute

approach to violent crime works particularly well with acts of violence that happen relatively infrequently, thus allowing for the estimation of the effect of specific instances of violence. For the current research question, an acute approach would compare teachers and children who were observed shortly following an act of violence (i.e., the treated group) to teachers and children who were observed shortly before or long after an act of violence (i.e., the untreated group). The acute approach to understanding the effect of violence collapses variation when the included forms of violence are more common and dilutes the treatment when greater distances are considered. In lower-crime contexts where violence is rarer, it can be difficult to have enough observations that happened in close enough time and distance proximity to violence detect an effect. This approach consistently finds that crimes that are closer to the school in time and distance have stronger effects on children (Sharkey, 2010; Sharkey et al., 2012).

Importance of Schools in Early Childhood

While most of the research on the impact of community violence on children has been focused on home environments, recent research has indicated that children experience violence not only near their home, but also near other important spaces where children benefit from feeling safe. For instance, one study that tracked adolescents using GIS found significant variation in exposure to violence existed among those living in the same neighborhood when their entire activity space was taken into account (Browning et al., 2017). We know that schools, one important part of children's activity spaces, are not immune from the impact of violence. One study performed in Boston found that violence clustered near schools especially in low-income and racially segregated neighborhoods (Barboza, 2018). Another study in Brazil found

that when violent gun battles occurred near the school at any point during the school year, children scored lower in math (Monteiro & Rocha, 2017).

The model of risk and protective factors shows that schools can serve as protective factors (Osofsky, 1999) against community violence or as an additional risk factor. We know that violence does occur near schools. One study in Boston found that violent crime disproportionately clusters in areas near schools, especially in poor and segregated communities (Barboza, 2018). The violence that occurs near these schools does impact children, especially in their academic outcomes (Caudillo & Torche, 2014; Monteiro & Rocha, 2017).

The effects of violence near schools are especially important for low-income communities because of the important role that high-quality early childhood education can play for children already at risk of academic and cognitive delays. Numerous studies have found that children's participation in high-quality early childhood education is beneficial for their cognitive and social-emotional outcomes (Barnett et al., 2013; Bloom & Weiland, 2015; Gormley Jr et al., 2005; Lipsey et al., 2013; Weiland et al., 2013; Wong et al., 2008). In 2016, approximately 65 percent of children between ages three and five attended some type of early childhood education program outside of the home (e.g., Head Start, public preK, center-based care; Hussar et al., 2020). Given the relatively high proportion of children participating in these programs, examining ECE contexts in relation to the broader neighborhood contexts in which they are embedded is critical for understanding how these two settings may interact to influence children's development.

Teaching Quality in Early Childhood

Teachers have been hypothesized as an important pathway through which violent crime impacts children (Monteiro & Rocha, 2017). Specifically, Monteiro and Rocha hypothesized that one pathway from local community violence to student test scores was through teacher stress. This can happen as teachers respond to changes in child behavior stemming from community violence or can occur when teachers themselves become aware of community violence.

Children may change their behavior at school in response to neighborhood violence, thus impacting teaching practices. One study found that children who experienced more adverse childhood experiences (including exposure to community violence) had worse relationships with their teachers and that this process was mediated by children's self-regulation (Loomis, 2021). These disruptive children can then their peers (Figlio, 2007). Thus, this process at the individual level can begin to change classroom-level processes. Another study found that children's achievement declined with a higher proportion of children in the classroom exposed to violence in their home neighborhoods (Burdick-Will, 2018). Teachers report concerns with behavior management and relationships with students exposed to community violence (Maring & Koblinsky, 2013). Therefore, child disruption in reaction to community violence can have influences on teaching practices and thus the classroom experiences of all children.

Teachers can also be directly impacted by violence in the school neighborhood as they become aware of it. One study of middle school teachers in a high-violence community found that teachers were aware of local violence and expressed personal safety concerns as well as concerns for the welfare of their students (Maring & Koblinsky, 2013). These teachers also indicated that they experienced physical and psychological symptoms in response to school

community violence which they coped with by becoming emotionally distant and limiting their involvement with difficult students. These teachers expressed a need for training to handle children's emotional and behavioral responses to violence for which they felt unprepared to handle.

One important aspect of school contexts is classroom quality, which in this chapter I refer to as teaching quality, to emphasize the role of the teacher in establishing the learning environment. Ecological and developmental systems theory suggest that that the day-to-day interactions between teachers and children are the primary way in which children develop in preschool settings. Indeed, developmental theory suggests that children benefit when teachers are warm and responsive, and children engage in intentional and cognitively stimulating interactions that are scaffolded to their individual needs (Howes, 2000; Phillipsen et al., 1997). The most common measure of teacher-child interactions is the CLASS, an observational tool that assesses teachers emotional and instructional support and classroom organization (R. C. Pianta et al., 2008). Prior research has found that teacher-child interaction quality as measured by the CLASS is associated with children's academic development, such as emotional support, classroom organization, and instructional support, as relevant for children's developmental outcomes, albeit with small effect sizes (J. T. Downer et al., 2012; Bridget K. Hamre, 2014; Mashburn et al., 2008; Perlman et al., 2016). In particular, the emotional support and classroom organization domains of the CLASS are typically associated with child behavioral and executive functioning outcomes and instructional support is more associated with children's language and literacy outcomes (J. Downer et al., 2010). In this chapter, I take advantage of the rich measurement of

the CLASS within the NCRECE Professional Development Study to examine the effect of community violence on teachers' observed quality.

The Current Chapter

The current chapter seeks to understand how deviations in violent crime in the school community affect teaching quality. This study builds on the robust literature about the impacts of community violence on children in several ways. First, these analyses focus on the impact of community violence surrounding schools on teachers. While previous work has considered the impact of community violence on both parents and children (e.g., Cuartas, 2018; Cuartas et al., 2018; Sharkey et al., 2012) and other work has examined the impact of violence near the school on children's outcomes (Caudillo & Torche, 2014; Monteiro & Rocha, 2017), this literature has not considered the role of teachers. In this chapter I include measures of teaching quality as an outcome of interest.

Second, this chapter uses a deviations method to understand the impact of community violence which allows me to incorporate the dosage of violent crime. One prominent method in the literature is to use a dichotomous measure of homicides (i.e., the acute method of treated and untreated observations) that allows the detection of an effect of a single homicide on children (e.g., Sharkey, 2010; Sharkey et al., 2012). Unfortunately, this method does not account for the impact of violent crime more broadly, nor the dosage of exposure. When studies consider the impact of violent crime more broadly on children, significant effects on biophysiological, mental health, and academic measures are detected (Cuartas & Leventhal, 2020; Cuartas & Roy, 2019; Heissel et al., 2018; McCoy et al., 2015; Monteiro & Rocha, 2017).

Third, I look at several large cities in various regions across the United States. These cities also vary in their crime rates. Previous research on the effects of violent crime is largely concentrated in a high-crime United States city, Chicago, (Burdick-Will, 2018; McCoy et al., 2015; Sharkey, 2010; Sharkey et al., 2012) and several high-crime cities across Colombia (e.g., Cuartas, 2018; Cuartas et al., 2018; Cuartas & Leventhal, 2020; Cuartas & Roy, 2019). There are several logistical challenges to having sufficient data to examine the effects of crime across cities. There is no centralized crime database in the United States and not all cities provide open access to police data. Therefore, the process of requesting and compiling crime data across individual municipalities with different classifications of crimes can impede this kind of research. Selecting participant data that include a geographic component, with enough exposure to crime, and with a large enough sample to detect an effect are an additional challenge. Other researchers recognize these methodological challenges. Cuartas and Leventhal (2020) explicitly state that Colombia is a good place to study the effects of violent crime because of its high crime rate. Certainly, the effects of crime can be more difficult to detect in lower-crime contexts, but it is nonetheless useful to attempt to understand how violent crimes affect children who live in lower-crime contexts.

Hypotheses

Previous work has not examined teaching quality as an outcome nor used this ebb and flow method to look at the effects of community violent crime; therefore, I am not able to approach this work with strong priors for how these deviations in violent crime prior to observation will relate to effects on teacher quality. Furthermore, while prior work has shown that violent crime that is closer to the home has stronger effects on child outcomes (e.g., Sharkey,

2010; Sharkey et al., 2012), it remains to be seen how distance will relate to the effects of violent crimes near schools. Finally, previous work that compared the effects for different types of violent crimes (e.g., homicide vs. assault) found that homicides have the strongest effects on outcomes (Heissel et al., 2018). This is supported by the fact that homicide is considered the most accurately reported crime (Sharkey, 2018). Therefore, I hypothesize that when I consider only homicides and assaults, the effects of violent crime deviations on teaching quality will be greater.

Method

Data

Data for this chapter were drawn from two sources: The National Center for Research on Early Childhood Education (NCRECE) Professional Development Study and police records from the Chicago, Hartford, New York City, Stockton, Columbus, Dayton/Springfield, and Providence Police Departments. I derived my measure for violent crime in the school neighborhood using police records for the seven cities. I obtained these records through online open-access data portals and through Freedom of Information Act (FOIA) data requests to the specific police departments. These records included information about the precise location, date, and type of violent crimes that occurred from 2007 to 2011 in the aforementioned cities.

The NCRECE study was a randomized control trial that involved coaching and course components designed to improve teachers' social and instructional interactions in the early childhood classroom. The NCRECE study took place over the course of 18 months (2007-2009) in nine major metropolitan areas across the United States. The study stretched across three different school years (waves). Trained observers observed and rated teachers in their classroom

to measure teaching quality over the course of study either in-person or through video recordings. Teachers were observed an average of 9.07 times over the course of the study (SD = 5.56, Min = 1, Max = 38). In total, 290 teachers from 178 schools were included in the analyses for this chapter.

The intervention itself involved coaching and course components designed to improve teachers' social and instructional interactions in the early childhood classroom. The actual effect of this intervention is not relevant for the current chapter, but treatment membership was controlled for in the analyses. A full description of the NCRECE study and its results can be found elsewhere (B. K. Hamre et al., 2012).

Participants

Of the 7 sites represented in the analyses for this chapter, the most prevalent sites represented in these analyses were Chicago (30.34%), New York (19.66%), and Hartford (16.29%). Within these cities, schools were located in neighborhoods that on average had poverty rates about 2.5 times the national average (31.08%; 2007 national poverty rate was 12.5%) with unemployment rates more than 3 times the national average (15.47%; average unemployment rate in 2007 was 4.8%). Teachers were heavily female (94.24%) and largely Black, non-Hispanic (42.24%) and White, non-Hispanic (29.6%). On average, teachers that participated in this chapter were highly educated with 35.02% with a Bachelor's degree and 20.58% possessing a Master's degree or higher. Teachers scored much higher on the Emotional Support ($\bar{x}$=5.25, SD=0.64) and Classroom Organization ($\bar{x}$=5.29, SD=0.72) domains than the Instructional Support domain ($\bar{x}$=2.37, SD=0.8), a common pattern found in the literature.

Additional demographic characteristics for teachers and school neighborhoods are found in Table 3.1.

Measures

Teaching Quality

Teachers were observed using two methods: live observation and videotaped observation. Most live observations occurred between January and March. Observers visited one classroom per day and completed observations in the morning prior to lunch or naptime. Live observations typically lasted between 2.5 and 4 hours. For videotaped observations, teachers were asked to send in 30-minute videotaped observations of their classroom teaching throughout the program. These 30-minute video were broken into two 15-minute segments. Each segment was then randomly assigned to two trained observers and double-coded.

All classrooms were rated using the Classroom Assessment Scoring System™ (CLASS™; Mashburn et al., 2008), an observational tool that describes the teaching domains of emotional support (e.g., positive and negative climate, teacher sensitivity, and regard for student perspectives), classroom organization (e.g., behavior management, productivity, instructional learning formats) , and instructional support (e.g., concept development, quality of feedback, and language modeling; α=0.81-0.89). Classrooms were scored along dimensions using a 7-point scale where 7 represents high-quality along the dimension. Inter-rater reliability on the class scales ranges from 0.72 to 0.89 (R. Pianta et al., 2005).

Table 3.1.
Descriptive statistics of schools, teachers, children, and observations using NCRECE data, 2007-2009

	% or Mean	SD	Min	Max
School (n=178)				
Chicago, IL	30.34%			
Hartford, CT	16.29%			
New York City, NY	19.66%			
Stockton, CA	10.11%			
Columbus, OH	8.99%			
Dayton/Springfield, OH	10.11%			
Providence, RI	4.49%			
Census Tract: Public assistance rate	8.03%	6.78	0	34.68
Census Tract: Poverty rate	31.08%	14.12	4.43	67.24
Census Tract: Unemployment rate	15.47%	8.28	2.68	46.33
Census Tract: Vacancy rate	12.31%	7.69	1.51	47.95
Teacher (n=290)				
Gender: Female	94.24%			
Income to Needs Ratio	2.99	1.68	0.52	8.7
Age	42.68	10.51	20	69
Race/Ethnicity: Black/African American, non-Hispanic	42.24%			
Race/Ethnicity: White, non-Hispanic	29.60%			
Race/Ethnicity: Hispanic/Latino, any race	19.49%			
Race/Ethnicity: Asian/Asian American	4.33%			
Race/Ethnicity: Multiple	4.33%			
Education: Less than Associate's degree	13.72%			
Education: Associate's degree	30.69%			
Education: Bachelor's degree	35.02%			
Education: Master's degree or higher	20.58%			
Teacher Observation (n=2,378)				
Fall	22.71%			
Winter	38.94%			
Spring	38.35%			
CLASS: Emotional Support	5.25	0.64	2.13	6.88
CLASS: Instructional Support	2.37	0.8	1	6
CLASS: Classroom Organization	5.29	0.72	2.33	6.83

School Neighborhood Violent Crime

When addresses for crimes were provided rather than geographic coordinates, I used ArcGIS to geocode the addresses and thus produce precise geographic coordinates. To have consistency in the definition of crimes across multiple states, I used the FBI Unified Crime Reporting definitions of violent crimes to determine what crimes to include in my measures: homicides, assaults, robberies, and rape. I then determined how many violent crimes occurred within specific distances of the school and specific time periods prior to observations of teachers and students. Figure 3.2 shows how I connected violent crimes and schools. Table 3.2 displays the amount of violent crime that occurred within certain distances and within certain times prior to observations.

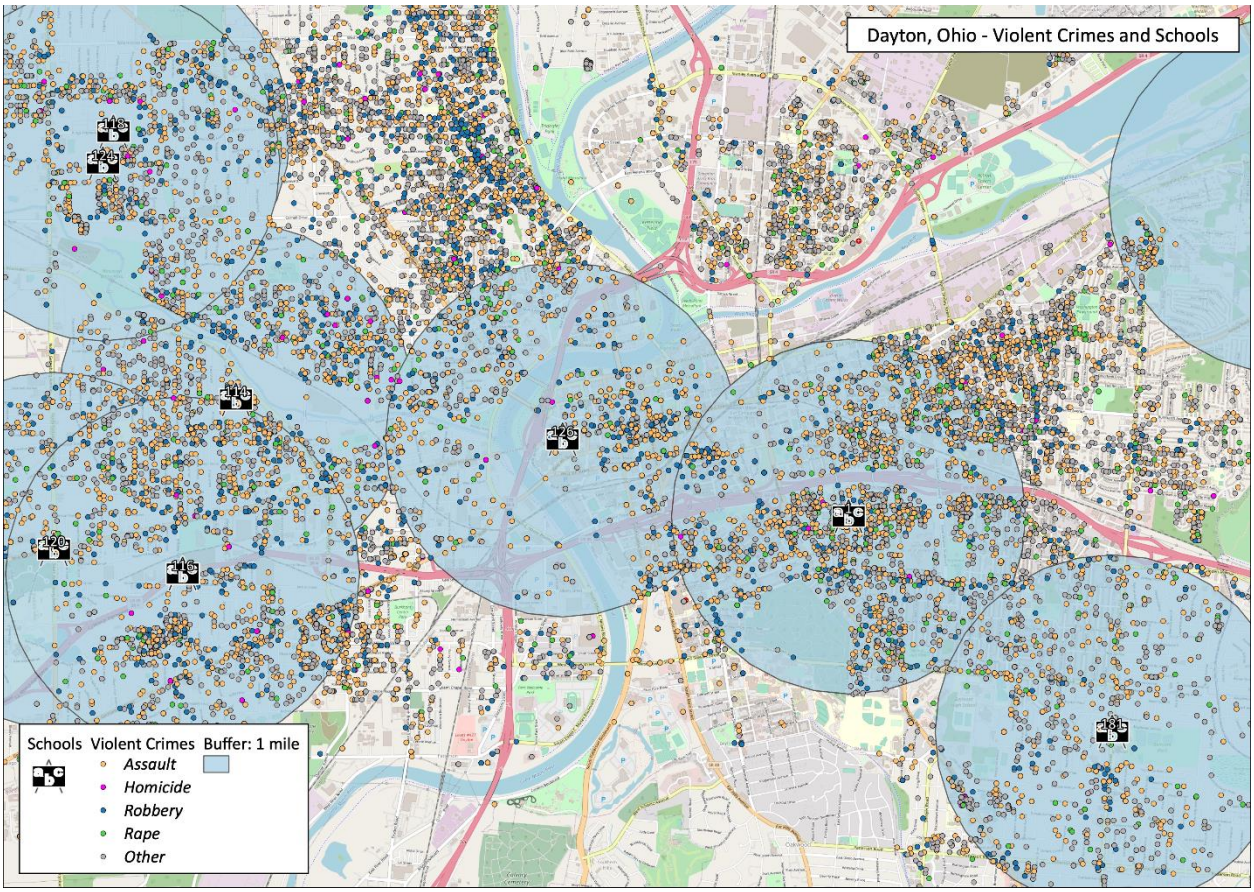
Analytic Plan

The analyses produced in this chapter seek to exploit variation in the exposure to violence among observations at different times for the same teacher or child. The validity of this method rests on the assumption that teacher quality and child ability is exogenous to the timing of violent crime in the community, or in other words, that better teachers or higher ability children are not more or less likely to be observed following periods of high violence. I test this assumption by looking at the correlation between violent crime z-scores and average teaching quality and child outcome scores.

Measuring Deviations in Violent Crime

I ran analyses according to various time-distance specifications. These specifications reflect the literature that indicates that the effect of violence varies according to the timing and distance with crimes occurring closer in distance and time to observations having a stronger impact on

Figure 3.2.
Map of Dayton, Ohio Study Schools and Violent Crimes with 1 Mile Buffers



Note. Example map of schools in Dayton, Ohio, one of the sites of this chapter, demonstrating how crimes were associated with schools using one-mile buffers. Violent crimes are represented by a dot, yellow represents assault, pink represents homicide, blue represents robbery, green represents rape, and yellow represents other violent crimes. One-mile buffers around schools are represented with light blue.

outcomes (Sharkey, 2010). Therefore, I tested each analysis using crimes occurring within 1, 0.5, 0.25, and 0.125 miles of the school. I also tested analyses with crimes occurring within 30, 21, 14, 7, and 4 days prior to the observation. Altogether, I evaluated 20 time-distance crime exposures for each model. Descriptive statistics for the average number of crimes that occurred within these time-distance windows prior to observation are found in Table 3.2.

Table 3.2.
Violent Crime Prior to Observations for All Time-Distance Exposures

	Teachers				Children			
	Number of Violent Crimes				Number of Violent Crimes			
	Mean	SD	Min	Max	Mean	SD	Min	Max
1 mile								
30 days	44.39	42.76	0	185	38.48	45.69	0	183
21 days	31.14	30.22	0	133	27.08	32.32	0	133
14 days	20.77	20.15	0	95	18.11	21.69	0	90
7 days	10.44	10.40	0	56	9.07	11.08	0	54
4 days	6.02	6.25	0	32	5.16	6.61	0	29
0.5 mile								
30 days	13.03	12.48	0	60	11.36	13.05	0	57
21 days	9.12	8.93	0	41	7.92	9.10	0	40
14 days	6.05	6.11	0	32	5.32	6.42	0	30
7 days	3.08	3.36	0	20	2.77	3.56	0	19
4 days	1.76	2.14	0	14	1.56	2.18	0	12
0.25 mile								
30 days	3.64	4.31	0	29	3.09	4.11	0	22
21 days	2.53	3.12	0	24	2.16	2.83	0	15
14 days	1.68	2.22	0	13	1.46	2.14	0	13
7 days	0.85	1.33	0	9	0.76	1.25	0	8
4 days	0.50	0.89	0	6	0.44	0.85	0	5
0.125 mile								
30 days	1.00	1.55	0	12	0.77	1.31	0	8
21 days	0.69	1.17	0	11	0.56	1.01	0	7
14 days	0.46	0.86	0	6	0.36	0.79	0	6
7 days	0.23	0.57	0	5	0.20	0.52	0	5
4 days	0.14	0.41	0	4	0.10	0.33	0	2

I modeled the effect of local violent crime on teaching quality with two different definitions of "exposure." The first method focuses on differences in violence compared to typical amounts in a neighborhood. More specifically, I used z-scores to understand how the violence occurring in specific time-distance period prior to teacher observation compared to the typical amount of violence occurring in that school neighborhood over the course of the study

(January 1, 2007 to December 31, 2009). To create this treatment variable, I first determined the sampling distribution for specific time-distances over the course of the study. For example, when I calculated the distribution of violent crime occurring over 30-day periods during this chapter, I started by calculating the number of violent crimes committed within 1 mile of a school during the first 30 days of the chapter period, then the next 30-days, and so forth for the entire study period. I then used those calculations to calculate the mean and standard deviation of the number of crimes within the specific time-distance period (i.e., 30-days, 1 mile). I repeated this process for the various distances (i.e., 0.5, 0.25, and 0.125 miles) and time periods (i.e., 21 days, 14 days, 7 days, and 4 days). I then calculated these statistics individually for each school.

Next, for each observation I calculated the number of violent crimes for each time-distance period, combining this number with the mean and standard deviation for the school to calculate a z-score for each observation that demonstrates how the violent crime occurring before the observation compared to the normal amount of crime occurring in that area. The z-score method also has other benefits: it allows for greater power because fixed effects can only be estimated within schools where there is variation in exposure to violence. Using a continuous treatment measure, rather than a dichotomous measure, allows for more variation in the treatment because the dichotomous method collapses substantial variation in exposure to violent crime within the treatment condition. Using the z-score method, therefore, incorporates more schools in estimating effects. It also more closely matches the reality of violent crime dosage that teachers experience.

This z-score violent crime deviation method contrasts with the more traditional method for defining violence exposure in quasi-experimental studies of the effects of violence. This

method creates a dichotomous treatment that assigns those who experienced at least one act of violence within a specific time-distance prior to observation into the treatment group. Those who experienced an act of violence outside of that time-distance window are assigned to the control condition. However, this method is based on studies that almost exclusively used homicides in their analyses (e.g., McCoy et al., 2015; Sharkey, 2010; Sharkey et al., 2012) or studies that were performed in high-violence cities (Cuartas, 2018; Cuartas et al., 2018; Cuartas & Leventhal, 2020). In fact, in the data used in this chapter, only 1.37% of violent crimes committed were homicides, indicating the far greater prevalence of other violent crimes relative to homicide. Therefore, using this dichotomous method with violent crimes collapses a considerable amount of variation of dosage contained within the treatment condition.

Of note, due to using teacher fixed effects, these analyses do not allow for comparisons across schools in the effects of violent crimes on teaching quality. In other words, I am not able to make conclusions about whether schools in neighborhoods with more crime have more negative effects on teachers than schools in lower crime neighborhoods. Rather, fixed effects models limit inference to comparisons between those being observed in the same school when more or less violence has occurred prior to observation. However, the fixed effects method does allow for inferences to be made on the relationship between the treatment (in this case, school neighborhood violence) and outcome of interest (teaching quality). In fact, the strength of the fixed effects method is that it accounts for any characteristics, observable or unobservable, at the level of the teacher that may be related to both rates of crime and teaching quality. This significantly reduces bias and increases confidence in the internal validity of the estimates.

Fixed Effects Models

I generated estimates using four models that correspond with the definition of exposure to violent crime presented above. I regressed the dependent variable, a measure of teaching quality using CLASS, on a variable for exposure to violent crime in the school neighborhood within a specific time-distance of observation, with fixed effects for each school, along with control variables for the season of observation, as is shown in equation 1:

$$(1) \quad Y_{ij} = \beta_0 + \beta_1 ViolentCrime_{ij} + \beta_{2-3} Season_{ij} + \beta_{4-n} Teacher\ FE_i + e$$

Where Y_{ij} is the standardized CLASS score for teacher *i* during observation *j*, thus using "person-observation" unit of analysis; β_0 represents the intercept; β_1 is the effect of a one standard deviation change in number of violent crimes that occurred within the specified distance from the school and time period prior to observation; $Season_{ij}$ stands for two indicator variables to distinguish observations that occurred in the fall from those occurring in the winter and spring. This reflects both the seasonality of crime, that more violent crimes occur during warmer months, and the seasonality of CLASS scores, showing that teaching quality has a natural pattern of variation throughout the school year; $Teacher\ FE_i$ represents a series of fixed effects dummy indicators for the teacher. Teacher fixed effects accounted for variation that occurred between teachers and between school settings; and e represents the residual error.

I also run a second model for teachers. In this model, rather than use the z-score for deviations in all violent crime, I instead use a z-score for deviations in only homicides and

assaults in the school neighborhood. I focus on homicides and assaults because prior research has shown that homicides and assaults only have an effect on children's bedtime (pushing bedtime back by 38 minutes to 1 hour 48 minutes; Heissel et al., 2018), thus indicating that these crimes potentially have the biggest impact on children's routines. The model is otherwise the same:

$$(2) \quad Y_{ij} = \beta_0 + \beta_1 HomicidesAssaults_{ij} + \beta_{2-3} Season_{ij} + \beta_{4-n} Teacher\ FE_i + e$$

.

Sensitivity Checks and Model Specifications

I ran several sensitivity checks to ensure the internal validity of the estimates in these analyses. First, I performed falsification tests to determine whether deviations in violent crime post-observation also predict teacher and student scores. I test the effect of a pseudo-treatment (violent crime deviations in the time periods following observation) on teacher outcomes, while controlling for z-score violent crime prior to observation. Controlling for violent crime prior to observation accounts for the fact that the amount of deviation in violent crime shortly prior to observation is correlated to the amount of deviation in violent crime shortly following observation. Second, I ran all analyses with school fixed effects rather than teacher fixed effects. I did not run analyses removing extreme outliers because not teacher observations occurred following periods of violent crime greater than 8 standard deviations away from the mean. I used listwise deletion for missing data and conducted all analyses using Stata 16.1 software.

Results

Here I present results of fixed effects regressions for models 1-4, examining three teaching quality domains. For each model I examine the treatment of crime deviations for all

violence and separately for homicides and assaults only. Treatments also vary according to distances from the school (0.125 miles to 1 mile) and according to time periods prior to observation (4 days to 30 days). As such, each regression table reported below includes the estimates of the coefficient of interest (β_1) from 20 separate regressions. I thus examine the pattern of results according to time period and distance variations rather than the results from one specific equation. I interpret p-values in terms of patterns, meaning that while I only interpret p-values lower than 0.05 as statistically significant, I consider coefficients that are similar in direction and magnitude with small, but nonsignificant p-values that follow a pattern with other lower p-values as indicative of broader trends.

The Effect of Crime on Teacher Quality

The first research question sought to identify the effect of deviations in school community violent crime on teaching quality. I sought to establish internal validity by confirming that average teaching quality was exogenous to the timing of community violence relative to observation. I estimated correlations for the number of violent crimes that occurred within a mile and 30 days prior to observation with the three CLASS domains. The estimated correlation coefficients indicated no correlation (r = -0.01 – 0.02) between the amount of violent crime prior to observation and teacher's average CLASS scores, indicating that better teachers are not more or less likely to be observed following periods of high violence.

All Violent Crimes

I present the main results for the effect of violent crime deviations on teacher CLASS domains (model 1 as described in the analytic plan), in Table 3.3. Displayed estimates are the coefficient of interest (β_1) for multiple estimations of model 1 according to various time-distance

specifications. Results from this model show moderate impacts of school neighborhood violent crimes on teacher emotional support across time periods at farther distances; specifically, I see effects at 1 mile (β = -0.048 – -0.016, p = 0.009 – 0.426) and at 0.5 miles (β = -0.061 – -0.027, p = 0.002 – 0.237). The estimates are not always statistically significant, but they follow a similar pattern in terms of the magnitude of effect sizes. I did not find a pattern of effects on emotional support at closer distances (0.25 miles and 0.125 miles). No effects were found on teacher instructional support (β = -0.043 – 0.013, p = 0.135 – 0.869) for any distance or time period. I find a similar pattern to emotional support for classroom organization of moderate effects at 1 mile (β = -0.054 – -0.042, p = 0.015 – 0.038) and 0.5 miles (β = -0.075 – -0.0059, p = 0.001 – 0.006). However, effects were only found at shorter time periods (4 days and 7 days).

Homicides and Assaults Only

Table 3.4 displays summarized results from estimations of model 2, a teacher fixed effects model using z-score deviations in homicides and assaults only as the primary treatment (β_1). When only homicides and assaults are used as treatment, I find a different pattern both in terms of the direction of effects and the distance at which effects are detected. I find *positive* effects on emotional support at 0.125 miles only and for shorter durations (4 days, 7 days, and 14 days; β = 0.064 – 0.095, p = 0.003 – 0.059), meaning that following periods of high violence, teachers exhibited higher emotional support. For teacher instructional support, I observed a similar pattern where positive effects occurred at all distances for 0.125 miles (β = -0.060 – 0.083, p = 0.013 – 0.081). An anomalous finding of negative effects also emerged for instructional support at 0.5 miles and longer durations (21 days and 30 days; β = 0.066 – 0.099, p = 0.016 – 0.099). This did not occur for other domains or for shorter durations at 0.5 miles, and thus did not represent a

Table 3.3.
Regression results for all violent crimes, teacher fixed effects (model 1)

	1 mile		0.5 mile		0.25 mile		0.125 mile	
	b/se	p	b/se	p	b/se	p	b/se	p
Emotional Support								
30 days	-0.039+	0.096	-0.052*	0.043	0.003	0.908	0.010	0.616
	(0.024)		(0.026)		(0.022)		(0.020)	
21 days	-0.025	0.263	-0.027	0.237	0.008	0.683	0.021	0.295
	(0.022)		(0.023)		(0.020)		(0.020)	
14 days	-0.016	0.426	-0.034	0.101	0.010	0.592	0.020	0.292
	(0.020)		(0.020)		(0.019)		(0.019)	
7 days	-0.048**	0.009	-0.061**	0.002	0.024	0.225	0.030	0.136
	(0.019)		(0.020)		(0.020)		(0.020)	
4 days	-0.032+	0.076	-0.035+	0.071	0.029	0.152	0.036+	0.066
	(0.018)		(0.019)		(0.020)		(0.019)	
Instructional Support								
30 days	-0.043	0.138	-0.037	0.185	-0.011	0.655	-0.015	0.477
	(0.029)		(0.028)		(0.024)		(0.021)	
21 days	-0.043	0.135	-0.032	0.228	-0.008	0.725	0.003	0.854
	(0.029)		(0.026)		(0.023)		(0.018)	
14 days	-0.020	0.447	-0.025	0.313	-0.007	0.727	0.003	0.869
	(0.026)		(0.025)		(0.021)		(0.018)	
7 days	-0.005	0.839	-0.025	0.290	0.004	0.860	0.014	0.450
	(0.025)		(0.023)		(0.022)		(0.018)	
4 days	-0.011	0.630	-0.028	0.222	0.013	0.541	0.011	0.582
	(0.023)		(0.023)		(0.022)		(0.019)	
Classroom Organization								
30 days	0.002	0.928	-0.026	0.294	0.008	0.707	0.007	0.733
	(0.025)		(0.025)		(0.023)		(0.020)	
21 days	0.005	0.827	-0.023	0.319	0.005	0.813	0.019	0.343
	(0.025)		(0.023)		(0.021)		(0.020)	
14 days	0.000	0.987	-0.029	0.200	0.015	0.447	0.018	0.344
	(0.024)		(0.022)		(0.019)		(0.019)	
7 days	-0.054*	0.015	-0.075**	0.001	0.010	0.646	0.022	0.262
	(0.022)		(0.023)		(0.021)		(0.020)	
4 days	-0.042*	0.038	-0.059**	0.006	0.018	0.372	0.022	0.287
	(0.020)		(0.022)		(0.020)		(0.021)	
Observations	2179		2179		2179		2179	

clear pattern. Teachers also demonstrated higher classroom organization when experiencing deviations in violent crime at the shortest distance (0.125 miles) and shorter time periods (4 days and 7 days; $\beta = 0.055 – 0.056$, $p = 0.060 – 0.091$).

Sensitivity Checks

I also ran models according to additional specifications to check for the sensitivity of these results. For the sake of parsimony, I do not include these results in the body of the chapter, but they can be examined in Appendix A. Table A.1 in Appendix A provides a summary of results from the falsification test for model 1. Falsification analyses showed a consistent pattern of null effects, thus contributing to support for the internal validity of this chapter. Table A.2 in Appendix A shows results for model 1 using school fixed effects instead of teacher fixed effects. These results demonstrate a nearly identical pattern of significant results to teacher fixed effects with similar effect sizes and standard errors. Table A.3 in Appendix A shows results for model 2 with school fixed effects for homicides and assaults only. This table also shows a similar pattern of significant results to the teacher fixed effects with one major difference. With school fixed effects there is no pattern of marginally significant results for classroom organization at 0.125 miles.

Discussion

In the current chapter, I examined how preschool teachers respond to violence that occurs in the neighborhood surrounding the school. I found a consistent pattern of small effects that showed that teachers demonstrated lower teaching quality following periods of high violent crime in the community and responded with improved observed teaching quality following homicides and assaults very close to the school. Below I explicate these major findings.

Table 3.4.
Regression results for homicides and assaults only, teacher fixed effects (model 2)

	1 mile		0.5 mile		0.25 mile		0.125 mile	
	b/se	p	b/se	p	b/se	p	b/se	p
Emotional Support								
30 days	-0.032	0.537	-0.045	0.353	0.003	0.927	0.028	0.515
	(0.051)		(0.049)		(0.038)		(0.043)	
21 days	0.003	0.958	-0.017	0.700	0.009	0.789	0.045	0.266
	(0.049)		(0.045)		(0.033)		(0.040)	
14 days	-0.006	0.898	-0.018	0.673	0.046	0.180	0.064+	0.059
	(0.044)		(0.043)		(0.034)		(0.034)	
7 days	-0.055	0.184	-0.043	0.316	0.036	0.308	0.086*	0.016
	(0.041)		(0.042)		(0.035)		(0.035)	
4 days	-0.035	0.368	-0.043	0.328	0.051	0.181	0.095**	0.003
	(0.039)		(0.044)		(0.038)		(0.032)	
Instructional Support								
30 days	-0.018	0.666	-0.099*	0.016	0.023	0.535	0.060+	0.081
	(0.042)		(0.041)		(0.037)		(0.034)	
21 days	-0.018	0.679	-0.066+	0.099	0.026	0.510	0.069+	0.053
	(0.043)		(0.040)		(0.039)		(0.036)	
14 days	-0.003	0.948	-0.047	0.258	0.047	0.198	0.065+	0.081
	(0.039)		(0.041)		(0.037)		(0.037)	
7 days	0.010	0.794	-0.029	0.494	0.034	0.403	0.069*	0.047
	(0.040)		(0.043)		(0.040)		(0.035)	
4 days	-0.020	0.600	-0.051	0.172	0.037	0.309	0.083*	0.013
	(0.038)		(0.037)		(0.037)		(0.033)	
Classroom Organization								
30 days	0.031	0.522	-0.017	0.728	-0.002	0.970	-0.022	0.631
	(0.048)		(0.050)		(0.041)		(0.045)	
21 days	0.040	0.406	0.003	0.954	-0.016	0.692	0.008	0.861
	(0.048)		(0.047)		(0.040)		(0.045)	
14 days	0.016	0.739	0.005	0.923	0.015	0.668	0.021	0.554
	(0.049)		(0.047)		(0.035)		(0.036)	
7 days	-0.039	0.328	-0.037	0.387	0.033	0.336	0.055+	0.091
	(0.040)		(0.042)		(0.034)		(0.033)	
4 days	-0.031	0.433	-0.051	0.208	0.037	0.297	0.056+	0.060
	(0.039)		(0.041)		(0.036)		(0.030)	
Observations	2179		2179		2179		2179	

Effects of School Community Violence on Teacher Quality

In this chapter, I found that teachers demonstrated a decrease in teaching quality following periods of violent crime in the school's broader community (>0.5 miles) but show no response to violent crimes closer to the school. Although the effects may seem small (i.e.,-0.075 < β < -0.032), these effect sizes are in line with previous work on the effect of community violence on parent discipline practices (Cuartas, 2018). This finding that violent crime deviations have effects at farther distances, but not at closer distances, from the school may initially appear to stand in contrast to the literature on the acute effects of violence that show that the effects of violence are stronger on residents' wellbeing when it occurs in closer proximity (Cuartas & Roy, 2019; Sharkey, 2010; Sharkey et al., 2012). However, since this chapter considers violence near the school rather than home, this different pattern of effects may be picking up on violence occurring near classroom children's homes.

On average in the United States, children live less than 4 miles from their early childhood education center (National Survey of Early Care and Education Project Team, 2016). This average distance to early childhood education centers is even smaller for children from low-income families and is likely even smaller for children living in densely populated urban environments such as the children in the current sample. The fact that this chapter finds effects for violent crime deviations in the broader community and not the immediate vicinity of the school may reflect a possible indirect effect of children on teachers. That is, children's experiences with residential community violence may affect teaching quality. Past research has found that children who are exposed to community violence get less sleep (Heissel et al., 2018), experience changes in cognitive functioning (McCoy et al., 2015; Sharkey et al., 2012), and

exhibit behavioral changes (Burdick-Will, 2018; Loomis, 2021), all of which are potentially disruptive in the classroom.

These behavioral changes from children may lead to a decrease in teacher quality. For instance, past work found that teachers indicated that emotional withdrawal was a coping mechanism teachers used to deal with the stressors of teaching in a high-violence community (Prilleltensky et al., 2016). Teachers in this study may have responded similarly, decreasing emotional support and their behavioral management (e.g., classroom organization) during periods of high community violence. It also may explain why I did not observe a decrease in instructional support but rather the domains of teaching quality that are tied to emotional/behavioral support.

In contrast, I also found in this chapter that teachers demonstrate higher-quality teaching practices following high periods of homicides and assaults in the school's near neighborhood (<0.125 miles surrounding the school). Although this finding may initially appear to be in opposition to traditional views of stress that predict a generalized *decline* in functioning following periods of high violence (e.g., Foster & Brooks-Gunn, 2009), it is in line with the "tend-and-befriend" model for female behavioral response to stressors (Taylor et al., 2000). This seems especially relevant given that over 94% of teachers in this sample are women. The "tend-and-befriend" model emphasizes that in response to stress, women often increase nurturing activities to protect themselves and offspring and to reduce distress. In this case, teachers may invest particular care in their teaching of children when they become aware of violence very near the school. Furthermore, that this result emerges for homicides and assaults, but not for violent crime may reflect teachers' awareness of violence occurring in the community, which I

hypothesize would be higher for homicides and assaults and for violence in closer proximity to the school.

Building on Sharkey's framework on exposure to violence (2018), I find that teachers who work, but who likely do not live in a community experiencing a period of high violence, are exposed to violent environments, but may not be exposed to violent situations. That is to say that although neighborhoods are generally considered to be geographically defined, Jarrett (1997) makes the argument that especially in higher-crime neighborhoods, neighborhoods are often also temporally defined. Different groups of the population publicly engage with the neighborhood at different times of the day. The temporal divide in the neighborhood is often separated according to the school day, with the morning and early afternoon dedicated for families and children to go about their daily business of school and running errands while the late afternoon and evening into the night are the times that crime is more likely to occur and families tend to stay indoors. For this chapter, it is possible that teachers are experiencing lower violent crime than what is reflected in the police record due to the times that teachers are in school neighborhoods.

Limitations and Future Directions

There are several limitations of the current study. First, this study estimated the short-term effect of deviations in violent crime on teacher and child outcomes, but I could not estimate the long-term cumulative effect of crime on teachers and children. This is because these analyses relied on variation in the exposure to violent crime for the same person; therefore, the points of comparison, observations within teachers and children, have the same long-term exposure. However, using the fixed effects method does allow for a better estimation of impacts than is possible by using methods that compare teachers in different communities to each other. The

accuracy of these analyses relies on the assumption that the timing of violent crimes relative to teacher and child observations is exogenous to teacher quality and child ability (e.g., lower-quality teachers were not systematically more likely to be observed following a homicide), thus allowing for a causal estimate of the effect of violent crimes on teaching quality. In future work, I seek to use more exploratory methods (e.g., structural equation models) to examine the bi-directional relation between teachers and children (and other caregivers such as parents) in the context of community violence.

Second, the seven cities included in these analyses are all major U.S. cities. Therefore, it is not clear whether these results, and the specific distances indicated here would hold in less densely populated cities or cities with lower levels of violence. However, it is important to note that most previous work about the effect of violent crime on children took place in Chicago or in major cities in Colombia. Looking across several U.S. cities in these analyses is a strength of this study and allows me to consider whether the effects of violent crime stretch beyond Chicago. This is an initial attempt that can be replicated on a larger scale with data from other cities. Furthermore, an exploration of other city and community factors that might impact the impact of violence on children could be explored.

Third, the data do not include information about where teachers or children live in relation to the school. It is certainly possible that some teachers and children live within the school neighborhood, and for those who also live in the neighborhood the expected impact of violent crimes in the school neighborhood would likely be stronger. Unfortunately, it is not possible to make that distinction with the data in this study. Future studies that have access to both home and school locations can make this comparison.

Fourth, this work relies on using administrative data to understand children's exposure to violence and does not include any measures for participants' victimization or witnessing of violence. Future work could compare community violent crime to teacher and parent reports. This would go beyond administrative data to get a better understanding of how community violent crime that occurs in the community is experienced and made salient by children and parents who live there. Past work shows that when children and parents have more similar reports of exposure to violent crime, that appears to be protective (Ceballo et al., 2001). It is an open question whether other forms of similar reports are also protective. For instance, is it beneficial for parents and children to report awareness of violent crime occurring in the community? Future work could also unpack the different impacts of different types of violent crime. While it is clear that homicides are the most impactful (Sharkey, 2018) and that stress tends to be generalized (Foster & Brooks-Gunn, 2009), it is possible that due to the nature of how information travels or how those who hear about the crime experience the threat that some violent crimes have more impact than others or that they impact different outcomes differently.

In addition to different types of violent crime, there are other features of crime that could be explored. For instance, crime occurs in different locations (e.g., in homes, on the street, in public places, etc.) and some crimes are solved or result in an arrest, while others never progress past the police report. Understanding these patterns and how they may reflect other aspects of the community such as collective efficacy or institutional trust (e.g., trust in the police) is also a ripe area for future research.

Finally, I was not able to address moderation in this study due to power limitations. Understanding moderation of the effects of violent crime deviations is an area primed for future

research. This would help us understand for whom and under what circumstances deviations in violent crime matter most for children, such as race, geographic factors, types of violent crime, and community violence rate. For instance, past research has shown that community violence disproportionately impacts Black children (e.g., Browning et al., 2017; Sharkey, 2010). Questions remain as to whether this same pattern is true for Black teachers or for teachers who work with Black children.

Future work can explore historical patterns of racism in communities to see how these patterns are related to trends in violence. As another example of moderation, future research can explore whether the ebb and flow of violence has more impact on people in high- or low-crime communities. Some research would indicate that children who are already taxed by the burden of crime would have their imbalance of risk and protective factors even worsened by an increase in violence relative to the mean whereas children in lower-crime environments would have protective factors (Burke et al., 2011; Cuartas & Roy, 2019). However, one study found that children who came from low-crime neighborhoods had their academic achievement most impacted by being in the classroom with children from high-crime neighborhoods (Burdick-Will, 2018), potentially indicating that they are more sensitive to the impacts of violence than children from higher crime neighborhoods.

Implications

Reducing the Occurrence of Violence Near Schools

This chapter demonstrates the deleterious effects of school neighborhood violence on teaching quality. The first priority to reduce the stress and trauma of violence on community members should always be to reduce violence and thereby mitigate the stressor (Foster &

Brooks-Gunn, 2009). The specific implication emanating from this chapter is then to reduce violent crime near schools.

While specific policy recommendations for reducing violence are beyond the scope of this paper, it is important to note that increased police presence as a tactic to reduce violent crime can have negative implications for community members. Indeed, increased police presence is one disruptive mechanism through which community members may be impacted by local violence (Sharkey, 2018). Trust and confidence in the police are low among those who live in high-violence contexts (Carr et al., 2007; La Vigne et al., 2017), a sentiment that extends to teachers and other school personnel who work in violent urban neighborhoods (Harding, 2010).

Trauma-Informed Preschools

While efforts to reduce violent crime near schools are pursued, schools can seek to be more trauma-informed, better meeting the needs of both teachers and students impacted by community violence. Trauma-informed teaching does not assume that children approach school with feelings of safety and puts an emphasis on building relationships with children so that educators better serve as protective factors (Hughes & Quinn, 2020).

One study with teachers who worked at schools located in violent communities found that teachers expressed personal safety concerns and empathized with students' reactions to community violence, but felt ill-equipped to handle changes in students' behavior (Prilleltensky et al., 2016). These feelings of inadequacy coupled with strained interpersonal relationships with students responding to community violence can be areas of risk for teacher stress (Prilleltensky et al., 2016). Working with children experiencing adverse experiences (e.g., community violence) can take its toll on teachers and eventually lead to burnout and compassion fatigue

(Hughes & Quinn, 2020). These distressed adults can compound the challenges for children burdened with community violence (Hughes & Quinn, 2020).

While this is something that can be implemented at a school-level, efforts to make schools more trauma-informed can also be addressed at the policy level (Loomis, 2018). In fact, in recent years, professional development for teachers to address trauma was the most common educational topic addressed by state legislatures in the United States (Temkin et al., 2021). This indicates that trauma-informed school practices are both needed and have political potential.

Conclusion

This chapter introduced the "ebb and flow" conceptualization for exposure to school neighborhood violence. Rather than consider the effects of specific acts of violence, this method takes as a given that some level of violent crime in a community is the norm and that the amount of violence varies from that norm, thus impacting teachers.

This chapter showed that preschool teachers respond to deviations in community violence surrounding schools. Teachers need training to respond in trauma-informed ways for children, even when they are not aware of specific acts of violence in the community. Finally, the findings of this chapter highlight the importance of considering the impacts of violence that occurs in people's broader activity spaces because violent crime in school neighborhoods can impact teaching quality.

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Appendix A.

This appendix includes additional analyses that were not included in the body of chapter 2 of the dissertation. These sensitivity analyses serve to further bolster the strength of the findings in the body of chapter 3, but are not essential to understanding the findings presented therein. Descriptions for the process of creating these estimates is found in the analytic strategy section of the body of the chapter. Here I include only the tables of results.

Pseudo Treatment

Table A.1.
Results for Teacher Fixed Effects Regression Analyses Using a Pseudo-Treatment

	1 mile		0.5 mile		0.25 mile		0.125 mile	
	b/se	p	b/se	p	b/se	p	b/se	p
Emotional Support								
30-day treatment	-0.043+	0.069	-0.057*	0.040	0.003	0.898	-0.009	0.777
	(0.024)		(0.028)		(0.025)		(0.031)	
30-day pseudo treatment	0.041+	0.072	0.030	0.176	0.023	0.390	-0.016	0.604
	(0.023)		(0.022)		(0.026)		(0.030)	
21-day treatment	-0.028	0.216	-0.029	0.236	0.017	0.477	-0.014	0.689
	(0.022)		(0.024)		(0.024)		(0.035)	
21-day pseudo treatment	0.006	0.803	0.004	0.878	-0.005	0.862	-0.019	0.597
	(0.022)		(0.023)		(0.027)		(0.036)	
14-day treatment	-0.013	0.522	-0.030	0.184	0.027	0.274	0.003	0.949
	(0.020)		(0.023)		(0.025)		(0.042)	
14-day pseudo treatment	-0.007	0.776	0.014	0.580	-0.011	0.720	-0.031	0.480
	(0.023)		(0.024)		(0.030)		(0.044)	
7-day treatment	-0.041*	0.035	-0.050*	0.030	0.016	0.617	-0.001	0.983
	(0.019)		(0.023)		(0.031)		(0.055)	
7-day pseudo treatment	0.024	0.305	0.006	0.795	0.009	0.810	0.009	0.874
	(0.023)		(0.024)		(0.037)		(0.059)	
4-day treatment	-0.021	0.302	-0.026	0.334	0.027	0.535	0.126	0.170
	(0.020)		(0.027)		(0.044)		(0.091)	
4-day pseudo treatment	0.039	0.151	0.003	0.926	-0.022	0.670	-0.085	0.474
	(0.027)		(0.027)		(0.051)		(0.118)	
Instructional Support								
30-day treatment	-0.043	0.145	-0.042	0.169	-0.022	0.396	-0.031	0.311
	(0.029)		(0.030)		(0.026)		(0.031)	
30-day pseudo treatment	0.031	0.202	0.001	0.983	-0.017	0.488	-0.066+	0.075
	(0.025)		(0.024)		(0.025)		(0.037)	

21-day treatment	-0.042	0.150	-0.035	0.231	-0.033	0.248	-0.028	0.359
	(0.029)		(0.029)		(0.028)		(0.031)	
21-day pseudo treatment	0.008	0.737	-0.032	0.155	-0.040	0.178	-0.030	0.464
	(0.024)		(0.022)		(0.030)		(0.041)	
14-day treatment	-0.013	0.625	-0.022	0.421	-0.016	0.558	-0.022	0.581
	(0.026)		(0.027)		(0.027)		(0.041)	
14-day pseudo treatment	-0.022	0.354	-0.049*	0.024	-0.037	0.174	-0.056	0.219
	(0.023)		(0.022)		(0.027)		(0.045)	
7-day treatment	0.005	0.839	-0.017	0.530	-0.037	0.240	-0.024	0.608
	(0.027)		(0.027)		(0.031)		(0.047)	
7-day pseudo treatment	-0.026	0.230	-0.061*	0.031	-0.034	0.339	0.050	0.392
	(0.021)		(0.028)		(0.036)		(0.058)	
4-day treatment	0.006	0.826	-0.033	0.277	0.025	0.587	-0.022	0.835
	(0.026)		(0.030)		(0.045)		(0.105)	
4-day pseudo treatment	-0.014	0.578	-0.039	0.249	0.016	0.722	-0.133	0.331
	(0.025)		(0.033)		(0.045)		(0.137)	
Classroom Organization								
30-day treatment	-0.001	0.982	-0.027	0.297	0.001	0.956	-0.020	0.520
	(0.026)		(0.026)		(0.025)		(0.030)	
30-day pseudo treatment	0.002	0.925	0.033	0.174	0.010	0.732	-0.044	0.212
	(0.024)		(0.024)		(0.029)		(0.035)	
21-day treatment	0.002	0.937	-0.024	0.356	-0.003	0.891	-0.029	0.382
	(0.025)		(0.026)		(0.025)		(0.033)	
21-day pseudo treatment	-0.024	0.330	-0.011	0.671	-0.035	0.246	-0.043	0.275
	(0.024)		(0.025)		(0.030)		(0.040)	
14-day treatment	-0.002	0.934	-0.031	0.207	0.019	0.462	-0.005	0.888
	(0.024)		(0.025)		(0.025)		(0.039)	
14-day pseudo treatment	-0.029	0.232	0.002	0.923	-0.020	0.536	-0.031	0.499
	(0.024)		(0.025)		(0.033)		(0.046)	
7-day treatment	-0.056*	0.021	-0.064*	0.019	-0.024	0.446	-0.029	0.524
	(0.024)		(0.027)		(0.031)		(0.045)	
7-day pseudo treatment	0.003	0.897	-0.009	0.753	-0.025	0.499	0.017	0.734

	(0.022)		(0.027)		(0.037)		(0.051)	
4-day treatment	-0.041+	0.082	-0.071*	0.016	0.005	0.907	0.036	0.682
	(0.024)		(0.029)		(0.044)		(0.087)	
4-day pseudo treatment	0.017	0.500	-0.009	0.756	-0.061	0.208	-0.043	0.710
	(0.025)		(0.030)		(0.049)		(0.116)	
Observations	2154		2025		1780		1228	

School Fixed Effects, All Violent Crimes

Table A.2.
Results for School Fixed Effects Regression Analyses for All Violent Crimes

	1 mile		0.5 mile		0.25 mile		0.125 mile	
	b/se	p	b/se	p	b/se	p	b/se	p
Emotional Support								
30 days	-0.038	0.119	-0.047+	0.076	0.013	0.578	0.017	0.372
	(0.024)		(0.027)		(0.022)		(0.019)	
21 days	-0.025	0.258	-0.028	0.248	0.017	0.418	0.023	0.247
	(0.022)		(0.024)		(0.021)		(0.020)	
14 days	-0.014	0.503	-0.034	0.101	0.016	0.396	0.022	0.226
	(0.021)		(0.021)		(0.019)		(0.018)	
7 days	-0.051**	0.006	-0.070**	0.001	0.025	0.209	0.023	0.223
	(0.018)		(0.022)		(0.020)		(0.019)	
4 days	-0.031+	0.077	-0.036+	0.056	0.028	0.158	0.026	0.167
	(0.017)		(0.019)		(0.020)		(0.019)	
Instructional Support								
30 days	-0.046	0.122	-0.036	0.189	-0.003	0.890	-0.013	0.606
	(0.030)		(0.028)		(0.025)		(0.026)	
21 days	-0.045	0.125	-0.035	0.166	-0.004	0.838	0.005	0.805
	(0.029)		(0.026)		(0.022)		(0.019)	
14 days	-0.023	0.387	-0.033	0.173	-0.007	0.769	0.003	0.867
	(0.026)		(0.024)		(0.023)		(0.020)	
7 days	-0.012	0.622	-0.038	0.099	0.009	0.695	0.014	0.479
	(0.024)		(0.023)		(0.023)		(0.019)	
4 days	-0.011	0.640	-0.034	0.130	0.016	0.525	0.010	0.575
	(0.023)		(0.023)		(0.025)		(0.019)	
Classroom Organization								
30 days	0.001	0.969	-0.034	0.184	0.016	0.495	0.011	0.576
	(0.028)		(0.026)		(0.023)		(0.020)	
21 days	0.007	0.773	-0.030	0.229	0.007	0.729	0.019	0.332
	(0.025)		(0.025)		(0.021)		(0.019)	
14 days	0.002	0.918	-0.036+	0.087	0.010	0.577	0.018	0.321
	(0.024)		(0.021)		(0.018)		(0.018)	
7 days	-0.056*	0.011	-0.088***	0.000	0.007	0.763	0.017	0.364
	(0.022)		(0.022)		(0.023)		(0.019)	
4 days	-0.044*	0.038	-0.064**	0.003	0.014	0.482	0.019	0.277

	(0.021)	(0.021)	(0.020)	(0.017)
Observations	2179	2179	2179	2179

School Fixed Effects, Homicides and Assaults Only

Table A.3.

Results for School Fixed Effects Regression Analyses for Homicides and Assaults Only

	1 mile		0.5 mile		0.25 mile		0.125 mile	
	b/se	p	b/se	p	b/se	p	b/se	p
Emotional Support								
30 days	-0.038	0.471	-0.041	0.400	0.011	0.778	0.038	0.380
	(0.053)		(0.048)		(0.038)		(0.044)	
21 days	-0.004	0.930	-0.014	0.761	0.020	0.549	0.054	0.211
	(0.050)		(0.046)		(0.033)		(0.043)	
14 days	-0.007	0.875	-0.021	0.603	0.045	0.157	0.070+	0.062
	(0.046)		(0.041)		(0.032)		(0.037)	
7 days	-0.071	0.115	-0.067	0.144	0.020	0.576	0.072*	0.042
	(0.045)		(0.046)		(0.036)		(0.035)	
4 days	-0.046	0.218	-0.061	0.181	0.034	0.383	0.077*	0.022
	(0.037)		(0.045)		(0.038)		(0.034)	
Instructional Support								
30 days	-0.013	0.775	-0.089	0.066	0.036	0.373	0.071+	0.060
	(0.046)		(0.048)		(0.040)		(0.038)	
21 days	-0.015	0.737	-0.061	0.151	0.039	0.340	0.078+	0.055
	(0.044)		(0.042)		(0.040)		(0.040)	
14 days	0.004	0.906	-0.046	0.290	0.050	0.247	0.079+	0.076
	(0.037)		(0.043)		(0.043)		(0.044)	
7 days	-0.002	0.950	-0.041	0.344	0.038	0.345	0.076+	0.051
	(0.036)		(0.043)		(0.040)		(0.039)	
4 days	-0.022	0.501	-0.057	0.113	0.045	0.296	0.090*	0.014
	(0.033)		(0.036)		(0.043)		(0.036)	
Classroom Organization								
30 days	0.031	0.553	-0.012	0.821	0.018	0.689	-0.005	0.916
	(0.052)		(0.053)		(0.046)		(0.049)	
21 days	0.038	0.442	0.007	0.892	-0.003	0.945	0.023	0.639
	(0.050)		(0.054)		(0.046)		(0.048)	
14 days	0.020	0.697	0.003	0.945	0.012	0.738	0.028	0.483
	(0.051)		(0.050)		(0.036)		(0.040)	
7 days	-0.050	0.236	-0.058	0.156	0.016	0.615	0.042	0.216
	(0.042)		(0.041)		(0.033)		(0.034)	
4 days	-0.046	0.286	-0.064	0.125	0.021	0.550	0.041	0.182
	(0.042)		(0.042)		(0.036)		(0.031)	
Observations	2179		2179		2179		2179	

Outliers

I did not conduct regression analyses removing outliers for teachers because no teacher observations were preceded by periods of violence that were greater than 50 SDs away from the mean.