ADVERSITY AND ATTACHMENT IN EARLY CHILDHOOD EDUCATION: A GROUP-RANDOMIZED TRIAL OF THE CIRCLE OF SECURITY-CLASSROOM APPROACH IN A HEAD START CENTER

by

TRASIE ADAMS TOPPLE

(Under the Direction of M. Elizabeth Vonk)

ABSTRACT

Using an early childhood adversity and attachment framework, this dissertation examined the Circle of Security-Classroom (COS-C) approach, an attachment-based intervention for early childhood educators (ECEs), in a Head Start (HS) Center. The research aims were to test effects of the 8-week caregiving sessions on student–teacher relationship (STR) quality, teacher well-being, and teacher-report of student social–emotional functioning. A group-randomized trial design was used to assign HS ECEs (N = 16 ECEs, n = 103 students, M_{age} = 4) to receive either COS-C or training-as-usual (TAU) during a 2-month period. ECEs completed demographic surveys and pre- and post-surveys on depression, stress, and self-efficacy, and reported on STR and student social–emotional functioning. Information on student demographics and adversities was collected from HS program data.

Repeated measures ANOVA was used to assess intervention effects for ECEs' outcomes, and a series of mixed-effects regression models to account for student data nested within teacher clusters was tested on STR and social–emotional functioning.

Results indicate significant within-group shifts for COS ECEs' depression levels, but no group x time interaction emerged. COS ECEs decreased in stress and increased in self-efficacy, while the TAU group increased slightly in both stress and self-efficacy; however, no significant within-group, between-groups, or group x time interaction emerged. COS participant feedback showed improvement in understanding of attachment behavior and increased strategies for fostering secure relationships. Mixed-effects regression model results showed significant intervention effects for STR closeness. A significant three-way interaction emerged for group x time x student adversity level with COS ECEs increasing in closeness significantly with students in the high adversity category level ($\geq$ 3 adverse experiences), while TAU ECEs decreased in closeness with this subset of population. No significant group x time effect was found for STR conflict nor for ECEs' ratings of student's social–emotional functioning. Overall, this study showed COS effectiveness for improving STR for young children from low-resourced households experiencing high adversities, but no significant differences in teacher functioning nor student social-emotional functioning emerged as compared to the TAU group. Study limitations, implications, and recommendations for future research are discussed.

INDEX WORDS: Circle of Security-Classroom, early childhood education, Head Start, preschool, student–teacher relationships, attachment, adverse childhood experiences, early childhood adversity, group-randomized control trial

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DEDICATION

To my girls, Ruby Eugenia and Zia Lanier, who inspire and amaze me every day with their unconditional love, pure joy, and boundless curiosity for life

To my husband, Chester Craig, who has believed in me, supported me, and cheered me on every step of the way

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My youngest daughter, Zia, offered some practical advice, “Mommy, I have a suggestion for your dissertation.....if you have to take a breath, then it’s the end of a sentence (big breath). We learned that in school today. So, remember that for your dissertation, okay, Mommy?” I have had to remember to breathe throughout this process, as my daughters learned well the word *dissertation.* Their mommy has been writing a lot of sentences for much of their seven and nine years of living. They have endured through. It takes a village to raise a child. Similarly, it has taken a supportive community, including my daughters, to “raise” this dissertation. Many people are to thank for the multitude of sentences that are contained in this document.

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CHAPTER 1

INTRODUCTION

Young children learn ways of being in the world in the context of their caregiving relationships. Increasingly, the important role of safe, secure relationships for young children extends beyond the nuclear family to include other caregiving environments in the community. Approximately two-thirds of U.S. households with children under the age of 6 are families with all adults working outside the home (Glynn, 2014). Subsequently, most young children in the United States are receiving some form of non-parental care, that is, care from someone other than their legal guardians. Approximately 60% of children aged 3-6 not yet in kindergarten are enrolled in some organized form of childcare, such as daycare or preschool (U.S. Department of Education, 2017). Early childhood educational settings such as Head Start (HS) centers—federally funded preschools—are an important component of the community caregiving network, particularly for low-income households that rely on quality, affordable childcare to provide for their families. Moreover, in addition to offering childcare that benefits low-income families, quality early childhood educational settings provide young children with a solid foundation in social and emotional competencies for successful transition into kindergarten and beyond (Office of Head Start, 2014).

Safe adult–child relationships co-regulate a child's experiences and support social and emotional learning which provides the foundation for cognitive learning (Schore, 2005). Young children with high social and emotional functioning show greater attention

spans and engagement levels, higher executive functioning, and stronger peer relationships (Shonkoff & Phillips, 2000). Given the importance of social relationships for early learning, it is not surprising that strong student–teacher relationships are significantly correlated with successful early learning and school readiness outcomes (Buyse, Verschueren, & Doumen, 2011; Howes & Smith, 1995; O'Connor, Dearing, & Collins, 2011).

Background

Attachment and early childhood adversities. At a time when young children experience rapid growth, secure adult–child relationships, including those with early childhood educators, support healthy development across physical, cognitive, behavioral, and social–emotional domains (Cassidy & Shaver, 2008; Sroufe, Egeland, Carlson, & Collins, 2005). Furthermore, early developmental regulatory processes (i.e., emotion, behavior, attention, physical) are sensitive to environmental factors and adaptive to early caregiving experiences (DiCorcia & Tronick, 2011; Perry & Pollard, 1998; McEwen, 2007). As such, secure attachments with adults not only support positive development but also buffer children from the negative impact of early childhood adversities or stresses, such as trauma, violence, maltreatment, and poverty, offering the opportunity for more resilient outcomes (Kochanska, Philibert, & Barry, 2009; Shonkoff et al., 2012). The buffering effect of secure attachments is particularly significant given that 26% of children will witness or experience a traumatic event by age 4 (Briggs-Gown, Carter, & Ford, 2012). Prevalence rates show that one in five children will witness violence in their neighborhoods or home, and nearly 14% of children will experience abuse and neglect (Finkelhor, Turner, Shattuck, & Hamby, 2013).

The pervasiveness of adverse experiences in childhood suggests that many young children come into formal classroom settings with emotional and behavioral dysregulations that make learning difficult. In preschool classrooms, large numbers of young children from low-income households experience challenges, with over 40% demonstrating delays in social competence and learning engagement and over 20% exhibiting high rates of aggressive–oppositional behavior at school entry (Kaiser, Hancock, Cai, Foster, & Hester, 2000). These staggering numbers may help explain why preschool children are expelled from school at overwhelming rates of three times that of K through 12th-grade students, with boys more than four and half times more likely than girls to be expelled (Gilliam, 2005). Furthermore, emotion, attention, and behavioral dysregulation due to trauma exposure and the stresses of poverty overlap with common, highly medicated childhood diagnosable disorders such as attention-deficit/hyperactivity disorder (ADHD) and other externalizing behavior disorders (Ford et al., 2000). Research has shown that supporting young students at risk for early adversity with safe, trusting relationships, as characterized by low levels of conflict and high levels of closeness in the classroom, increases their ability to regulate and manage difficult emotions and behaviors (Colley & Cooper, 2017; Cozolino, 2013; Denham & Burton, 2003; Greenberg, 2006). Moreover, supportive relationships may be particularly important for populations with hyper-aroused stress response systems attributed to early childhood adversities, such as poverty, maltreatment, over-crowded living conditions or poor primary caregiving relationships (Cicchetti, Rogosch, & Toth, 2006; Oshri, Topple, & Carlson, 2017). Preschool experiences that foster strong student–teacher interactions may be particularly important to buffer children living with adversity from maladaptive

behaviors and place them on more resilient developmental trajectories (Nix, Bierman, Heinrichs, Gest, Welsh, & Domitrovich, 2016).

Head Start centers. In recognition of the importance and urgency of quality early childcare programs for vulnerable children living in impoverished communities and households, HS preschools were instituted some 60 years ago as a federally funded initiative. Today, HS classrooms serve approximately 770,000 children in 1,600 centers around the country. In full-day Head Start classrooms, young children, aged 3 to 5, spend on average 35 hours per week in the care of and learning from early childhood educators. The amount of time that children spend in preschool classrooms creates ample opportunities for moment-to-moment patterns of interactions between student and teacher to develop into behavioral strategies that influence attachment style (i.e., secure, insecure, or disorganized) on both the part of the educator and student to meet salient developmental needs. Strong student–teacher relationships help children manage stresses in the classroom and have been linked to positive social–emotional development and successful academic outcomes (Hamre & Pianta, 2004). However, there are several threats to the formation of strong student–teacher relationships. In previous research, children with difficult behaviors tend to show greater conflict in teacher relationships (Jerome, Hamre, & Pianta, 2009). Boys, on average, have been reported to display more externalizing and challenging behaviors in the classroom than their female peers (Hamre, Pianta, Downer, & Mashburn, 2008). Thus, gender has been linked to student–teacher relationships, such that teachers tend to report more closeness with girls and more conflict with boys (Jerome, Hamre, & Pianta, 2001). Some researchers suggest that boys may be more vulnerable to developing early problem behaviors that lead to more conflict

with teachers (Hamre & Pianta, 2001), while others have theorized that since the majority of preschool teachers are female, it may be easier for teachers to form relationships with children who are more similar to themselves (Rudasill, 2011).

When young children present with challenging behaviors in the classroom, teachers can become overwhelmed and experience stressful job conditions and burn-out, which may contribute to high early childhood educator turn-over rates (Hamre et al., 2008). Ultimately, ECEs' capacities to regulate their own stress and emotions affect the quality of the student–teacher relationship (Forry et al., 2013). Researchers have found higher rates of insecure attachments than secure attachments with caregivers for students in center-based care (Ahnert, Pinquart, & Lamb, 2006; Howes & Smith, 1995; Whitebook, Phillips & Howes, 2014), indicating a need for school-based interventions to increase the likelihood of secure attachments in preschool classroom settings. Given the significance of strong student–teacher relationships both in and out of school, it is fundamental that early childhood educators (ECEs) not only understand the buffering role of the attachment relationship but are also competent in implementing strategies to increase the likelihood of forming secure attachments with their young students.

Because of Head Start's exclusive focus on providing quality early childhood education to under-resourced and economically disadvantaged students, the research and study of HS programs provide important scientific knowledge on how educational settings can increase positive educational, developmental, and social outcomes for children living in poverty, thereby helping break cycles of intergenerational adversities. In HS research, practice, and policy, professional development modules have largely focused on providing ECEs with training to increase young children's cognitive (i.e.,

literacy, executive functioning) and social–emotional (i.e., emotion regulation, social skills) outcomes for school success (Powell, Diamond, Burchinal, & Koehler, 2010; Lillvist, Sandberg, Björck-Äkesson, & Granlund, 2009). However, despite a growing body of work on the centrality of strong student–teacher relationships for school readiness outcomes, such as social–emotional development (Hamre & Pianta, 2001; 2005; Graziano et al., 2016; Mashburn & Pianta; 2006; Mashburn et al., 2008), there is a lack of professional development trainings to prepare ECEs to recognize, understand, and meet the complex attachment needs of young children.

The Circle of Security-Classroom approach. Professional development training models designed to strengthen the student–teacher relationship in the preschool environment are limited. The few professional development approaches that exist in the current early childhood education literature to increase the quality of early student–teacher classroom interactions use behavioral-based strategies (Early, Maxwell, Ponder, & Pan, 2017) and lack attachment-based frameworks or understanding of early adversity. Yet a fundamental understanding of the function of safe relationships, as well as the effect of adversity, is essential to intervention programs designed to strengthen the quality of caregiving relationships (Schore & Schore, 2007; National Child Traumatic Stress Network, 2018). The utilization of an attachment-based versus a behavioral-based approach in early childhood classrooms is crucial for children who have experienced early adversities. Secure relationships provide extra support in times of stress and contribute to the development of important self-regulatory capacities (Sciaraffa, Zeanah, & Zeanah, 2018) needed for sustained social–emotional and academic success.

The Circle of Security-Classroom approach (Cooper, Hoffman, & Powell, 2017) is a caregiving intervention that can be used with ECEs in the classroom to increase knowledge and understanding of attachment behaviors and the negative impact of adversities on young children's behavior and development. The COS-C was adapted from the Circle of Security-Parenting (COS-P; Cooper, Hoffman, & Powell, 2011) attachment-based intervention used to foster secure attachment among primary caregivers of children from birth to 5 years of age. This COS-classroom approach is increasingly utilized in HS centers as a professional development module with ECEs targeted as primary caregivers in school settings.

COS-P intervention studies have shown significant shifts in more desirable attachment styles as well as increases in parental sensitivity and reflective functioning (Cassidy et al., 2010; Cassidy, Woodhouse, Sherman, Stupica, & Lejuez, 2011; Hoffman, Marvin, Cooper, & Powell, 2006; Marvin, Cooper, Hoffman, & Powell, 2002). In the only published research on the COS-C approach, Gray (2015) studied the effect of COS-C with home-based family childcare providers ($N = 34$) as a professional development module as compared to a community comparison group ($N = 17$) that did not receive the training. The quasi-experimental study found significant pre-post findings for provider self-efficacy and for competency level in managing children's difficult behaviors as compared to the community group of family childcare providers. Provider feedback on the intervention as a professional development module was overwhelmingly positive. However, the study lacked control conditions and quantitative measurement of the effect on the child–adult relationship or child development measures. To date, no published

study has shown the effect of COS-C on student, ECE, or student–teacher relationship outcomes in a center-based preschool setting such as HS.

Thus, while some research on strengthening student–teacher interactions in preschool-aged children through professional development modules has been conducted, a large research and practice gap remains regarding effective ways for ECEs to increase knowledge and understanding of the attachment system (i.e., the biological control system for the regulation of both exploratory and attachment behaviors) and strategies to increase the quality of student–teacher interactions in a formal school setting. Without safe adult–child relationships, learning for any child becomes challenging, particularly so for children exposed early on to forms of adversity such as poverty, trauma, low-quality primary attachments, abuse and neglect, and community violence.

Statement of Problem

Increasingly, children under the age of 6 are spending more time outside the household and in early childhood educational centers, thus expanding their early childhood experiences into the classroom. Early childhood experiences impact the organization of important emotional, biological, neural, and physical regulatory systems for children as they age (Philips & Shonkoff, 2000). Safe adult–child relationships co-regulate a child's experiences and provide her with the necessary support in learning developmentally salient tasks such as managing emotional and behavioral responses to stress or fear (Schore, 2005; Tronick & Beeghly, 2011). When young children enter formal school settings, the absence of a primary attachment figure and the complexities of early child adversities may heighten the stress response system, making early student–teacher relationships crucial in creating a safe and trusting environment for learning.

Increasing ECE knowledge and strategies to create strong student–teacher relationships can support a multitude of successful outcomes for both teacher and students within and outside the classroom (Hamre & Pianta, 2001, 2005).

Congruent with evidence from research in early parent–child attachment and the impact of adversities on early childhood development, education-based research shows that high-quality early student–teacher relationships can protect children from maladaptive problem behaviors and promote future academic and interpersonal success in important outcomes such as executive functioning, emotion regulation, social skills, language development, early literacy, and school readiness (Burchinal, Roberts, Zeisel, Hennon, & Hooper, 2006; Buyse, Verschureern, & Doumen, 2011). Furthermore, substantial evidence demonstrates that social–emotional and academic gains through strong student–teacher interactions are even greater for children who may be experiencing poverty, poor primary caregiving attachments, maltreatment or other adverse childhood experiences (Denham & Burton, 2003; Nix et al., 2016).

HS, a federally funded preschool program, serves low-income populations that are at risk for overexposure to early adversities in childhood. Although evidence shows that secure attachment relationships can serve as a potential buffer from early childhood adversities and form the foundation of early learning, professional development opportunities for ECEs in HS programs to understand and meet key attachment needs in young children are minimal. The COS-P parenting intervention has a growing evidence base for supporting increases in caregiver awareness and sensitivity of attachment behaviors that have resulted in more secure attachment behaviors from both children and caregivers (Hoffman et al., 2006; Cassidy et al., 2017). The COS-C, adapted from the

COS-P, transfers principles, knowledge, and strategies to increase attachment security with ECEs, as well as to increase emotional and behavioral regulation strategies in the classroom. The COS-C has shown some evidence of increasing early childcare providers' competency and self-efficacy in home-based centers (Gray, 2015), but research on center-based preschool settings and on potential student well-being indicators (i.e., emotion and behavior regulation) is lacking.

Purpose of Study

The primary purpose of this study is to evaluate the effects of a COS-C training module on student–teacher relationship quality and on student and teacher well-being outcomes in a HS center, with classroom educators randomly assigned to receive either COS-C or training as usual (TAU). Other professional development modules for increasing student–teacher interactions do not include practices sensitive to early childhood adversities and are typically behaviorally based. Previous research with the COS-C intervention is limited in focus solely to home-based centers with family childcare providers and does not examine center-based settings with accredited early childhood educators. The one published study to date on the COS-C approach measured its effect (i.e., self-efficacy, competency, depression) on family childcare providers but did not assess if the positive outcomes of COS professional development had any influence on student-level outcomes. In addition, although the study used a comparison group, it did not use control conditions.

This current study adds to the literature in three distinct ways. First, it expands knowledge on attachment-based interventions with non-parental caregivers with low-resourced populations over-exposed to adversities. Second, it expands the measurement

of the COS-C approach to center-based preschool settings with accredited early childhood educators. Third, it increases the rigor of research conducted thus far on the COS-C approach by including group-randomized control trial conditions and effects on student-level variables.

Study Questions and Hypotheses

This study seeks to answer questions regarding the extent to which COS-C is able to increase ECEs' perception of the quality of student–teacher relationships and whether intervention effects positively influence child functioning as compared to TAU. In order to test if the COS-C is more effective for some ECEs or students than for others, the proposed study also examines potential moderators of intervention effects, including student gender and adversity scores. Moreover, since the primary target population of the COS-C professional development is ECEs, this proposed study examines the effect on ECEs' variables associated with higher quality student–teacher interactions (i.e., decrease in job stress and depression, increase in self-efficacy). These inquiries are divided into three broad questions, each containing specific questions as listed below.

1) Does the COS-C training have a significant positive effect on teacher well-being variables (job stress level, depression level, and self-efficacy) at post-training as compared to TAU?
2) Does membership in the COS-C training group significantly predict ECEs' perception of the quality of relationship (i.e., decrease in conflict and increase in closeness) with individual students at post-training as compared to TAU?

3) Does membership in the COS-C training significantly predict ECEs' perception of student social–emotional functioning as measured by a decrease of problem behaviors at post-training as compared to the TAU?

Study hypotheses. The COS-C intervention is delivered to early childhood educators; however, since the intervention has the potential to directly affect both teacher- and student-level outcomes, the research questions and their following hypotheses (H) are organized by teacher effects, student–teacher relationship effects, and student effects.

Study question 1. Does the COS-C training have a significant positive effect on teacher well-being variables at post-training as compared to TAU? The following hypotheses listed below are based on previous research findings with COS intervention populations (see Table 2.1), particularly the Gray (2015) study conducted with childcare providers.

- H1: It is hypothesized that COS-C ECEs will show a significant decrease in depression levels at post-test as compared to ECEs in the TAU group.
- H2: It is hypothesized that COS-C ECEs will show a significant decrease in job stress levels at post-test as compared to ECEs in the TAU group.
- H3: It is hypothesized that COS-C ECEs will show a significant increase in perception of self-efficacy in managing challenging behaviors and influencing students as compared to ECEs in the TAU group.

Study question 2. Does membership in the COS-C training group significantly predict ECEs' perception of the quality of relationship with individual students at post-training as compared to TAU? The following hypotheses listed below are based on a

large body of work of previous research findings on student–teacher relationships, attachment relationships, and the impact of early childhood adversity on child functioning (see Chapter 2 for a review of the literature).

- H4: It is hypothesized that ECEs in both groups will change over time in their perception of the quality of student–teacher relationship. As seen in previous work in student–teacher relationships, both groups will increase in closeness and decrease in conflict from pre-test to post-test.
- H5: Since the COS-C professional development specifically targets increasing security in attachment relationships, it is expected that membership in the COS ECE group will significantly predict a higher student–teacher relationship closeness score at post-test as compared to the TAU group.
- H6: Since the COS-C professional development provides ECEs with training on understanding young children's behaviors in a relational context, it is expected that membership in the COS ECE group will significantly predict a lower student–teacher relationship conflict score at post-test compared to the TAU group.
- H7: Based on research findings on negative outcomes for children experiencing early childhood adversity, it is hypothesized that early childhood adversity will significantly predict quality of relationship over time, that is, a decrease in closeness and increase in conflict, for both groups.

However, it is unknown if students' early adversities will have a moderating role on intervention effects because of the lack of research in this area; thus, an interaction effect of group by time by childhood adversity level will be included as an exploratory examination.

Study question 3. Does membership in the COS-C training significantly predict ECEs' perception of student social–emotional functioning in the classroom at post-training as compared to the TAU group? The following hypotheses listed below are based on previous research findings with COS interventions with primary caregivers (see Table 2.1).

- H8: It is hypothesized that the COS-C group, as compared to the TAU group, will significantly predict a decrease in ECEs' ratings of students' social–emotional difficulties in the classroom from pre-test to post-test.

However, since this is the first study to test a COS-C intervention on child social emotional functioning, and since post-test will occur immediately after training, it is uncertain if there is sufficient time to demonstrate COS-C classroom differences in child outcomes.

Significance of Study

Poverty, the primary eligibility requirement for Head Start classroom admission, increases children's likelihood of exposure to multiple stressors, such as food insecurity, family instability, crowded living conditions, and violence (Nix et al., 2016). Research has demonstrated the powerful influence of early life experiences on the developing capacities for social–emotional regulation and learning. Furthermore, numerous studies have shown that experiences and relationships in the early years of life influence school

readiness and future relationships (Bergin & Bergin, 2009; Shonkoff & Phillips, 2000; Shonkoff et al., 2012). Student-teacher interactions that promote safe, trusting relationships are foundational to fostering the healthy emotional and behavioral regulation critical for school readiness. However, attachment-based professional development modules for ECEs in preschool settings are limited. The COS-C module shows promise but has not yet been tested with this population.

Early childhood education is of growing interest for social workers. There is considerable public support for programs and services to support young children and their families. There is also a growing awareness of the influence of early experiences on brain development and later school readiness indicators. Consideration of the influencing factors of the environment on the developing child is an important contribution from the field of social work for application in early childhood settings (Bronfenbrenner, 1993; Frankel, 1997). Increasingly, there are more opportunities for social workers to develop and deliver interventions for families and support the capacity-building of professionals in early childhood programs (Azzi-Lessing, 2010). In particular, social workers can bring expertise in systems knowledge, culturally relevant practices, and relationship-based approaches to guide teachers and classroom staff in supporting the mental health and well-being of young children. In addition, research on best mental health practices in early education settings can help close educational achievement gaps and support social work advocacy initiatives for funding and services that support impoverished, minority populations in HS programs.

This study proposes to expand knowledge on attachment-based professional development modules important to the field of social work in several ways. First, HS

ECEs receive minimal training on attachment relationships with young children, leaving educators unprepared to meet early relational needs and to respond in the moment in developmentally supportive ways to emotional and behavioral cues in the classroom. Results from this study may have important practice and policy implications regarding ECEs' professional development around increasing knowledge, awareness, and skills in meeting key attachment needs essential for learning, increasing teachers' self-efficacy and decreasing stress. If COS-C training is found effective, HS centers would benefit from a cost-effective, evidence-based professional development model to enhance learning in the classroom for our youngest and most vulnerable student population, perhaps closing known educational achievement gaps for low-income populations sooner. Second, if teacher benefits emerge, COS training could help lower stress, increase support, and contribute to longevity in the workplace in a field plagued with high turn-over rates. Lastly, HS centers are under federal regulation and are required to adhere to policy-determined developmental standards. This research project specifically aims to help HS achieve standards set under social–emotional domains in self-regulation for preschoolers. A current HS school readiness goal is that children will be able to regulate their emotions as developmentally appropriate. The COS-C training targets student–teacher interactions in order to give teachers effective, developmentally appropriate ways of responding to and supporting young students' self-regulation of emotions and behavior.

Definition of Terms

The following section briefly defines key terms and concepts of this research study. Key terms include adverse childhood experiences, attachment, buffer effect,

Circle of Security interventions, caregiver, co-regulation, early childhood adversities, early childhood educators, Head Start, preschool, resilience, self-regulation, student–teacher relationship, toxic stress, and trauma.

Adverse childhood experiences (ACEs). ACEs are early childhood experiences that include experiences such as maltreatment, household violence, food insecurity, parental incarceration, and parental mental illness. Higher ACEs are linked to negative physical (i.e., heart disease, diabetes, etc.), emotional, mental, and academic outcomes (Anda et al., 2006).

Attachment. Attachment refers to bi-directional patterns of relational interactions between a caregiver and a child that develop over time. Attachment is not a diagnosis but a set of observable behaviors with the goal of seeking proximity to a preferred adult in times of threat or danger for co-regulation. The attachment systems involve both exploratory and attachment behaviors.

Buffer effect. The supportive presence of protective adults that allow young children to positively adapt to stressful events or experiences through effective adult–child co-regulation strategies.

Circle of Security (COS) interventions. COS interventions are attachment-based interventions to increase secure and organized attachments (Hoffman et al., 2006). There are currently three forms of service delivery, all requiring various levels of training and certification: 1) Circle of Security-Intervention (COS-I): A 20-week treatment model utilizing individualized parent–child video interaction delivered in a group or individual therapeutic setting by a licensed master's-level clinician; 2) Circle of Security-Parenting (COS-P): An 8-week, manualized intervention utilizing a pre-recorded video-based

format for parent–child interactions delivered in either a group or individual setting. Intervention can be delivered by anyone who completes certification, regardless of licensure. This format is not therapeutic but psycho-educational in content and discussion; and 3) Circle of Security-Classroom (COS-C): A format that can be delivered as professional development modules to early childcare educators and staff. It is the same manualized video used with COS-P, except that it is tailored toward classroom interactions.

Caregiver. A caregiver is any significant person caring for a child in an organized or informal setting on a consistent basis. Caregivers may include parents, grandparents, foster parents, day care workers, and early childhood educators.

Co-regulation. Co-regulation is the ability of a caregiver to support a young child's management of and coping with strong emotions and behavior in healthy ways that decrease stress responses and arousal. Often, co-regulation helps children organize and make sense of their experiences.

Early childhood adversity. Early childhood adversities are negative experiences occurring early in life that can shape development with potential damaging effects for learning, behavior, and mental and physical health. These experiences can include poverty, trauma, toxic stress, parental mental illness, in utero exposure to toxins, and abuse and neglect.

Early childhood educator (ECE). An ECE is any teaching professional in preschool classrooms, including teachers, paraprofessionals, and support aides in the classroom. This term and acronym (ECE) are used throughout the study, are synonymous with teacher, and do not refer to early childhood education.

Head Start (HS). Head Start, one of the longest-running federally funded program, began in 1965 as an initiative of Lyndon B. Johnson's "War on Poverty" to provide early childhood education for disadvantaged children. Eligibility requirements are age of child (3 to 5 years of age) and household income at or below the federal poverty line. HS classrooms serve approximately 770,000 children in 1,600 centers around the nation.

Preschool. Organized early childhood education for children, typically between the ages of 3 and 5, prior to entering kindergarten.

Resilience. Resilience refers to the capacity of an individual to recover from significant challenges that threaten stability, viability, or development (Masten, 2011). Resilience is a multidimensional construct impacted by biological and environmental factors at varying levels of an individual's ecology (i.e., individual, family, community). Resilience science has an extensive multidisciplinary research and practice base.

Self-regulation. The ability of a child to manage strong emotions and behavior in healthy ways that decrease stress responses, which, in turn, fosters healthy development without significant support from the caregiver.

Student–teacher relationship. The student–teacher relationship is the ECE's perception of his or her relationship or connection with an individual student. In this study, the student–teacher relationship includes two domains of functioning: perceived closeness and perceived conflict in the classroom setting.

Toxic stress. Toxic stress refers to a type of stress that is chronic and prolonged. In children, the level of stress is considered toxic when it is beyond the typical

developmental coping range. Toxic stress compromises a child's ability to regulate stress and leads to long-term functional changes in the brain (Shonkoff et al., 2012).

Trauma. In this study, trauma refers to early childhood trauma, occurring in the first years of life (before age 3). Childhood trauma is the child's response to a perceived threat to her psychological or physical integrity that surpasses her coping capacities (i.e., self-regulation) or capacities to be co-regulated by a trusting adult. The threat could be a single event or series of events (e.g., car wreck, medical procedure, witnessing community violence, frequent moves, separation from caregiver, death of a family member) or ongoing experiences considered chronic and prolonged (e.g., abuse and neglect, food insecurity, parental mental illness). Childhood trauma exposures often occur within the child's caregiving system and can have a negative cascading impact on development impact.

Summary

Chapter 1 summarizes the importance of secure attachment relationships in early childhood development and the key role ECEs play in early learning for preschoolers, particularly as a "buffer" for children who may be experiencing early childhood adversities (e.g., food insecurity, trauma, abuse and neglect, low-quality primary attachments, community and household violence). In addition, Chapter 1 introduces literature related to the positive influence of strong student–teacher relationships in preschool and introduces the COS-C approach as a cost-effective, professional development training module to be used in a group format with ECEs to promote high-quality student–teacher interactions. The COS-C professional development module has the potential to increase knowledge and strategies for meeting attachment-based

behavioral and emotional needs but lacks sufficient research on its efficacy in a preschool setting. The statement of purpose, research questions and hypotheses, significance of study, and definition of terms familiarize the reader with the key concepts and overall proposed design of this study.

Chapter 2 presents a thorough literature review related to explanatory theories and models on early childhood relationships, early childhood adversities, attachment relationships in early childhood care settings, professional development models designed to increase the quality of student–teacher relationships—including an in-depth review of Circle of Security interventions and preschool classroom approach—and, lastly, a presentation of the study's conceptual framework. Chapter 3 describes the research method, including sample population, study design, procedures, measures, data collection methods, and data analytic plan. Chapter 4 presents the study's results; Chapter 5 discusses the relevance of key findings; and, finally, Chapter 6 concludes by offering the study's implications and recommendations for practice and future research.

CHAPTER 2

LITERATURE REVIEW

This review draws from multiple disciplines of literature and attempts to synthesize a broad knowledge base from fields that have contributed to the study of adult–child interactions in the areas of developmental psychology, early childhood mental health, social work, educational psychology, and early childhood education. Relevant literature on theory, research, and practice pertaining specifically to student–teacher relationships, subsequent student outcomes and professional development modules to increase the quality of preschool student–teacher interactions is reviewed. To that end, the review is organized in sections designed to highlight concepts and findings relevant to student–teacher relationships. First, a theoretical framework for understanding important theoretical constructs foundational to student–teacher relationships is introduced. Next, relevant literature on key findings from previous research on early childhood adversity and attachment in schools, as well as research predictors of quality student–teacher relationships, is described. Then, professional development modules designed to increase the quality of student–teacher relationships are reviewed, including an extensive review of COS interventions and the development of the COS-Classroom (COS-C) approach. Finally, contextual factors (both child- and teacher-level indicators) and study variables important to this study are presented in a conceptual framework.

Theoretical Framework

Observations, theories, and research from the past decade have advanced a robust knowledge base on early childhood social–emotional development in the context of adult–child interactions. Grand theories such as attachment, ecological systems, dynamic systems, social learning, psychodynamic, developmental and stress theories, as well as principles in neurodevelopment, provide key concepts regarding how early relationships and environments shape the developing child. While all these fields have provided rich theoretical contributions to understanding adult–child interactions and their significance for development, the framework for this study is predominantly influenced by attachment theory as well as key principles from the field of social neuroscience, specifically, areas that shed light on adult–child relationships in educational settings. The following sections provide an overview of attachment theory and its relevance to the educational setting. Then, an introduction to key principles in social neuroscience and their importance to young learners is offered. Taken together, attachment theory and social neuroscience illuminate important considerations for the formation of student–teacher relationships and interventions aimed at increasing the quality of student–teacher interactions in preschool classroom settings.

Attachment theory. Attachment theory (AT) is one of the most influential theories in the early childhood development field and provides the primary foundation for the framework for understanding early childhood student–teacher relationships. Attachment research has yielded consistent findings on the importance of the quality of the caregiver–child relationship in forming healthy social–emotional relationships throughout the lifespan **(**Sroufe et al., 2005). There is considerable evidence that secure

attachment in childhood is important in developing a sense of self. Research has demonstrated that stability in attachment over time (Ammaniti, van Ijzendoorn, Speranza, & Tambelli, 2000; Bowlby, 1969; Cassidy & Shaver, 2008; George, 2014; McConnell & Moss, 2011; Sroufe et al., 2005) and attachment style is predictive of social, emotional, and cognitive behaviors during the early school years (Bergin & Bergin, 2009; Cozolino, 2013; Geddes, 2006, 2017). Other theorists argue, however, that relational interactions are dynamic and may change over time with the primary caregivers' behaviors and responses (Crittenden & Claussen, 2000; Sroufe, 1983; Tronick, 2007).

Bowlby's (1982) AT asserts that infants are innately hard-wired for connection and seek proximity to a primary caregiver based on biological needs for safety and survival. Attachment is an enduring affectionate bond with a specific person (Bowlby, 1969) that supports the child's exploration of the world and connection to an adult figure to provide safety, comfort, and protection. Attachment does not imply dependency; indeed, healthy attachment facilitates security and independence as children age. Attachment behaviors show similarity across cultures (Music, 2016), and young children typically direct observable attachment behaviors toward their primary caregiver.

Attachment with primary caregivers is thought to greatly influence personality development and to influence future attachment relationships through the formation of "internal working models"—an internal representation of expected responses in interpersonal relationships. AT posits that infants develop their attachment to their primary caregiver within the first 18 months of life. During the early months of life, children engage in behaviors (e.g., eye contact, crying, reaching) that elicit responses from their caregiver. Over time, the dyadic pattern of interactions between caregiver and

child influences a child's understanding and expectations of the dependability, sensitivity, and responsiveness of adults (Bowlby, 1982; Tronick, 2005). Since early learning for young children across developmental domains takes place within the caregiving context, primary attachment relationships influence overall development (Ainsworth, Blehar, Waters, & Wall, 1978; Murray, 2014). By the time children have entered a preschool classroom, they have developed numerous behavioral and relational strategies to potentially influence teachers to meet their relational needs. Thus, the internal working models that children develop with primary caregivers may transfer to relationships with their teachers.

Thus, key concepts and ideas from AT are easily extended to an early childhood educational context, with student–teacher attachment relationships forming the foundation for early learning. Specifically, AT asserts that the behaviors of infants and young children are regulated by biobehavioral control systems in a dynamic, relational context with an adult figure. There are three main biobehavioral systems described in AT: the exploration, affiliation, and attachment systems. The exploration system, which is central to education, is the basis for all learning and allows the child to explore his or her environment guided by innate curiosity. The affiliation system encourages the child to seek connection with the caregiver through play and mutual enjoyment. The attachment system is activated when the child becomes frightened by external forces, such as unknown places or people, or internal forces such as illness, hunger, pain, temperature, etc. (Ainsworth et al., 1978). These regulatory systems are complementary and involve concrete, observable behaviors in children, such as proximity seeking, distress of separation, exploration of environment, happiness at reunion with caregiver,

ability to be comforted, sadness at loss of caregiver, and mutual enjoyment (George, 2014); these systems are the dynamic product of thousands of moment-to-moment interactions between caregiver and child (Tronick & Beeghly, 2011). Thus, attachment to a caregiver is formed over time and involves learning (exploration), comfort and protection (attachment), and enjoyment (affiliation). Attachment relationships in classrooms can provide young children with feelings of security to explore freely and can support socialization because as children interact with adults, they adopt and respond to adults' patterns of interaction both in behavior and values (Bergin & Bergin, 2009). Traditionally, school environments have prioritized learning; however, for learning to be optimized for young children, needs for exploration, attachment, and affiliation must be met as well.

Ainsworth and colleagues' (1978) seminal work identified individual differences in attachment style. Ainsworth et al. (1978) and, later, Main and Solomon (1986), classified attachment styles into four discrete categories, 1) secure, 2) insecure-anxious, 3) insecure-avoidant, and 4) disorganized, with clusters of observable behaviors. The following sections describe the behaviors typically observed in each attachment classification.

Secure. Securely attached children experience their caregiver as a *secure base* (Bowlby, 1969). They easily explore and take interest in their environment in the presence of the caregiver. If upset, they seek proximity to the caregiver, who is a *safe haven* (Bowlby, 1969), to receive comfort and soothing, and then return on their own initiative to exploration. The caregiver and the child show mutual enjoyment in engagement and play. Securely attached children typically have caregivers who are

sensitive to their child's experience. Sensitive caregivers attend to the child's signals, accurately interpret those signals, and respond promptly and predictably to meet their child's need.

Insecure-anxious. Children who have caregivers with low levels of sensitivity and who are inconsistently or inadequately responsive tend to have children who are insecure-anxious in their attachment style. Insecure-anxious children have difficulty feeling secure in novel situations and have difficulty receiving comfort and soothing from the primary caregiver. They exhibit behaviors such as whining, crying, helplessness, or demanding of their caregiver in order to maintain contact or to assure responsiveness by using exaggerated emotions and responses (i.e., anger, threats, tantrums, pouting, etc.).

Insecure-avoidant. Children whose attachment style is insecure-avoidant appear very independent and may not show a preference for an attachment figure. These children will often turn away from their caregiver, fail to acknowledge separation or reunion, and may appear developmentally more advanced than biological age. Insecure-avoidant children tend to have caregivers who are insensitive, intrusive, or rejecting or who are frequently emotionally unavailable. In order to maintain proximity with their caregivers, as biologically required, these children exhibit indifference to avoid rejection.

Insecure-disorganized. Children who display disorganized attachment styles do not have a predictable or effective pattern with which to get their attachment needs met or elicit appropriate caregiving responses from attachment figures. Their behaviors are confusing and contradictory, such as approaching a caregiver with arms outstretched but their head turned away from the caregiver. Children with disorganized attachment patterns may be responding to their caregivers' frightening and unpredictable behavior,

such as looming in the child's face, fearful or angry facial expressions, aggression, or handling the child as inanimate object (Bergin & Bergin, 2009).

This four-typology attachment classification is the most widely used in research, but some researchers disagree on these classifications and simply use insecure vs. secure, while others view attachment more as a continuum rather than as discrete behaviors (Fraley & Spieker, 2003). Attachment styles, whether separate categories or on a continuum, involve patterns of dyadic interaction between an adult and a child that emerge over time. With the exception of the disorganized attachment, all attachment styles have predictable, organized behaviors and responses by both caregiver and child. The disorganized attachment style, which involves unpredictable caregiving resulting in no organized pattern on the part of the child to elicit caregiving behaviors, is the most concerning developmentally. Parental insensitivity, parental mental health challenges, childhood maltreatment, exposure to violence, and caregiver substance abuse are linked to insecure and disorganized attachment patterns (Cicchetti, Rogosch, & Toth, 2006; Main & Solomon, 1990), with disorganized attachment associated with greater risk for maladaptive behavioral and psychological functioning (Toth, Maughan, Manly, Spagnola, & Cicchetti, 2002). Children living in under-resourced neighborhoods with high poverty rates and higher exposure to violence are at increased risk for disruptions in the primary caregiving environment compared to middle-income children (Phillips & Shonkoff, 2000; Thompson, 2006). Ainsworth et al. (1978) note that the caregiver's sensitivity, responsiveness, emotional availability, and effective communication with the child all play a critical role in developing the child's attachment style. Thus, attachment-based interventions typically target caregivers' internal working models to increase

positive, attuned caregiving interactions (Zeanah, Stafford, & Zeanah, 2005) that build capacity for emotion regulation in young children.

Attachment classification in the classroom. Building off previous work in parent–child attachment classifications, researchers have sought to build a classification that describes observable attachment behaviors in the classroom. Pianta, Nimetz, and Bennett (1997) observed in a largely African American preschool population the same behaviors described as secure parent–child attachment in strong student–teacher relationships, such as using the teacher as a secure base for exploration and safe haven to receive comfort and dyadic attunement to facial expressions and emotions. Howes and Ritchie (1999) assessed the attachment styles of over 3,000 low-income, predominantly Caucasian and African American preschool students to their early childhood educators. They found four types of attachment that parallel the classifications for parent–child attachment: secure, avoidant, resistant, and near secure. Bergin and Bergin (2009) further describe the types as follows:

> 1) *Secure* preschoolers were able to be soothed and comforted by their teacher, often molding their bodies to teachers if held, and spontaneously initiated proximity and touch, such as hugging their teacher. Typically, transitions were smooth for these students, and they looked to teachers' faces for non-verbal cues and easily followed verbal directives. Secure preschoolers communicated enjoyment and pleasure in the relationship with the teacher by sharing activities, welcoming play, and greeting the teacher at the beginning of the day.
>
> 2) *Avoidant* preschoolers engaged more in classroom objects than in social relationships with either their teacher or peers. When hurt or upset, they did not

seek proximity to the teacher and at times would even move away if the teacher tried to provide comfort. Because they did not seek proximity to share activities, ask for help, or seek comfort, the teacher easily lost track of them. When the teacher approached, they did not look to the teacher or respond as if they noticed. If called by the teacher, they would come but quickly move away.

3) *Resistant* preschoolers had difficulty being satisfied in the classroom and were easily frustrated by challenging tasks. They upset easily, often cried, were difficult to soothe and resisted classroom routines. They showed distress by clinging and crying when the teacher left the room. Resistant students were demanding and impatient with the teacher and were generally not satisfied with the teacher's attempts to engage with them.

4) *Near secure* preschoolers had some avoidant behaviors and some secure behaviors. They readily conformed to classroom routines, so the teachers did not perceive a problem in their relationship. However, at times, they seemed distrustful of the teacher, so they were classified as approaching secure.

Although not classified by Howes and Ritchie (1999), other researchers have sought to describe the behaviors of disorganized attachment in school settings (Geddes, 2006; Kennedy & Kennedy, 2004). The percentage of toddlers with disorganized attachment classification is estimated at 15% in the general population and approximately 25% in low-SES populations (Shemmings & Shemmings, 2011; van Ijzendoorn, Schuengel, & Bakermans–Kranenburg, 1999). However, rates of disorganized attachment style in Head Start centers have been reported as high as 60% of children assessed (Cooper, Hoffman, & Powell, 2017). Disorganized attachment behaviors are the

most disruptive in a classroom setting. These children have often endured childhood adversities that prohibit organized ways of functioning in the classrooms and interacting with adults and peers. Often, it is children with disorganized attachment that have difficulty with school adaptation due to behavior that is either punitive-controlling (e.g., aggressive, hostile) or caregiving-controlling (e.g., manipulative, overly affectionate, coy; Main et al., 1985). These children are at risk of becoming further stigmatized by administration and peers with negative perceptions such as non-compliant, manipulative, aggressive, reactive, unpredictable, and difficult to manage (Kennedy & Kennedy, 2004). Consequently, children with disorganized attachments are at greatest risk of experiencing learning and behavior difficulties (e.g., ADHD, conduct disorder), internalizing problem behaviors (e.g., depression), and preschool expulsions (Gilliam, 2005; Graham & Easterbrooks, 2000; Kennedy & Kennedy, 2004; Lyons-Ruth, Alpern, & Repacholi, 1993). Geddes (2017) outlines that students with disorganized attachment styles likely display classroom behaviors that reflect a heightened sense of anxiety, high vigilance and reactivity, little trust of adults, defiance of the teacher, unable to tolerate "not knowing," insensitivity to others, bullying of others, sensitivity to criticism, aggression in unsupervised areas of school environment, and mood swings that are poorly self-regulated.

Children carry their attachment style into the classroom based on attachment experiences with their primary caregivers (Jerome et al., 2009). Certainly not all student–teacher relationships in school can be considered an attachment relationship. However, the younger the child is, the more likely it is that an attachment-like relationship can develop (Jerome et al., 2009). Howes and Ritchie (1999) identified three conditions

needed to form attachment relationships outside the family unit for young children: 1) provision of physical and emotional care, 2) a consistent presence in the child's life, and 3) an emotional investment in the child's life. Thus, relationships with young children in preschool environments may be qualitatively similar to those of a primary attachment figure. Because attachment is a relational response to dyadic interaction, it would follow, then, that children who have developed a particular attachment style with a primary caregiver may be able to develop or implement alternative attachment strategies with non-parental primary caregivers in novel settings such as preschool. Given ample opportunity for emotional and physical proximity, the preschool teacher has the potential to develop into an attachment figure, providing a secure base for exploratory behaviors and a safe haven for emotion regulation behaviors when distressed—both supporting neural pathways essential for learning.

Allostasis. For young children, separation from primary caregivers, regardless of attachment classification, can be a stressful event, particularly the time of transition from primary care in the home to primary care outside the home, where rules, structures, and expectations may be different. How successfully children manage states of arousal directly affects their adaptation and learning in the school environment (Cozolino, 2013; Perry & Pollard, 1998). Children with effective emotion regulation strategies, including using the adults in their presence for soothing, comfort, and exploration, adapt more smoothly to school environments and perform better academically than their peers (Bergin & Bergin, 2009). Understanding derived from stress theories such as allostasis and principles from social neuroscience offer insight into the fundamental ways in which

relationships, the brain, and physiological responses interact to form the foundations of how children learn.

In the social sciences, stress refers to challenging life experiences that have the possibility of both positive and negative effects on physical and psychological states. The depth and divergent views in literature concerning stress in human development, as well as mainstream understanding and use of the word "stress," have led some scholars to search for a more comprehensive term to describe the way in which the body adapts and copes with psychological, social, environmental, and physical challenges. Some stress researchers (McEwen, 2007; Sterling & Eyer, 1988) have settled on concepts of "allostasis," referring to the body's ability to maintain homeostasis via fluctuating neuroendocrine (hormonal, autonomic, and immune systems) responses in the face of physical and psychological stress.

"Allostasis" means achieving stability through change to maintain homeostasis (McEwen & Wingfield, 2010). Allostasis theory posits that everyday life events leading to stress responses are protective in the short run, yet lead to a wearing out of the body due to mind–body regulatory processes (i.e., allostatic load) over time. Thus, allostatic processes are believed to be cumulative over the life course and are influenced by early social factors by shaping brain development, structure, and function.

A major concept of allostasis theory is that the "brain is the organ in the body that interprets experiences as threatening or nonthreatening and which determines the behavioral and physiological responses to each situation" (McEwen, 2007, p. 847). Allostasis refers to the many strategies used by the body to support homeostasis and the stability of physiological processes in response to everyday life events as well as

adaptation (physical and behavioral) to larger disturbances in the life cycle. This adaptation occurs through a constant and dynamic process of physiological body responses to both internal and external stimuli. Adequate functioning and coping are the result of complex communication between the brain and the central nervous system, which results in adaption of the brain to internal and external stressors (see Figure 2.1). Allostatic states are sustained activity levels of stress hormones (e.g., glucocorticoids) to promote adaptation in response to changing environments and challenges such as social interactions, food fluctuations, weather, disease, predators, and pollution. However, though initially commenced as a protective factor, allostatic states can produce "wear and tear" on the body over time if maintained at high levels. Thus, "allostatic load" or "allostatic overload" refers to the wear and tear produced by repeated exposure to mediators of allostasis (stress hormones), resulting in exacerbation of stress symptoms on regulatory systems (McEwen, 2005).

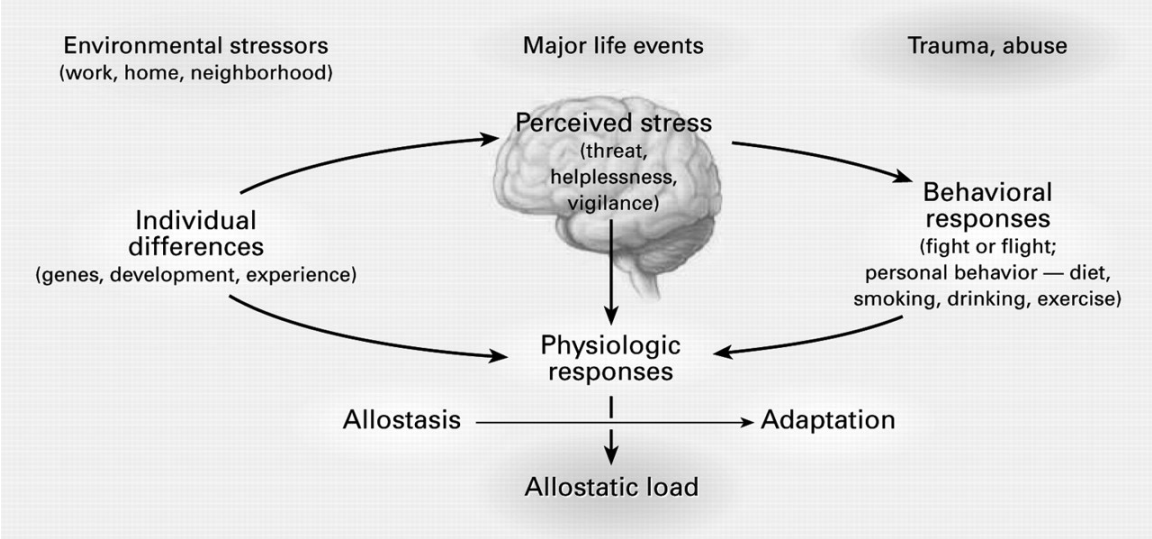


Figure 2.1. Allostatic Load and Neurobiological Functioning. Central role of brain functioning in allostatic load and the behavioral and physiological response to stressors. Illustration from B. S. McEwen (1998).

Individual responses to stress display great heterogeneity. Early life experiences, positive and negative, can influence a person's response in new situations. Allostasis theory points to early life experience to explain physiological and behavioral responses of the stress system. Areas of interest for developmentalists include prenatal stress on the developing infant, the influence of childhood maltreatment on mental and physical functioning, and the effect of chaotic home environments on stress and emotion regulatory systems. Animal experiments have provided most of the evidence for allostasis theory on the influence of early life experience in establishing the stress response system, particularly in the area of maternal care. A study conducted by Meaney and colleagues (2001) found that early life maternal care in rodents is a predictor of future emotional reactivity and stress hormone reactivity, and greater reactivity was associated with earlier cognitive decline and a shorter life span. Allostasis theory purports that "events early in life affect how the brain responds to stressors throughout adult life and influences the aging process as well as susceptibility to the diseases of modern life, such as cardiovascular disease, diabetes, and depression" (McEwen, 2007, p. 894). Stress and social neuroscience scholars recognize the sensitivity to early conditions in shaping the individual's regulatory capacities.

Allostasis uses principles of social neuroscience to explain how neural pathways are organized and shaped in response to stress. There is particular focus on regions of the brain responsible for shutting off the hypothalamic-pituitary-adrenal (HPA) axis, a major regulator of neuroendocrine systems such as digestion, emotions, and stress responses. Allostatic load resulting from chronic stress can damage the hippocampus and impairs the shutting off of the HPA axis, leading to a more prolonged stress response and

restructuring of neuronal pathways, thereby causing a host of impairments in cognitive and regulatory functioning. In preschool settings, chronic stress can result in a downward spiral of emotional and behavioral dysregulation, making learning very difficult (Cozolino, 2013).

Studies investigating links between adverse childhood experiences and long-term physical and mental health outcomes (Felitti et al., 1998) have raised critical questions about the effects of childhood stress (allostatic load) on biological, physiological, and cognitive functioning. Continuing work on ideas of allostatic load, Shonkoff and colleagues (2012) have developed ideas of toxic stress to describe stress that is chronic and beyond the typical developmental coping range for children. In order to delineate different kinds of stress, Shonkoff and colleagues (2012) have developed a stress–trauma continuum to describe developmental outcomes of varying levels of stress. For example, stress that is predictable and controllable is proposed to lead to resilience, whereas stress that is unpredictable, prolonged, and uncontrollable is proposed to lead to damaging outcomes. As attachment theory ushered in new ways of viewing early childhood relationships, concepts of allostasis theory are offering a new paradigm for investigating interaction with the caregiving environment, including the attachment relationship as a co-regulator or buffer from potentially stressful experiences. Studies investigating links between adverse childhood experiences and long-term physical and mental health outcomes (Felitti et al., 1998) have raised critical concerns about the negative impact of childhood stress (allostatic load) on biological, physiological, and cognitive functioning.

Early Childhood Adversity

Although many etiologies can lead to compromised early regulatory capacities, such as genetic, environmental, and epigenetic pathways, the following sections focus primarily on early childhood adversities with disruptions in the caregiving environment that can lead to social–emotional and behavior dysregulations (Loman & Gunner, 2010). Both internal and external factors have the potential to compromise the self-regulatory capacity of young children. For example, temperamental dispositions and their goodness of fit with the caregiver's temperament can influence parent–child interactions and enhance or disrupt regulatory processes. However, since adults play a key role in helping create early self-regulatory processes, the majority of identified risk factors involve the interaction between the young child and the caregiving environment. Mental health difficulties, substance use, teen pregnancy, poverty, negative childhood relationship history, and interpersonal violence (including childhood maltreatment) have all been identified as risk factors that disrupt the caregiving environment by impairing parental sensitivity, empathetic responses, and emotional availability (Easterbrooks et al., 2008). In addition, caregiving environments that are unpredictable and chaotic (e.g., childhood maltreatment, parental substance use) have the potential to expose the infant to a range of stress that is outside the typical coping mechanisms available to the infant, particularly if chronic and extreme. These impairments may influence infant functioning in a variety of developmental domains as well as alter early neurodevelopment. For example, maternal depression has consistently been identified as the greatest predictor of developmental risk for infants. Primary caregivers with chronic depression may be inconsistently unresponsive or emotionally unavailable to their young children at a time when

contingent and sensitive responsiveness is key to co-regulation of emotions and important physiological responses in the organization of the stress response system (McEwen, 1998; Shonkoff et al., 2012).

Of significant interest is the influence of poverty on early childhood experiences. Over half of children aged birth to 3 years in the United States live in low-income households (Jiang, Granja & Koball, 2017). A complex picture is beginning to emerge on the deleterious impact of poverty on overall child development on mental, emotional, and behavioral health (Yoshikawa, Aber, & Beardslee, 2012). In particular, children living in poverty often display high levels of cortisol (a stress hormone) and are more likely to experience an accumulation of adverse experiences known as cumulative risk. Cumulative risk has been defined in a number of ways, but the risk categories are often overlapping. Some studies use a "multiple risk" approach that combines socio-demographic risk factors, such as single parenting, low income, low education, unemployment, access to healthcare (e.g., prenatal care), etc., with psychosocial risk factors, such as maternal depression, parent–child dysfunction, negative life events, parental stress, etc. (Sameroff, Seifer, Zax, & Barocas, 1987).

The presence of cumulative risk factors may increase the body's stress response system and lead to "toxic stress." The presence of toxic or prolonged stress compromises children's ability to regulate stress and leads to long-term functional changes in the brain (Shonkoff et al., 2012). Prior research suggests two ways that cumulative risk may play out in a child's life. The first is a linear response, in which an increase in number of risks is correlated with an equal increase in adverse outcome. The second approach is a threshold response, which suggests a non-linear relationship in that once a certain critical

number of risks is reached, there is an exponential increase in adverse outcomes (Appleyard, Egeland, van Dulem, & Sroufe, 2005). Some research suggests that when the number of socio-demographic risks increases from zero to two, the relative risk rises proportionally; however, once or more three risks accumulate, the risk factor for adverse outcomes begins to rise steeply (Larson, Russ, Crall, & Halfon, 2008), as do increases in psychosocial risk factors, such as maternal depression, poor family functioning, parental stress, and punitive parenting strategies. This finding suggests that families are able to maintain stability under a moderate level of socio-demographic stress, but when a certain threshold is reached, potential coping mechanisms may become exhausted.

There is also considerable evidence on the deleterious effect of adversity on school indicators. Jimenez and colleagues' (2017) longitudinal study from birth through kindergarten found a pattern of worse academic, literacy, and behavior outcomes with increased number of adversities. Children with three or more ACEs were more than twice as likely to be below average in language, science, social studies, and mathematical skills at the end of kindergarten and had odds ratios ranging from 1.7 to 2.7 times greater likelihood of not yet displaying emergent literacy skills. The effect of three or more ACEs was greater for social–emotional functioning—children were 3.8 times more likely to have attention problems, 3 times more likely to have social problems, and 2.6 times more likely to display aggressive behavior.

Moreover, extreme variations in the caregiving environment (e.g., trauma, child maltreatment, maternal psychopathology) can have particularly damaging effects on the early development of self-regulation. Environmental factors may influence neurobiological structures and impair self-regulatory processes, and some studies have

associated conditions of extreme adversity with epigenetic processes—the regulation of genes' expression in response to environmental factors (Champagne & Meaney, 2007). Furthermore, adversities in early childhood are associated with alterations in brain organization and increased risk for long term maladaptation and psychopathology (Calkins & Dollar, 2014; Cicchetti, 2013; Perry & Pollard, 1998; Shonkoff et al., 2012; Schore, 2005). However, many examples in literature show heterogeneity in response to childhood adversity (Oshri et al., 2017; Mowbray & Mowbray, 2006), as not all children demonstrate negative outcomes to adverse caregiving conditions. This discrepancy in outcomes points to potential protective factors that may increase pathways to resilience.

Of considerable significance to this study is the protective role that attachment-like relationships with early childhood educators may have in buffering the negative impact of toxic stress that inhibits learning for populations growing up in harsh environmental conditions, such as those children enrolled in HS programs. There is some evidence that HS and EHS programs provide a buffering effect for young students. Research suggests that HS and EHS programs not only improve children's development and school outcomes but may also buffer children from toxic stress by providing quality early learning experiences. Quality interactions for young children who have experienced adversities may be particularly salient. Research shows that children who have been maltreated look to teachers as role models, form attachments with childcare providers, and have better developmental outcomes with sensitive caregivers (Dinehart, Katz, Manfra, & Ullery, 2013).

Caregiver sensitivity, secure attachment relationships, temperament style, social support, positive adult–child interactions, and emotional availability have been identified

as protective factors for healthy social–emotional development and are associated with greater levels of resilient functioning, such as higher levels of emotion regulation, positive adaption in context of adversity, and greater prosocial behaviors (Beeghly, Perry, & Tronick, 2016; Easterbrook et al., 2008). Thus, children's relationships with caring adults help regulate stress hormones, such that when faced with adversity, young children utilize caring adults for comfort. When children have access to trusting adult relationships, they are more likely to regulate their stress hormones and are buffered from the negative effects of stress on the brain, such as impairments in learning and memory (Lupien et al., 1998). Early childhood educators are in a unique position to buffer the impact of adversity. There is some evidence that there is variation in the effects of childcare on early adverse experience, with children at the greatest risk showing the greatest gains in high-quality early care (Sciaraffa et al., 2018). Furthermore, there is some evidence that competent caregiving may lead to changes in brain structure and function via epigenetic processes (Cicchetti & Curtis, 2007; Meaney, 2001). The following section discusses the influence of attachment relationships in the school environment.

Attachment in Schools

Over 50 years of research have shown that parent–child attachment in early childhood is linked to many outcomes that can extend into adulthood, including successful school indicators from preschool into K-12 education. Secure parent–child attachment predicts academic achievement. One of the most well-known longitudinal studies on attachment, the Minnesota Study of Risk and Adaptation, began in 1975 following a cohort of 287 low-SES families from the third trimester in utero to their mid-

30s (Sroufe et al., 2005). This foundational work has provided a wealth of linkages from early experiences, particularly parent–child attachment, to later school outcomes above and beyond child temperament, child IQ, and SES. The Minnesota study found that parent–child attachment was linked to social competence, emotion regulation, and ADHD behaviors; furthermore, disorganized attachment was linked to psychopathology and delinquency in adolescence. Some of the associations were quite high; for example, Jimerson, Egeland, Sroufe, and Carlson (2000) found that the quality of early caregiving by age 3, including attachment classification, predicted with 77% accuracy who would drop out of school by age 19. The findings from the Minnesota study have been supported with ongoing research in multiple disciplines (Sroufe et al., 2005).

Securely attached preschoolers stay more engaged in parent–child joint reading activities and develop pre-reading skills earlier than preschoolers classified as insecure (Bus & van IJzendoorn, 1988). Toddlers classified as insecure have been shown to have shorter attention spans, decreased scores on cognitive and communication assessments, and less interest in reading (Moss & St-Laurent, 2001), leading to greater difficulties with school-interfering diagnoses such as ADHD (Bergin & Bergin, 2009). Additionally, elementary-aged children classified as insecure tend to perform worse than their securely attached peers on verbal, math, and reading assessments and show less curiosity in the school environment (Pianta & Harbers, 1996). Furthermore, parent–child attachment has been linked to teachers' ratings of children's academic skills and social–emotional well-being for third-, fifth-, and sixth-graders (Kerns, Tomich, Aspelmeier, & Contreras, 2000) and is positively correlated with teacher perceptions of student relationship quality (Buyse et al., 2011). Effects of parent–child attachment have been found to extend into

the high school and college years, where insecure parental attachment predicted lower achievement in one's first year in college via less preparation for exams, lessened abilities to concentrate, fear of failure, and fewer help-seeking behaviors (Larose et al., 2005).

Student–teacher relationships. These important findings in parent–child attachment have relevance for attachment-like relationships between students and teachers (O'Connor & McCartney, 2006). So far, over two decades of research on student–teacher attachment-like relationships has clearly identified that attachment relationships do extend beyond the parent–child dyad to include other important adult figures, namely, early childhood educators (Pianta, 1992), and also have significant links to successful school indicators. Hamre and Pianta (2007) propose that the quotidian interactions between students and teachers are the primary mechanism by which children learn. Developing a secure attachment with an adult other than their primary caregiver, such as their teacher, can provide opportunities for students to learn to regulate emotions and develop effective behavioral strategies (Cassidy, 1994), explore the learning environment with confidence (Pianta, 1999), establish successful peer relationships (Birch & Ladd, 1996), and increase school readiness capacities (Mashburn et al., 2008), such as language development, emergent literacy and reading, and cognitive development (Bus & van IJzendoorn, 1988; Erickson, Sroufe, & Egeland, 1985; Sroufe, 1983).

The pioneering work of Pianta and colleagues (Pianta, 1992) resulted in a validated measure, the Student–Teacher Relationship Scale (STRS), with which to assess student–teacher relationship quality from the teacher's perspective. It is the most frequently used and empirically tested assessment tool of teachers' perceived relationship quality with

individual students. The STRS measures three distinct constructs of student–teacher relationships: closeness, conflict, and dependency. Pianta and Steinberg (1992) describe closeness as the degree of warmth and positive affect between the teacher and the child, as well as how comfortable the child is approaching the teacher. Conflict refers to the negativity or lack of rapport between the teacher and child and appears to be the factor most strongly related to child outcomes when teachers' views of the relationship are assessed (Ladd & Burgess, 2001). These constructs conceptually map onto parent–child attachment relationships by focusing on the relationship between children's sense of security with a teacher and their ability to explore the environment (Hamre & Pianta, 2001; Pianta & Nimetz, 1991).

Anhert et al. (2006) conducted a meta-analysis of 40 studies involving 2,867 children in early childcare settings. They investigated the security of children's relationships with non-parental care providers. The meta-analysis showed that rates of security in young children in early child care settings are lower than those reported in parent–child attachments in the general population—approximately 60% security in parent–child attachments versus 42% security in student–teacher attachments. Furthermore, home-based early childhood care was found to have higher rates of security than center-based settings. Interestingly, the meta-analysis by Ahnert et al. (2006) showed that attachment-like relationships, especially in centers, were significantly linked with measures of the care providers' behavior toward the group as a whole. Group interaction may play a larger role in creating secure early childhood learning environments than only one-on-one dyadic interaction, as early childhood educators are consistently required to attend collectively to the group and rarely have the opportunity

for undivided one-on-one interaction. The caregiver's sensitivity to individual children only predicted attachment security in small groups. Consistent with other student–teacher relationship work (Howes and Smith, 1995), Ahnert et al. (2006) also found that attachment security significantly varied depending on the child's gender, with girls rated as having more secure relationships than boys.

Mashburn et al. (2008) investigated the development of academic, language, and social skills in publicly funded pre-K programs among 2,439 children in a nested, two-level model design. The investigators studied the effect of adherence to quality standards for program infrastructure and design, quality of classroom environments, and quality of student–teacher emotional and instructional interactions. Surprisingly, the study found no significant links between student–teacher interactions and minimum standards of quality set for program infrastructure and design by professional organizations, such as the National Institute for Early Education Research, an organization that heavily influences recommended standards for preschool programs and informs the decisions of policy makers and administrators on programming and quality measures. Nor did the study find significant links between academic, language, and social development and the Early Childhood Environment Rating Scale, which has been the most commonly used comprehensive observational measure of the quality of classroom environments for over 25 years. Instead, high-quality emotional and instructional support was found to be the mechanism by which children advanced academic, language, and social skills. The results demonstrated that for young children, learning takes place via supportive adult–child interactions. Thus, to improve the effectiveness of early learning for young children, programs should focus on professional development that directly improves

student–teacher interactions.

There is an important debate in the stability of student–teacher relationships from early childhood to later grades. Often, children change teachers each year; do they start fresh with a new teacher, or are relational patterns set in place that carry over into the new relationship dynamic? Parent–child attachment research indicates a moderate to high stability of attachment style through childhood and into adulthood (Ammaniti et al., 2000) via internal working models of relational interactions that influence other significant relationships. However, parent–child attachment examines the relationship of one specific dyad over time. Students change teachers each academic year, and as children progress in higher grades, the majority will change teachers for each academic subject.

Interestingly, although there is significant shifting of teachers in and out of students' lives, there is some evidence that student–teacher relational patterns hold stable over time. Jerome et al. (2009) followed a cohort of 878 children from kindergarten to sixth grade, and results indicated modest stability of teacher-perceived conflict and closeness, with greater stability in perceptions of conflict. However, for younger children, relational interactions may be more malleable. There is some evidence that infants and toddlers experience stability with a specific person, as in parent–child attachment, but will experience a change in relationship quality if the teacher changes (Jerome et al., 2009). Therefore, younger children may be more influenced by teacher characteristics in relationship closeness and conflict, whereas older children may be operating from internalized models of being in a classroom setting and not be as dependent on teacher characteristics. Furthermore, as children age, both closeness and

conflict with teachers tend to decrease. This process is partly attributed to maturation and party to the changing dynamics of larger class sizes with less time spent with one teacher (Pianta & Stuhlman, 2004).

Indeed, student–teacher relationships operate as part of a complex system (Burns & Knox, 2011; Kennedy & Kenndey, 2004) and are influenced by a number of factors related to both child and teacher. Given the critical role that student–teacher relationships play in children's success in many developmental outcomes, prior research has focused on the mechanisms of early teacher-child relationship formation and how those mechanisms extend to student–teacher relationship quality in later school grades. Consistent with parent–child attachment research, prior research on student–teacher relationships indicates that characteristics and behaviors of both children and teachers influence teacher-child relationship quality (Baker, 2006; Eisenhower, Baker, & Blacher, 2007; Rudasill, Rimm-Kaufman, Justice, & Pence, 2006; Saft & Pianta, 2001). The next section reviews child- and teacher-specific influences on relationship quality.

Teacher-specific influences in STR. Fundamental to student–teacher interactions is the ability of the adult to accurately read social and emotional cues and respond correctly and contingently to the need and or behavior of the child. Thus, teachers' ability to reflect on and take the child's perspective is an important quality influencing relational dynamics (Pianta, Hamre, & Stuhlman, 2003). Teachers' expectations and perceptions of children are influential factors in the quality of student–teacher relationships (Saft & Pianta, 2001; Stuhlman & Pianta, 2001), making interventions focused on teacher perceptions a potential avenue through which to increase quality of relationships. Teachers' perceptions of students may have some lasting impact in future

grades as a potential moderator of future student–teacher relationships; Rudasill (2011) found that teachers' perceptions of relationship quality and the number of teacher-initiated interactions in first grade predicted teachers' perceptions of relationship quality and the number of teacher-initiated interactions in third grade. In addition, as in parent–child attachment findings, teachers' attachment histories with their primary caregiver have been predictive of the quality of teacher-student relationships (Kesner, 2000).

ECEs' mental health state is of particular interest, as it quite likely influences their perceptions. In a Pennsylvania study (Whitaker, Becker, Herman, & Gooze, 2013), Head Start teachers had poorer mental health and physical health compared to that of national samples of women working in other professions. Twenty-four percent of teachers were considered depressed versus 18% in the comparison population. Hamre and Pianta (2004) found that teachers with more depressive symptoms engaged in fewer interactions with children. In addition, in a recent study from the Fragile Families and Child Well-being project (Jeon, Buettner, & Snyder, 2014), teachers with higher depressive symptoms had lower child-care quality scores and reported more externalizing and internalizing problem behaviors for students. Roberts, LoCasale-Crouch, Hamre, and Decoster (2016) also found that children in Head Start classrooms with teachers reporting higher depressive symptoms made few gains in social–emotional skills as reported by teacher and parent.

Teachers encounter various stressors in the workplace, where there are high demands and stakes in the daily responsibilities of keeping young children safe, often with limited support, low pay, and inadequate benefits (Whitebook et al., 2014). Teacher stress is defined as "the experience by a teacher of unpleasant negative emotions, such as

anger, anxiety, tension, frustration, or depression, resulting from some aspect of their work as teacher (Kyriacou, 2001, p. 28). Previous research has found links between teacher stress, reports of relationship quality, and student conduct. Yoon (2002) found among 113 kindergarten to fifth-grade teachers that negative perceptions of student relationships were predicted by teacher stress level. Moreover, managing challenging, aggressive, and disruptive student behavior has long been correlated with higher levels of teacher stress (Boyle, Borg, Falzon, & Baglioni, 1995; Grayson & Alvarez, 2008) and has been shown to reduce the quality of student–teacher interactions (Li-Grinning et al., 2010, Yoon, 2002). Furthermore, ECEs who report higher stress levels concurrently report increased difficulties with student behavior and higher conflict in student–teacher relationships (Whitaker, Dearth-Wesley, & Gooze, 2015). A recent study conducted by Sandilos, Goble, Rimm-Kaufman, and Pianta (2018) found evidence that professional development courses moderated the relationship between job stress and improvement in teacher-child interactions, suggesting that interventions with teachers can have direct effects on student–teacher relationship dynamics.

Teacher self-efficacy is an area of interest for intervention focus, as it has been linked to critical outcomes for students, teachers, and student–teacher interactions. Self-efficacy refers to the extent to which teachers believe they have the ability to influence their students (Klassen & Chiu, 2010). Klassen and Chiu (2010), examining teacher (K-12) self-efficacy in a large sample size, found non-linear relationships of teacher self-efficacy over time and note that self-efficacy is not static and is subject to change based on years of experience, teacher characteristics, workload stress levels, classroom stress levels, and environmental circumstances. Teachers reporting higher levels of self-

efficacy have also reported higher levels of student closeness and rated students higher on social–emotional competencies (Birch & Ladd, 1998; Hamre & Pianta, 2004). Mashburn and colleagues (2006) examined teacher characteristics predicting student social competencies and behavior problems in a multi-level model. They found that teacher self-efficacy levels significantly predicted higher student competency levels and closeness levels but did not significantly predict behavior problems nor conflict in the student–teacher relationship. In this study, 20% of the variance between teachers' ratings was explained by teacher and classroom characteristics. In contrast, Hamre, Pianta, Downer, and Mashburn (2008) examined predictors of student–teacher conflict in a multi-level model, and their findings indicated that lower teacher self-efficacy levels were significantly associated with higher teacher ratings of conflict in the relationship and problem behaviors in the classroom; this study, however, did not examine closeness scores. Prior studies on teacher training and coaching models have seen significant shifts in increasing teacher self-efficacy associated with decreases in problem behaviors, and, in particular, mental health consultation has improved teachers' confidence in supporting children with emotional and behavioral challenges (Alkon, Ramler, & MacLennan, 2003). Taken together, this body of research suggests that teacher characteristics, perceptions, and well-being contribute to the overall quality of the student–teacher relationship.

Child-specific influences on STR. Evidence on student–teacher relationships has found that, in part, the quality of student–teacher relationships is linked to children's characteristics, specifically, gender, ethnicity, age, temperament, and intellect (Eisenhower et al., 2007; Hamre & Pianta, 2001; Ladd, Birch, & Buhs,1999). In a

longitudinal study conducted by Jerome et al. (2009) on approximately 900 children from kindergarten through sixth grade, they found that in kindergarten, teacher-reported closeness levels were lower when students were male, had lower quality home environments, and had lower academic achievement scores. Conversely, teacher-reported levels of conflict at kindergarten were higher for children who were male, identified as Black, had lower academic achievement scores, and had greater externalizing behavior. This gender and race effect remained until the middle elementary school years, with students who identified as Black and those who had less sensitive mothers at greatest risk for increased conflict with teachers over time. However, some evidence suggests that when students had the same ethnicity as teachers, teachers rated their relationships with children more positively (Saft & Pianta, 2001).

In general, teachers tend to report higher closeness in relationships with girls and greater conflict in relationships with boys (Saft & Pianta, 2001; Silver, Measelle, Armstrong, & Essex, 2005, Stuhlman & Pianta, 2001). Some researchers propose that this may be in part due to gender differences in how closeness is expressed and perceived in relationships (Ewing & Taylor, 2009). Given that teaching is a female-driven profession—approximately 75% of K-12 teachers are female (U.S. Department of Education, 2013)—teachers may perceive more closeness with girls due to differences in gender-based relationship expectations.

In addition, some children's temperament characteristics (i.e., shyness and effortful control) were related in this study to the frequency of interactions they initiated with their third-grade teachers. The number of teacher-initiated interactions with a child in third grade was positively related to teacher perception of conflict, but not closeness, with that

child (Rudasill, 2011). Regarding temperament, an emerging body of work suggests that certain temperament characteristics, such as effortful control, may promote positive teacher-child relationships, while others, such as anger, may hinder them (Justice, Cottone, Mashburn, & Rimm-Kaufman, 2008; Rudasill et al., 2006).

Students' family and environmental factors also shape quality of student–teacher relationships. There is evidence that children with longer time in non-parental care, children with stable out-of-home caregiving, children from higher-SES households, and children with secure parental attachments are more likely to demonstrate secure attachment styles in early child care settings (Ahnert et al., 2006; Howes & Smith, 1995). Since home environment is directly correlated with positive school success outcomes, children who have experienced abuse and neglect may have more difficulty trusting adult figures. Abused and neglected children may have higher levels of cortisol and experience symptoms of PTSD, including hyperarousal of the amygdala, the fear center in the brain. The behaviors of children experiencing ongoing trauma can manifest symptoms similar to ADHD (Glaser, 2000). A longitudinal study found that children who had experienced abuse and neglect show social withdrawal, inattention, and lower cognitive achievement in the primary years (Erikson & Egland, 2002). Since strong student–teacher relationships are such an essential part of the learning process for young children, this next section turns to professional development models designed to support teachers in meeting young children's relational needs in the classroom.

Professional Development Models

Professional development provides teachers with additional supports and skills and has been linked to decreases in job stress level and burnout and increases in self-efficacy

and the quality of student–teacher interactions (Rimm-Kaufman & Sawyer, 2004; Sandilos et al., 2018). Head Start programs routinely provide professional development opportunities and many in-house professional learning days throughout the academic year. A national study conducted by Garet, Porter, Desimone, Birman, and Yoon (2001) found that sustained and intensive professional development is more likely than shorter professional development to promote change in teaching strategies as well as opportunities to discuss new concepts, talk about challenges in the classroom, and encourage professional communication among teachers. In current literature, there is a lack of research on professional development models to enhance the quality of student–teacher relationships in preschools, although there are a few models that have been examined for efficacy. It should be noted that three of the four professional development interventions reviewed here were developed by the authors of the Classroom Assessment Scoring System© (CLASS; Pianta, La Paro, & Hamre, 2008), which is the standard of quality of teacher interactions in preschools. The tool includes 10 dimensions of student–teacher interactions organized into three domains: emotional support, classroom organization, and instructional support. The CLASS is used in the federal monitoring and evaluation of Head Start programs. Below is a brief description of each model.

1. Teacher-Child Interaction Therapy (TCIT): TCIT is modified from an evidence-based intervention, Parent–child Interaction Therapy (PCIT), which is a behavioral training program used to decrease disruptive programs. Teachers learn to use positive relational skills (e.g., labeled praises, reflections, behavioral descriptions) in child-directed interaction and classroom behavior management skills (e.g., strategic attention, selective

ignoring, redirection, timeout) for teacher-directed interaction for behavioral compliance. The teacher attends workshop trainings and is coached in the use of the skills in the classroom while interacting with students until they attain a pre-determined level of mastery. Emphasis is placed not on increasing relationships but on behavior management. TCIT has been linked with improved classroom climate, an increase in positive teacher-child interactions, a decrease in disruptive behaviors, and improved social skills for children (Garbacz et al., 2014; Lyon et al., 2009; Tiano & McNeil, 2006).

2. My Teaching Partner (MTP): MTP is a one-on-one coaching model that gives specific feedback to teachers about their interactions using the CLASS framework. Individualized video feedback is utilized to provide feedback and facilitate discussion of areas of growth in the CLASS domains. Several studies have provided support for an increase in quality of interactions and gains in language and literacy for students (Pianta, Mashburn, Downer, Hamre, & Justice, 2008; Mashburn, Downer, Hamre, Justice, & Pianta, 2010; Early et al., 2017)
3. Making the Most of Child Interactions (MMCI): MMCI was adapted from a semester-long college-level course developed by Hamre et al. (2012) to improve interactions on observed emotional and instructional support as measured by the CLASS. As a professional development model, teachers meet for 10 half-day sessions or five full-day sessions face-to-face with trained instructors and learn to identify and analyze effective interactions in classrooms through homework assignments and video feedback. Teachers

discuss ways to interact to increase children's learning. MMCI has been shown to improve teachers' scores in CLASS domains, improve the relationship between coach and teacher, and increase collegial support (Early et al., 2017).

4. Banking Time (BT): BT (Pianta & Hamre, 2001) is a dyadic intervention designed to increase supportive teacher-child interactions based on principles of child-directed play in order to improve behavior management. Teachers engage in non-directive, regular sessions with children that are structured to support relational interactions by giving the dyad opportunities to interact positively. There are four components: a) observe the child's actions, b) narrate the child's actions, c) label the child's feelings and emotions, and d) develop relational themes. An experimental study conducted by Driscoll and Pianta (2010) found some gains in teacher perceptions of closeness but, overall, no significant differences for children.

Circle of Security Interventions

The Circle of Security (COS) treatment approach is an attachment-based intervention protocol designed to foster secure and organized attachment patterns in young children. COS was developed in the early 90s by Glen Cooper, Kent Hoffman, and Bert Powell as a clinical graphic intended to apply in-depth knowledge of infant-parent relationship dynamics from attachment research to clinical practice with caregivers. Over the past 20 years, the COS approach has grown into multiple treatment and psychoeducational options for caregivers of young children: 1) COS-Intervention, a 20-week individual assessment and treatment in group or individual settings with child-

specific video feedback; 2) COS-Parenting (COS-P), a manualized, pre-recorded eight-session video format delivered in a group or individual setting; and 3) COS-HV4, a COS-P video option delivered in a brief, four-session home-visit model; and 4) COS-Classroom (COS-C), a professional development module for early childhood educators utilizing the COS-P videos for training along with classroom-specific exercises.

The COS approach has the flexibility to be used with biological parents and other caregivers (e.g., foster and adoptive parents, grandparents, and early childhood educators). The primary goal in all the programs has been "to improve the caregivers' sensitivity to infant attachment and exploratory signals, with the assumption that this will, in turn, increase the likelihood that the infant or toddler will develop a secure attachment to that caregiver" (Hoffman et al., 2006, p. 1018). The COS interventions are rooted firmly in AT. In that framework, young children's behavior challenges are viewed as disturbances in the primary caregiving relationship. The intervention heavily utilizes a graphic format to visually demonstrate to caregivers key AT concepts, including naming concrete behaviors of young children and caregiving responses that increase likelihood of secure attachment (see Figure 2.2). The COS graphic and concepts were designed in the belief that the intervention needs to be "user-friendly" and "intuitively accessible" for both caregivers and clinicians (Zeanah, 2009). In the graphic, the caregiver is represented by a pair of hands holding the circle. The top half of the circle represents exploration, and the bottom half of the circle represents attachment. At the top half, the caregivers are the "secure base" from which the child launches into exploration needs, and at the bottom half, the caregivers are again the "safe haven" welcoming the child in for attachment needs. Affiliation is supported all the way around the circle as the

caregivers are encouraged to remain present with child's experience and to always be "Bigger, Stronger, Wise, and Kind," meeting their children's needs whenever possible and taking charge of their children's needs whenever necessary.

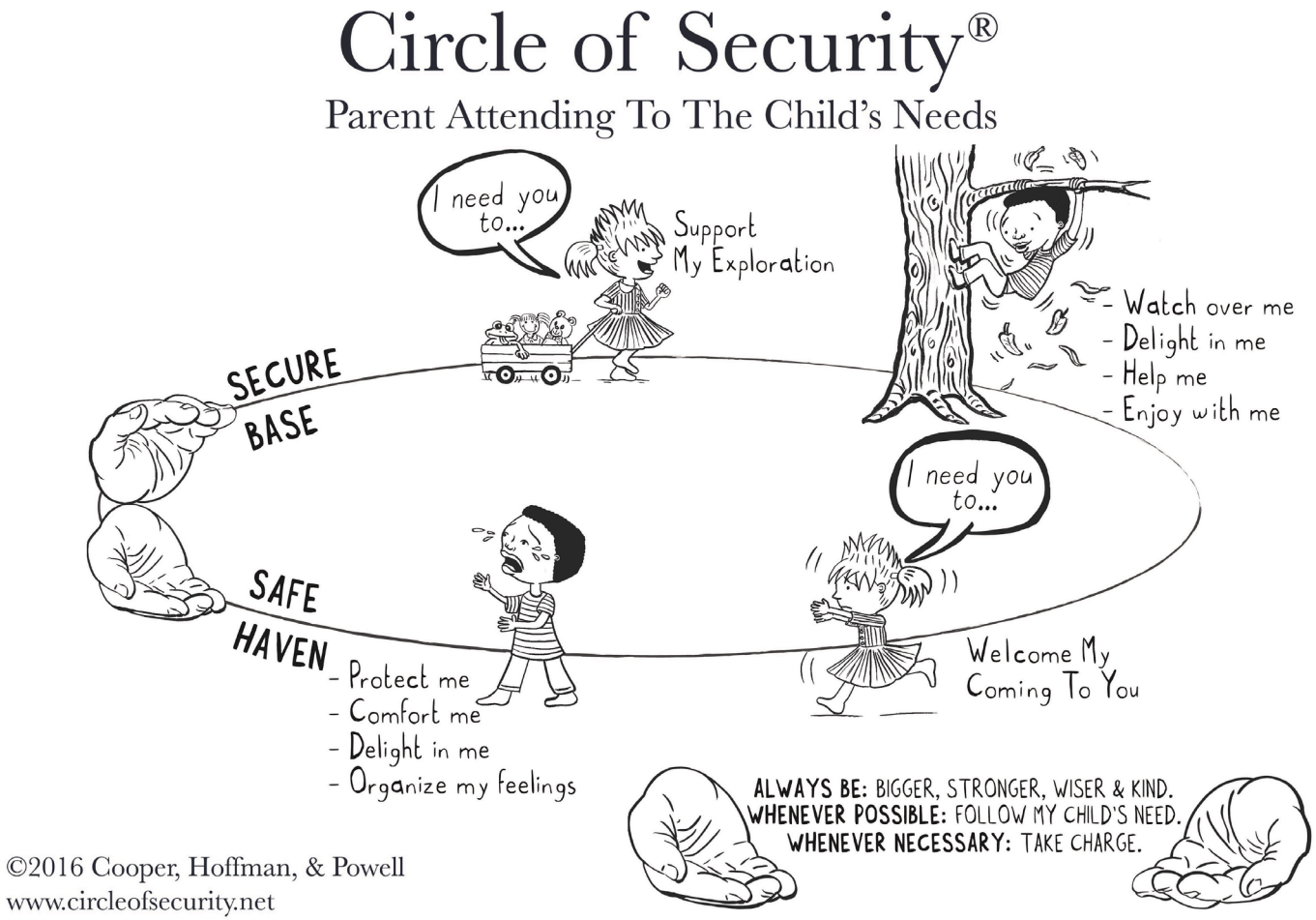


Figure 2.2. Circle of Security Curriculum Graphic

The 20-week COS individualized treatment intervention was created to treat psychopathologic risks associated with disorganized attachment styles (Main & Solomon, 1990); however, with the creation of the COS-Parenting video curriculum accessible on-line, the curriculum is being distributed more widely as a psychoeducational training tool for caregivers of young children, including ECEs, with access in 12 languages (English, Spanish, Norwegian, Swedish, Danish, Japanese, Cantonese, Mandarin, Italian, French, Romanian, and Estonian). COS-P facilitators receive 4-day training by certified COS trainers to learn AT concepts and how to facilitate groups. In order to use the 20-week model, clinicians must attend a 10-day training in assessment and treatment planning based on the COS approach. There are no re-certification or follow-up trainings; however, in order to ensure fidelity, the COS has developed intervention fidelity journals to be used weekly and encourages the use of an intervention fidelity coach when possible. Chapter 3 details the weekly session curriculum in the method section.

COS empirical evidence. There is emerging evidence that the COS approach is an effective program for increasing secure attachment for young children. The majority of studies have focused on parent–child dyads with children 1 to 7 years of age. COS has some base of effectiveness as a program for changing toddlers' insecure attachment patterns, shifting caregivers' internal processes (e.g., sensitivity, reflective capacity), and increasing caregiver well-being (e.g., levels of stress and depression). Hoffman and colleagues (2006) conducted a quasi-experimental study with 65 parent–child dyads recruited from Early Head Start and Head Start programs for the 20-week intervention program. Findings report a significant decrease in the number of children classified as insecure-disorganized, from 65% pre-intervention to 25% post-intervention, and an

increase in secure attachment pattern, from 20% pre-intervention to 54% post-intervention. Numerous clinical studies, case studies, and qualitative work have been conducted on COS interventions, but for the purpose of this study, this review focuses on quantitative research studies.

Cassidy and colleagues (2010, 2011, 2017) have conducted three studies to date on various intervention approaches. Cassidy et al. (2010) conducted an outcomes study on the COS-Perinatal Protocol (COS-PP) with pregnant women with histories of substance abuse and nonviolent criminal offenses recruited from a jail diversion program. Post-intervention results showed significant improvement in maternal sensitivity and a decrease in depression symptoms, and 70% of the high-risk infants were rated with secure attachment at post-test, prevalence rates similar to those in low-risk populations. Cassidy et al. (2011) conducted a randomized control trial investigating treatment effects and differential susceptibility of the brief COS home-visiting approach (COS-HV4) with mothers of irritable infants. There were no main treatment effects found; however, treatment interaction effects with the infant's level of irritability and the mother's attachment style found that for mothers with secure and dismissive attachment styles, treatment was effective with highly irritable infants, and for preoccupied mothers, a treatment effect was found only when infants were moderately irritable. Thus, the COS-C has some evidence for showing differential responses depending on the characteristics of both caregiver and child.

In the only published research on the COS-C approach with non-parental caregivers, Gray (2015) studied the effect of COS-C with home-based family childcare providers ($N = 34$) as a professional development module compared to a community

comparison group ($N = 17$) that did not receive the training. The quasi-experimental study found significant pre-post findings for provider self-efficacy and for competency level in managing children's difficult behaviors as compared to the community group of family childcare providers. Provider feedback on the intervention as a professional development module was overwhelmingly positive. However, the study lacked control conditions and quantitative measurement of the effect on the child-adult relationship or child development measures. To date, no published study has shown the effect of the COS-C on student, ECE, or student–teacher relationship outcomes in a center-based preschool setting such as HS. This current study is the first study to date to examine the effect of the COS-C on center-based early childhood education. See Table 2.1 for a summary of relevant studies.

Table 2.1

Summary of Circle of Security (COS) Quantitative Research Findings, N = *11*

Study	Type	COS Approach	*N* = (dyads)	Where	Who	Key Findings
Cassidy et al. (2010)	Pre-post test, single-group design	COS-Perinatal Protocol	20	US	Jail diversion program	- Post-test rates of security in the treated high-risk sample comparable to typical rates of security in nonclinical community samples
Cassidy et al. (2011)	RCT-Hierarchal Logistic Regression	COS-Home Visits 4	169	US	Clinical-Highly irritable infants	- No main effect of treatment found - Differential response found with highly irritable infants - Three-way interaction: Group x attachment x irritability. Mothers with more secure and dismissive attachment styles and highly irritable infants benefitted from tx
Cassidy et al. (2017)	RCT-Mixed model with random effects	COS-P	141	US	Head Start center	- No significant intervention effects for attachment security or behavior problems found - Tx showed a decrease in unsupportive response to distress as compared to control - Tx showed an increase in child inhibitory control as compared to control
Dehghani et al. (2014)	RCT-MANCOVA	COS- 20 week	48	Iran	Preschool centers	- Significant main effects for higher attachment scores - Significant main effects for higher well-being (emotional, educational, cognition, family)

Gray (2015)[1]	Quasi-experimental, RM-ANOVA	COS-P	34	US	Childcare providers	- Time by group effect for self-efficacy in managing challenging behaviors of intervention group - Depression decreased for both groups - Job stress remained unchanged
Fardoulys & Coyne (2016)	Quasi-experimental,	COS- 20 week	2	Australia	Children with autism	- Shift occurred in one dyad from avoidant to secure while the other remained secure with improvement in behavioral domains - Findings highlight some treatment efficacy for children with autism
Hoffman et al. (2006)	Pre-post test, McNemar's test	COS- 20 week	65	US	Head Start center	- 69% of children shifted from disorganized to organized attachment styles - 44% shifted from insecure to secure
Horton & Murray (2015)		COS-P	15	US	Mothers-Residential treatment center	- Mothers who attended the majority of sessions showed improvement on emotion regulation, parenting attributes, and the parenting scale. Mothers who did not attend showed no improvement or decreased attributes - Predictors of more positive outcomes in tx were parents with no history of child maltreatment, more education, less time in residential treatment center, and lower social desirability scores

Huber, McMahon, Sweller (2015a, 2015b, 2016)	Single group, Pre-post test-RM-ANOVA	COS 20-week model	83	Australia	Clinical	- Significant improvement in parent-report of child protective factors, behavior concerns, internalizing and externalizing behaviors, with more gains by children with more severe problems - Teacher report of significant decrease in externalizing behaviors - Caregiver reflective functioning, representations, and attachment security increased, disorganization decreased for those with high baseline - Clinical improvement in parental stress and psychological functioning
Mothander et al. (2018)	Comparison groups-McNemar's test	COS-P	52	Sweden	Clinical	- Found significant increases in maternal representations and emotional availability when clinical population received COS-P as an add-on to treatment as usual in IMH clinics.
Yaholkoski, Hurl, & Theule (2016)	Meta-analysis-Random effects model	All	10 studies	Canada	10 studies included	- Significant medium effect sizes found for secure attachment, quality of caregiving, and caregiver depression and large effect size for improving caregiver self-efficacy

Note. RCT = randomized control trial, MANCOVA = multivariate analysis of covariance, RM-ANOVA = repeated measures analysis of variance, COS-P = Circle of Security-Parenting, IMH = infant mental health

[1]The only study to date on COS in childcare settings with non-parental caregivers

Conceptual Framework

A conceptual framework (see Figure 2.3) to guide the current investigation was developed based on the above review of theory and literature about the influencing factors on student–teacher attachment-like relationships in preschool years. Utilizing previous research on attachment relationships, the influence of early childhood adversity, professional development for ECEs, and COS efficacy studies, this conceptual framework includes known demographic, early environmental, and student and teacher characteristics important to the quality of student–teacher attachment relationships associated with positive academic and social–emotional development for young children. This framework outlines anticipated pathways from teacher and student variables to student outcomes. Central to the framework is the moderating role of student–teacher relationships influenced by both teacher and student characteristics. In this study, the COS-C professional development model targets teacher-level variables to influence student–teacher relationship dynamics, with implications for both teacher and student functioning. This study extends COS intervention findings to students' social–emotional functioning in the classroom. Although school readiness is an important outcome to examine, it is beyond the scope of this study to include intervention effects on school readiness indicators.

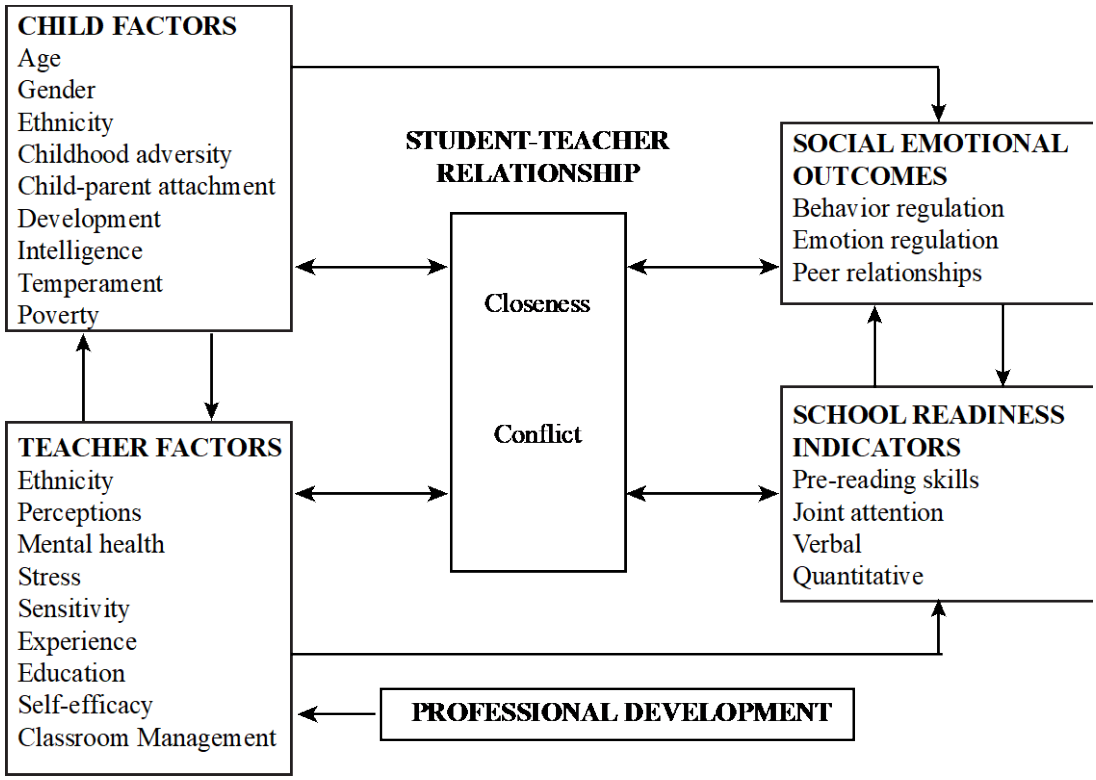


Figure 2.3. Conceptual Framework

Summary and Need for Study

Although the results of many studies support the claim that preschool student–teacher relationships are an important educational construct (Hamre & Pianta, 2001; LoCasale-Crouch et al., 2007; Mashburn et al., 2006), few studies have investigated interventions to influence the quality of these attachment-like relationships. The current study evaluated whether a specific teacher intervention, the Circle of Security-Classroom, positively affected teacher perceptions of relationships and other salient student and teacher outcomes. The current study is the first attempt to evaluate the effects of a specific preschool classroom mental health intervention targeted at teachers on early childhood classroom attachment relationships within

an experimental design. The results of this study inform social work research, practice, and opportunities for policy improvement in the growing field of early childhood education. The next chapter describes the method used to test COS intervention efficacy on the quality of student–teacher relationships and on young children's social–emotional functioning in preschool settings.

CHAPTER 3

METHODS

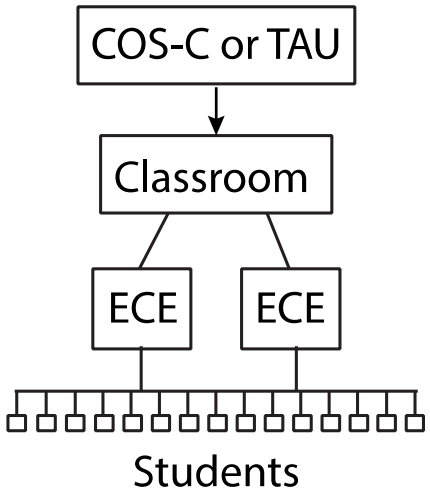
The purpose of this study is to examine the effectiveness of the COS-C approach in Head Start classrooms. The primary aim is to test the COS intervention (the independent variable) on student–teacher relationship quality (the dependent variable). The secondary aim is to test intervention effects on dependent variables associated with teacher and student well-being indicators. The following sections describe the study design, study setting, participants, procedures, measures, and analytic plan.

Study Design

This study focused on eight HS classrooms housed in a school district's early childhood education location. A group-randomized trial design was used to randomly assign ECEs at the classroom group level to receive either the COS-C or training as usual (TAU) during a 2-month period. Classroom assignment was completed by randomly drawing four classrooms to participate in the COS-C. Additionally, ECEs were randomly assigned to students in their classroom for teacher-report items on student measures. Student randomization occurred by alternating students on the class roster to ECEs located in the same classroom.

Student participants are within teacher groups (see Figure 3.1). Teachers completed pre- and post-surveys on basic demographics, individual student–teacher relationships, student behavior, and teacher well-being outcomes. Secondary data collected as part of HS program participation was used for student demographics and student adversities pre- and post-

training. Lastly, ECEs in the COS-C group completed participant feedback specific to the COS-C training module. Data collected are parent reports on student and family demographics and self-report measures by HS ECEs on ECE and child functioning.



Note: COS-C, Circle of Security-Classroom; TAU, Training as usual

Figure 3.1. Conceptualization of Nested Research Design. Research design with randomization at classroom level. $N = 8$ classrooms, 16 teachers, 103 students.

Study Setting

Study participants were recruited from a local HS center in a mid-size town of approximately 127,000 people in the southeastern part of the United States. The county in which the HS center is located is one of the poorest counties in the state, with a median household income of approximately $32,000 and approximately 38% of people living in poverty (U.S. Census Bureau, 2016). The county's ethnic composition includes 65% White, 28% African-American, and 7% Other. Approximately 10% of the population identifies as Latino or Hispanic. In 2016, wellness indicators for children living in the county indicate that

17% of children are born with inadequate prenatal care, 50% of births are to single mothers, 15% of children have mothers with less than a 12th-grade education, 12% of births were premature, and almost 9% of births were to teenaged mothers (Kids Count, 2016). In 2012, the rate of substantiated child abuse and neglect in the state and county was 7%. However, between 2013 and 2016, the rate of substantiated child abuse and neglect in the county increased by 52% and has exceeded the state rate each subsequent year (Kids Count, 2016).

Governed by the local school board, the HS center is housed under the local school district's site for early childhood education, The Early Learning Center, serving populations prenatal to 5 years of age. As part of the district-wide programs for young children, the site also houses the Early Head Start (EHS) home visitation program for children prenatal to 3 years of age, EHS center-based classrooms for children birth to 3 years of age, HS classrooms for children aged 3 to 5 years old, and state-funded Pre-K classrooms for 4- and 5-year-olds. Populations within Early Head Start / Head Start programs include children with disabilities, foster children, English language learners, homeless, and low-income children and families. In 2017, the Early Learning Center housed the only EHS and HS programs serving the 5.3% (6,791 children) of the county's population under the age of 5, with approximately 35% (2,376 children) living below the federal poverty level and income eligible for EHS and HS services. However, center capacity only allows the programs to serve 13% of income-eligible children. In the 2017-2018 school year for this district, the EHS and HS programs had a total enrollment of 306 children.

Participants

This study utilized a convenience sample of participants, who were all ECEs and students enrolled in HS classrooms in a local early education center. This particular HS site

was chosen because it is the only center located in the county and because of administrative interest in implementing professional development training center-wide to support ECEs in meeting the educational needs of children who may be experiencing trauma.

All 21 HS teachers and students located in this center were invited to participate. Eligibility criteria for ECEs include currently teaching in a HS classroom as a lead teacher or paraprofessional, availability for additional training hours, and plans to remain in the same classroom for the duration of the study (approximately 2 months). All 21 ECEs met eligibility requirements, but one ECE declined to participate. The remaining 20 ECEs signed informed consent forms, completed a pre-intervention packet, and were then randomly assigned to either a COS or TAU group. One participant in the COS group had to drop out after five COS sessions due to a sooner-than-anticipated maternity leave, and two ECE participants in the control group left the center during the time of the study, decreasing the total ECE sample size to 16 (ECEs, $N = 16$, COS, $n = 9$; TAU, $n = 7$).

All enrolled HS families met program eligibility requirements, which requires having a child between 3 and 5 years of age and household income at or below the federal poverty level guidelines. Students were eligible for inclusion in the study if they were enrolled at the time the study began, remained in the same classroom for the duration of the study (approximately 2 months), and had data already collected by HS staff on demographic and development assessments prior to the start of the study. Total sample size for students was 103 (COS, $n = 59$; TAU, $n = 44$). See Figure 3.2 for the participant flow diagram.

Participant Flow Diagram

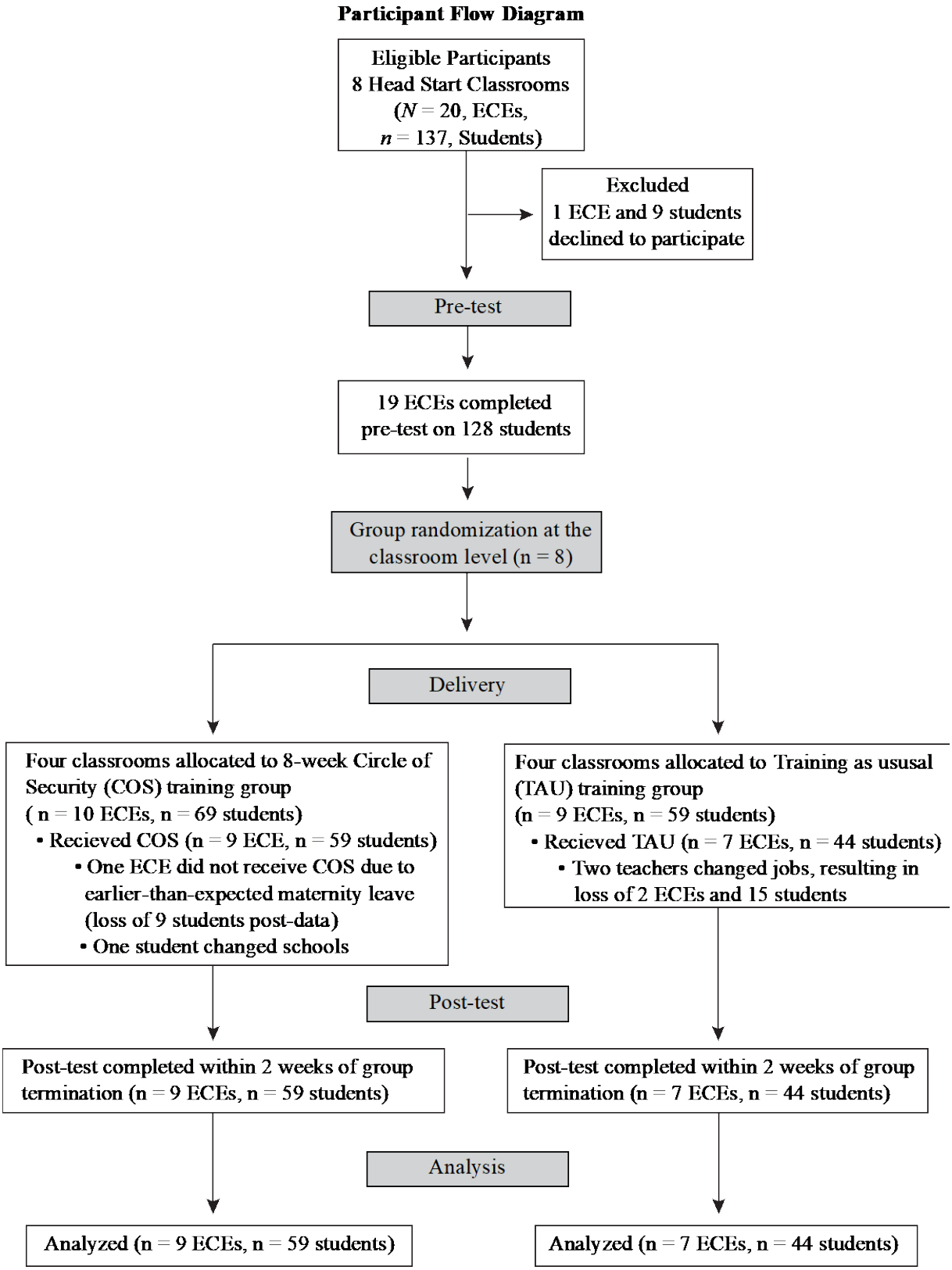


Figure 3.2. Participant flow diagram. Figure shows randomization, pre-test, COS delivery, post-test, and group sizes for analyses.

Study Procedures

After IRB approval was obtained from the local school district and the University of Georgia, the Early Learning Center director and HS coordinator attended two meetings to coordinate details of the study. ECEs in HS classrooms were informed of the research project through a recruitment letter, with an invitation to attend an informational meeting. At the informational meeting, the researcher discussed the COS training, the study design, and the eligibility requirements and passed out informed consent paperwork. ECEs were given one week to decide whether they wished to participate. Those not wishing to participate in the research evaluation were excluded from data collection. Parents and guardians received information and informed consent forms about the research project in their child's agenda and a follow-up copy at the parent-teacher conferences. Parents either returned informed consent forms in their child's agenda or in person to the HS center.

Paper pre-training survey packets (see Appendix D) were distributed and completed one week prior to start of the COS training. Total time anticipated to complete the pre-assessment survey was approximately 90 minutes. Next, ECEs and students were randomized. The COS-C group received a weekly manualized, 90-minute video-based training after student dismissal in addition to training as usual, which included one professional learning day and classroom coaching as typical. The TAU group received only the one professional learning day and classroom coaching as typical. At the end of training, all ECEs completed post-training assessment in the same format as the pre-training assessment, with the COS-C group completing an additional anonymous post-training participant feedback

form specific to the COS-C training. Educator participants received a $25 gift card for each survey packet completed before and after the study and time off to compensate for additional hours required for the intervention (participants were allowed to choose another day to leave 90 minutes early, immediately following student dismissal). All incentives to participate in this research study complied with the local school district's regulations.

Intervention fidelity. COS intervention fidelity refers to intervention delivery by the COS facilitators to the early childhood educators outside of the classroom as a professional development model. Intervention fidelity does not assess whether teachers are implementing the intervention in the classroom with children. A number of steps were taken to ensure COS intervention fidelity. First, two certified COS-P facilitators who were licensed master's-level clinicians (the researcher and the HS behavioral specialist) delivered the training. Second, the facilitators followed a detailed manual that includes specific objectives, activities, and discussion questions and recommended pauses for each weekly session. Third, after each session, facilitators completed a self-report measure created by COS originators to document adherence to the intervention manual (see Appendix H) and completed a narrative reflection on issues that emerged. Overall, COS facilitators had an overall mean score of 3.3 out of 4 for the intervention fidelity checklist in all sessions, an adherence rate of approximately 83%. It should be noted that at times facilitators were adapting original COS material developed for parents to be applicable in classroom settings. Whenever possible, this was done in consultation with COS originators and intervention coach. Fourth, a certified COS intervention coach provided weekly fidelity reflective consultation via online conferencing software to address any facilitator questions or concerns and to reflect on overall group process in applying the COS intervention with ECEs. Fifth, to ensure that ECEs received all

material, ECEs who missed a group training session were required to complete make-up sessions before the next weekly training with one of the facilitators, since material is consecutive and builds on previous weeks. A total of three make-up sessions were scheduled throughout the training time to accommodate ECEs' schedules. Seven ECEs attended all eight sessions, one ECE attended seven out of eight sessions, and one ECE attended six out of eight sessions, for an attendance rate of 96%.

Ethical considerations. Precautions were taken in order to safeguard participants' confidentiality. The university's IRB, as well as the IRB of the school district, approved the teacher intervention and experimental study. Written consent from early childhood educators was obtained prior to their participation in the intervention, as was written consent from parents to use secondary data already collected from the Head Start program. These consent forms informed parents and teachers of the purpose of the study, potential risks and benefits of participating, and provided contact information in the case of any questions concerning the study. In addition, teachers participated in an informational meeting where the study details were given, and time was allowed for questions. Educators were informed that they could discontinue participation in the study at any time. Further, each participant (students and teachers) was assigned code numbers, which ensured the confidentiality of all information. All student data were received de-identified, with a master code created by HS to link students to classrooms and teachers, and were then re-assigned a project-specific code to ensure confidentiality. Only the author had access to study documents linking participants' names to code numbers, which were stored separately from the data. Study documents were kept locked in a filing cabinet in the author's office.

Despite the precautions that were taken to safeguard participants' rights, some risks may

have remained. A potential risk for the teachers in the study included emotional stress (i.e., becoming upset) related to survey items or material discussed in the intervention. To safeguard against this potential risk, mental health professionals, contracted by the Head Start center, were available to ECEs free of charge if desired.

Summary of COS-C Approach

The Circle of Security-Classroom (COS-C) was adapted to deliver the Circle of Security-Parenting (COS-P) intervention to ECEs as a training module. The COS-C uses the same protocol manual as COS-P but requires the facilitator to focus on behaviors and experiences in early childhood classrooms rather than parent–child dynamics. The COS-C requires educators take generalized information about students' needs from stock video of parent–child interactions and apply it to their own strengths and struggles in the classroom, with the goal of increasing the sensitivity and awareness of students' relational needs in the caregiver—in this case, the ECE.

The training consisted of eight sessions, called chapters, each lasting 60 to 90 minutes. Each chapter contains between 10-15 minutes of archival video clips that were viewed and discussed during the session. The clips are of child–parent interactions, as well as of previous COS-P participants reflecting on what they learned about interactions with young children from the COS-P. The video indicates where to pause, themes to discuss, and how to help teachers consider interactions with young children. The facilitators followed along with a detailed protocol manual containing specific questions suggested for discussion.

Chapters 1 and 2 introduced educators to basic concepts of attachment, the use of the COS graphic as a map for caregiver–child interactions, and a child's secure base and safe haven needs as expressed through behaviors (see Figure 2.2). Chapter 3 addressed the

concept of "being with"—a major concept in the training that demonstrates the benefits of validating and accepting children's emotions and emotional states without trying to change them. Chapter 4, dedicated to infants under 12 months of age, discussed how to identify exploration and attachment needs in infants. In Chapter 5, educators considered the importance of reflecting on their own caregiving struggles. The COS employs the metaphor of shark music (i.e., the "scary" background music that may play in a caregiver's mind, causing a caregiver to feel unsafe in adult–child interactions that are safe) to discuss internal working models that may inhibit either exploration or connection in the attachment relationship. This approach gave educators a vocabulary for talking about processes outside their conscious awareness that may influence classroom interactions. These processes, often developed within primary attachment relationships, can make some students' needs seem threatening. By labeling these threats "shark music," educators can learn to pause their habitual response, recognize and regulate their own emotions/reactions to the behavior, and respond appropriately to the student's exploration and connection needs. The goal of Chapter 5 was to increase sensitivity to and awareness of the student's experience and key attachment behavior strategies used by young children to get their relational needs met. Avoidant and ambivalent attachment patterns were introduced and contextualized as children's adaptations to insensitive caregiving. In Chapters 6 and 7, educators learned about disorganized attachment through discussion of mean (hostile), weak (helpless), and gone (neglecting) parenting and caregiving styles. Educators discussed the importance of rupture and repair in relationships, and how rupture–repair processes can support emotion regulation and successful relationships. Chapter 8 consisted of a summary, discussion of the group's experience, and a celebration of program completion.

Measures

Primary and secondary data pre- and post-training were utilized in this study. Measures included student measures reported by parent and ECE and ECE self-report. All primary data are ECE demographic and self-report measures collected face to face at the HS site prior to beginning training and within 2 weeks following completion of COS training. All ECE participants completed the same pre- and post-survey packet, with the exception of an additional COS-C Participant Feedback Form at post-survey for COS-C participants.

Secondary data were student and family demographics, student adversity and resilience factors, student behavioral and developmental assessments, and classroom observations collected by the HS center in September, at the beginning of the Fall semester and again in December at the end of the Fall semester. All student data were received de-identified, with a master code created by HS to link students to classrooms and teachers, and were then re-assigned a project-specific code to ensure confidentiality. The following sections detail instruments and assessments at the student, ECE, and classroom levels.

Student variables. Student-level variables are student and family demographics (parent-report), adverse childhood experiences (parent-report), social–emotional development (ECE-report), and student–teacher relationship (ECE-report).

Student, family, and classroom demographics. All guardians completed an initial student intake form with student and family demographic information (see Appendix E). Demographics reported include age and ethnicity of all family members in the household, language spoken in the home, family income, adults' education levels and vocations, guardians' relationship to student (parent, foster parent, grandparent, etc.), and marital status. In addition, classroom demographics, such as number of students, student-to-teacher ratio,

gender composition, and ethnicity composition of the classroom, were gathered from Head Start class roles.

Adversity. At enrollment, guardians reported on family adversity experienced as part of intake paperwork and eligibility determination. Adverse experiences used in this study include born to teenage parent, child protective services involvement, homelessness, parental mental health concerns, crisis event (such as death of a family member, domestic violence, or natural disaster), parental incarceration, disability, and child injury. A composite score was created to obtain total childhood adversity, with one point per family adversity experienced representing student's total adversity score, for a total of eight childhood adversities collected as part of intake paperwork. Poverty was not counted as an adversity because all participants' household income was at or below the federal poverty line. Higher scores represent a greater number of adversities experienced in the student's life. Each student's adversity level was categorically ordered low (1-2) or high (> 3) based on prior research findings on the cumulative negative effect of childhood adversity after experiencing three or more adversities early in childhood (Appleyard et al., 2005; Larson et al., 2008).

Developmental Profile-3 (DP-3). The Developmental Profile was assessed at the beginning of the school year, approximately 1 month before this current study began, by trained HS staff and was utilized in this study as secondary data. The DP-3 was created in 1971 and has undergone three revisions for modifications on item wording, primarily to remove ambiguity, gender-specific pronouns, and any items that appeared to have gender bias (e.g., asking about gender-stereotypical play). There are 186 items assessing development through 12 years, 11 months in five domains: physical, adaptive behavior, social–emotional, cognitive, and communication. This tool was standardized with a majority-white sample of

2,216 typically developing children throughout the United States. The five domains had reliability scores of 0.90 or above, and test–retest correlations ranged from 0.81-0.92 (Alpern, Boll, & Shearer, 1986). The DP-3 can be used in multiple settings such as schools, clinics, and hospitals to evaluate a child's developmental status. The standardized tool provides broad ranges of development categories: a) Well above average, > 130; b) Above average, 116-130; c) Average, 85-115; d) Below average; e) Delayed, < 70. In this study, no student scored in the well-above-average category. The DP-3 results are often used clinically as a screening tool for early intervention services.

Social–emotional and behavioral functioning. The Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) was used to assess social–emotional and behavioral functioning (see Appendix D.iv) pre- and post-training. The SDQ is a brief, 25-item teacher-report screening questionnaire for use with students aged 3-16 years old. The SDQ assesses five separate domains of student functioning: (1) emotional (e.g., "many fears, easily scared"), (2) conduct (e.g., "often fights with other children"), (3) hyperactivity (e.g., "constantly fidgeting or squirming"), (4) peer relationships (e.g., "generally liked by other children"), and (5) prosocial behavior (e.g., "is kind when someone is hurt"). As in previous literature, this study combined average scores on domains 1-4 for a total difficulties score (Burdon et al., 2005). The ECEs reported on students' behavior in the classroom context pre- and post-training. This study did not utilize the prosocial behavior domains.

For each item, the ECE gave a rating of 0 (not true), 1 (somewhat true), or 2 (certainly true). Domains were aggregated to form a total score, with some items reverse-scored so that a higher score indicated greater difficulties in the domain. The scale has been normed in diverse samples from multiple countries with cut-off scores for each domain as well as total

difficult and prosocial behavioral functioning scores. Widely used, the SDQ has demonstrated satisfactory reliability and validity, with Cronbach's alpha scores range from 0.46 to 0.83 (Goodman, 2001). In addition, the SDQ has reported strong correlations with the Child Behavior checklist (CBCL; Achenbach, 1991). Burdon and colleagues (2005) created normative scoring bands from a cohort of over 10,000 children in the United States, with 10% of the sample falling in the high total difficulties category (Low = 0-11, Medium = 12-15, High = 17-40). The high total difficulties category had strong correlations with ADHD, being male, having a learning disability, family below the poverty line, and single-parent households. In this study, 60% of the student population was in the low category, 16% in the medium category, and 14% fell within the high total difficulties category. The Cronbach's alpha for the SDQ domains for this study at Time 1 and Time 2, respectively, were emotional (0.786, 0.707), conduct (0.883, 0.807), and hyperactivity (0.891, 0.865).

Student–teacher relationship. The Student–teacher Relationship Scale (STRS-SF; Pianta, 1992) will be used to assess student–teacher relationships as reported by the ECE pre- and post-training (see Appendix D.v). The STRS original 28-item measure was developed with an attachment theory framework out of a need to capture a teacher's own emotional experience in the classroom and to measure the contribution of important relationships for student success (Pianta & Hamre, 2001). The STRS is the only self-report measure to assess a teacher's perception of relationship with a student for children pre-K to third grade.

ECEs rate on a Likert scale from 1 (*definitely does not apply*) to 5 (*definitely applies*) the degree to which statements currently apply to the relationship with a specific student. Statements include "I share an affectionate, warm relationship with this child;" "This child and I always seem to be struggling with each other;" "It is easy to be in tune with what this

child is feeling;" and "When this child is in a bad mood, I know we're in for a long and difficult day." In the short form, statements are categorized into two inversely related domains of relationship functioning: (a) closeness and (b) conflict. Scores in each domain are aggregated, with higher scores in closeness indicating a teacher's perception of greater warmth, affection, and open communication in the student–teacher interactions, and higher scores in conflict indicating that the teacher's perception of the relationship is more negative and that the teacher struggles with the student in classroom interactions. The total score is calculated by subtracting total conflict score from overall possible points and then adding the closeness score (e.g., the overall view of the teacher's perception of the relationship with higher scores suggesting higher quality of relationship reflecting lack of conflict scores and higher closeness). This study utilized the closeness (items 1, 3, 4, 5, 7, 9, 12, 15, 21, 27, 28) and conflict (items 4, 11, 13, 16, 18, 19, 20, 22-26) domains.

The psychometrics properties of the STRS have been validated and normed with a diverse sample size of over 1,500 students in the United States (Pianta & Hamre, 2001). Previous validity studies have reported sufficient internal consistencies, with Cronbach's alpha coefficients ranging from .91 to .93 for the conflict scale and .85 to .87 for the closeness scale. Test–retest reliabilities, with Pearson correlation coefficients based on a 4-week interval, are reported to be .92 for conflict and .88 for closeness domains (Pianta & Hamre, 2001). Mi-Young and Neuharth-Pritchett (2011) further examined the factor validity and measurement invariance for African American and European American populations. They found some items to have low factor loadings and the dependency domain to have poor psychometric properties. They also found that there was measurement invariance between African Americans and European Americans and advised caution when using this measure in

ethnic group comparisons. The measure has been used extensively in Head Start populations in the United States (Driscoll & Pianta, 2010; Myers & Morris, 2009; Spritz, Sandberg, Maher, & Zajdel, 2010; Whitaker et al., 2015). In the present study, closeness and conflict pre-test reliability showed good Cronbach's alpha scores of .89 and .93, respectively, and post-test was .85 for closeness and .90 for conflict.

ECE variables. ECE variables were measured using self-report items and include demographics, awareness of trauma, depression, competency in supporting social–emotional development, COS-C participant feedback form (for those assigned to COS-C group), job stress, and self-efficacy.

ECE demographics. ECEs were asked to provide demographic information, including their age, education level, number of years teaching, HS staff position, race/ethnicity, gender, family income, language, country of origin, and marital status.

Depression. The Center for Epidemiologic Studies-Depression Scale (CES-D, Eaton, Muntaner, Smith, Tien, & Ybarra, 2004) is a well-known and widely used short scale (20 items) to assess depressive symptoms that has been widely validated with diverse populations (see Appendix F.ii). ECEs rated themselves on a Likert scale of 0 (*rarely or none of the time; less than 1 day*) to 4 (*most or all of the time, 5-7 days*) on how often they had felt or behaved in certain ways over the past week (e.g., "I was bothered by things that usually don't bother me;" "I felt hopeful about the future;" "My sleep was restless;" "I had trouble keeping my mind on what I was doing"). Higher scores reflect higher severity ratings of depressive symptoms (range = 0–60). This measure is normed with a score of 16 or higher representing clinical cut-off scores for depression. Cronbach's alpha score for pre-test was 0.778 and post-test was 0.748.

COS Participant Feedback from ECE. ECEs were asked to provide feedback on the training module using the Circle of Security Participant Feedback Form (COS-PFF, unpublished; see Appendix F.iv), which was developed by the COS originators for the COS-P intervention and adapted by the researcher in collaboration with Glen Cooper, COS originator, for use with HS educators. The COS-PFF survey consists of 11 Likert-scale questions (e.g., understanding of behaviors in classrooms, change in teaching strategies and responses, and change in behavior of students). In addition, the ECEs were asked to give brief written responses to seven questions (e.g., impact on relationship with children, behavioral strategies, and support among teachers receiving training together). Open-ended responses were used in the current study analysis as corroboration for quantitative findings and to inform future COS-C work at the local HS center.

Job Stress. The Child Care Worker Job Stress Inventory (CCWJSI) instrument was used to assess child care worker-specific job stress (Curbow et al., 2000). The CWJSI measures job stress level in three domains: job demands, job control, and job resources. This study utilized the 17-item Job Resources subscale to assess stress related to direct interactions with children (see Appendix F.iii). This study measured only child care worker job stress level as it related to working directly with children, since the COS intervention targets relational dynamics with children and is not intended to intervene in other areas of job stress such as administrative job demands. Providers rated statements on a scale of 1 (*never/rarely*) to 5 (*most of the time*) of how often a list of 17 items occur during their work life. Items included "I know the children want to be with me," "I feel like I am helping the children grow and develop," and "I have fun with the children." The CCJWSI has demonstrated high validity and internal consistency (Curbow et al., 2000). As is, higher scores on the measure

reflect more access to resources to manage job-related stress. Scores were reversed so that higher scores represent increased stress level and lower scores represent decreased stress level. Cronbach's alpha scores for pre- and post-test for this study were very good (α = .918, α = .887), indicating high reliability in measuring teachers' perceived job stress levels.

Self-efficacy. The Teacher Opinion Survey-Revised (TOS-R; Geller & Lynch, 1999), a short 13-item scale designed to assess preschool workers' self-efficacy, was used at pre- and post-training (see Appendix F.viii). ECEs used a Likert scale of 1 (*strongly disagree*) to 5 (*strongly agree*) to report on their perceived efficacy (competence and confidence) in managing students' challenging behaviors and on impacting students' lives (e.g., "If I keep trying, I can find some way to reach even the most challenging child" and "I know how to respond effectively when a child becomes disruptive in my classroom"). Higher scores on this scale reflect higher perceived competencies in managing difficult behaviors and influencing students' lives. This measure was designed specifically for use with early care and education providers and has been used in studies that evaluate the effects of early childhood mental health consultation in childcare programs (Heller et al., 2011). It is in the process of being validated (Geller, personal communication, August 14, 2017). Cronbach's alpha scores for the study sample will be computed. In the Gray (2015) COS-C study, an acceptable Cronbach's alpha score was reported (α = .70) for the TOS-R. In the current study, the TOS-R showed slightly higher pre- and post-test Cronbach's alpha scores (α = .779, α = .839).

Data entry and checking. Three research assistants assisted in data entry. Assistants entered study variables from original hardcopy assessments into an Excel database file using pre-established codes and values. After data were entered, 10% of the data for both students

and teachers was randomly checked for accuracy by the author. This procedure was performed by selecting 10% of the code numbers in the database for verification. Once the participants were selected, the author compared the entered data to the original questionnaire responses. Data accuracy checks revealed high rates of accuracy in data entry, ranging from 97.3% to 100%.

Analytical Strategy

SPSS version 25 was used to create separate data files for student, ECE, and classroom variables and for preliminary analyses. First, univariate and bivariate analysis were conducted to report descriptive and correlational data. Variables were checked for normality, outliers, and multicollinearity. Scatterplots were examined for linear relationships between all study variables. In addition, Cronbach's alpha was calculated on study measures in order to determine the internal consistency of these measures when utilized with this particular sample. Then, intervention effects were analyzed utilizing repeated measures ANOVA for within- and between-group differences over time in SPSS 25, and a mixed-effects regression model to account for the nested nature of the data was used to assess intervention effects on student–teacher relationship quality and student social–emotional functioning in Stata 15.

Study Question 1. In order to test H1-H3 for within-group and between-group changes in ECE variables, a repeated measures analysis of variance (RM-ANOVA) was used utilizing pre- and post-scores. The RM-ANOVA was chosen over other statistical approaches such as the analysis of covariance (ANCOVA), which uses the post-test score as the dependent variable and the pretest score as a covariate. In the ANCOVA approach, the whole focus is on whether one group has a higher mean after the treatment. It is appropriate when the research question is not about gains, growth, or changes (Dimitrov & Rumrill, 2003).

However, since this study was concerned about growth over time in participants' well-being levels, the RM-ANOVA was chosen. Assumptions for RM-ANOVA are normal distribution, homogeneity of variance, absence of outliers, absence of multicollinearity, and linear relationship between covariates and dependent variables.

Study Questions 2 and 3. To examine H4-H7 in study questions 2 and 3 on COS-C intervention effects on student–teacher relationship and student functioning, a mixed-effects regression model was analyzed due to the clustered nature of the data. The nested quality of the data (students within teachers) violates assumptions of independent observations required used by other statistical analyses tests, such as ANOVA, ANCOVA or linear regression.

Mixed effects models are a form of ordinary least squares (OLS) regression that are used to analyze variance in the outcome variable (always a lower-level variable) when predictor variables are organized at varying levels (i.e., students, teachers). This form of analysis allows the researcher to statistically account for any shared group variance that may affect the outcome. In this study, four models were estimated to determine the contributions of student- and teacher-level variables. First, the null model was estimated; then, the null model plus student variables was estimated; and finally, the full model with all study variables was estimated. Time and group were built into all models (except the null model) to account for intervention effects over time.

Therefore, the mixed effects model can accommodate relationships within and between nested levels of grouped data and account for shared variance among clusters (Woltman, Feldstain, MacKay, & Rocchi, 2012), making it an appropriate statistical analytic strategy for this proposed study with variables collected at the student and teacher levels.

Mixed effects regression models have fewer assumptions but does require normally distributed data, equal variance at each level, and linear relationships among variables.

Summary

This chapter described the overall study design, procedures, and analytic strategy used to test the COS-intervention effects on student–teacher relationship quality and teacher and student well-being outcomes. Participants were from a local HS and students are nested within teacher clusters ($N = 16$, $n = 103$). This study used a group-randomized nested design to assign ECE to either COS-C or TAU group. Data analytic strategies appropriate for pre- and post-intervention designs and nested data were described to test the effects of the independent variable, COS-C intervention, on dependent variables of student–teacher closeness and conflict, teacher depression, stress, and self-efficacy levels, and student social–emotional functioning as reported teachers pre- and post-test. Demographic variables and parent-report adversity level are also used in the model to test intervention effects. The next chapter reports the findings of the analyses.

CHAPTER 4

RESULTS

This chapter presents the results of the study analyses examining the intervention effects of the COS-C approach on teacher- and student-level outcome measures. Examination of study questions required the use of descriptive, bivariate, and multivariate analyses. First, significance level used and missing data are discussed. Next, preliminary and descriptive analyses, and bi-variate correlations are reported. Then, the results of teacher-level and student-level outcomes are presented, organized by study questions and hypotheses. Lastly, a summary of the key findings is reported. Tables and graphs are presented throughout. All analyses were conducted in SPSS 21 and Stata 15. The following sections describe the analytic process and present the results.

The significance level for all analyses was set at $p < .05$. However, given that the current project is an experimental study of an unevaluated center-based classroom intervention with a small cluster sample ($N = 16$), findings with alpha levels between .05 and .10 will be discussed as promising results. Cohen (1992) supports this adjustment in circumstances in which a less rigorous standard for rejection of the null hypothesis is desired in exploratory studies. Furthermore, the COS intervention in previous parenting studies has been shown to be of "no-harm," suggesting that committing a Type 2 error (not identifying potential intervention effects) may be more harmful than a Type 1 error (incorrectly identifying an intervention effect). Moreover, seeing small shifts for young children in early intervention could mean larger effects as children continue on a particular development

trajectory due to the sensitivity to initial conditions of early childhood brain development (McEwen, 2007; National Scientific Council on the Developing Child, 2004). Given the low statistical power of the cluster size and the importance of identifying interventions that may have effective change and do no harm for populations of young children facing many adversities, findings below $p < .10$ will be reported in the results section and explored in the discussion section.

Only early childhood educators who completed both pre- and post-measures and their student dyad are included in the analysis (16 out of 19 eligible teachers and 104 out of 143 eligible students). Less than 5% of data was missing for all study variables included in the analyses: teacher outcomes pre- and post-measure (0%), STRS pre-measure (1%), STRS post-measure (2%), and SDQ pre- and post-measure (4.8%). Some missingness was due to students who unenrolled during the study period. On demographic variables, less than 5% of data was missing for all variables except for parental education level (14%), parental employment status (13%), family income level (6%), and student individualized education plan (IEP) status (6%). Missingness on demographics was most likely due to data collection and entry failure at enrollment time. Variables with more than 5% missing were not included in analyses.

Preliminary Analyses

First preliminary analyses were conducted on all study variables to assess for normality through skewness and kurtosis scores. All variables fell within acceptable levels of skewness and kurtosis (see Table 4.3). Next, independent-samples *t*-tests and Chi-square tests were performed on demographics variables to assess any differences between groups. For student-level demographics, the COS and TAU groups did not differ in characteristics except

in age [t (97) = 3.39, $p < .001$] and number of students per classroom [t (101) = 4.27, $p < .001$] (see Table 4.1). Thus, all analysis at the student level included age and number of students in class as covariates to control for any potential group differences. There were no group differences in teacher demographics (see Table 4.1). Likewise, all outcome variables were tested for pretest mean differences between groups. Teachers did not differ on job stress, depression level, nor self-efficacy level at pretest. Results of student outcomes did not differ on pretest mean scores except for STRS closeness. The COS group were significantly higher at pretest than the TAU group [t (101) = -3.03, $p < .001$] on closeness scores. All pretest scores were included in analyses to control for intercept when comparing post-test scores.

Descriptive Analysis

ECEs ranged in age from 25-40 years of age (M = 37.53) and had educational backgrounds that extended from associate- to graduate-level training, with the majority of ECEs earning at least a bachelor's level education. The teacher group represented a diverse population, with 45% of educators identifying as African American, 45% White, and 2% Hispanic. The ECEs in the study were experienced educators with a range from 2 years minimum to 20 years maximum (M = 8.6) in the field and a range of 1 year to 13 years (M = 4.7) teaching in a preschool context. All ECEs have received some type of trauma training in recent years, with only one ECE receiving previous training in attachment for young children. Table 4.1 presents the demographic characteristics for the early childhood educators by total sample and group conditions.

Table 4.1

Head Start Early Childhood Educator Characteristics and Tests of Differences on Demographic Measures between Groups, N = *16*

Characteristic	Total Sample *N* (%)	COS (*n* = 9)	TAU (*n* = 7)	χ^2	*p-value*
Female	16 (100)	9 (100)	7 (100)	–	–
Race/Ethnicity				1.55	0.46
Black	9 (56)	4 (44)	5 (71)		
White	6 (38)	4 (44)	2 (29)		
Other	1 (6)	1 (11)	0 (0)		
Hispanic	0 (0)	0 (0)	0 (0)	–	–
Primary language spoken				–	–
English	16 (100)	9 (100)	7 (100)		
Partner status				3.72	0.293
Single	9 (56)	5 (56)	4 (57)		
Living with partner	1 (6)	0 (0)	1 (14)		
Married	5 (31)	4 (44)	1 (14)		
Divorced	1 (6)	0 (0)	1 (14)		
Has children	10 (63)	6 (67)	4 (57)	0.15	0.70
Education level				1.11	0.57
Associates	5 (31)	2 (22)	3 (43)		
Bachelors	7 (44)	4 (44)	3 (43)		
Graduate	4 (25)	3 (33)	1 (14)		
Received trauma training	14 (88)	8 (89)	6 (86)	0.04	0.85
Continuous variables	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*t-t*est	*p-value*
Age	37.53 (8.22)	39.33 (7.97)	34.83 (8.54)	1.04	0.32
Years taught	8.63 (5.37)	8.22 (5.87)	9.14 (5.05)	-0.33	0.75
Years at HS	4.25 (3.26)	5.44 (3.71)	2.71 (1.80)	1.78	0.10

Note. N = Total number of participants, *n* = Subset of participants, *M* = Mean, *SD* = Standard deviation, COS = Circle of Security, TAU = Training as usual, HS = Head Start, *t* = independent-samples *t*-test. χ^2 = Pearson's Chi-square.
$^{*}p < .05$

The student population enrolled in the HS classrooms is 82% African American, 14% Hispanic, 2% White, and 2% Other. Approximately 20% of the population identified as English language learners. The average age of the students is approximately 4 years old (*SD* = 0.53), and their primary caregiver's age ranges from 19 years of age to 61 years of age (*M* =

31.04, *SD* = 7.52). At least 20% of enrolled HS students have individualized educational plans, indicating that some level of learning support is needed in the classroom. The student population is considered high-risk for several reasons in addition to federal poverty income levels required for enrollment. Slightly more than 9% of HS children qualified as experiencing homelessness, an overwhelming majority are from single-parent households (83%), approximately 40% of students are impacted by parental incarceration, and approximately one-third of students are cared for by a parent with mental health concerns. In addition, on average, students had experienced 3.83 (range = 1-9) early childhood adversities at the time of enrollment, with over half experiencing 3 or more adversities before enrollment, the threshold identified for a cumulatively more negative impact of adverse childhood experiences (Appleyard et al., 2005; Larson et al., 2008). Developmentally, 23% of students fall within the below-average and developmentally delayed categories of the Developmental Profile-3. Table 4.2 presents the demographic characteristics for the HS student population by total sample and group conditions.

Table 4.2

Head Start Student Characteristics and Tests of Differences on Demographic Measures between Groups, N = *103*

Characteristic	Total Sample *N* (%)	COS, *n* = 59 *n* (%)	TAU, *n* = 44 *n* (%)	χ^2	*p-value*
Female	43 (43)	26 (46)	17 (41)	0.26	0.61
Premature birth	15 (17)	8 (15)	7 (18)	0.11	0.74
Race/Ethnicity				4.64	0.20
Black	74 (75)	46 (80)	28 (67)		
White	8 (8)	5 (9)	3 (7)		
Multi-race	4 (4)	2 (4)	2 (5)		
Other	13 (13)	4 (7)	9 (21)		
Hispanic	20 (20)	8 (14)	12 (29)	3.17	0.08

Primary language spoken				2.54	0.28
English	78 (79)	48 (84)	30 (71)		
Spanish	15 (15)	6 (11)	9 (21)		
Other	6 (6)	3 (5)	3 (7)		
Family poverty level (PL)				1.68	0.64
At PL	29 (29)	18 (32)	11 (26)		
25% below PL	26 (26)	15 (26)	11 (26)		
50% below PL	18 (18)	8 (14)	10 (24)		
99% below PL	26 (26)	16 (28)	10 (24)		
Social assistance receipt	31 (31)	17 (30)	14 (33)	0.14	0.71
Education level of PC				3.39	0.34
< High school	35 (39)	20 (38)	15 (42)		
High school	39 (44)	21 (40)	18 (50)		
GED	8 (9)	6 (11)	2 (6)		
Some college	7 (8)	6 (11)	1 (3)		
Bachelors	0 (0)	0 (0)	0 (0)		
PC is unemployed	49 (55)	25 (46)	24 (67)	3.61	0.06
Adverse experiences					
Homeless	17 (17)	11 (20)	6 (14)	0.48	0.48
Child welfare involvement	22 (22)	16 (28)	6 (14)	2.67	0.10
Parent incarcerated	40 (40)	22 (39)	18 (43)	0.18	0.67
Parental MH concerns	33 (33)	21 (37)	12 (29)	0.74	0.39
Has IEP	21 (21)	14 (25)	7 (17)	0.90	0.34
Adversity Level				2.38	0.12
Low (1-2)	43 (43)	21 (37)	22 (52)		
High (3≤)	56 (57)	36 (63)	20 (48)		

Continuous demographics	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*t*-test	*p-value*
Student age	4.13 (0.53)	3.98 (0.46)	4.33 (0.54)	3.39	**0.01***
Caregiver age	31.04 (7.52)	30.46 (5.96)	31.81 (9.23)	0.88	0.38
DP-3 Scores	92.34 (14.20)	91.77 (17.06)	93.11 (9.12)	0.50	0.62
Students in classroom	16.9 (2)	16.22 (1.71)	17.81 (2.01)	4.27	**0.01***
Adults in classroom	2.7 (0.96)	2.6 (0.90)	2.9 (1.01)	1.81	0.07
Student: Teacher Ratio	6.79 (1.73)	6.9 (1.87)	6.6 (1.51)	-0.78	0.44

Note. N = total number of participants, *n* = subset of participants, *M* = mean, *SD* = standard deviation, COS = Circle of Security, TAU = Training as usual, PL = poverty level, IEP = Individualized Education Plan, DP-3 = Developmental Profile-3, *t* = independent-samples *t*-test. χ^2 = Pearson's Chi-square. Bolded significant variables used as covariates in model.

* $p < .05$

Bivariate Analysis

Across study variables, there was a moderate to strong level of significant associations. Bivariate statistics of the study variables are shown in Table 4.3. Correlations range from -1 to 1. Positive correlations signify that two variables are positively related and change in same direction, while negative correlations indicate that two variables are inversely related and change in opposite directions. The following values were used to determine strength of the correlation coefficient: 0.10, weak; 0.30, moderate; 0.50, strong (Rubin, 2013). The expected direction of the correlation between all variables at time 1 and time 2 variables was observed. Student adversity level had a weak to moderate positive correlation with teacher depression at time 1 ($r = 0.231$, $p < .05$) but not at time 2 and had low positive correlations with student total problems at time 2 ($r = 0.233$, $p < .01$). Student age was negatively correlated with teacher depression symptomology and job stress level, as well as a decrease in student total problems reported at time 2 ($r = -0.262$, $p < .05$). The number of students in the classroom had a significant weak to moderate negative association with teacher depression at time 1, ($r = -0.294$, $p < .01$), time 2 ($r = -0.249$, $p < .05$) and stress levels (time 1, $r = -0.267$, $p < .01$; time 2, $r = -0.270$, $p < .01$) and a positive association with self-efficacy (time 1, $r = 0.023$, $p < .05$; time 2, $r = 0.227$, $p < .05$). Teacher-level outcomes were correlated in anticipated directions, with negative correlations between job stress and self-efficacy and depression and self-efficacy and positive correlations between depression and stress levels.

As expected, there were moderate to strong negative correlations between conflict and closeness scores for student–teacher relationship at time 1 ($r = -0.477$, $p < .01$) and at time 2 ($r = -0.195$, $p < .01$). Closeness scores were also negatively associated with teacher depression

and job stress level and positively associated with self-efficacy at moderate levels. There were no significant correlations between closeness and student total problems. The inverse was seen in STR conflict correlations, with moderate negative associations with teacher self-efficacy and weak positive associations with teacher depression and job stress levels. Also, STR conflict time 1 had a weak to moderate positive correlation with student total problems reported at time 2 ($r = 0.220$, $p < .05$) but not at time 1. Surprisingly, teacher-report on closeness was not significantly correlated with SDQ-total problems at time 1 or time 2. Because previous literature has shown strong associations with gender and STR quality as well as social–emotional scores, gender was tested in bivariate correlations. It is surprising that gender did not emerge as a significant correlation with any study variables.

Descriptives and Pearson's Correlation Coefficients among Study Variables, $N = 104$

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. STR Closeness, T1	—														
2. STR Closeness, T2	.666*	—													
3. STR Conflict, T1	-.477*	-.315*	—												
4. STR Conflict, T2	-.195*	-.517*	.415*	—											
5. No. students/class	.019	.024	-.023	-.081	—										
6. S Age	.041	.004	-.062	-.053	.728*	—									
7. S Adversity level	-.020	-.049	.096	.153	-.114	.054	—								
8. T Depression, T1	-.182	-.059	.100	.039	-.294*	-.294*	.231*	—							
9. T Depression, T2	-.345*	-.202*	.078	-.003	-.215*	-.249*	.128	.796*	—						
10. T Self-efficacy, T1	.353*	.377*	-.320*	-.246*	.023	.106	-.047	-.405*	-.347*	—					
11. T Self-efficacy, T2	.343*	.410*	-.263*	-.254*	.227*	.183	-.073	-.395*	-.254*	.892*	—				
12. T Job stress, T1	-.433*	-.386*	.096	.035	-.267*	-.358*	-.015	.433*	.563*	-.669*	-.681*	—			
13. T Job stress, T2	-.438*	-.442*	.163	.085	-.270*	-.354*	-.018	.380*	.446*	-.693*	-.746*	.880*	—		
14. S SDQ-P, T1	-.011	.021	.014	.858	-.240*	-.262*	.196	.088	.022	-.084	-.113	-.035	-.007	—	
15. S SDQ-P, T2	.054	.037	.220*	.177	-.202	-.262*	.233*	.086	-.005	-.170	-.182	-.032	.006	.806*	—
16. S Gender	-.037	-.02	.160	.120	-.074	-.073	-.192	-.055	.045	-.074	-.053	.092	.113	.111	.152
Mean	43.06	43.80	20.46	20.98	16.90	4.13	—	12.23	9.68	46.51	47.65	15.21	14.19	10.35	10.01
SD	8.27	8.18	9.57	9.19	2.00	0.53	—	7.52	5.26	5.36	6.35	9.64	8.86	7.57	7.14
Skewness	-0.52	-0.46	1.45	1.20	0.31	0.40	—	0.69	0.30	-0.02	0.24	-0.01	0.56	0.60	0.29
Kurtosis	-0.31	-0.52	1.37	0.92	-0.98	-0.67	—	0.51	-0.25	-0.67	-0.82	-1.22	-0.51	-.54	-1.18

Note. T = Time, STR = Student-teacher relationship, No. = Number, S = Student, T = Teacher, SDQ-P = Strengths and Difficulties Questionnaire–Problems Domain.

* $p < .05$

Teacher-level Outcomes

To answer study question one, concerning the effect of COS on teacher well-being indicators, a series of repeated measures analysis of variance (RM-ANOVA) was used to detect intervention effects for teachers between groups (COS and TAU), across time (pre- and post-scores), and between group and time on teacher-level outcome variables in SPSS 21. Pre- and post-scores were used in the analysis, and since there were no significant differences in teacher demographic variables, no covariates were tested.

First, the assumptions of RM-ANOVA were examined to assess the appropriateness of data for this type of analysis. RM-ANOVA has several assumptions: 1) the dependent variable is continuous; 2) the independent variable has two or more categories, in this case, the control and intervention group; 3) independence of error, i.e., scores of each participant are statistically independent of each other; 4) no significant outliers; 5) normal distribution of the dependent variable within each group; and 6) assumption of sphericity, homogeneity of variance of the differences between intervention and control.

The data met the majority of assumptions. All teacher-level outcome variables were continuous with independent conditions of two groups: COS and TAU. Teachers' baseline scores were measured before randomization and are assumed to be statistically independent of one another. There were no outliers present. Each measure was tested for normality by intervention and control group and was found to have acceptable normal distribution values ranging from skewness -0.787 to 1.832 and kurtosis -0.246 to 0.696, with two exceptions: job stress level at time 1 for the TAU group had a kurtosis of -2.32, and self-efficacy at time 1 scores for the TAU group had a kurtosis of 3.55. See Table 4.3 for skewness and kurtosis scores for study variables. The Shapiro–Wilk test of normality, a well-known test appropriate

for small sample sizes, was not significant, indicating that the normality of the data is appropriate for RM-ANOVA. In addition, normal Q-Q plots were examined and showed acceptable distribution for both job stress level at time 2 and self-efficacy at time 1 for both groups. In addition, Mauchly's Test of Sphericity indicated that the assumption of sphericity had not been violated in each of the outcome variables.

Table 4.4 shows the means and standard deviations of pre, post and change scores by group, as well as within group difference on pre and post scores for teacher-level outcomes. There were no significant group by time interactions.

Table 4.4

Means, standard deviations, and within-group change on teacher-level outcomes

	Intervention (COS, *n* = 9)				Control (TAU, *n* = 7)			
	Pre	Post	Change		Pre	Post	Change	
Teacher-level outcome	M (SD)	M (SD)	M (SD)	*p*	M (SD)	M (SD)	M (SD)	*p*
Depression	12.78 (9.36)	9.24 (7.04)	-3.53 (4.72)	**0.05**[*]	11.43 (3.26)	9.91 (3.97)	-1.52 (4.07)	0.36
Self-efficacy	46.89 (6.01)	48.89 (5.37)	2.00 (3.16)	0.09[†]	44.67 (5.39)	45.50 (7.23)	0.83 (2.86)	0.75
Job Stress	15.11 (9.17)	12.58 (8.06)	-2.53 (4.11)	0.10[†]	15.86 (10.76)	16.43 (9.68)	0.57 (4.58)	0.51
COS feedback[a]	—	3.11 (0.31)	—		—	—	—	

Note. *M* = Mean, *SD* = Standard deviation, COS = Circle of Security, TAU = Training as usual, *N* = Total number of participants, *n* = Subset of participants.

[a]Scale: 0 = much worse, 1 = worse, 2 = no change, 3 = better, 4 = much better than before COS training

[†]significantly different at post-test within group at $p < .10$

[*]significantly different at post-test within group at $p < .05$

Depression. For depressive symptomology, there was a significant main effect for time [F (1, 14) = 5.078, p = .041, partial η^2 = 0.27], with depressive symptoms decreasing on average for both intervention and control groups, with the COS group decreasing at a slightly steeper rate than the TAU group. However, the group x time effect was not significant [F (1, 14) = 0.803, p = 0.39]. There was a significant difference in intercepts between groups, with the COS group showing a significantly higher mean depression level than the TAU group at time 1 [F (1, 14) = 46.376, p = .001]. Figure 4.1 shows the change in depression score by group from time 1 to time 2.

Examining more closely the means by group and clinical cut-off range (> 16, Eaton et al., 2002), three teachers in the COS group and one teacher in the TAU group met the clinical cut-off score for depressive symptoms at pre-test. Two of the three teachers in COS dropped to levels below clinical significance, while the other seven remained well below the clinical cut-off score. In the TAU group, one teacher dropped below the clinical cut-off score, whereas one teacher increased to above the cut-off score for clinical depression at post-test. Seventy-eight percent of teachers in the COS group decreased in depressive symptoms by an average of 4.5 points, while the remainder increased by an average of 1.5 points. In the TAU group, 70% of teachers decreased in depression by an average of 3.7 points, and 30% increased in depression by an average of 4 points.

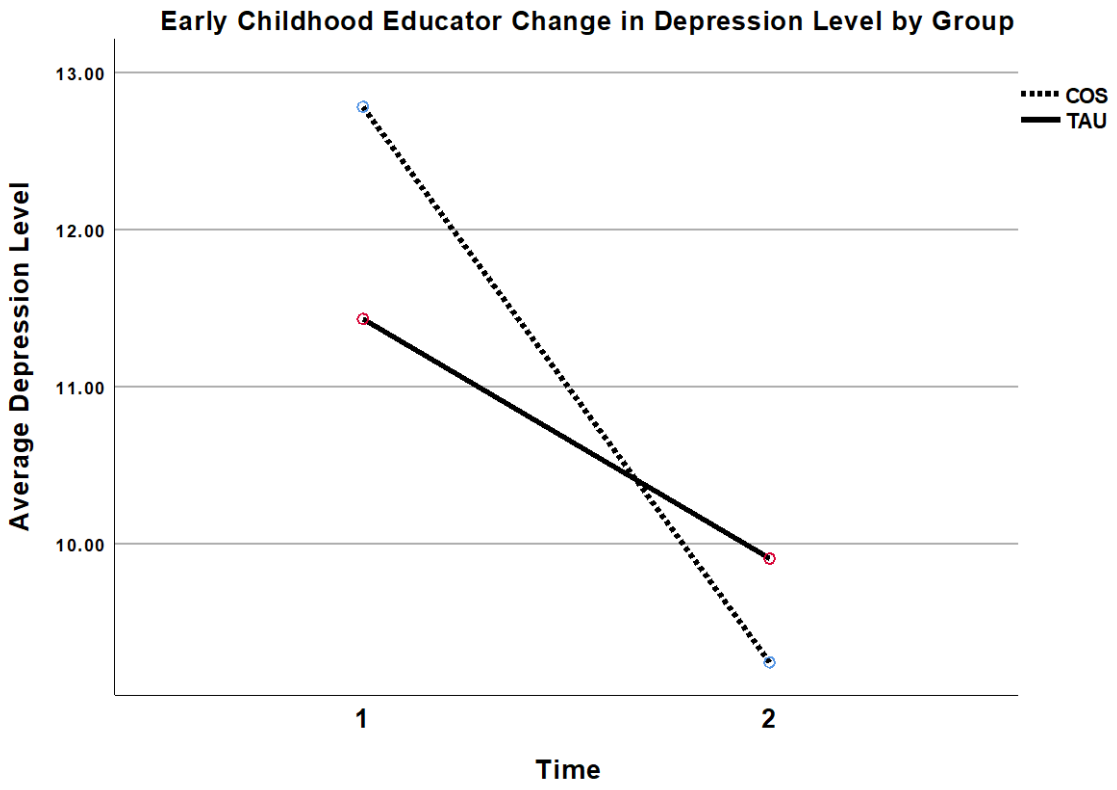


Figure 4.1. Change in early childhood educators' depression levels pre- and post-test for Circle of Security and training-as-usual groups.

Self-efficacy. For teacher self-efficacy in managing children's challenging behaviors, there was no significant main effect for time, nor was a group x time effect found [F (1, 14) = .527, p = .481]. The COS group showed an increase in self-efficacy at the .10 significance level from time 1 to time 2. Additionally, the COS group had a higher self-efficacy score for managing children's challenging behaviors at time 1 and time 2 than the TAU group, but no significant group difference at post-test emerged. Figure 4.2 shows the change in teachers' self-efficacy ratings for managing children's challenging behavior by group from time 1 to time 2.

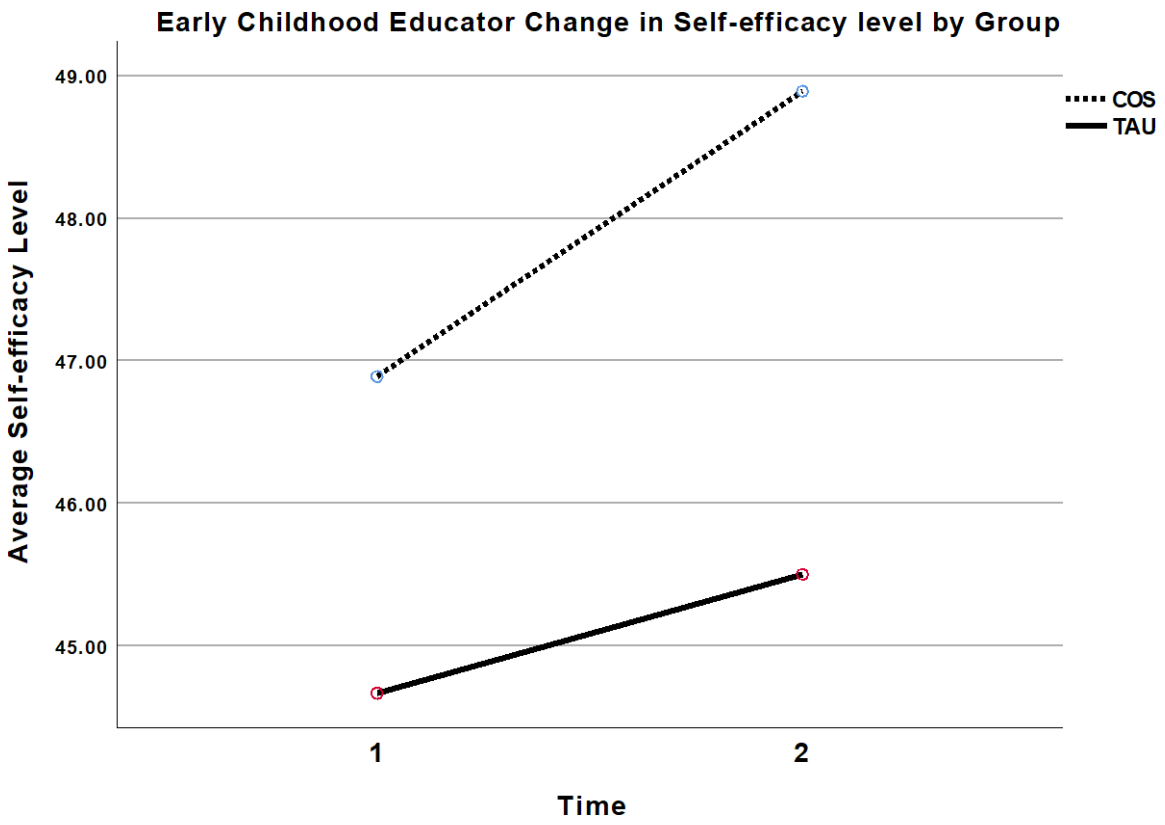


Figure 4.2. Change in early childhood educators' self-efficacy levels for managing children's challenging behaviors pre- and post-test for Circle of Security and training-as-usual groups.

Job stress level. For job stress level, there was no significant main effect for time, nor was a group x time effect found [F (1, 14) = 2.04, p = .175]. However, the change of the groups over time occurred in opposite directions. The COS group decreased in stress over time from time 1 and time 2 at the .10 significance level, and the TAU group increased slightly in stress from time 1 to time 2. Figure 4.3 shows the change in teachers' job stress level by group from time 1 to time 2.

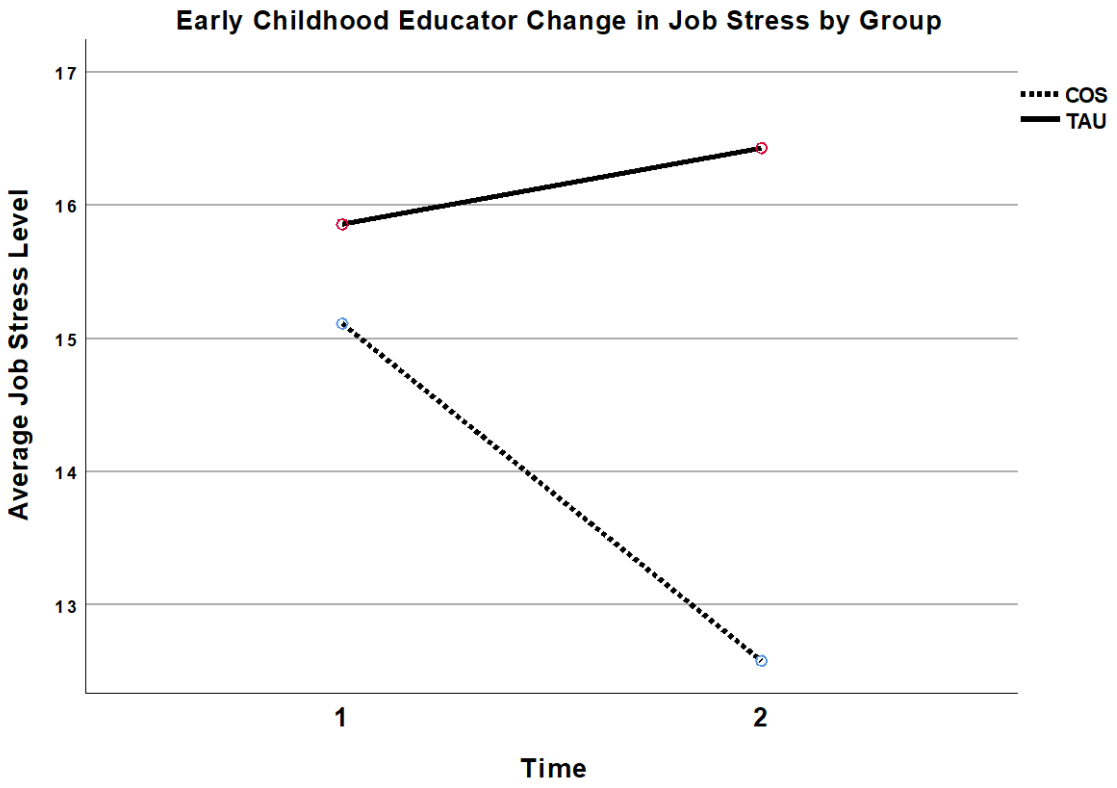


Figure 4.3. Change in early childhood educators' job stress level pre- and post-test for Circle of Security and training-as-usual groups.

Anonymous COS participant feedback. Participants anonymously rated their own sense of change over time on behaviors specifically targeted by the COS intervention on a scale from 0 = much worse to 4 = much better. Participants scored, on average, a 3.11, indicating that participants' classroom behaviors supporting the social, emotional, and behavioral development of children was better than before participating in COS. No one rated themselves as worse or much worse than before the intervention. Figure 4.4 shows individual item change scores.

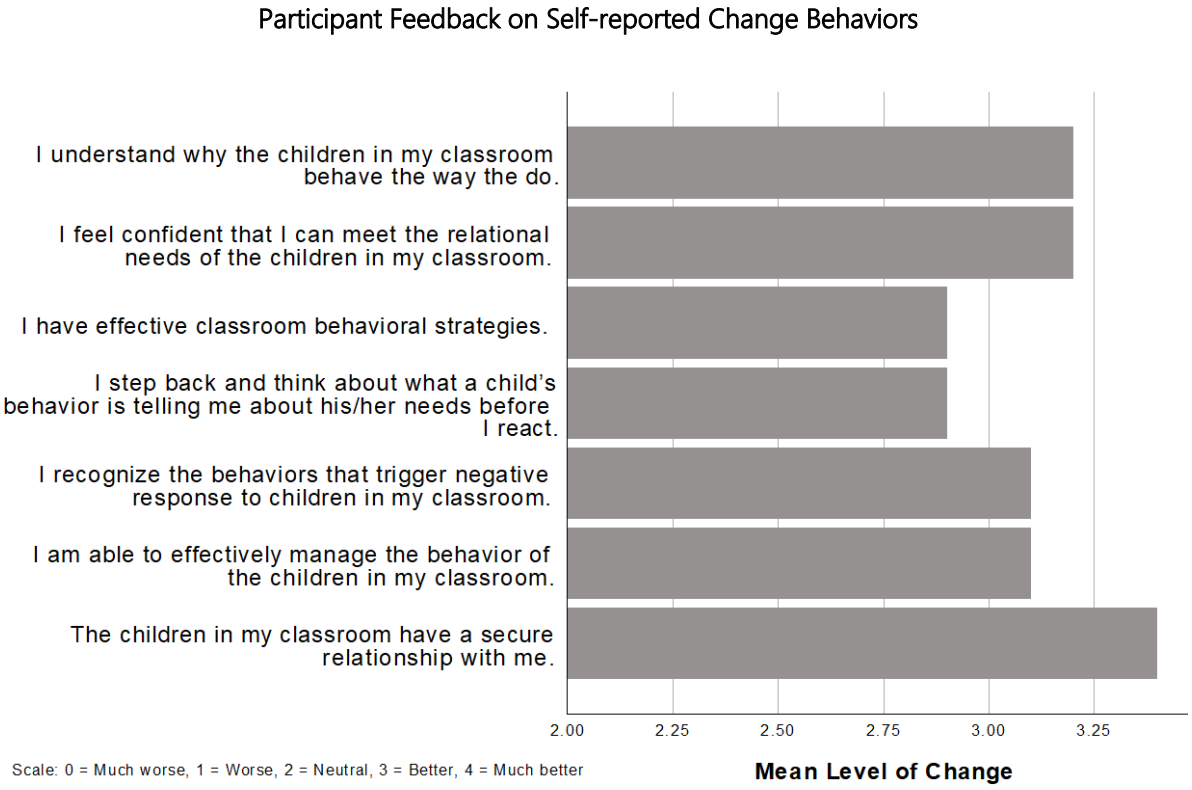


Figure 4.4. Anonymous participant feedback on self-reported change in classroom behaviors to support social–emotional development of children after participating in COS group. Scale: 0 = Much worse, 1 = Worse, 2 = Neutral, 3 = Better, 4 = Much better, $M = 3.11$, $SD = 0.31$.

In addition, participants' anonymous brief qualitative surveys indicated mostly positive feedback, with themes of increased understanding of children's social–emotional needs and challenging behaviors, increased capacity to manage behavior, reduction in stress level, and increased relationship qualities. All teachers reported that the COS was a useful training and recommended that future Head Start teachers receive such training. Several teachers commented that the training was directed toward parents with one-on-one relationship dynamics and would be more useful with training directed at early childhood

educators interacting in multiple relationships with young children at any given moment.

Below is a table of qualitative feedback by survey question theme.

Table 4.5

Anonymous Participant Qualitative Feedback by Theme, N = *8*

Participant	Feedback
Understanding and strategies to meet students' social–emotional needs	
P1	*"Made me look at their needs vs. behavior to better relate to them. ...[when] you look for their needs the behavior part doesn't seem as bad."*
P1	*"[I am] more patient and more focused on how the child feels rather than just responding."*
P2	*"It has allowed me to be more understanding and open to what children need when different situations occur."*
P3	*"It [COS] has helped me to try to understand the needs of my students first and then help them organize their feelings."*
P5	*"....it [COS] helps you to better understand your students['] cues and miscue[s] and help figure out what they need."*
P5	*"I am recognizing my students['] cues a lot better and figuring out what they need."*
P5	*"Before I hear my shark music. I am listening to my students before they get upset."*
P6	*"Now I can step back and think about why rather than how can I get past this, I think more about what they mean rather than where I need them to be."*
P6	*"I realize that the needs of the children come first. Yes we are supposed to do thing by schedule but sometimes we [cannot] always get there."*
P8	*"It has allowed me to look at why a child is acting the way they are by having a mental picture of the circle and being able to figure out where they are on the circle."*
Understanding and strategies to manage students' challenging behaviors	
P2	*"It [COS] has impacted behavioral strategies in that I've learned to use different approaches when dealing with difficult behaviors, verses [sic] one way of handling behaviors."*

P6	*"I am not great at behavior management…I am still working on it. I am not sure I will ever be great at it. But at least I have more understanding now."*
P7	*"With COS [I] have been able to manage certain behaviors better. I can stop most extreme behaviors now before they get [too] far."*

Job stress

P1	*"Helped it [stress level] decrease a little because the behavior issues don't seem so bad."*
P2	*"My stress level varies from day to day depending on how the day begins."*
P5	*"My job is still stressful but I am trying to control the situation better before I hear my shark music."*
P6	*"Maybe more stress because I know when I break my circles and this upsets me and I have to think about how to repair it."*
P7	*"My stress level has decreased. I am more confident in my relationships with my kids and my technique regarding their behavior."*
P8	*"It has brought my stress level down."*

Teaching strategies

P2	*"Teaching strategies have been impacted in that there are different ways to teach and get children to learn. To allow children more freedom in how [they] may learn."*
P7	*"COS really hasn't impacted my teaching strategies. I am able to see my children's needs better and teach accordingly like I always have."*

Relationship quality with students

P2	*"Relationships are about the same."*
P3	*"[COS] Teaches me how to form a better relationship with my students."*
P7	*"The training has helped build a better relationship with my children, especially the ones I had difficult time connecting with."*

Relationship quality with parents

P1	*"It is easier to talk to parents about the children by addressing their need rather than behavior."*
P3	*"I have given them [parents] advice on how to recognize their child['s] needs."*
P5	*"I have used COS to help parents learn how to listen to their child before they get upset."*
P6	*"[COS] has helped me 'be with' my parents and just listen."*

P8	*"It helps me offer support on what they can do to help [their] kids"*
Relationship quality with colleagues	
P1	*"We are all on the same page more and look at things different than before."*
P2	*"Teachers are more willing to talk about ways to deal with difficult kids."*
P3	*"We have supported each other better by allowing the teacher that is the strongest in whatever area the child needs at that time, to deal with the child."*
P5	*"We are helping each other with cues and miscues."*
P7	*"Teachers have become more supportive of one another. We have more secure hands."*
P8	*"We have a common language that we can use."*

Note. P = participant

Student–Teacher Closeness and Conflict

To assess intervention effects on the student-level outcomes, a series of mixed-effects regression models were estimated for teacher-report of student–teacher relationship domains of closeness and conflict, and teacher-report for students' total difficulties in social–emotional functioning (emotion, conduct, hyperactivity, and peer relationships). All regression models were estimated in Stata 15 using Maximum Likelihood. Table 4.6 displays the means and standard deviations by group for each student-level outcome.

Table 4.6

Means and standard deviations on student-level outcome measures

	Intervention (COS, *n* = 59)			Control (TAU, *n* = 44)		
	Pre M (SD)	Post M (SD)	Change M (SD)	Pre M (SD)	Post M (SD)	Change M (SD)
STRS-closeness	44.92 (7.80)	46.41 (7.36)	1.49 (7.37)	40.30 (8.13)	40.30 (7.99)	0.00 (5.67)
STRS-conflict	19.64 (8.70)	20.66 (8.56)	1.02 (11.29)	21.35 (10.55)	21.58 (10.09)	0.23 (8.42)
SDQ-total difficulties[a]	10.85 (7.59)	10.19 (6.86)	-0.66 (5.05)	10.33 (7.96)	9.85 (7.73)	-0.49 (4.15)
SDQ-emotion	1.33 (2.02)	1.57 (1.72)	0.24 (1.63)	1.23 (1.81)	1.28 (1.67)	0.05 (1.15)
SDQ-conduct	2.19 (2.63)	2.04 (2.26)	-0.16 (2.24)	2.44 (3.17)	2.44 (2.85)	0.00 (1.78)
SDQ-hyperactivity	5.43 (3.57)	4.54 (3.48)	-0.90 (2.09)	4.41 (3.20)	4.01 (4.08)	-0.33 (1.90)
SDQ-peer	1.89 (2.05)	2.04 (3.14)	0.14 (2.83)	2.26 (1.80)	2.05 (1.70)	-0.21 (1.44)

Note. *M* = Mean, *SD* = Standard deviation, COS = Circle of Security, TAU = Training as usual, *N* = Total number of participants, *n* = Subset of participants.

[a]SDQ-total difficulties is the sum of difficulties of emotion, conduct, hyperactivity, and peer domains, higher score is more difficulties in all domains

Student–teacher relationship quality. First, the fully unconditional model (Model A) was estimated to calculate the intraclass correlation (ICC) coefficient for both closeness and conflict domains across teachers without any predictors. The average cluster size of students within teachers was 6.15 (Min = 4, Max = 9). Results from the STRS-closeness domain indicate that approximately 38% of variance in closeness scores is between teacher clusters. ICC results for the STRS-conflict scores were lower, showing that approximately 29% of variance in conflict could be accounted for by teacher clusters. The ICC is used to evaluate whether or not mixed model methods are needed. A high ICC indicates that there is clustering among observations and thus shared error within the cluster. In this study, the STRS-closeness and -conflict scores for each student were clustered by teacher membership. Thus, the students belonging to the same teacher have shared error variance in their scores with one another and may be more similar in scores than to students with different teachers. The variance parameter of the random effect (teacher) is the between-cluster variance. Figure 4.5 shows the mean regression line for the STRS closeness pre- and post-scores by teacher cluster ($N = 16$).

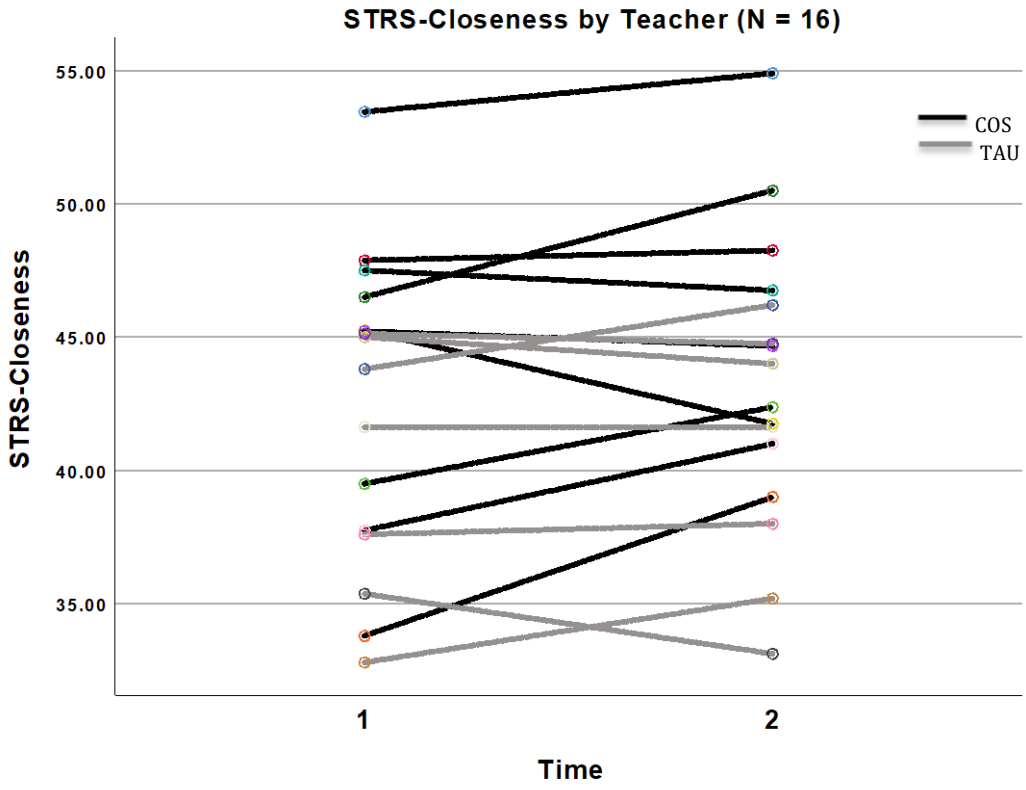


Figure 4.5. Graph depicting mean STRS-closeness scores by teacher cluster ($N = 16$).

Next, Model B was built by adding student-level predictors to Model A, as well as the covariate of demographic differences in student groups (number of children in the classroom and age). Then, Model C examined Model A with teacher-level predictors of depression, stress, and self-efficacy in managing challenging behaviors scores. Finally, the full model (Model D) tested both student and teacher variables with group interactions in the same model.

Closeness. Table 4.7 shows the results for the mixed-effects regression models of student–teacher closeness. In Model B, the results report the main effects of student-level variables of adversity level and covariates on differences in demographics by treatment group

(number of children per class and age). The COS group had a main effect on STRS closeness, with students scoring higher on closeness than the TAU group (B = 5.52, SE = 2.80, p = 0.049). There was no main effect for time, adversity level, or covariates. High adversity level had a negative estimate, such that belonging in the high adversity level decreased closeness but not significantly. Age also negatively influenced closeness, indicating that as children age, they experience less closeness. In Model C, the regression examined teacher-level influence of depression, stress, and self-efficacy in managing children's challenging behaviors. Depression and stress were both negative influences on student–teacher closeness, suggesting that as depression and stress increased, student–teacher closeness decreased. However, depression level did not significantly predict closeness, whereas job stress level was approaching the 95% significance range (B = -0.20, SE = 0.10, p = 0.055). The directionality of all coefficients was as expected.

The full model of student–teacher closeness was tested in Model D, with student and teacher predictors with interaction terms. All predictors and covariates, as well as group and time, were not significant at the $p < .05$ value. The group by time interaction was approaching the 95% significance range (B = 3.13, SE = 1.97, p = 0.055). A two-way interaction between variable of interest and adversity level was tested with time. A significant interaction emerged, with children with a high level of adversity scoring, on average, 3.13 points lower over time on STRS closeness than children coded with a low level of adversity. Since there was a significant two-way interaction, a three-way interaction was tested between group, time, and adversity level. The COS group had 36 students in the high adversity category, and the TAU group had 20 students in the high adversity category. The COS group scored significantly higher on STRS closeness than the TAU group with children who had

experienced three or more childhood adversities ($B = 7.32$, $SE = 2.67$, $p = 0.006$). Figure 4.6 depicts the three-way interaction between group, time, and childhood adversity.

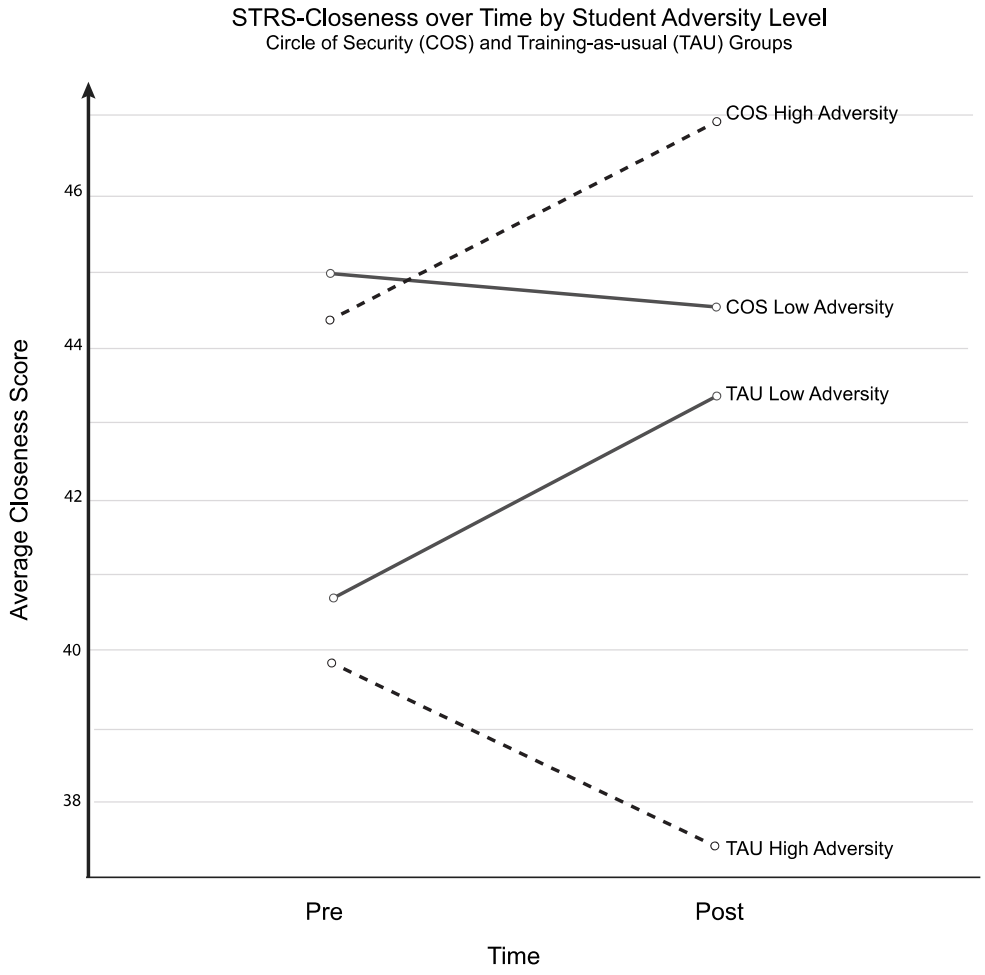


Figure 4.6. Three-way interaction for mean STRS-closeness scores by group at pre- and post-assessment and by childhood adversity.

Table 4.7 Mixed-effects Regression Model Results for the Effect of COS on Student-Teacher Relationship Closeness, $N = 103$

	STRS Closeness											
	Model A (Null)			Model B			Model C			Model D		
	Estimate	SE	*p*	Estimate	SE	*p*	Estimate	SE	*p*	Estimate	SE	*p*
Fixed Effects												
Intercept	**42.91**	**1.35**	**0.001*****	**31.14**	**13.03**	**0.017***	**34.90**	**8.49**	**0.001*****	**30.35**	**14.38**	**0.035***
Time				0.94	0.68	0.164	0.31	0.72	0.665	**2.29**	**1.37**	**0.093**†
COS				**5.52**	**2.80**	**0.049***	**3.71**	**2.00**	**0.063**†	3.13	2.78	0.261
# of students in class				0.58	0.77	0.454				0.30	0.67	0.657
Age (S)				-0.37	1.87	0.844				-0.55	1.81	0.762
High childhood adversity (S)				-1.07	1.27	0.400				-1.43	2.81	0.627
Depression (T)							-0.08	0.11	0.467	-0.09	0.11	0.439
Job stress (T)							**-0.20**	**0.10**	**0.055**†	-0.17	0.11	0.128
Self-efficacy (T)							0.21	0.16	0.209	0.19	0.11	0.253
Random Effect												
Teacher	4.94	1.04		4.27	0.97		3.19	0.83		3.29	0.87	
Interactions												
COS x Time										**3.13**	**1.97**	**0.055**†
Time x High Adversity										**-4.47**	**1.99**	**0.025***
COS x Time x High Adversity										**7.32**	**2.67**	**0.006****
Fit Statistics												
ICC (Teacher)	0.375			0.308			0.202			0.203		
df	3			8			8			14		
AIC	1341.98			1310.50			1336.95			1304.98		
BIC	1355.23			1340.50			1366.78			1357.51		
Deviance	1333.96			1290.15			1318.95			1272.98		

Note. COS = Circle of Security, STRS = Student-Teacher Relationship Scale, Estimate = Unstandardized beta coefficients, SE = standard error, S = Student, T = Teacher, ICC = Intra-class correlation, *df* = degrees of freedom, AIC = Akaike information criterion, BIC = Bayes information criterion.
$^{\dagger}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Conflict. Table 4.8 shows the results for the mixed-effects regression models of student–teacher conflict. In Model B, the results report the main effects of student-level variables of adversity level and covariates on differences in demographics by treatment group (number of children per class and age). Gender was also included in the model because of the previous literature finding that boys were consistently rated as having more conflictual relationships with teachers than girls (Ahnert et al., 2006; Jerome et al., 2009), and indeed, being male emerged as a significant predictor of student–teacher conflict ($B = 2.54$, $SE = 1.23$, $p = 0.039$). There was no COS group effect on conflict nor a main effect for time or covariates. High adversity level was a significant positive predictor of conflict at the $p < .10$ level, approaching 95% significance ($B = 2.45$, $SE = 1.36$, $p = 0.071$), such that belonging in the high adversity level increased student–teacher conflict. Age and number of students in the class had negative estimates but were not significant predictors, indicating that as children aged, they experienced less conflict and that as the number of students in the class increased, their teachers rated them with less conflict. In Model C, the regression examined the teacher-level influence of depression, stress, and self-efficacy in managing children's challenging behaviors on teacher perceived student conflict. As expected, teacher depression level had a positive estimate, indicating that the higher the teacher depression level is, the more a teacher perceived conflict in the student relationship; however, it was not a significant predictor. Likewise, job stress was not a significant predictor, but, surprisingly, it had a negative coefficient in the model, indicating that as job stress level increased, teachers rated student relationships as less conflictual. This direction was opposite to that expected. Teacher self-efficacy in managing challenging behaviors emerged as a significant predictor of perceived conflict. An increase in teacher self-efficacy in managing challenging behaviors decreased

the perceived student–teacher conflict (B = -0.58, SE = 0.23, p = 0.011). This direction was as expected.

The full model of student–teacher conflict was tested in Model D, with student and teacher predictors with interaction terms. Male gender and teacher self-efficacy remained as significant predictors increasing in significance (male: B = 2.74, SE = 1.23, p = 0.027; self-efficacy: B = -.059, SE = 0.22, p = 0.008), while the significance value for high childhood adversity rose above significance value. All other predictors and covariates as well as interactions with group, time, and high childhood adversity were not significant.

Table 4.8 Mixed-effects Regression Model Results for the Effect of COS on Student-Teacher Relationship Conflict, $N = 103$

	STRS Conflict											
	Model A (Null)			Model B			Model C			Model D		
	Estimate	SE	*p*	Estimate	SE	*p*	Estimate	SE	*p*	Estimate	SE	*p*
Fixed Effects												
Intercept	**21.01**	**1.37**	**0.001*****	19.05	14.51	0.189	**49.27**	**11.85**	**0.001*****	**51.10**	**17.99**	**0.005****
Time				0.46	1.05	0.664	1.07	1.10	0.329	-0.57	2.22	0.798
COS				-0.19	3.12	0.950	0.78	2.47	0.750	1.27	3.33	0.704
Male				**2.54**	**1.23**	**0.039***				**2.74**	**1.23**	**0.027***
Number of students in class				-0.04	0.86	0.961				-0.08	0.75	0.911
Age (S)				-0.06	2.00	0.978				-0.57	1.97	0.770
High childhood adversity (S)				**2.45**	**1.36**	**0.071**†				3.27	2.63	0.214
Depression (T)							0.05	0.15	0.722	0.05	0.16	0.731
Job stress (T)							-0.19	0.15	0.190	-0.20	0.15	0.195
Self-efficacy (T)							**-0.58**	**0.23**	**0.011***	**-0.59**	**0.22**	**0.008****
Random Effect												
Teacher	4.92	1.07		4.85	1.07		4.08	0.98		3.25	0.87	
Interactions												
COS x Time										2.63	3.18	0.409
Time x High Adversity										2.46	0.32	0.443
COS x Time x High Adversit										-3.56	4.30	0.408
Fit Statistics												
ICC (Teacher)	0.285			0.283			0.216			0.189		
df	3			9			8			15		
AIC	1428.27			1396.28			1432.21			1401.62		
BIC	1441.48			1429.01			1461.94			1457.62		
Deviance	1420.27			1290.15			1414.21			1367.62		

Note. COS = Circle of Security, STRS = Student-Teacher Relationship Scale, Estimate = Unstandardized beta coefficients, SE = standard error, S = Student, T = Teacher, ICC = Intra-class correlation, *df* = degrees of freedom AIC = Akaike information criterion, BIC = Bayes information criterion.
$^{\dagger}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Student Social-emotional Functioning

Table 4.8 shows the results for the multivariate models of student social–emotional functioning. In Model B, the results report the main effects of student-level variables. The study covariates (age and number of students per classroom) were tested and were not significant in social–emotional functioning; therefore, they were trimmed from the model for parsimony. The effects of other variables known to influence social–emotional functioning in previous literature were added to the model. Gender was tested in this model in line with previous literature finding gender as a moderator of social–emotional functioning in the classroom (Gilliam, 2005). Furthermore, developmental assessment scores were used to control for any differences in social–emotional functioning due to developmental processes. Developmental score was also seen as additional information on changes in interactions due to maturation because developmental level may reflect better maturation than chronological age. Having a high number of childhood adverse experiences significantly predicted teacher-report of more difficulties in social–emotional functioning in the classroom ($B = 2.96$, $SE = 1.29$, $p = 0.022$), while having a higher developmental assessment score was a negative predictor of teachers' perception of social–emotional difficulties ($B = -0.12$, $SE = 0.05$, $p = 0.010$). There was no group nor time main effect in Model B.

In Model C, the regression model examined the teacher-level influence of depression, stress, and self-efficacy on teacher report of social–emotional functioning. All three teacher variables negatively influenced student social–emotional functioning but were not significant. Self-efficacy was anticipated to have a negative coefficient, such that as self-efficacy of the teachers increases, then problems in social function

decrease; however, both depression and stress levels also had negative estimates. This direction was not anticipated.

The full model of teacher-report of student social–emotional functioning was tested in Model D, with student and teacher predictors and interaction terms. High childhood adversity and developmental score remained significant predictors in the full model and strengthened slightly in parameter estimates and significance. All other predictors and interactions were not significant at the $p < .05$ value.

Table 4.9 Mixed-effects Regression Model Results for the Effect of COS on Student Social-emotional Difficulties, $N = 99$

	STRS Conflict											
	Model A (Null)			Model B			Model C			Model D		
Effect (Reference)	Estimate	SE	*p*	Estimate	SE	*p*	Estimate	SE	*p*	Estimate	SE	*p*
Fixed Effects												
Intercept	**10.23**	**0.94**	**0.001*****	**18.24**	**4.78**	**0.001*****	**13.68**	**6.81**	**0.045***	**22.60**	**7.69**	**0.003****
Time				-0.44	0.48	0.354	-0.57	0.55	0.297	-0.47	0.90	0.598
COS				0.40	1.63	0.806	0.91	1.88	0.629	0.70	1.65	0.671
Male				2.00	1.25	0.109				1.99	1.25	0.112
High childhood adversity (S)				**2.96**	**1.29**	**0.022***				**2.68**	**1.39**	**0.053**†
DP-3 Score				**-0.12**	**0.05**	**0.010****				**-0.12**	**0.05**	**0.010****
Depression (T)							-0.03	0.09	0.757	0.01	0.08	0.939
Job stress (T)							-0.07	0.13	0.620	-0.02	0.08	0.770
Self-efficacy (T)							-0.02	0.09	0.813	-0.09	0.12	0.469
Random Effect												
Teacher	2.71	0.91		2.12	0.86		2.60	0.94		1.87	0.97	
Interactions												
COS x Time										-0.31	1.02	0.763
Time x High Adversity										0.53	0.05	0.595
Fit Statistics												
ICC (Teacher)	0.140			0.105			0.131			0.08		
df	3			8			8			15		
AIC	1217.05			1200.99			1225.16			1181.05		
BIC	1230.08			1171.91			1254.48			1226.29		
Deviance	1209.04			1153.91			1207.16			1153.05		

Note. COS = Circle of Security, STRS = Student-Teacher Relationship Scale, Estimate = Unstandardized beta coefficients, SE = standard error, S = Student, T = Teacher, DP-3 = Developmental Profile-3 ICC = Intra-class correlation, *df* = degrees of freedom AIC = Akaike information criterion, BIC = Bayes information criterion.

$^{\dagger}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Summary of Findings

This chapter reported the findings from the univariate, bivariate, and multivariate analyses to test the COS-C intervention effects on teacher outcomes, student–teacher relationship, and student outcomes compared to the TAU group. Repeated measures ANOVA was used to assess intervention effects for ECEs, and a series of mixed-effects regression models to account for student data nested within teacher clusters was tested to examine intervention effects on STR and social–emotional functioning. Results indicate significant within-group shifts over time for COS ECEs in depression ($p = .05$) and shifts in stress ($p = .09$) and self-efficacy ($p = .10$) at the .10 significance level. Mean depressive symptoms decreased for both groups over time, but there was not a significant group by time interaction. COS ECEs decreased in stress and increased in self-efficacy, while the TAU group increased slightly in both stress and self-efficacy. COS participant feedback showed improvement in understanding of attachment behavior and increased strategies for fostering secure relationships. Mixed-effects regression model results showed significant intervention effects on STR closeness. A significant three-way interaction emerged for group x time x student adversity level ($p = .006$), with COS ECEs increasing in closeness significantly with students in the high adversity category level ($\geq$ 3 adverse experiences), while TAU ECEs decreased significantly in closeness with this subset of population. No significant group x time effect was found for STR conflict nor for teacher ratings of students' social–emotional functioning. The next chapter will discuss the interpretation of the study findings.

CHAPTER 5

DISCUSSION

The present study sought to examine the intervention effects of a professional development model, the Circle of Security-Classroom approach, on student–teacher relationship quality. This study also investigated intervention effects for teacher well-being and student social–emotional functioning in Head Start center-based classrooms. This study makes a substantial contribution to the literature on professional development models created to increase the quality of student–teacher relationships, as it is the first study to use a group-randomized trial to test the effect of the COS-C compared to a training-as-usual group and to examine outcomes on both teachers and students in a center-based setting. Overall, the study's findings indicate promising support for the COS-C's effect on student–teacher relationship closeness with students who have experienced high levels of early childhood adversity. However, in this study, the COS-C intervention did not affect teacher well-being indicators, student–teacher conflict levels, and teachers' ratings of student social–emotional functioning. Taken together, these results suggest that COS-C appears to be effective as a professional development module to increase the quality of student–teacher interactions with students who may be experiencing symptoms of early childhood adversity—a high-need, substantial subset of the population in Head Start settings. This study contributes to the understanding of the COS-C as a professional development module for early childhood educators in three interconnected areas: teacher well-being, student well-being, and the dynamic interaction

between student and teacher. The following sections discuss the study's findings unique to each of these areas by study question. Lastly, the study limitations are acknowledged and discussed.

Study Question 1

The first question that this study sought to answer was whether COS-C, an attachment-based parenting intervention given in eight weekly group sessions with early childhood educators, affected teacher depression symptoms (H1), job stress level (H2), and self-efficacy outcomes (H3) pre- to post-intervention. Below the study findings are discussed.

Depression (H1). Both COS and TAU groups experienced a decline in depression symptomology from pre-test to post-test, indicating that as time progressed, teacher depressive symptoms lessened regardless of group assignment; therefore, H1 was rejected. This finding is consistent with Gray's (2015) findings that showed a decline in teacher depression symptoms over time in providers of home-based childcare assigned to either COS or to a comparison group. This result could indicate that, as teachers adjust to classroom dynamics, their depression symptoms decline regardless of professional development. Moreover, the results of this study are consistent with student–teacher relationship literature linking teacher characteristics—namely, depressive symptoms—to overall quality of the student–teacher relationship (Hamre & Pianta, 2004; Jeon et al., 2014). In this present study, teacher depression was negatively correlated with closeness and positively correlated with conflict. Specifically, this study corroborates findings from previous research in the student–teacher relationship literature and the broader attachment literature that links fewer adult depressive symptoms to higher closeness

scores and more secure attachments (Banyard et al., 2003; Beck, 1998; Bergin & Bergin, 2009; Jeon et al., 2014; Jerome et al., 2009).

Although there was not a significant time by group interaction, the COS group showed a significant within-group reduction in depression symptoms, while the TAU group lessened in depression, albeit insignificantly. The COS-C may target a pathway of teacher functioning important for strong student–teacher relationships. Through regular weekly sessions, ECEs have opportunities to experience collegial support, to reflect on personal and professional relational challenges, and to learn adult behaviors effective in meeting young children's exploration and attachment needs in the classroom, all of which have the potential to decrease teacher depression symptoms. The COS group format—regular, weekly sessions—gives opportunities for teachers to reflect on their own caregiving environments and dynamics in their personal family of origin, in addition to relational dynamics observed with students in the classroom. This format is unlike many educational trainings, which are designed to deliver as much content as possible in a specified block of time. Professional development delivered through professional learning days meets an economic and scheduling need for busy Head Start centers but does not allow teachers sufficient time to reflect on content or caregiving dynamics that are important for secure student–teacher relationships or to share in group format. The consistent gathering of COS once a week creates a safe environment that provides teachers space to get to know each other and share both personal and professional challenges. This aspect of the COS-C intervention may be the primary mechanism by which depression symptoms are lessened. This result is not surprising, as many teachers report that professional development in group settings decreases isolation and increases

feelings of support (Garet et al., 2001). Such a benefit may be particularly salient for Head Start teachers, who have been found to report higher levels of depression than the general population (Whitaker et al., 2013). Working in a fast-paced, demanding environment with little time for professional and personal reflection may contribute to higher depressive symptoms among Head Start teachers than in the general population. Reflective practice has been linked to decreased depression and stress levels for various professions, including education (Fowler & Chevannes, 1998; Redmond, 2006), highlighting the importance of such practices through means such as the COS-C intervention.

However, since ECEs had a higher mean depression level at pre-test compared to the TAU group and there was no between group difference, caution should be taken in interpreting the significant finding within COS group decrease in teacher depression symptom., COS ECEs may have regressed to the overall mean level of depression at post-test due to a high pre-test score. Nonetheless, previous COS work has also documented decreases in caregivers' depression symptoms (Yaholkoski, Hurl, & Theule, 2016). Therefore, it is likely that, in part, participation in the COS intervention contributed to a steeper decrease in depressive symptoms than observed for the TAU group. If so, this is an important intervention finding, as decreasing depression symptoms has the potential to increase teacher sensitivity and increase engagement with students to affect the overall quality of student–teacher interactions (Hamre & Pianta, 2004). Depressive symptoms interfere with social–emotional functioning in daily life, including workplace responsibilities (McIntryre, Liauw, & Taylor, 2011), and such interference could be compounded for Head Start teachers, who must maintain high

levels of engagement to ensure a safe and effective learning experience for young children. Such difficulty may be particularly true for teachers who are clinically at risk for high depression scores and for whom shifts below the clinical level (> 16, Eaton et al., 2004) could improve functioning in and out of the classroom.

Reducing teacher depression is a critical concern for Head Start populations because children growing up in poverty are more likely to be overexposed to early childhood adversities (Blair & Raver, 2012). Thus, children in Head Start centers may be particularly sensitive to environmental dynamics, including teacher depression (Beeghly et al., 2016; Perry, 2009). Furthermore, a potential negative feedback loop can occur between teacher depressive symptoms and childhood adversity. Children experiencing adversity often display challenging behaviors that may contribute to an increase in teacher depressive symptoms (Colley & Cooper, 2017; Roberts et al., 2014). In this study, the COS group had greater numbers of children who had experienced high adversity compared to the TAU group (COS = 36, TAU = 20). It would be expected from findings from previous research on STRS (Jeon et al., 2014; Jerome et al., 2009; Roberts et al., 2014) that at post-test, teachers working with a greater number of children who had experienced high levels of adversity would show an increase in depressive symptoms at post-test, not a decrease. Nonetheless, the COS group decreased to a slightly lower depressive symptomology mean than did the TAU group. Despite high student adversity, teachers in the COS group reported significantly higher closeness levels with students and reduced depression levels.

Finally, it is important to acknowledge the time on the academic calendar at which this study was conducted. Timing may have provided the conditions for a decline

in teacher depression symptoms across groups. The pre-test occurred mid-way through the semester, when the excitement of the new school year may be waning and the difficulties of the current classroom dynamics are high, while the post-test was measured one week before winter break. The anticipation of time off work may have elevated mood and decreased depression symptoms. Thus, maturation may be considered a threat to the internal validity of the study's findings on teacher depression symptoms.

Job Stress (H2). Linked closely to teacher depression levels and overall well-being is teacher perceived job stress level. As with depressive symptoms, the COS group decreased in job stress symptoms while the TAU increased in perceived stress. Differences between mean group scores were minimal, although the groups changed in opposing directions. Thus, H2 was rejected. These findings are also similar to the Gray (2015) study that found no group by time effect for job stress levels for home-based childcare workers' intervention and comparison groups. However, whereas Gray (2015) found that job stress levels remained stable over time for both groups, this study found that the job stress level of the COS group lessened, even as the job stress level of the TAU group increased from pre-test to post-test. Although ECEs in the COS group did show a decrease in job stress level, it was not significantly different than the TAU group's level.

A potential moderator of job stress level is student conduct. Student conduct has been closely linked to teacher stress level (Jennings & Greenberg, 2009; Whitaker et al., 2015; Yoon, 2002). The COS curriculum directly addresses conduct issues that may be challenging for teachers. The COS intervention teaches a concept of empathizing with, i.e., "being with" students in their core emotions until they are able to regulate

themselves, as opposed to attempting to move them to feel or to behave a specific way in their distress. This relationship-based approach differs from common behavioral approaches in school settings, such as applied behavioral analysis (ABA) and positive behavioral interventions. These behavioral interventions are based on shaping, rewarding, or extinguishing behaviors when managing conduct problems (Peters-Scheffer, Didden, Korzilius, & Sturmey, 2011; Sugai & Horner, 2002). The COS intervention may in part decrease job stress level by giving teachers alternative ways of managing student conduct problems. Specifically, the COS curriculum assists teachers in identifying problem behaviors as ways for children to communicate particular unmet relational needs. COS strategies may be more effective for students with high childhood adversity because they use relationship-based regulation techniques to meet children's underlying social–emotional needs rather than focusing solely on changing problem behaviors. While learning effective ways to support students' exploration and attachment needs may decrease stress level, the one-on-one strategies that the COS encourages may be difficult to implement in school environments where behavioral approaches are dominant. Furthermore, teachers manage multiple relationships at once and rarely have concentrated time with one student. These classroom dynamics could in part explain why COS teachers did not decrease significantly in stress from teachers who did not receive the COS intervention.

In the brief, anonymous, open-ended survey questions, one teacher reported that her stress level increased after COS. She explained the increase in stress as due to more awareness of when she was unable to meet children's relational needs. A large portion of the COS training focuses on teachers' awareness of regulating their own anxieties about

needs or emotions that feel unsafe—referred to as "shark music" in the framework—in order to focus more clearly on meeting students' relational needs. Becoming more aware of self-processes and how these contribute to young children's development may actually increase stress levels for teachers who are not accustomed to observing themselves or their students in this personally introspective way.

Self-efficacy (H3). Both the TAU and COS groups increased in self-efficacy in managing challenging behaviors over time. The COS group increased slightly more than the TAU group did, but there was not a significant within- or between-group by time interaction. Thus, H3 was rejected. However, the COS participant feedback survey indicated that teachers rated themselves as "better" to "much better" in increased strategies for managing children's challenging behaviors. Additionally, overwhelming positive feedback was reported in the open-ended survey questions on the utility of the COS intervention in increasing understanding and effective strategies to meet young children's social–emotional needs. Better understanding young children's social–emotional needs and increasing ECEs' strategies to support these needs are mechanisms by which the COS intervention may build capacity for managing challenging behaviors in the classroom. However, since changes in relational strategies take time to learn or implement consistently, teachers in the COS group did not show significant shifts in self-efficacy immediately following the intervention compared to teachers in the TAU group.

As previous studies (Klassen & Chui, 2010) indicate, teaching experience and environmental conditions contribute to self-efficacy as well. It could be that over time, ECEs trained in COS strategies will see a greater increase in self-efficacy with more experience implementing COS-informed strategies. Furthermore, gains in self-efficacy

may be more evident if modeling and coaching sessions were implemented in addition to the COS intervention. Previous work on classroom-based interventions suggests that combining training and some form of mentoring and coaching is an effective strategy for increasing a teacher's capacity to meet young children's social emotional needs and decrease problem behaviors (Zhai, Raver, & Li-Grining, 2011).

The findings in this study corroborate findings that self-efficacy has a high negative correlation with job stress (Klassen & Chui, 2010) and is significantly negatively correlated with perceived student–teacher conflict (Hamre et al., 2008). This finding is unlike that of the Masburn et al. (2006) study, which did not find significant associations with teacher self-efficacy levels and ratings of student conflict. In addition to such negative correlations and in line with the findings of previous studies (Birch & Ladd, 1998; Hamre & Pianta, 2004), early childhood educators in this sample with higher levels of self-efficacy also reported higher levels of closeness among students.

Study Question 2

The second question this study sought to answer was whether the COS-C affected teachers' ratings of student–teacher relationship quality (H4-H7). In order to test the intervention effects for both closeness and conflict domains, a series of mixed-effects regression models were tested: first, the empty model; then, the student variables of interest; then, the teacher variables of interest; and, finally, the full model on both closeness and conflict domains were tested. The key finding was that, after controlling for available student- and teacher-level variables, the COS group had a statistically significant and positive effect on student–teacher relationship closeness for students who had experienced high childhood adversity, defined as having experienced three or more

childhood adversities (e.g., parental mental health concerns, child welfare involvement, homelessness, parental incarceration). However, the COS intervention did not have a direct effect on teachers' ratings of student–teacher conflict. The specific hypotheses tested are discussed below.

Student–teacher closeness and conflict (H4-H6). It was hypothesized that both groups would increase in student–teacher relationship closeness and decrease in teacher perception of conflict from pre-test to post-test. H4 was partially supported. The COS group increased slightly in closeness over time, but there was not a significant within-group increase, while the TAU group showed no change in closeness from pre-test to post-test. Surprisingly, both groups increased slightly in conflict over time; however, it was not a significant within- or between-group change. Conflict and closeness scores have been negatively correlated in previous studies (Hamre & Pianta, 2001), as they were in this study, so the increase in conflict scores was unexpected because closeness scores also increased. The COS group showed a greater increase in conflict scores than did the TAU group.

As caregivers try out new caregiving strategies, disruptions are created in the typical ways of interacting, and interventions may show a short-term negative response even though evidence shows positive longer-term outcomes (Cassidy et al., 2017). Such a temporary discrepancy may explain the simultaneous increase in closeness and conflict for the COS group. Conflict scores may have increased because, as teachers implement new strategies for managing and supporting children's behavior, there may be some resistance from the students. As children's internal working models are anticipating a particular response from a patterned way of interacting, a shift in strategies could, at first,

be confusing to a young child until adjustments are made in the relational dynamics. Longer term follow-up is needed to see if students, over time, make positive adjustments to COS strategies and if a decrease in conflict might be expected. Moreover, previous longitudinal research showing an increase in student–teacher closeness and a decrease in student–teacher conflict has been typically measured from the beginning (fall) to the end of the academic year (spring). That the COS group showed improvement as compared to the TAU group, although not significantly, in closeness over the 2-month period is notable. If the COS and TAU continued on these trajectories over the course of an academic year, significant increases in closeness for the COS group would be expected.

In order to test the study hypothesis on intervention effects for student–teacher relationship quality, a series of mixed-effects regression models were tested: first, the empty model; then, the student variables of interest; then, the teacher variables of interest; and, finally, the full model on both closeness and conflict domains were tested. The COS intervention did not have a significant effect on student–teacher closeness compared to the TAU group at the $p < .05$ level but was approaching significance, and thus, H5 was rejected. However, as discussed in the Methods section, significance levels between .05 and .10 will be considered in the discussion as promising intervention effects. Additionally, the COS did not have a significant effect on teacher ratings of student–teacher conflict compared to the TAU group; thus, H6 was rejected. Testing of high childhood adversity on relationship quality showed that it had a moderating effect on student–teacher closeness by group, but not on teachers' rating of conflict with students. While on the overall mean level, students with high childhood adversity declined significantly over time in teachers' ratings of closeness regardless of group,

students with ECEs in the COS group increased significantly in closeness over time compared to the rates of the TAU group (see Figure 4.6). H7 stated that childhood adversity would predict relationship quality; thus, H7 was partially accepted in this study because adversity moderated student–teacher closeness ratings but did not affect conflict ratings. The following sections discuss study question two's findings, organized by student- and teacher-level variables, and the influence of the COS on relationship quality with students experiencing high childhood adversity.

Student-level variables. None of the student-level variables significantly predicted closeness. Age was negatively correlated with closeness but was not a significant predictor. On average, older students had lower closeness scores. Previous work has also found that as students age, student–teacher closeness and conflict both decrease (Jerome et al., 2009). The lack of significance of age in this study could be due to the lack of variability of age ranges ($M = 4.13$, $SD = 0.53$). Greater variability can make a difference in developmental capacity, such as language expression, which affects student–teacher interactions.

Typically, as children age they become less dependent on adults to be successful in school which may decrease student–teacher conflict. From a developmental perspective, as children age they increase in social–emotional competence and become more self-reliant and less reliant on adults for regulation (Beeghly et al., 2016). For students experiencing early life stressors, however, typical social–emotional development can be hindered (Perry & Pollard, 1998). For example, Oshri et al. (2017) found that among a large national sample of middle school-age children who had adverse rearing conditions, multiple social skills trajectories were followed as the children aged. For

children who had experienced adversity, caregiver support was a significant predictor of adaptive social skills trajectories. Thus, children experiencing early life stressors—such as HS populations living in poverty—may need more adult relational support from ECEs in the classroom environment in order to successfully learn self-regulation skills. This dependence may explain why the COS ECEs rated experiencing closer student relationships at post-test but also rated having higher conflict. Children learning new patterns of attachment in the classroom need time to adjust to the different kinds of responses they are receiving from ECEs at school than those they have previously received or are receiving from primary caregivers in the home environment. Furthermore, as students age, teachers' expectations and acceptance of certain kinds of behaviors may shift. For example, ECEs may expect older students to need less adult support to work out conflict with peers.

Classroom size had a surprisingly positive association with student–teacher closeness but was not a significant predictor of ECEs' rating of closeness. This finding suggests that as classroom size increased, student–teacher closeness increased. Likewise, classroom size was negatively associated with but not a significant predictor of conflict, suggesting that as classroom size increased, student-conflict decreased. It could be that as classroom size increases, teachers have less frequent one-on-one interactions, thereby reducing opportunities for either closeness or conflict. Interestingly, some authors have looked into the concept of group attachment styles and their potential influence on teacher relationship based on group rather than individual interactions (Ahnert et al., 2006). It could be that a teacher's way of interacting with the group could become more salient as classroom size increases than the dyadic interactional experiences of each

individual student. Another possibility is that as classroom size increases, more adults are placed in the classroom to maintain the student-to-teacher ratio. Smaller teacher-to-child ratios have been linked to higher-quality student–teacher interactions (Mashburn et al., 2008). Early childhood education policies and standards regulate classroom sizes as well as student-to-teacher ratios. The correlation in this study to increased quality of relationship overall could be due to the fact that teacher-to-student ratios were maintained in both groups, and classroom size did not vary greatly (*Range* = 14-20, *M* = 17).

It is surprising that the COS intervention approached significance on predicting teacher ratings of closeness but not on conflict. This finding highlights that certain aspects of the intervention may start to appear following intervention; however, others may require more implementation time to see shifts. For example, increasing ECEs' knowledge of children's exploration and attachment needs may increase empathy and understanding of children's behavior, thereby creating more immediate closeness, but may not decrease conflict until new relational strategies are implemented with enough frequency and consistency to shift children's attachment strategies.

Teacher-level variables. In this study, teacher job stress and self-efficacy emerged as important predictors of student–teacher relationship quality. This result is not surprising, as both have been linked with student–teacher relationship quality in numerous studies on student–teacher relationships pre-K through high school (Hamre & Pianta, 2004). In this study, teacher depression level did not appear to significantly influence either closeness or conflict, as was predicted because this factor has consistently been linked to relationship quality in student–teacher relationship work and in the broader attachment literature (Beeghly & Tronick, 2011; Hamre & Pianta, 2004;

Jeon et al., 2014; Roberts et al., 2016). Regarding the intervention's effects on teachers, the COS intervention group significantly deceased ECE depression and showed promise in decreasing job stress and increasing self-efficacy. Since a decrease in job stress significantly predicted an increase in closeness, and an increase in self-efficacy was a predictor of a decrease in conflict, the COS professional development sessions may serve as a protective factor for quality of relationship.

Previous research has linked teacher depressive symptoms, sense of competence, stress level, and perception to student–teacher interactions (Hamre & Pianta, 2004). Since there were significant correlations between teacher variables in this study, it is possible that a change in either ECE stress, depression, or self-efficacy levels could impact the other teacher outcomes, thereby creating a feedback loop (e.g., increase in self-efficacy may decrease stress, which in turn could increase student–teacher closeness and decrease conflict). For example, teachers' depressive symptoms could alter teachers' experience of stress as well as influence teacher perception. Students presenting with challenging behaviors could undermine a teacher's sense of self-efficacy and contribute to feelings of depression and stress. Likewise, if teachers feel competent to handle difficult behaviors in the classroom, they may experience more positive feelings toward a student and have greater expectations for social–emotional aspects such as emotion regulation, conduct, impulse control, and peer relationships. In turn, a student who perceives positive feelings from their teacher may be more likely to demonstrate behaviors desired and expected by the teacher. In addition, the COS professional development process-oriented structure offers opportunities to discuss difficulties in the classroom and to experience collegial support in a group setting versus more traditional

didactic, content-based professional trainings for ECEs. The process-oriented group format may, in part, foster teacher insight that contributes to more positive relationships with students, even with challenging behaviors present (Garet et al., 2001).

Moreover, teacher characteristics have been linked in longitudinal work to children's development of social skills and problem behaviors (Jerome et al., 2009). Due to the complex social environment in classrooms and the nested nature of the data, it is difficult to isolate the effect of individual teacher variables. More longitudinal, hierarchal research on teacher and student contributions to determine causality and cross-level interactions are needed in order to better target ECEs' professional development models to increase the quality of student relationships.

Adversity and COS (H7). The key finding in this study is the COS intervention group prediction on student–teacher relationship closeness for children experiencing high childhood adversity. Overall, adversity level was predictive of quality of relationship over time in the full model for student–teacher closeness but not for conflict. In the conflict regression model, adversity level approached the .05 level of significance when examining student-level variables (Model B), but the predictive power disappeared in the full model (Model D). Thus, H7 was partially accepted.

The interaction between teacher participation in the COS intervention and student adversity is most predictive in ECEs' ratings of student–teacher closeness. The mixed-effects regression model revealed a significant interaction by time for children who have experienced high childhood adversity, so a three-way interaction was tested to examine whether this effect was the same for COS and TAU groups. The findings suggest that teachers in the COS intervention were able to form closer relationships with students with

high childhood adversity backgrounds than the TAU group while maintaining a high level of closeness with students with lower levels of adversity. In contrast, the TAU group decreased significantly over time in relationship closeness with children with high adversity backgrounds and increased significantly with children of low adversity backgrounds to approximately the same level of closeness as the COS group with low adversity. Given previous findings on the negative outcomes of early childhood adversity on social–emotional development and behavior (Anda et al., 2006; Shonkoff et al., 2012), this COS intervention finding is of great importance.

The COS intervention curriculum gives teachers a clear visual map to easily locate a student's attachment behaviors and needs in a relational context. The sessions emphasize observation, reflection, and identification of young children's needs rather than a sole focus on behaviors, which is the normative response in traditional school settings. In this study, greater childhood adversity was also predictive of more challenges in social emotional functioning, i.e., emotional, conduct, hyperactivity, and peer relations functioning. Because the COS intervention provides teachers with a greater understanding of challenging behaviors in the classroom, COS teachers may have experienced shifts in perception of the behavior of children who have experienced high adversity, which in turn may have influenced strategies to increase closeness. Traditional behavioral approaches in classrooms utilize rewards and consequences of behavior, such as time out, asking students to make good choices, reminding them of rules, or worse, threats of expulsion. With children who have experienced trauma, these strategies may further disconnect them from adults by emphasizing self-agency. In contrast, more trauma-sensitive approaches, such as those taught in COS interventions, are more

effective for children who may have compromised stress response systems. The COS highlights the adult's capacity to "be with" or co-regulate children in their emotions so they can learn effective self-regulation capacities and resume classroom activity. This approach may not stop conflicts immediately, but it begins the process of trust-building so that when conflict does happen, there is an effective strategy for calming down. Over time, this may lead to a decrease in conflictual behaviors as children learn to trust the ECE to meet their needs. The teachers in the COS group may have adjusted their own reactions and responses to young children's behavior as they allowed themselves to function more as a "secure base" and "safe haven" throughout the day, which fostered a sense of increase closeness with their students.

The brief qualitative feedback from teachers highlighted that ECEs in the COS group were indeed examining the social–emotional need behind the problem behavior rather than using strategies that merely focus on shaping behavior. Teachers in the COS group confirmed the mixed-regression results in student–teacher closeness by rating themselves as "better" than before intervention at supporting children's social and emotional development and managing challenging behaviors. Teachers rated themselves highest in feeling that students in their classroom had a secure relationship with them. These findings suggest that the COS intervention gives ECEs the tools, through observation and reflection, to better understand and co-regulate their students' strong emotions, thereby helping young children feel safe enough to develop closer student–teacher relationships.

Previous work has consistently linked strong student–teacher relationships with higher academic, behavioral, and social functioning (Jerome et al., 2009; Mashburn &

Pianta, 2006; Mashburn et al., 2008). The COS intervention's effects on strengthening student–teacher relationships with children who have experienced high childhood adversity is an extremely important finding considering that children with high ACE scores are at an increased risk for poor school outcomes. This study extends previous research findings on COS interventions with populations experiencing adversity. In the Hoffman et al. (2006) study, the COS 20 week-intervention for primary caregivers showed significant reduction in disorganized attachment, suggesting that children who had experienced more adversities, such as childhood maltreatment, were shifting to more organized attachment styles in relationships with their primary caregivers after COS intervention. Another randomized trial reported a moderated effect for caregiver attachment style, with avoidant and dismissive caregivers experiencing benefits from the intervention, whereas there was no change for caregivers showing anxious attachment styles (Cassidy et al., 2017). In addition, another COS study found that the intervention was more effective for caregivers with highly irritable infants (Cassidy et al., 2011).

Study Question 3

Study question 3 sought to answer the question of whether the COS-C affected teachers' ratings of students' social–emotional functioning pre- and post-intervention (H8). As with student–teacher relationship quality, a series of mixed-effects regression models were tested—first the empty model, then the student variables of interest, then the teacher variables of interest, and then the full model. Developmental score and adversity level significantly predicted social–emotional difficulties, but the COS intervention did not have a direct effect on teacher ratings of social–emotional functioning. Therefore, H8 was rejected.

Social–emotional functioning (H8). Total social emotional functioning was compiled from teachers' ratings of four domains of functioning in the classroom: conduct, emotion, hyperactivity, and peer relations functioning. Both teacher groups reported a decrease in social–emotional difficulties over time. The COS intervention teachers reported slightly fewer problems at post-test than the TAU group did, but a group by time interaction did not predict student social–emotional functioning.

This is the first study to attempt to measure the effect of the COS-C intervention with ECEs on student social–emotional gains. This approach is important because children who have more difficulties in the classroom are more likely to have less closeness and greater conflict in their teacher relationships, with boys typically scoring higher on conflict scores than girls (Jerome et al., 2009). In this study, gender was a significant predictor of ECEs' ratings of conflict but not of social–emotional difficulties in the classroom. However, adversity level and developmental level remained strong predictors of social–emotional difficulty when controlling for gender and teacher-level variables.

It is not surprising that students with three or more adverse experiences had higher difficulties in social–emotional functioning than students with fewer than three adversities. It is well documented that early adverse childhood experiences influence brain development and later school outcomes. In a longitudinal study following children from preschool to middle adolescence, Barch et al. (2018) found impairment in the neural regions responsible for emotion regulation and impulse control. Jimenez and colleagues' (2017) longitudinal study from birth through kindergarten found a pattern of worse academic, literacy, and behavior outcomes with increased number of ACEs. Children

with three or more ACEs were more than twice as likely to be below average in language, science, social studies, and mathematical skills at the end of kindergarten and had odds ratios ranging from 1.7 to 2.7 times more likely to not yet display emergent literacy skills. The effect of three or more ACEs was greater for social–emotional functioning—3.8 times more likely to have attention problems, 3 times more likely to have social problems, and 2.6 timed more likely to display aggressive behavior. Improving student–teacher relationships with children who have experienced high childhood adversity may have significant impact on emerging academic, literacy, and behavioral outcomes.

While this study did not find intervention effects on student functioning, Cassidy et al. (2017) found COS-Parenting intervention effects for child inhibitory control. Moreover, additional follow-up assessments of social–emotional functioning would be useful in capturing the degree to which changes may emerge over time as teachers make shifts in classroom strategies. It makes sense that intervention effects for students may not be immediate and may take more time to emerge as teachers gain more confidence in implementation. The COS may affect certain areas of social–emotional functioning more than others. This study utilized a broad social–emotional assessment tool completed by teachers. Future research into more specific areas of student social–emotional functioning may capture intervention effects. For example, the COS curriculum emphasizes the concept of the caregiver's role in organizing students' emotions and being present with students to increase the development of their self-regulatory skills. Perhaps a more detailed assessment tool developed for younger children could capture important intervention effects for emotion regulation or other important domains of social–emotional functioning rather than broad domains of functioning for wide developmental

ranges. Furthermore, third-party observation in addition to teacher-report would be useful in detecting student shifts.

Although this study only tested the effect of targeted intervention with the ECE outside the classroom for a relatively short period of time, intervention effects may be enhanced through supplemental coaching. Coaching, an effective professional development model in early childhood education (Sandilos et al., 2018), may increase the effectiveness of the COS intervention strategies employed in the classroom, with an indirect effect on student social–emotional functioning. Moreover, coaching could provide a supportive environment in which the teachers can tailor COS strategies for individual children. Future research should consider examining the COS 8-week intervention compared to a COS 8-week intervention plus follow-up coaching for classroom implementation.

Study Limitations

A number of limitations should be considered when interpreting the results of this study. First, since the data was clustered, the sample size was limited to the number of participating teachers ($N = 16$). A larger cluster number would increase the power to see intervention effects, particularly for teacher outcomes, and allow for more cross-level interactions to be tested. Furthermore, the TAU group experienced teacher attrition, leaving the intervention and comparison group with unbalanced group sizes, which may have affected the results. Second, the time between pre- and post-test was the duration of the intervention. A follow-up post-test would examine if intervention effects were able to be maintained over a longer period of time (e.g., an academic year), or if new intervention effects emerged after student–teacher adjustment to new relational strategies

and patterns in the classroom. Third, the STRS measure is an approximation for attachment relationship but does not capture student or teacher attachment style. To more accurately measure changes in attachment relationship, third-party video observations or attachment assessments are needed (Tryphonopoulos, Letourneau, & Ditommaso, 2014). Fourth, all student outcome measures were teacher-reported, which may have thereby reflected teachers' perceptions of student outcome rather than actual student competencies. Also problematic is that a teacher's ratings contain judgments that are unrelated to actual student functioning. For example, teachers may assign similar ratings to all children, known as the halo effect (Englehard, 2002). Moreover, a teacher's ratings may be influenced by personal biases, such as personal characteristics of both teachers and students. For example, teacher–student ethnicity match has been linked to higher closeness ratings of student relationships (Jerome et al., 2009). The effect of this sort of biased rating was not examined in this study. Also germane to this study is that ECEs' ratings have been found to have significant associations with teachers' education level and students' socio-economic backgrounds (Mashburn & Henry, 2004).

Another set of limitations includes the findings on childhood adversity, which should be interpreted with caution. In this study, a student's adversity levels were compiled from demographic data used for eligibility determination by Head Start case managers upon enrollment. This count data was divided into low and high categories based on cumulative risk models (Bethell et al., 2017) that show more negative outcomes after three adversities experienced. Thus, adversity level in this study is represented by retrospective parent-report data and was not assessed with a validated adverse childhood experiences measurement tool. The measure utilized assumes one point for each

available adversity measured at Head Start enrollment and is thus a one-time frequency count only that does not account for the severity of adversity or the ongoing nature of some adversities associated with chronic stress, such as homelessness. Furthermore, this measure does not provide an exhaustive list of adversities, and it could be that parents under-reported adversities due to the sensitive nature of disclosure, or over-reported, since it is known that adversities are used for HS eligibility determination. In addition, it is not a screening for trauma or symptoms associated with trauma. However, it does relate to exposure to early life adversities that, in turn, increases the risk of trauma and chronic stress with associated physical, emotional, behavioral, and mental symptoms (Anda et al., 2006). Currently, there is much debate in the literature concerning how best to measure childhood adversity. Nevertheless, cumulative risk frameworks have shown strong validity and predictive power (Bethell et al., 2017).

It is also important to note threats to external validity. This study was conducted with a low-resource minority population in publicly funded pre-K classrooms. While study findings may be generalizable to similar Head Start populations and classrooms, they may not be generalizable to other contexts, such as home-based childcare, private pre-K classrooms, or other age brackets. Nor is this study free from threats to internal validity due to maturation from children's development over time, which may confound the findings on student–teacher relationships and social–emotional functioning. Moreover, the STRS pre-test completion may have been a threat to internal validity, as teachers may have become more aware of important aspects of student–teacher relationships from completing the pre-test questionnaire.

Summary

This chapter discussed important aspects to the COS intervention effect findings. Specifically, there is great promise for the COS-Classroom approach to effect change in relationship closeness with teachers working with populations of children who are overexposed to early childhood adversities but not decreases in conflict were not found. The COS intervention may have the potential to equip teachers with a greater understanding of challenging behaviors, as well as strategies to nurture closer relationships in the classroom. Benefits for teachers, decreased depression and stress and increased self-efficacy, were minimal. The COS group showed some improvement in these areas over TAU but not significantly different at post-test. Although, in this study, teachers' ratings of student's social–emotional functioning were not directly linked to the COS intervention training, there is evidence from previous work that intervening in the student–teacher relationship does positively affect students' social–emotional outcomes, and—although beyond the scope of this study to explore—academic outcomes as well (Raver, 2004). Overall, the findings from this study indicate that the COS-Classroom intervention helps ECEs increase student–teacher relationship closeness with vulnerable preschool students, thereby ultimately helping to support students' social, emotional, and behavioral regulatory capacities.

CHAPTER 6

CONCLUSION

This study found that the Circle of Security-Classroom approach is a promising intervention to increase closeness in student–teacher relationships for young children who have been exposed to multiple adversities. The results of this study make a novel contribution to the limited knowledge base on the effectiveness of professional development models to increase the quality of student–teacher relationships in Head Start programs, which serve an impoverished young student population overexposed to early life stressors. This is the only study to date to examine the effect of the COS-C approach on both teacher and student outcomes in a group-randomized trial in a center-based setting. Overall, this study's findings are consistent with previously well-established findings that link student and teacher characteristics to the quality of student–teacher relationships, but they also extend the literature base on effective professional development models with which to support secure classroom relationships. Thus, the results from this study have important preventive and interventive implications for interdisciplinary social work practice, research, and policy in the intersection between early childhood mental health, adversity, and education. This chapter discusses the implications of the study's findings and highlights future areas of research to strengthen the knowledge base regarding the COS-C professional development model in early childhood education.

Study Implications

The findings from this study have several important implications for ECEs and young children in preschool settings. First, and perhaps most urgent, is that the COS-C professional development for ECEs may help buffer young children from the stresses of early childhood adversity, ultimately leading to more resilient developmental trajectories. Second, this study's findings extend knowledge on important intervening factors for consideration in professional development models for ECEs. Third, these findings can be used to advocate for interdisciplinary social work policy and practice to integrate early childhood mental health into early childhood education. The following sections discuss each of these implications.

The first study implication is a greater understanding of intervention in student–teacher relationships in student populations experiencing adversity. Early childhood experiences influence how the brain develops and functions. Specifically, young children in Head Start programs are overexposed to life stressors that put children at risk for prolonged activation of the stress response system, leading to regulatory difficulties both within and outside of the classroom (Anda et al., 2006; Shonkoff et al., 2001). It is well known that important brain functions, such as executive functioning, emotion regulation, and impulse and behavior control, that are necessary for successful school outcomes can be impaired by early life stressors (Kindsvatter & Geroski, 2014; Perry & Pollard, 1998; Shonkoff et al., 2013). In this study, 54% of the sample size had documented experiences of three or more adversities. This rate is more than 10 times that of the general population, which is reported to have 5% of children under 5 who have

experienced three or more adversities (Child Trends Data Bank, 2013). The COS-C fostered an improvement in relationship quality in this study for this population of students. Importantly, sensitive, attuned adult–child interactions can help buffer young children from the damaging effects of toxic stress (Shonkoff et al., 2012). The COS-C professional development trainings provide relational tools for ECEs to better understand young children's attachment behaviors and social–emotional needs and recommendations of strategies to support self-regulatory capacities. These tools could have widespread implications for the social–emotional functioning and later behavioral and academic outcomes of children exposed to multiple adversities.

For young children who have experienced trauma, the classroom can become a safe, protective environment when other aspects of their lives may be stressful (Mortensen & Barnett, 2016). Young children develop within an environment of relationships. One caring adult may be the most important factor in supporting young children with multiple risk factors (National Scientific Council on the Developing Child, 2004). Thus, ECEs are in a unique position to influence young children's developmental trajectories. The COS-C approach provides opportunities for teachers to create safe, healthy classroom environments that foster exploration and learning as well as connection to self and others. Therefore, it is quite likely that children with insecure attachment relationships can form secure relationships with their teachers, thereby creating alternate internal working models that may function as a buffer from negative developmental outcomes associated with adversity (Buyse et al., 2011). For example, preschool has the highest expulsion rate compared to any single grade K through 12. Relationship-based strategies, such as those taught in the COS-C, provide alternatives for

teachers to support young children in de-escalating behaviors that can lead to higher expulsion rates. Such augmentation would ultimately affect low-income minority students, who have been found to experience expulsion and widening educational achievement gaps at higher rates than white students. Educational gaps can, in part, be attributed to missed school days due to expulsion and externalizing behaviors (Gilliam, 2005; Losen, 2014). Supported by high-quality student–teacher interactions, young children can learn self-regulatory capacities important for behavior and learning.

Second, this study's findings extend knowledge on important intervening factors for consideration in professional development models for ECEs. In attachment research, attention has begun to focus on "what works for whom" in efforts to better understand differential responses to interventions (Cassidy et al., 2017). This work extends these findings for COS intervention effects that may be most helpful for teachers when working with students with a high number of childhood adverse experiences. Certainly, for Head Start ECEs working with populations experiencing adversity, more substantial knowledge is needed on the mental health needs, including attachment needs, of young children. While other professional developmental models to enhance student–teacher relationships have attachment-based theoretical frameworks, the COS-C is unique in integrating attachment-based mental interventions in early childhood education. In particular, the COS-C focuses on the dynamic interchanges between student and teacher that are influenced by the ECEs' own psychological functioning. By supporting ECEs in reflecting on their own caregiving experiences, the COS-C helps ECEs create more awareness of caregiving dynamics that may limit or support children's social emotional needs in the classroom, which could prove to be particularly salient for working with

children with challenging behaviors.

Third, these findings can be used to advocate for interdisciplinary social work policy and practice to integrate early childhood mental health into early childhood education. Guiding social work theories and practice highlight the importance of environmental factors on the developing child in early childhood settings (Bronfenbrenner, 1993). Social workers bring expertise in systems knowledge, culturally relevant practices, and relationship-based approaches to support teachers and classroom staff in creating classroom environment to support the mental health and well-being of young children. At the school level, the findings of this study can be used to advocate for children living with exposure to multiple adversities at home and in their neighborhoods to have access to the supports needed in the school environment to attain more resilient outcomes. Educational achievement gaps in schools disproportionately impact minority students and students living in poverty. In turn, living in poverty increases the likelihood of exposure to early childhood adversities. Social work research on best mental health practices in early education settings can be used to help close systemic educational achievement gaps due to poverty and support social work advocacy initiatives for more funding and better access to early childhood mental health services for minorities and underserved populations. Early childhood settings can help close educational gaps thorough interdisciplinary collaborations with mental health practitioners such as clinical social workers and counselors. At the community level, Head Start ECEs, alongside social workers, can create awareness of the early childhood adversity epidemic plaguing young children in their programs and advocate for policy to support the social–emotional development of young children. Practitioners can inform families and communities of

the effect of early adversities on brain development and the link to later outcomes on individuals, families, communities, and society. Ultimately, society is positively affected when young children are raised in thriving families and communities and are given opportunities to develop in the context of a safe, secure relationship environment.

Directions for Future Research

The effect of student–teacher relationships on successful school outcomes has been well established in research (Howes & Smith, 1995; Jerome et al., 2009; Pianta, Hamre, & Stuhlman, 2003; Mashburn et al., 2008; Sabol & Pianta, 2012). The effectiveness of professional development models designed to enhance student–teacher relationships, however, is less well known. This current study's findings raise serious concerns about the influence of early childhood adversity on student–teacher relationships in an early childhood education context and highlight the need for professional development models to increase the capacity of ECEs to meet the complex social–emotional needs of young children overexposed to adversities. Previous research on student–teacher relationships has theoretical roots in attachment and developmental systems theories, but many professional development models intended to increase the quality of student–teacher relationships nonetheless rely heavily on behavior management strategies. Shifting the focus to more relationship-based, process-oriented professional development models like the COS-C approach opens new and exciting areas of interdisciplinary research on strengthening relationships in the classroom. Specifically, more research efforts are needed that utilize multi-informant, longitudinal data and person-centered analyses to account for long-term effects and heterogeneity in outcomes. Further research areas include earlier intervention efforts with Early Head

Start populations (birth to 3), the influence of group dynamics on individual and classroom attachment, examinations of the implementation of the COS-C plus other effective coaching models, and the potential use of the COS-C with the COS-P to improve family engagement and collaboration. Increased knowledge in these areas would inform interdisciplinary early childhood education practitioners on specific professional development areas to target using the COS-C approach. Five suggestions for future research efforts are discussed below.

First, more longitudinal research would allow researchers to better assess the long-term influence of the COS-C on student–teacher relationships, particularly their role as a buffer for at-risk students. Specific to the COS-C, multi-informant, longitudinal research is needed to see if levels of closeness are sustained for children with multiple adversities over time versus comparison groups. Adding third-party observations, such as class observation and parent-reports, could provide more reliable information when paired with teacher-report of relationship quality and could inform the transferability of intervention effects in the home environment. Moreover, many studies of early-life stress and development document heterogeneity in outcomes over time (Rutter, 2006), further necessitating longitudinal research. This discrepancy may be due to the dynamic interplay between risk and protective factors that interact to shape developmental pathways. Person-centered analyses would allow for the examination of multiple developmental pathways, such as growth curves of the quality of student–teacher relationships, to identify important contributing factors. The employment of person-centered analysis could elucidate important person-in-environment influences for the

protective factors of student–teacher relationships for young children with multiple adversities.

Second, future research with the COS-C should examine the intervention effect with Early Head Start populations (birth to 3 years of age). Developmentally, younger children may be more sensitive to adaptations in the caregiving environment and thus more likely to shift in attachment style or relational schemata in response to ECE caregiver style. However, there are mixed findings on the influence of non-parental care on developmental outcomes for younger children. Howes and Smith (1995) reported that secure attachments were more common with younger children, although a meta-analysis conducted by Ahnert et al. (2006) reported that time post entry to child care was positively associated with more secure attachment in childcare regardless of age at enrollment. More research is needed to better understand the developmental timing of attachment-based interventions in the classroom.

Third, influencing factors beyond the dyadic interaction of the student–teacher relationship exist. Further, factors unique to the attachment relationship with non-parental care providers that are not relevant in child–parent attachment work are present, such as group-oriented sensitivity and potential group attachments. Specifically, in child care centers, group-oriented sensitivity affects the student–teacher relationship more than teacher sensitivity in individual responses to children. Similar to attachment research with siblings, there may be influences of group dynamics or attachment that emerge among classroom peers (Ahnert et al., 2006). For example, gender may become more of an influencing factor in group dynamics than in student–teacher dyadic interactions. Research in influencing factors of classroom group dynamics could help improve

attachment-based professional development models that typically focus on dyadic interactions without attention to group dynamics or structure. The most consistent constructive feedback in this study of COS participants was the lack of strategies to meet the attachment needs of groups of children due to lack of individualized time with students. Cozolino's (2013) research in the social neuroscience of education proposes ideas of "tribal classrooms" to promote natural learning environments that parallel humanity's tribal past and activate the biochemistry of attachment and exploration. Current student–teacher relationship research has not yet begun to investigate the constructs of group attachment or group-oriented teacher sensitivity that could inform professional development models on strategies to increase the quality of relationships with groups of children.

Fourth, this study investigated the effect of the COS-C 8-week professional development training, but it was beyond the scope of this study to examine the effects of additive interventions to the COS-C approach. For example, coaching and consultation models have been used in early childhood education to augment the quality of teacher–student interactions (Sheridan et al., 2009; Zan & Donegan-Ritter, 2014). The focus of coaching and consultation models in early childhood education is to enhance the learning and application of specific interventions or strategies in collaborative learning exchanges (Sheridan et al., 2019). Since the COS-C is a reflective, process-oriented professional development training, intervention effects could be increased by opportunities for teachers to reflect on observations in classrooms and receive feedback from coaches on specific COS-C strategies to employ in the classroom. Furthermore, since the COS-C is a mental health intervention, coaching and consultation provide opportunities to integrate

knowledge from divergent fields (e.g., social work, early childhood mental health, and education). The collaborative work of multiple disciplines can offer support to young children in the classroom that extends beyond that offered by traditional educational models for a more holistic approach. Future research should consider examining effects of a COS-C 8-week session in comparison to COS-C 8-week sessions plus a specified time of classroom coaching or consultation.

Finally, previous research, specifically in Head Start programs, has shown the importance of teacher engagement with families of young children and the influential factors of the parent–teacher relationship (Webster-Stratton, Reid, & Hammon, 2001). An unanticipated finding in this study was the identification in the qualitative survey from the COS participants that this intervention may assist in building trusting relationships with students' parents. The COS-C may be particularly suited for teachers to engage families because of the common language and simple graphic. Family engagement with the COS could support parent–teacher communication around observable attachment behaviors. Moreover, the focus of COS on the "positive intentionality of caregivers," explicit curriculum on suspending blame (either of the student or the primary caregiver), and reflections on the intergenerational transmission of trauma may serve to strengthen relationships between the student's primary caregiver and the teacher. By working collaboratively with families, early childhood educators may provide an additional layer of protection for children who experience adversity. Research into the effectiveness of using a combination of the COS-C with the COS-P to build secure relationships between caregivers and teachers to support young children in the classroom is needed.

Summary

The findings from this study support the COS-C as a promising preventive and interventive attachment-based professional development model for ECEs to increase closeness with students experience high adversity. The findings did not support meaningful change for teacher well-being indicators nor students' social-emotional functioning at post-test compared to the TAU group. Findings suggest equipping ECEs with knowledge and strategies to meet attachment needs in the classroom may help buffer young children from early childhood adversities. This chapter discussed implications of this study for interdisciplinary work in early childhood education to help close educational gaps experienced by minorities and children living in poverty by increasing the safe, secure environment of relationships in non-parental care. In addition, the findings from this study highlight several areas of future research for further examination of the potential effect of the COS-C approach to make meaningful change in student–teacher relationships for vulnerable populations.

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* denotes studies conducted on Circle of Security interventions

APPENDIX A

TEACHER LETTER REQUESTING PARTICIPATION FORM

Dear Head Start Early Childhood Educator,

My name is Trasie A. Topple and I am a PhD Candidate at The University of Georgia. I am writing to ask if you are interested in learning more about participating in a research study on the Circle of Security-Classroom (COS-C) Training for teachers on fostering safe, secure student–teacher attachment relationships for young children. This study is part of the requirements for a doctoral degree in Social Work.

Participating in this study will require your classroom to be placed by random assignment to receive the COS-C training or to receive training-as-usual (TAU). Then, you will also be asked to complete approximately 1.5 hours of a pre-training packet on your basic demographic information, job stress and resource level working with young children, job self-efficacy on managing problem behaviors, your overall mood level, and your general thoughts and attitude toward students' learning and behavioral challenges. Next, if you are assigned to receive the COS-C, you will attend training given by certified COS facilitators during professional learning blocks. In order to complete the training, you will be required to attend an additional 6 hours of training over the course of a two-month period. If you are in the TAU group, you will receive training typically scheduled for Head Start teaching professionals. At the end of the COS-C training, all participants will be asked to complete approximately 1.5 hours of a post-training package with the

same surveys as the pre-assessment package. The participants receiving the COS-C training will also complete an additional .5 hour survey on specific training feedback. No photographs, audio, or video recordings will be used in this study. You will receive a $25 gift card for each pre and post-training survey session. Those who receive the COS-C training will also receive a $60 gift card upon study completion for additional time spent beyond what is typically required by your employer for professional development.

Participation is completely voluntary and there is no penalty for not participating or for withdrawing from the study. If you agree to participate, your identity will be kept strictly confidential. Your name will not appear in the study. You will be given a unique participant ID to complete surveys. All survey packets will be kept in a locked office cabinet at The University of Georgia. Once data is entered into a password protected computer file, all paper surveys will be destroyed and no personal information will be indentifiable in the study.

If you are interested in learning more about participating, please contact me by replying by email to tatopple@gmail.com. Or you may feel free to contact me by phone at (505) 795-4829. On October _____ at 7:00 A.M. and 3:15 P.M. you will have the opportunity to learn more about the study and review the consent document before deciding whether or not to participate.

Sincerely,

Trasie A. Topple, LCSW, IMH-E® III

Licensed Clinical Social Worker, Infant Mental Health Endorsement, Level 3

APPENDIX B

TEACHER CONSENT FORM

UNIVERSITY OF GEORGIA

EARLY CHILDHOOD EDUCATOR CONSENT FORM

Attending to Attachment in Early Childhood Education: Pilot Evaluation of the Circle of Security-Classroom Approach in a Head Start Center

Researcher's Statement

We are asking you to take part in a research study. Before you decide to participate in this study, it is important that you understand why the research is being done and what it will involve. This form is designed to give you the information about the study so you can decide whether to be in the study or not. Please take the time to read the following information carefully. Please ask the researcher if there is anything that is not clear or if you need more information. When all your questions have been answered, you can decide if you want to be in the study or not. This process is called "informed consent." A copy of this form will be given to you.

Principal Investigator: Betsy Vonk, PhD, LCSW

School of Social Work

bvonk@uga.edu

Graduate Student Investigator: Trasie A. Topple, LCSW

School of Social Work

tatopple@uga.edu

Purpose of the Study

Strong student–teacher relationships can help children learn positive social behaviors and promote future academic success in important areas such as social skills, language development, early literacy, and school readiness. The purpose of the study is to provide a professional learning experience for early childhood educators to support high-quality early student–teacher interactions. This study will pilot a relationship-based training, Circle of Security-Classroom (COS-C), with preschool teachers and evaluate the impact on student–teacher relationships and other potential positive benefits for students and teachers. You are being asked to participate because you are currently a preschool teacher or paraprofessional with children in a Head Start classroom between the ages of 3 and 5 years old. Some surveys will be completed before the program begins, and some will be completed at the end of the program. This will allow us to see the ways in which Circle of Security-Classroom has or has not impacted you and your experience of interactions in the classroom.

Study Procedures, If you agree to participate, you will be asked to …

- *Be randomly assigned to receive the Circle of Security-Classroom training or to receive training-as-usual (TAU).*
- *Complete approximately 1.5 hours of a pre-survey package. Surveys will cover the quality of the relationship (closeness and conflict) you feel you have with the students in your classroom, as well as your perspective on their behavioral strengths and challenges. You will also be asked to complete pre-surveys on your basic demographic information, such as training level, age and ethnicity; job stress and resource level working with young children, such as to the degree you feel you are making a difference in children's*

learning and development; job self-efficacy on managing problem behaviors, and your overall mood level, such as depression symptoms including crying spells or difficulty sleep. Lastly, a pre-survey will be completed on your general thoughts and attitude toward students' learning and behavioral problems, particularly with students who may have experienced adversity.

- *If you are assigned to receive the COS-C, you will attend approximately 12 hours of training during professional learning blocks over the course of a two-month period determined in coordination with ELC Director. If you are in the TAU group, you will receive training typically scheduled for Head Start teaching professionals.*
- *At the end of the COS-C training, all participants will be asked to complete approximately 1.5 hours of a post-training package with the same surveys as the pre-assessment package. The participants receiving the COS-C training will complete an additional .5 hour survey for training feedback.*
- *Total anticipated time for receiving the COS-training and completing pre- and post-surveys is approximately 9 hours outside of typical work hours over the course of 2 months. Total anticipated time for the TAU group is approximately 3 hours outside of typical work hours over the course of 2 months.*
- *No photographs, audio, or video recordings will be used in this study.*
- *Anticipated Schedule:*

Risks and discomforts

- *Foreseeable risk or discomforts may include:*

❖ *This is no known risk to the TAU group. The risk associated with the COS training group is no greater than other early childhood professional development for educators, in that some psychological risks may include feelings of sadness or discomfort around training material that may remind participant's of negative adult-child interactions, either of their own or of those of children in their previous or current classrooms. In order to provide the most support to participants as possible, everyone will receive a list of local mental health agencies, as well as a referral list for child mental health counselors in collaboration with HS mental health coordinator.*

Start Date [1]	Event	Duration
10-12-17	Informational Meeting & Informed Consent	1 week
10-16-17	Pre-training Data Collection	3 day
10-20-17	COS-C training or TAU Begins	8 weeks
12-11-17	Post-training Data Collection	1 week
4-01-17	Oral Report to ELC with preliminary results	n/a

Benefits

- *Overall, there are no direct benefits to you for participating in this evaluation. Those that are assigned to the COS group may experience benefits such as a greater understanding of child development and attachment knowledge and useful behavioral strategies in the classroom.*

[1] Dates will change pending IRB and prospectus approval

- *The expected benefits to society are to find cost-effective ways to support early childhood educators and strengthen student–teacher relationships and the learning environment.*

Incentives for participation: *All participants will receive a $25 gift card upon completion of the pre-training surveys and an additional $25 visa gift card upon completion of post-training surveys. COS participants will also receive a $60 gift card for training time beyond what is typically required in their job description. All participants must initial to receive gift cards. Initialed gift card receipt forms will be kept secured and separate from data collection.*

Privacy/Confidentiality: *All pen and pencil survey data collected will list teaching professionals' unique ID and will be kept in a locked filing cabinet at The University of Georgia to protect the participant's privacy and maintain confidentiality. At all times, only the researchers listed (Betsy Vonk and Trasie A. Topple) will have access to this file for purposes of data entry. Data will be entered into a secure, password protected computer file. After data are entered into the computer, all hardcopies of survey instruments and master code key linking teaching ID for pre and post training assessments will be shredded and only electronic data will remain with no identifying information. The project's research records may be reviewed by departments at the University of Georgia responsible for regulatory and research oversight. Confidentiality may be breached if there is suspicion of immediate harm to oneself or others, including suspicion of child or elder abuse.*

Taking part is voluntary

Your involvement in the study is voluntary, and you may choose not to participate or to stop at any time without penalty or loss of benefits to which you are otherwise entitled. If

you decide to withdraw from the study, the information that can be identified as yours will be kept as part of the study and may continue to be analyzed, unless you make a written request to remove, return, or destroy the information.

If you have questions

The main researcher conducting this study is *Betsy Vonk, Ph.D., LCSW, a professor* in School of Social work in supervision of *Trasie A Topple, LCSW,* in fulfillment of her doctoral degree at the University of Georgia. Please ask any questions you have now. If you have questions later, you may contact *Betsy Vonk* at *bvonk@uga.edu* or at *(678) 985-6793* or Trasie A. Topple, LCSW, at tatopple@uga.edu If you have any questions or concerns regarding your rights as a research participant in this study, you may contact the Institutional Review Board (IRB) Chairperson at 706.542.3199 or irb@uga.edu.

Research Subject's Consent to Participate in Research:

To voluntarily agree to take part in this study, you must sign on the line below. Your signature below indicates that you have read or had read to you this entire consent form, and have had all of your questions answered.

_____	_____	_____
Name of Researcher	Signature	Date
_____	_____	_____
Name of Participant	Signature	Date

Please sign both copies, keep one and return one to the researcher.

APPENDIX C

PARENTAL CONSENT FORM

UNIVERSITY OF GEORGIA

Parental/Guardian Consent Form to Use Data Already Collected

You are being invited to participate in a research study entitled *Attending to Attachment in Preschool: Pilot Evaluation of the Circle of Security-Classroom Approach for Head Start Teachers.* This research hopes to find out whether a professional training module will help create stronger student–teacher relationships and improve students' behavior and social emotional development. Your participation will involve permission to use information collected through your participation in the Head Start Program to be included in our research. We will use student demographic information, such as ethnicity, age, and family income level, as well as behavioral and social–emotional developmental assessments collected as part of tracking student progress. Data will be accessed through the Head Start office one time only at the end of Fall 2017 and will not contain any personal information such as name, birthdate, or social security numbers so that your child will not be able to be identified in the data file.

Your participation, of course, is voluntary but would be greatly appreciated. You may choose not to participate or to withdraw your consent at any time without penalty or loss of benefits to which you are otherwise entitled. If you agree to the use of your information/data for this research project, please simply sign on the line below; if you don't agree, none of your data will be included in the research and you can still

participate in the program. If you decide to withdraw from the study, the information that can be identified as yours will be kept as part of the study and may continue to be analyzed, unless you make a written request to remove, return, or destroy the information. The results of the research study may be published, but your name or any identifying information will not be used. Before retrieval of data from Head Start, all identifying information will be removed and your child will be given a unique ID identifier. All data will be kept on a secure, password protected computer file with no identifying information to maintain your privacy and confidentiality. There are no known risks associated with this research. The findings from this project may aid your child's teacher in learning strategies to help create stronger student–teacher interactions to enhance your child's learning in the classroom.

The researchers conducting this study are: Betsy Vonk, Ph.D., LCSW and Trasie A. Topple, LCSW. If you have any questions, you are encouraged to contact them at the School of Social Work, 678-985-6793, bvonk@uga.edu or tatopple@uga.edu.

Questions or concerns about your rights as a research participant should be directed to The Chairperson, University of Georgia Institutional Review Board, 609 Boyd GSRC, Athens, Georgia 30602-7411; telephone (706) 542-3199; email address irb@uga.edu.

Research Subject's Consent to Participate in Research: I have read the above information, and have received answers to any questions I asked. I consent to take part in the study. Please sign both copies, keep one and return one to the school to be given to the researcher by November 17, 2017.

Name of Researcher	Signature	Date
Name of Participant	Signature	Date

APPENDIX D

DATA COLLECTION INSTRUMENTS

D.i. Center for Epidemiologic Studies Depression Scale

	During the Past Week			
	Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)
1. I was bothered by things that usually don't bother me.	☐	☐	☐	☐
2. I did not feel like eating; my appetite was poor.	☐	☐	☐	☐
3. I felt that I could not shake off the blues even with help from my family or friends.	☐	☐	☐	☐
4. I felt I was just as good as other people.	☐	☐	☐	☐
5. I had trouble keeping my mind on what I was doing.	☐	☐	☐	☐
6. I felt depressed.	☐	☐	☐	☐
7. I felt that everything I did was an effort.	☐	☐	☐	☐
8. I felt hopeful about the future.	☐	☐	☐	☐
9. I thought my life had been a failure.	☐	☐	☐	☐
10. I felt fearful.	☐	☐	☐	☐
11. My sleep was restless.	☐	☐	☐	☐
12. I was happy.	☐	☐	☐	☐
13. I talked less than usual.	☐	☐	☐	☐
14. I felt lonely.	☐	☐	☐	☐
15. People were unfriendly.	☐	☐	☐	☐
16. I enjoyed life.	☐	☐	☐	☐
17. I had crying spells.	☐	☐	☐	☐
18. I felt sad.	☐	☐	☐	☐
19. I felt that people dislike me.	☐	☐	☐	☐
20. I could not get "going."	☐	☐	☐	☐

SCORING: zero for answers in the first column, 1 for answers in the second column, 2 for answers in the third column, 3 for answers in the fourth column. The scoring of positive items is reversed. Possible range of scores is zero to 60, with the higher scores indicating the presence of more symptomatology.

Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied psychological measurement*, *1*(3), 385-401.

D.ii. Childcare Worker Job Stress Inventory

Child Care Worker Job Stress Inventory–Job Resources Subscale

Please reflect on the degree to which each of the following statements currently reflects how you feel about your job.

Never 1	Rarely 2	Occasionally 3	Frequently 4	Most of the time 5

1.	I know the children are happy with me.	1	2	3	4	5
2.	I know the children want to be with me.	1	2	3	4	5
3.	I feel the love of the children for me.	1	2	3	4	5
4.	I feel like I become close to the children.	1	2	3	4	5
5.	I have one-on-one time with the children.	1	2	3	4	5
6.	I see children do special things before their parents do.	1	2	3	4	5
7.	I know that I am appreciated by the parents.	1	2	3	4	5
8.	I get praise from the parents for the work that I do.	1	2	3	4	5
9.	I feel respected for the work that I do.	1	2	3	4	5
10.	I feel the satisfaction of knowing I am helping the parents.	1	2	3	4	5
11.	I see that my work is making a difference with a child.	1	2	3	4	5
12.	I feel like I am doing a “real” job.	1	2	3	4	5
13.	I know that the work I am doing is important.	1	2	3	4	5
14.	I feel like I am helping the children grow and develop.	1	2	3	4	5
15.	I know that the people who are important to me think that I am doing a “real job”.	1	2	3	4	5
16.	I have fun with the children.	1	2	3	4	5
17.	I feel like I am teaching the children the skills they need for school.	1	2	3	4	5

Text retrieved from: Curbow, B., Spratt, K., Ungaretti, A., McDonnell, K., & Breckler, S. (2001). Development of the child care worker job stress inventory. *Early Childhood Research Quarterly*, *15*(4), 515-536.

D.iii. Circle of Security Participant Survey–Post-Training

Adapted by Trasie A. Topple Page 1

Please ***circle*** the number that best describes the level of change described by the statement **BEFORE** you attended the Circle of Security-Classroom training to **NOW,** after you completed the Circle of Security-Classroom training.

Much Worse 1	Worse 2	No Change 3	Better 4	Much Better 5

1.	The children in my classroom have a secure relationship with me.	1	2	3	4	5
2.	I am able to effectively manage the behavior of the children in my classroom.	1	2	3	4	5
3.	I feel that I can manage my stress level from providing care to children in my classroom.	1	2	3	4	5
4.	I recognize the behaviors that trigger negative response to children in my classroom (i.e. my "shark music.")	1	2	3	4	5
5.	I identify and respond to the needs of the children in my classroom for support to explore (the top of the Circle).	1	2	3	4	5
6.	I identify and respond to the needs of the children in my classroom for support for comfort and connection (the bottom of the Circle).	1	2	3	4	5
7.	When I fail to respond to a child's need in my classroom (I step off the Circle), I look for a way to repair our relationship.	1	2	3	4	5
8.	I step back and think about what a child's behavior is telling me about his/her needs before I react.	1	2	3	4	5
9.	I have effective classroom behavioral strategies.	1	2	3	4	5
10.	I feel confident that I can meet the relational needs of the children in my classroom.	1	2	3	4	5
11.	I understand why the children in my classroom behave the way they do.	1	2	3	4	5

Appendix D.iii. Data Collection Instruments
Con't. Circle of Security Participant Survey–Post-Training
Page 2

Please write the answers to the following open-ended questions (open-ended questions developed by Trasie A. Topple):

1. How, if at all, has the COS-Classroom training impacted your relationship with the children in your classroom?

2. How, if at all, has the COS-Classroom training impacted behavioral management strategies used in your classroom?

3. How, if at all, has the COS-Classroom training impacted teaching strategies used in your classroom?

4. How, if at all, has the COS-Classroom training impacted your job stress level?

5. How, if at all, has the COS-Classroom training impacted support among teachers in the COS-C group?

6. How, if at all, has the COS-Classroom training impacted your relationship with parents?

7. Would you recommend COS-Classroom to other early educators? Why or Why not

D.iv. Strengths and Difficulties Questionnaire

	Not True	Somewhat True	Certainly True
Considerate of other people's feelings	☐	☐	☐
Restless, overactive, cannot stay still for long	☐	☐	☐
Often complains of headaches, stomach-aches or sickness	☐	☐	☐
Shares readily with other children, for example toys, treats, pencils	☐	☐	☐
Often loses temper	☐	☐	☐
Rather solitary, prefers to play alone	☐	☐	☐
Generally well behaved, usually does what adults request	☐	☐	☐
Many worries or often seems worried	☐	☐	☐
Helpful if someone is hurt, upset or feeling ill	☐	☐	☐
Constantly fidgeting or squirming	☐	☐	☐
Has at least one good friend	☐	☐	☐
Often fights with other children or bullies them	☐	☐	☐
Often unhappy, depressed or tearful	☐	☐	☐
Generally liked by other children	☐	☐	☐
Easily distracted, concentration wanders	☐	☐	☐
Nervous or clingy in new situations, easily loses confidence	☐	☐	☐
Kind to younger children	☐	☐	☐
Often argumentative with adults	☐	☐	☐
Picked on or bullied by other children	☐	☐	☐
Often offers to help others (parents, teachers, other children)	☐	☐	☐
Can stop and think things out before acting	☐	☐	☐
Can be spiteful to others	☐	☐	☐
Gets along better with adults than with other children	☐	☐	☐
Many fears, easily scared	☐	☐	☐
Good attention span, sees work through to the end	☐	☐	☐

Do you have any other comments or concerns?

D.v. Data Collection Instruments

Student–teacher Relationship Scale–Long Form

Please reflect on the degree to which each of the following statements currently applies to your relationship with this child. Circle the appropriate number for each item.

Definitely does not apply 1	Not really 2	Neutral, not sure 3	Applies somewhat 4	Definitely applies 5

1.	I share an affectionate, warm relationship with this child.	1	2	3	4	5
2.	This child and I always seem to be struggling with each other.	1	2	3	4	5
3.	If upset, this child will seek comfort from me.	1	2	3	4	5
4.	This child is uncomfortable with physical affection or touch from me.	1	2	3	4	5
5.	This child values his/her relationship with me.	1	2	3	4	5
6.	This child appears hurt or embarrassed when I correct him/her.	1	2	3	4	5
7.	When I praise this child, he/she beams with pride.	1	2	3	4	5
8.	This child reacts strongly to separation from me.	1	2	3	4	5
9.	This child spontaneously shares information about himself/herself.	1	2	3	4	5
10.	This child is overly dependent on me.	1	2	3	4	5
11.	This child easily becomes angry with me.	1	2	3	4	5
12.	This child tries to please me.	1	2	3	4	5
13.	This child feels like I treat him/her unfairly.	1	2	3	4	5

14.	This child asks for me help when he/she really does not need help.	1	2	3	4	5
15.	It is easy to be in tune with what this child is feeling.	1	2	3	4	5
16.	This child sees me as a source of punishment and criticism.	1	2	3	4	5
17.	This child expresses hurt or jealousy when I spend time with other children.	1	2	3	4	5
18.	This child remains angry or is resistant after being disciplined.	1	2	3	4	5
19.	When this child is misbehaving, he/she responds well to my look or tone of voice.	1	2	3	4	5
20.	Dealing with this child drains my energy	1	2	3	4	5
21.	I've noticed this child copying my behavior or ways of doing things.	1	2	3	4	5
22.	When this child is in a bad mood, I know we're in for a long and difficult day.	1	2	3	4	5
23.	This child's feelings toward me can be unpredictable or can change suddenly.	1	2	3	4	5
24.	Despite my best efforts, I'm uncomfortable with how this child and I get along.	1	2	3	4	5
25.	This child whines and cries when he/she wants something from me.	1	2	3	4	5
26.	This child is sneak or manipulative with me.	1	2	3	4	5
27.	This child openly shares his/her feelings and experiences with me.	1	2	3	4	5
28.	My interactions with this child make me feel effective and confident.	1	2	3	4	5

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D.vi. Data Collection Instruments
Teacher Opinion Survey-Revised (TOS-R)

Instructions: Please rate the extent to which you agree or disagree with the statements below, by reflecting on your experience as a preschool teacher. *[Circle ONE number for each item.]*

		STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE
1.	If I keep trying, I can find some way to reach even the most challenging child.	1	2	3	4	5
2.	I can help my preschool children learn skills that they need to cope with adversity in their lives.	1	2	3	4	5
3.	There are some children in my classroom that I simply cannot have any influence on.	1	2	3	4	5
4.	If some children in my class are not doing as well as others, I believe that I should change my way of working with them.	1	2	3	4	5
5.	As a preschool teacher, I can't really do much, because the way a child develops depends mostly on what goes on at home.	1	2	3	4	5
6.	I know things I can do to help children develop skills to resist alcohol and drug use in later life.	1	2	3	4	5
7.	I feel a sense of hopelessness about the future of the children I work with.	1	2	3	4	5
8.	I can imagine myself teaching preschool for several more years.	1	2	3	4	5
9.	I know how to respond effectively when a child becomes disruptive in my classroom.	1	2	3	4	5
10.	I frequently feel overwhelmed by my job.	1	2	3	4	5
11.	I have enough training to deal with almost any classroom situation.	1	2	3	4	5
12.	On a typical day, I feel a sense of accomplishment as a preschool teacher.	1	2	3	4	5

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APPENDIX E

HEAD START STUDENT INTAKE FORM

OFFICE OF EARLY LEARNING EARLY HEAD START / HEAD START
2017-2018 APPLICATION and DOCUMENT CHECKLIST

Head Start is a federal program that promotes the school readiness of children ages birth to five from low-income families by enhancing children's health and development and positive family outcomes. For more information about Early Head Start and Head Start visit: www.clarke.k12.ga.us/preschool or http://eclkc.ohs.acf.hhs.gov/hslc

AGE ELIGIBILITY		
For Head Start Pre-K Students (4 Year Olds)	**For Head Start Three Year Old Students (3 Year Olds)**	**For Early Head Start Expectant Women / Infants and Toddlers (Children 0 through age 2)**
Birthdays are between September 2, 2012 – September 1, 2013 Students must be 4 years old by September 1, 2017.	Birthdays are between September 2, 2013 – September 1, 2014 Students must be 3 years old by September 1, 2017.	Birthdays are after September 1, 2014 Expectant mothers apply during pregnancy.

Student Information

FOR OFFICE USE ONLY
Date Student Will Enter School:_____

Student ID:_____ **School:**_____

Student's Legal Name:_____

(Last) (First) (Middle)

Preferred Name:_____

Social Security Number: _____ **Birthdate (mm/dd/yyyy):**_____

Grade: N/A **Date Student Entered 9th Grade** (required for all students in grades 9–12) N/A

Name of last school attended: N/A

(city) (state) (zip code)

Gender: □Male □Female

Birthplace (city, state, country):

Date Student Entered U.S. Schools N/A

Month and Year

Ethnic Code: Is this student Hispanic/Latino? (Choose only one) □No, not Hispanic/Latino □Yes, Hispanic/Latino

What is the student's race? (Choose one or more) □American Indian or Alaska Native □Asian

□Black or African American □Native Hawaiian or Other Pacific Islander □White

Parent/Guardian Information

Student ID:

Student's Name:

(Last) (First) (Middle)

Please list all parents and/or legal guardians (ask for an additional form, if needed):

□Mother □Step-Mother □Grandmother □Other (specify)

□Father □Step-Father □Grandfather

Student Resides with this Parent/Guardian: □Yes □No Is this parent allowed contact with student: □Yes □No

Last Name: First Name:

Home Telephone: ( ) Cellular Telephone: ( )

Street Address: Apt/Lot #:

City, State, Zip:

Mailing Address (if different):

City, State, Zip:

Email:

Employer: Occupation: Work Telephone:( )

□Mother □Step-Mother □Grandmother □Other (specify)_____

□Father □Step-Father □Grandfather

Student Resides with this Parent/Guardian: □Yes □No Is this parent allowed contact with student: □Yes □No

Last Name:_____ First Name:_____

Home Telephone: (____)_____Cellular Telephone: (____)_____

Street Address:_____Apt/Lot #:_____

City, State, Zip:_____

Mailing Address (if different):_____

City, State, Zip:_____

Email:_____

Employer:_____Occupation:_____Work Telephone:(_____)_____

Language Minority Eligibility: We are required to determine the need for language assistance. If a language other than English is indicated for any of the questions below, CCSD will test your child's English language proficiency to determine eligibility for placement in an English language development program. You will be notified about the results of this testing.

1. What is the first language your child learned to speak? _____

2. What language does your child speak most often? _____

3. What language is most often spoken in your home? _____

Do you need school communications translated? _____ If yes, what language? _____

Migrant Education Program Occupational Survey: Determining eligibility for Migrant Services. Please check below.
Have you ever received Migrant Services? Yes _____ No _____ Where _____
Have you worked in or applied for farming, poultry, planting, or livestock within the last three years? Yes _____ No _____

Does this student have health insurance: □Yes □ No

If yes, which health insurance: □ Medicaid
□ Peach Care
□ Private
□ Don't Know

Child / Family Well-Being Questionnaire

Child's Birth History		
1. Birth weight:_____ lbs _____ oz Length:_____ inches		
2. Type of Delivery: ❒ Natural ❒ Cesarean		
3. Was your child Premature:_____ Gestational age: _____ weeks	❒Yes ❒No	
4. Name of Birth Facility: _____City: _____State: _____		
5. Did your child come home with you from the hospital?	❒Yes ❒No	If no, why and how long was your child in the hospital: _____
6. Did your child have any of the following problems at birth or any of the following birth defects? ❒ Down Syndrome ❒ Low Birth Weight ❒ Injury ❒ Fetal Alcohol Syndrome ❒ Breathing/Respiratory ❒ Heart ❒ Seizure ❒ Sickle Cell ❒ Jaundice ❒ Other condition, please describe.:_____		If "Yes," please describe: _____ _____ _____
7. Did you take any medications, drugs, or alcohol, or smoke while pregnant with this child?	❒Yes ❒No	If "Yes," please explain: _____
Child's Current Health Status		
8. Child's Physician (Medical Home):_____ ❒ Insurance type: _____ ❒ Insurance number: _____		*Provide copy of insurance card*
9. What is the last well baby check your child received? *(Well baby checks are due at 1, 2, 4, 6, 9, 12, 15, 18, 24, 30, 36, 48, 60 months. Please circle the last well baby check received)*		Date of last Well Child Check: _____
10. Is your child up-to-date on immunizations?	❒Yes ❒No	*If no, schedule appointment*
11. Has your child received preventative dental care? Child's Dentist (Dental Home): _____ Next dental appointment: _____	❒Yes ❒No	
12. Does your child have a specialty doctor (Ear/Nose/Throat, Allergy Dr., Eye Dr., Heart Dr., Neurologist, Psychologist, Psychiatrist, etc)?	❒Yes ❒No	If "Yes," what type of doctor? _____ Specialty Doctor's Name? _____

EARLY HEAD START / HEAD START
FAMILY INFORMATION FORM (ADULT #1)

Applicant's Name: _____

GENERAL FAMILY INFORMATION

Parental Status (check one)	Homeless Family	Parent/Guardian on Active Duty Military	Receiving TANF	Receiving SSI
☐ ☐	☐ ☐	☐ ☐	☐ ☐	☐ ☐

EMERGENCY CONTACT NUMBERS / AUTHORIZED TO PICK UP CHILD

Name	Telephone	Relationship	Emergency Contact	Authorized to Pick-Up Child?
			☐ ☐	☐ ☐
			☐ ☐	☐ ☐
			☐ ☐	☐ ☐
			☐ ☐	☐ ☐

ADULT #1 (RELATION TO APPLICANT): Please list *all* parents and/or legal guardians (ask for an additional form, if needed):

☐ ☐ ☐ ☐ ☐

☐ ☐ ☐ ☐ ☐

☐ ☐

☐ ☐

☐ ☐

Parent / Guardian Last Name:		First Name:				
	(Address)	*Apt/Lot #*	*City*	*State*	*Zip Code*	

HIGHEST GRADE COMPLETED

Primary & Secondary	Post-Secondary	Type of Certification / Degree Completed
☐	☐	
☐	☐	
☐	☐	
☐	☐	
☐	☐	

WORK / SCHOOL / TRAINING SCHEDULE

☐ ☐ ☐ ☐ ☐ ☐ ☐ *(Circle Days)*

 # Hrs / Week:

Time of Day / Night

☐ ☐ ☐ ☐ ☐ ☐ ☐ *(Circle Days)*

 # Hrs / Week:

Time of Day / Night

☐ ☐ ☐ ☐ ☐ ☐ ☐ *(Circle Days)*

 # Hrs / Week:

Time of Day / Night

_____ _____

Parent/ Legal Guardian Signature **Date**

EARLY HEAD START / HEAD START
FAMILY INFORMATION FORM (ADULT #2)

ADULT #2 (RELATION TO APPLICANT)

Parent / Guardian Last Name: _____ **First Name:** _____

_____

_____

_____

(Address) | *Apt/Lot #* | *City* | *State* | *Zip Code*

HIGHEST GRADE COMPLETED

Primary & Secondary	Post-Secondary	Type of Certification / Degree

WORK / SCHOOL / TRAINING SCHEDULE

_____ _____

(Circle Days) *# Hrs / Week:* _____

Time of Day / Night _____

_____ _____

(Circle Days) *# Hrs / Week:* _____

Time of Day / Night _____

_____ _____

(Circle Days *# Hrs / Week:* _____

Time of Day / Night _____

_____ _____

Parent/ Legal Guardian Signature **Date**

EARLY HEAD START / HEAD START
FAMILY NEEDS ASSESSMENT

Parent's / Guardian's Name: _____ **Date:** _____

Family of (List all children enrolled in EHS/HS): _____

- ☐ Strength
- ☐ Need:
- ☐ Interest:

1. FAMILY WELL-BEING					
☐					
☐					
☐					
☐					
☐					
☐					
☐					
2. POSITIVE PARENT-CHILD RELATIONSHIPS					
☐					
☐					
☐					
3. FAMILIES AS LIFELONG EDUCATORS					
☐					
☐					
☐					
4. FAMILIES AS LEARNERS					
☐					
☐					
☐					
☐					
☐					
5. FAMILY ENGAGEMENT IN TRANSITIONS					
☐					
☐					
☐					
☐					
6. FAMILY CONNECTIONS TO PEER AND COMMUNITY					
☐					
☐					
☐					
7. FAMILIES AS ADVOCATES AND LEADERS					
☐					
☐					
8. OTHER					
☐					

9. Of the 8 learning areas above, which one(s) would you like to work on / learn about the most this school year? (choose at least one)

APPENDIX F

CLARKE COUNTY SCHOOL DISTRICT APPROVAL

Dear Trasie,

Congratulations! Your research proposal has been approved by CCSD. Please send this approval email to IRB. Once you have IRB approval, please forward that to me and I will send to the District so that you can be approved to contact the principal to begin your study.

Regards, Grace

Grace M. Thornton, M.Ed.
Research Development Manager · College of Education
University of Georgia · G10H Aderhold Hall · Athens, GA 30602
706-542-9068 (phone) · 706-542-8125 (fax) · gthorn@uga.edu

College of Education
Research Office
UNIVERSITY OF GEORGIA

From: James Barlament [mailto:barlamentj@clarke.k12.ga.us]
Sent: Tuesday, October 03, 2017 10:30 AM
To: Grace M Thornton
Subject: Re: Topple Research Proposal

Good morning Grace,

Dr. Topple's research proposal has been **approved** by the Clarke County School District. Thank you for your patience through this process. As we discussed, CCSD has been through a number of changes in leadership during this time.

Thank you so much,

James Barlament

APPENDIX G

UGA IRB APPROVAL LETTER

UNIVERSITY OF GEORGIA

Tucker Hall, Room 212
310 E. Campus Rd.
Athens, Georgia 30602
TEL 706-542-3199 | FAX 706-542-5638
IRB@uga.edu
http://research.uga.edu/hso/irb/

Office of Research
Institutional Review Board

EXEMPT DETERMINATION

October 3, 2017

Dear MARGARET Vonk:

On 10/3/2017, the IRB reviewed the following submission:

Type of Review:	Initial Study
Title of Study:	Attending to Attachment in Early Childhood Education: Pilot Evaluation of the Circle of Security-Classroom Approach in a Head Start Center
Investigator:	MARGARET Vonk
Co-Investigator:	Trasie Topple
IRB ID:	STUDY00005147
Funding:	None
Review Category:	Exempt Flex 7

The IRB approved the protocol from 10/3/2017 to 9/28/2022.

Please close this study when it is complete.

In conducting this study, you are required to follow the requirements listed in the Investigator Manual (HRP-103).

Sincerely,

Kate Pavich, IRB Analyst
Human Subjects Office, University of Georgia

APPENDIX H

SAMPLE INTERVENTION FIDELITY CHECKLIST

Chapter One "Welcome to the Circle of Security"

Reflect on your work today - 1 (rarely) to 4 (almost always)

1. Prior to group, I took time to review the chapter goals and DVD transcript so that I could settle my mind and was able to be fully present and engaged.	1	2	3	4
2. I feel confident in the use of the DVD and of my choices of when to use scheduled and/or recommended pauses. • Did you show all the scheduled material on the DVD for the day? Y N What did you skip? • Did you stop at all scheduled pauses? Y N What did you skip? • Did you stop at all the recommended pauses? Y N What did you skip?	1	2	3	4
3. I was able to remain nonjudgmental even when I was struggling with my own feelings and hearing Shark Music.	1	2	3	4
4. I provided the necessary structure for safety by starting and ending groups on time, keeping the flow of the material going, and working to make room for everyone to speak.	1	2	3	4
5. I was sensitive to parents' response to much of parenting being 'automatic' and that much of what we learn from parenting we learned from being parented.	1	2	3	4
6. I was able to find positive intentionality toward each group member.	1	2	3	4
7. I was able to create a holding environment where group members experienced safety and security within the group.	1	2	3	4
8. During the group, I observed participants appropriately using concepts and building connections between the theory and their lives in a coherent story that tells me they "get it" and understand "hidden in plain sight."	1	2	3	4
9. I heard caregivers begin to organize into words their understanding of procedural learning and supported their exploration of what is meant by 'automatic caregiving behaviors.'	1	2	3	4
10. I was able to 'be with' group members in the way that I want them to 'be with' their children (parallel process).	1	2	3	4
11. I was sensitive to my own 'in the moment' experiences and used them to help make sense out of the experiences of both group members and the group process.	1	2	3	4
12. In reflection, I am able to identify moments where I struggle and hear Shark Music as a facilitator.	1	2	3	4