CAREGIVER LEVEL PREDICTORS OF SELF-REGULATION IN PRESCHOOL-AGED CHILDREN

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University of Missouri-Kansas City, 2020

ABSTRACT

Self-regulation is regarded as a key developmental skill that underlies children's success throughout their life. When children enter kindergarten with under-developed self-regulation skills, they are at a greater risk for poor peer relationships and academic achievement (Bernier, Carlson, & Whipple, 2010). Caregivers matter in the development of children's self-regulation (Karreman et al., 2006), but specific ways that day-to-day caregiver-child interactions shape self-regulation are not yet well understood. The current study sought to further the understanding of caregiver behaviors, particularly behaviors that occur during caregiver-child play, in relation to children's self-regulation. Self-regulation is defined in this study as a child's ability to adapt their attention, manage their emotions, and control their behaviors. Data from 58 female-caregiver and child dyads were included in this study and were drawn from a larger longitudinal study evaluating the development of self-regulatory and relational skills in preschool-aged children over time. Caregivers and their children attended a laboratory visit where the caregiver engaged in an interview and completed questionnaires of family demographics, caregiving self-regulation (Me as a Parent), and ratings of their child's self-regulatory behaviors (Devereaux Early Childhood Assessment-Clinical; DECA-C), while the child completed a brief cognitive screener

(Stanford-Binet Intelligence Scales for Early Childhood–Fifth Edition, Verbal and Nonverbal Routing sections; Roid, 2003) and a field assessment of self-regulation, which contained an assessor rating scale of child behaviors during the assessment (Preschool Self-Regulation Assessment; PSRA; Smith-Donald et al., 2007). The final task was a 5-minute unstructured play interaction between caregiver and child. Play-based caregiver behaviors were coded for caregiver use of labeled praise, questions, and commands using the Behavioral Coding System (BCS) from McMahon and Forehand (2005). We hypothesized that across both available measures of self-regulation (assessor report and maternal report) high levels of caregiving self-regulation would be associated with higher levels of child self-regulation. We also expected that more labeled praises provided by caregivers during play would predict higher child self-regulation, but that more commands and questions would predict lower child self-regulation. Two hierarchical regressions were conducted: one with PSRA Assessor Total of child self-regulation as the DV and the other with DECA-C Total caregiver report of child self-regulation as the DV. Results indicated that regarding assessor ratings, surprisingly, the higher the mothers rated their own self-regulation, the lower the PSRA assessor rated the child's self-regulation. Labeled praise, questions, and commands did not contribute to the model. Regarding caregiver ratings of child self-regulation, mothers who rated their caregiving self-regulation as high also rated their child as highly regulated. Similar to the previous model, play related behaviors such as labeled praises, questions, and commands did not contribute the model. In both analyses, the mother's own self-regulation was the strongest predictor of the child's self-regulation. Implications for self-regulation measurement and the role of caregiving self-regulation in promoting self-regulation in children will be discussed.

APPROVAL PAGE

The faculty listed below, appointed by the Dean of the College of Arts and Sciences, have examined a thesis titled "Caregiver Level Predictors of Self-Regulation in Preschool-Aged Children," presented by Jennifer O. Collins, candidate for the Master of Arts degree, and certify that in their opinion it is worthy of acceptance.

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CHAPTER 1

OVERVIEW

A child's ability to learn from the world around them advances exponentially during their first few years of life, more so than during any other developmental period (Rosanbalm & Murray, 2017). While early developmental processes generally unfold rapidly, there is between-child variability in the degree and pace of the development of specific functions (Sawyer et al., 2015), and a child's early experiences can influence this variability. These formative first years build the foundation for many developmental capacities; among them, a child's ability to self-regulate. A child who can effectively self-regulate demonstrates the ability to focus their attention, manage their emotions, and conform their behaviors adaptively to the environment (Halle & Darling-Churchill, 2016; Sawyer et al., 2015). Moreover, a child's self-regulation is evident when they can delay or suppress behaviors, abide by social rules, control and regulate their emotions, and focus and maintain their attention despite environmental distractions (Tanribuyurdu & Yildiz, 2014).

Self-regulation has long been regarded as a key developmental capacity that underlies children's success throughout their life. In fact, when children enter kindergarten with under-developed self-regulation skills, they are at a greater risk for poor peer relationships and academic achievement (Bernier, Carlson, & Whipple, 2010). A study by Moffitt and colleagues (2010) followed 1,000 children from birth to 32 years. This study measured self-control throughout childhood every two years from the years of three until eleven, and they found that levels of self-control in childhood were predictive of physical health, substance use, financial wellbeing, and criminal behaviors when the participants reached adulthood. It

is no wonder why more than 3% of peer-reviewed articles in psychology related journals pertain to self-regulation (Duckworth, 2011).

During the first few years of life, when self-regulation skills become highly apparent and are practiced and refined (Karreman et al., 2006), parents and children's legal guardians, henceforth caregivers, are particularly influential in the development of self-regulation (Rosanbalm & Murray, 2017). They are their child's initial external regulators, acting as co-regulators starting from birth as they respond to their baby's immediate needs (e.g. food, hygiene, and temperature control) and progressing to other skills as they grow (Rosanbalm & Murray, 2017). While children's attempts to self-regulate become increasingly noticeable in the preschool years, the development of self-regulation is far from complete and will continue into young adulthood and throughout the lifespan (Cole et al., 2009). Therefore, giving the child a good start during preschool will set them on a positive trajectory in helping them express and understand their emotions, overcome challenges, understand others, and communicate.

The extent that caregivers can co-regulate with their child likely depends on their own capacities in both their personal self-regulation and their caregiving self-regulation. Differentiating between the two similar, yet different constructs, is necessary because an individual may have plenty of self-regulation skills while meeting the demands of their adult life but may become dysregulated when it comes to challenges faced in parenting. Adult personal self-regulation is analogous to child self-regulation in that it means an adult can appropriately modulate their attention, emotions, and behaviors, while caregiving self-regulation refers to how caregivers perceives themselves regarding their ability to problem-

solve, self-direct, and adapt parenting goals and skills in a wide variety of parenting challenges (Hamilton, Matthews, & Crawford, 2015).

Caregiving self-regulation is an important parenting skill because as the child matures, the caregiver gradually facilitates their child's ability to self-regulate in different ways (Bernier, Carlson & Whipple, 2010), one of which is through play. Through the process of play, caregivers model that the child can solve their problems with help and perseverance while also helping them acquire self-regulation skills like how to calm down, recognize emotion cues from others, and identify solutions to simple problems. For example, while building a puzzle the caregiver may encourage the child to try fitting the puzzle pieces in different ways, and then praising them when they match up the pieces on their own (Sanders & Mazzucchelli, 2013). As children grow in ability, they are then more likely to try to solve their problems with increasingly less parental assistance (Karreman et al., 2006), equipping them with strategies that will help them persist in the face of novel or frustrating tasks.

Successful development of self-regulation in childhood requires lots of practice and support to emerge, which is why caregivers are central in nurturing their child's development. Indeed, building self-regulation is experience-dependent, and the environment provides feedback that helps the skills develop (Morrison, Ponitz, & McClelland, 2010). Caregivers help their child establish a basic set of self-regulatory skills so that they can go on to succeed in contexts common to preschool-aged children such as group based learning environments where children will establish social connections and cooperate with peers (Jones, Greenberg, & Crowley, 2015), learn to shift and focus their attention in order to control their behaviors (Halle & Darling-Churchill, 2016), and learn to manage stress independently from their primary caregivers (Cole et al., 2009). Preschool-aged children are

regularly being introduced to situations that have a need for rudimentary self-regulation skills as well as opportunities that encourage these competencies to evolve, highlighting the value of exploring how caregiver behaviors nurture their child's development of these skills during this time period. It has been established that there is an association between caregiver characteristics (e.g. sensitivity, warmth, and responsiveness; Hamoudi et al., 2015) and a child's self-regulation development, but there remains more to learn about how other caregiver attributes, like caregiving self-regulation, and caregiver behaviors during play, namely giving labeled praises, asking questions, or giving commands, may influence their child's self-regulation.

Purpose

The current study sought to further understand how caregiver characteristics (e.g. caregiving self-regulation) and behaviors during play (e.g. labeled praise, questions, and commands) may be associated with their child's self-regulation. The following literature review provides basic background information on self-regulation, with specific attention to caregiver level predictors that have been under researched but are thought to highly influence the development of child self-regulation.

CHAPTER 2

REVIEW OF THE LITERATURE

Self-Regulation

There are many definitions of self-regulation throughout the developmental literature. In this study, self-regulation is defined as the child's ability to adapt their attention, manage their emotions, and control their behaviors. These three components of self-regulation are predominant throughout the social and emotional development literature (e.g., Halle & Darling-Churchill, 2016; Sawyer et al., 2015). Attention can broadly be defined as the ability to ignore distraction and to remain alert to continue a task (Tanribuyurdu & Yildiz, 2014). When a child effectively manages their emotions they can initiate, avoid, inhibit, maintain, or modulate the frequency, form, intensity, or duration of their emotions (Eisenberg & Spinrad, 2004). Behavioral self-control refers to the child's forethought in planning how they will act, reducing impulsive behaviors, modulating their reactions, and waiting patiently for their turn (Smith-Donald et al., 2007; Tanribuyurdu & Yildiz, 2014). These self-regulatory skills help the child to temper their actions from their immediate emotional impulse like an angry or aggressive response to the action of their peer or halting a behavior when asked by a caregiver (Kochanska, Philibert & Barry, 2009). Exploring potentially modifiable caregiver predictors of child self-regulation is worthwhile given that young children spend most of their time with their caregiver, and that learning to self-regulate helps in their progression to being able to engage in more socially and cognitively complex tasks.

Caregiving Self-Regulation

A caregiver's own self-regulation during caregiving interactions likely influences child self-regulation, (Hamilton, Matthews, & Crawford, 2015). Sanders and Mazzucchelli

(2013) suggest that caregiver self-regulation is important in the developing and maintaining of positive and caring parenting practices that promote good outcomes for children by focusing on the support of parenting independence, confidence, and problem-solving abilities. When caregivers have the confidence in knowing that they have the skills needed to resolve problems that may arise in parenting, they have greater ability to problem-solve, self-direct, and adjust their own goals and behaviors to meet the demands of caregiving challenges. A caregiver's ability to recognize their caregiving skills can function as a buffer in times of parenting stress (Hamilton, Matthews, & Crawford, 2015). In other words, a caregiver's awareness of their own stress during parenting can result in the parent choosing, in-the-moment, to become more regulated. According to Sanders and Mazzucchelli (2013) a parent with caregiving self-regulation is one that: a) has personal resources, knowledge and skills to care for their child independently; b) has good problem solving skills, sets clear goals for their child, and can select and implement strategies for change when needed; c) believes that they have an influence on their own and their child's behaviors; and d) believes that they are able to incorporate these behavior changes and that good outcomes will transpire. Sanders and Mazzucchelli (2013) offer hope that these self-regulatory skills are not solely an inherited trait but can be learned and honed through practice on the part of both caregivers and children. If caregivers can help their child learn self-regulation skills, then they will help prepare them to succeed.

Given recent interest in caregiving self-regulation as a construct, the Me as a Parent scale was developed and selected for use in our study (Hamilton, Matthews, & Crawford, 2015; Appendix A). Given its recent development, to our knowledge, our study is one of the

first to explore how caregiving self-regulation, comprised of self-efficacy, personal agency self-sufficiency, and self-management, are associated with child's self-regulation.

Caregiver-Child Interaction

Early-life positive and stimulating interactions between a caregiver and child have been linked to gains in a child's academic proficiencies (Duncan, Schmitt, & Vandell, 2019). They also effect cognitive capacities and behavioral regulation (Feinberg, Kan, & Goslin, 2009). Such interactions occur in everyday situations and may be developed and encouraged through play. Playtime is actually "work" or learning time for children. Playtime between caregivers and children cultivates a safe, stable, and nurturing relationship (Yogman et al., 2018). A relationship that allows the child to explore their world and try new things is something that children need in order to flourish.

Positive engagement between caregivers and their children can occur in many forms. When a child's behaviors are identified as highly problematic (e.g. aggressive, defiant, noncompliant) and rise to a level requiring clinical intervention, increasing positive caregiver-child engagement is often encouraged through behavioral parent training programs. Behavioral parent training programs have been found to be useful in promoting attachment, acknowledging routine caregiving challenges (Kazdin, 2008), and addressing disruptive child behavior by teaching parents *Do* and *Don't* skills (Eyberg & Robinson, 1982) to use when playing with their child. One of the cornerstone *Do* skills parents learn is *praise* which lets the child know what behaviors are acceptable (McMahon & Forehand, 2005). These praises help the caregivers notice the good behaviors in their child. Caregivers are coached to use *Labeled Praise* which is a descriptive form of praise that lets the child know what specific behavior is acceptable. During interaction between the caregiver and child this

can be demonstrated by the caregiver telling the child "I like how nicely you put the animals in the barn!" Verbalizations of praise from the caregiver have a great effect on the child's ability to create and experience positive and rewarding relationships (Nomaguchi, 2006). Drawing upon the principles of operant learning theory (Skinner, 1950), the child's desired behaviors are predicted to increase as a result of the positive praise from their caregiver. Over time, these interactions help the caregiver notice the positive behaviors of the child, increase the child's self-esteem and positive behaviors, and improve the overall warmth between the caregiver and child (Colman et al., 2006). In time, using these *Do* skills, like labeled praise, the child notices which behaviors bring them rewards thereby helping them utilize their self-regulation skills (e.g. controlling anger and other impulses). However, it has yet to be explored whether labeled praise may foster the growth of self-regulatory skills in children.

Research in caregiver-child interactions suggests that engaging in less-positive behaviors, or *Don't* skills, like frequent asking of questions or giving commands, during play may compromise the positive, reciprocal connection between the caregiver and child (Eyberg & Robinson, 1982). Asking questions during play is not ideal as the goal in play is to allow the child the opportunity to explore their environment and use their imagination. It is common for adults to ask more questions than realized given that inflection alone can signal that a question is being asked. Questions are not always detrimental to the caregiver-child relationship as they are a useful tool to gather information; however, the frequent use of questions during play can result in the caregiver taking over the lead of conversations (Brestan-Knight & Salamone, 2011), which may then take away the space for other types of speech and interaction. Too many questions may also convey that the

caregiver is not really listening to the child, or that they disapprove of what the child is doing or saying, which is often contrary to the goal behind why caregivers ask questions in the first place. Frequent question asking may test these newly developing self-regulation skills and, if they become? overwhelmed, it could result in frustration or acting out.

Commands are also common *Don't* skill that arise during play, although many adults may give them unknowingly. Commands can inadvertently be phrased like a question (e.g. "Can you please get down?") as well as be vague in the action the caregiver expects (e.g. "be good!"; Pearl, 2009). When caregivers issue commands during play, it can make playtime less positive and give rise to the need to correct a child who does not follow through with the commands. Similar to questions, commands also prevent the child from taking the lead in play, which could also place unnecessary demands on the child's ability to control their emotions and behaviors thereby potentially thwarting their self-regulation development.

Literature has consistently described self-regulation as manifesting from the milieu of supportive relationships between the caregiver and their child (Bocknek et al., 2017). While we know that the aforementioned parenting behaviors of labeled praise, questions, and commands have been shown to be influential therapeutically in children with behavior problems, less is known about whether practicing them in daily interaction with children without clinical behavior problems can influence self-regulation. We are interested in exploring whether these three behaviors that have been shown to improve the quality of play and caregiver-child relationships might also be related to the child's self-regulation and their ability to focus their attention, manage their emotions, and control their own behaviors.

The Utility of Multiple Reporters of Children's Self-Regulation

Gathering data from multiple reporters has been a widely accepted and preferred practice in evaluating children for diagnostic purposes. Clinicians often rely on multiple reporters when conducting diagnostic evaluations for Attention-Deficit/Hyperactivity Disorder (ADHD) and Autism Spectrum Disorder, for example, to gain understanding about a child's behavior in naturalistic settings (Power et al., 2008). Much of the literature evaluating self-regulation in children includes a variety of structured and semi-structured lab assessments, unstructured naturalistic observation, and reports from teachers and/or parents (McClelland & Cameron, 2012). Yet despite the call to use multiple reporters and multiple modalities within the same study, it has been difficult to gain wide use of this approach in research studies investigating self-regulation (Smith-Donald et al., 2007). This could be due to the absence of a "gold standard" in method or measurement (Moens et al., 2018), differing expectations and perspectives from researchers (Smith-Donald et al., 2007; Martel, Markon, & Smith, 2017), and convenience, among other barriers. Therefore, we introduce two ways of measuring self-regulation that will be used in this study, and their unique merits and drawbacks.

The reliability, or consistency, of a caregiver's report and whether they can be objective in their responses has long been something researchers take into consideration (Seifer et al., 2004). This has been a point highlighted in some literature involving maternal participants where mothers may be vulnerable to bias (Teti & McGorty, 1996) and may under-report characteristics of their child or in cases where mothers are experiencing depression where over-reporting disruptive behaviors of their child may occur (Collishaw et al., 2009). While information involving maternal data is more plentiful than paternal data in

the literature, there remains support for treating the caregiver as a trustworthy source of report regarding their child's behaviors despite these limitations (Teti & McGorty, 1996). However, utilizing information from a single source only provides one part of the picture of the child's self-regulation, and using a single source may introduce bias and/or omit important information. Additionally, each reporter provides unique information (Moens et al., 2018). While caregivers typically have the broadest information about the child's self-regulation skills and behaviors at home (Waschbusch, Daleiden, & Drabman, 2000), a neutral party, such as a researcher, may offer another, perhaps more impartial, perspective of child behaviors. Exploring how the child performs on tasks developed to assess self-regulation conducted in the laboratory, as well as simply learning about how the child can self-regulate outside of the parent's presence may help us understand more about a child's attention, emotions, behaviors. Of course, researcher report is based on a single point in time, in a novel situation, and despite best efforts to build rapport, it is possible that we may not be able to generalize results across situations. When considering information from multiple reporters, questions naturally arise about how much the informants agree or disagree in their responses and how to make sense of and resolve the discrepancies should they exist (De Los Reyes et al., 2013). However, research must begin to include multiple methods and reporters so that we can learn more about how to assess and key developmental constructs and make sense of the findings.

Covariates

Research suggests many things influence self-regulation, so when trying to determine the role of caregiver related variables we must account for them. Thus, in this study household income and child participant age, gender, and IQ were considered for inclusion as

covariates. Household income has been shown to have a positive association with self-control (Moffitt et al., 2010) and children raised in poverty commonly experience delays in emotion regulation and ability to control their attention (Mathis & Bierman, 2015). Preschool-aged children experience considerable gains in their emotional understanding between their third birthday and the time that they enter kindergarten (Cole et al., 2009). Because this time between 3 to 5 years old is a period in which children become aware of self-regulation strategies (Cole et al., 2009), there are likely to be noticeable differences between a 3-year old's self-regulatory behaviors and that of their 5-year-old peers. Furthermore, past research suggests children with higher-IQ may have better self-regulation (Calero et al, 2007), and IQ is thought to be directly related to the ability to resist temptation in adolescence (Allen & Lewis, 2019).

The Current Study

This cross-sectional study seeks to examine caregiver-related predictors of self-regulation, as measured by caregiver report and assessor observation, in preschool-aged children. The dataset that this study was drawn from had limited male caregiver data, which may be due in part to convenience, because a large portion of the mothers who participated in this study reported being an at-home caregiver. Therefore, the focus of this analysis was on data provided from the maternal caregivers, henceforth referred to as mothers.

The broad aim of this study is to explore whether maternal predictors of interest, specifically, caregiving self-regulation and maternal behaviors during play (i.e. labeled praise, questions, and commands), influence child self-regulation. To achieve this, we will utilize data from a larger longitudinal study that focused on studying the development of self-regulatory and relational skills over time in typically developing preschool-aged children.

Hypotheses

Hypothesis One

Maternal caregiving self-regulation and maternal play behaviors are predicted to be associated with the PSRA, an assessor rating of child self-regulation while children completed a set of tasks meant to require child self-regulatory control. Specifically, maternal report of caregiving self-regulation is expected to be associated with a higher degree of child self-regulation. Regarding maternal play behaviors, it is expected that they will account for variance in PSRA Assessor Report of child self-regulation above and beyond the variance explained by maternal caregiving self-regulation; specifically, the number of labeled praises given during play is also expected to be associated with a higher degree of self-regulation on the assessor report PSRA, whereas questions asked and commands given during play are expected to predict a lower degree of PSRA Assessor Report of child's self-regulation.

Hypothesis Two

Maternal caregiving self-regulation and maternal play behaviors are predicted to be associated with the DECA-C, a caregiver report measure of child self-regulation. Specifically, maternal report of caregiving self-regulation is expected to be associated with a higher degree of self-regulation. Regarding maternal play behaviors, it is expected that they will account for variance in DECA-C caregiver report of child self-regulation above and beyond the variance explained by maternal caregiving self-regulation; specifically, the number of labeled praises given during play is also expected to be associated with a higher degree of self-regulation on the caregiver report DECA-C, whereas questions asked and commands given during play are expected to predict a lower degree of DECA-C caregiver report of child's self-regulation.

Although the two different ways of measuring child self-regulation may result in different findings in each of our hypotheses, so few studies have used more than one measure of self-regulation, which has precluded us from understanding their similarities and differences within the same sample. We assume that caregiver influences will have roughly the same associations with both dependent variables, and we remain curious about how the use of two different measures of self-regulation may influence our findings.

CHAPTER 3

METHODOLOGY

Participants

Participants were fifty-eight mother/female-caregiver and child dyads (see Table 1 for demographic characteristics of participants). In this study, "mother" refers to the female caregiver, whether her relation to the child is biological, adoptive, stepparent, foster caregiver, grandmother or other primary female caregiver. Caregivers in this study were primarily biological mothers (98%), with 1.7% identifying as unspecified other female caregiver. Data for this study were obtained from Time 1 of a longitudinal study evaluating the development of self-regulatory and relational skills in typically developing preschool-aged children compared to maltreated children enrolled in a therapeutic preschool. Only the typically developing sample was used for this study given that data collection for this sample, and not the treatment sample, included video-taped interactions between children and their caregivers.

Families with at least one 3- to 4-year-old child were recruited through online postings in parenting groups on social media and through word of mouth in proximity of a metropolitan research university in the Midwest. The children invited to participate were screened by a phone conversation between a member of the research team and the caregiver to confirm their child did not have an intellectual or cognitive disability, an Autism Spectrum Disorder diagnosis, nor were receiving mental or behavioral health services including speech or occupational therapy services.

Inclusion criteria for the caregiver were that they be 18-years or older, the legal caregiver of the child participant, and be fluent in English so they could complete questionnaires.

Table 1

Demographic characteristics of Mothers and Children

Variable	Mothers	Child
Gender	n = 56	n = 58
Male	0	27
Female	58	31
Age (SD)	33.16 (5.30) years	46.56 (7.13) months/3 years 9 months
Race & Ethnicity (%)		
White	47 (81)	45 (77.6)
African American/Black	5 (8.6)	6 (10.3)
Multiracial	3 (5.2)	5 (8.6)
Asian	1 (1.7)	1 (1.7)
American Indian /Alaska Native	1 (1.7)	1 (1.7)
Hispanic / Latinx	1 (1.7)	0
Income		
Mean	100,424	
Median	90,000	
Mode	120,000	
Range	9,600 – 400,000	
Relationship to Child (%)		
Biological	57 (98.3)	
Other legal caregiver	1 (1.7)	
Other caregiver in home		
Yes	50 (86.2)	
No	8 (13.8)	
Education		
Advanced Degree (Masters, Professional, Doctorate)	14 (24.1)	
Bachelor's Degree	24 (41.4)	
Associates Degree	8 (13.8)	
Some college	8 (13.7)	
Completed high school or received a GED	2 (3.4)	
None/Prefer not to answer	2 (3.4)	
Working Status (%)		
Stay-at-home Caregiver	Yes 40 (69) No 18 (31)	
Stay-at-home Full-time	35 (60.3)	
Stay-at-home Half-time	4 (6.9)	
Stay-at-home ≤ 10 hrs/wk	1 (1.7)	
Child Attends Preschool/Daycare (%)		Yes 34 (58.6) No 24 (41.4)
Full-time (~40 hrs/wk)		15 (25.9)
Half-time (approx 20 hrs/wk)		10 (17.2)

Less than 10 hrs/wk	9 (15.5)
Toilet Trained Status	
Fully toilet trained	33 (56.9)
Occasional naptime & nighttime accident	15 (25.9)
Somewhat toilet-trained	6 (10.3)
Currently toilet-training	3 (5.2)
Not toilet-trained	1 (1.7)

Procedures

Children and their parents attended a laboratory visit where the data collection space was outfitted with child-sized chairs, tables, a bookshelf with toys for the play interaction, and child friendly décor. Upon arrival to the data collection room, the child was offered toys and bubbles to build rapport with the researcher while their caregiver completed the informed consent process. The child would remain in this room for the duration of the visit while the caregiver completed measures in an adjacent room.

Once consented, caregivers were offered to part with their child in whatever way they felt most comfortable and then were accompanied by a research assistant to an adjacent room. Once settled, the parent completed a brief interview with the research assistant about their child's development. After the interview, the caregiver was asked to complete a brief battery of standardized measures regarding their child's developmental and psychosocial functioning, their child's developmental history (e.g., history of adverse childhood experiences), and a questionnaire about caregiving self-regulation. Caregivers completed the questionnaires on an iPad via REDCap (Harris et al., 2009), a secure web application for managing online surveys and databases. If needed, or if requested by the caregivers, doctoral research assistants were available to read questions out loud to caregivers and assist them with entering their answers on the iPad.

While the caregiver(s) was engaged in the interview and completing the questionnaires, the child was with a researcher completing a brief cognitive screener (Stanford-Binet Intelligence Scales for Early Childhood–Fifth Edition, Verbal and Nonverbal Routing sections; Roid, 2003) and a field assessment to measure self-regulation (Preschool Self-Regulation Assessment: PSRA; Smith-Donald et al., 2007).

Once both the caregiver and child completed their respective activities, the were brought back together and asked to play for 5 minutes. They were instructed to play as they normally would and were provided three bins of toys for the play interaction: one bin contained plastic fruit and vegetables, another had large building bricks (DUPLO® blocks), and the third bin contained a toy barn and farm animals.

Measures

Child and Family Demographics

Demographic data collected include caregiver age, gender, race and ethnicity, household income, education, whether the child attends daycare/preschool in a structured "school" setting, if an additional caregiver lives in the home, and whether the caregiver considers themselves to be a stay-at-home caregiver. The caregiver was also asked to provide demographic data for their child, which included child's date of birth, gender, race and ethnicity, and information about the status the child's toilet training.

General Intelligence

The Stanford-Binet Intelligence Scale, Fifth Edition (SB5; Roid, 2003) was used as a brief screening of intelligence. The SB5 uses a normed mean of 100 and standard deviation of 15. The SB5 is widely used and has sound psychometric properties with reliabilities ranging from .95 to .98 (Roid, 2003). The Abbreviated Battery IQ (ABIQ) is an abridged

version of the test which consists of two routing subtests, one nonverbal (Object Series/Matrices) and one verbal (Vocabulary) and has been shown to be significantly correlated with the full measure of intelligence (SB5 FSIQ; Newton et al., 2008). The ABIQ is typically scored by calculating scaled scores from the manual, then summing the scaled scores from the two subtests. However, in this study we used the raw scores from these two measures, standardized them, then summed them to create a composite score before analyses were conducted so that we could control for age across all variables our data. Prior to standardization, the following descriptive statistics for IQ were; Cronbach's α=.86, *M*=24.03, *SD*=6.81, range=6-38.

Maternal Report of Child Self-Regulation

The Devereaux Early Childhood Assessment Clinical Form (DECA-C; Appendix A; LeBuffe & Naglieri, 2003) is a nationally normed assessment that evaluates within-child protective factors as well as social and emotional concerns in preschool children. This checklist, which can be completed by either a caregiver or teacher, contains three protective factor scales (Initiative, Self-Control, and Attachment) and four behavioral concerns scales (Attention Problems, Aggression, Withdrawal/Depression, and Emotional Control Problems).

For this study we utilized the Self-Control, Emotional Control Problems, and Attention Problems subscales to measure of maternal report of their child's self-regulation. These subscales capture the behaviors consistent with our chosen definition of self-regulation, where the child can demonstrate the ability to focus their attention, manage their emotions, and control their behaviors (Halle & Darling-Churchill, 2016; Sawyer et al., 2015). All three of the DECA-C subscales, Self-Control, Emotional Control Problems, and Attention Problems, have demonstrated high internal consistency and reliability with average

reliabilities across raters of α=.88, α=.76 and α=.83 respectively (Goldstein & Brooks, 2005; LeBuffe & Naglieri, 2003) and has consistently shown to be reliable and valid during both measure development and in field research (Sawyer et al., 2015). Scoring rubrics and instructions for the DECA-C are proprietary in nature, but general scoring and composite variable information can be found in Appendix B. Individually, the subscales yielded the following descriptive statistics in this study; Self-Control Cronbach's α=.81, *M*=9.14, *SD* =3.87, range = 1-17; Emotional Control problems α=.82, *M*=12.55, *SD* =4.27, range = 4-28, Attention Problems *M*=9.76, *SD* =4.15, range = 3-23, α=.79. The Self-Control subscale was reverse scored in our data to match the direction of the other two subscales. Raw scores from these three subscales were standardized then summed to create a DECA-C Total *M*=31.44, *SD*=10.16, *range*=9.00-58.00. Lower scores on the DECA-C Total indicate a higher degree of self-regulation.

Assessor Rating of Child Self-Regulation

Child self-regulation is also measured using the PSRA Report Examiner Rating Scale (Appendix A; Smith-Donald et al., 2007). The Preschool Self-Regulation Assessment (PSRA) is an observer-rated assessment that includes 10 tasks and a 28-item assessor report (for more information on the specific tasks, see Table 2 & Smith-Donald et al., 2007). The PSRA was designed to measure the attentional, emotional, and behavioral domains of self-regulation. Data on children's self-regulation competencies were collected using direct assessment and assessor report. For this study we only utilize the assessor observation portion of this assessment. This is because the assessor report and maternal report of the child's self-control from the DECA-C are similar in nature as they evaluate similar constructs

of self-regulation (attention, emotions, and behaviors), yet their different data collection methods potentially allow us to evaluate unique aspects of a child's self-regulation.

Table 2

PSRA tasks

Task	Description/Instructions given for child
Toy Wrap	Child was asked not to peek while the assessor noisily wrapped a "surprise"
Toy Wait	Child was directed to wait without touching the wrapped "surprise"
Balance Beam	After walking a long line once, child was directed to walk the same line slowly
Tower Task	Child was instructed to take turns with the assessor placing blocks to build a tower
Pencil Tap	Child was to tap once when assessor tapped twice, and tap twice when assessor tapped once
Tower Clean up	Child was instructed to clean up the blocks from Tower Task
Toy Sort	Child was asked to sort and put away small toys without playing with them
Toy Return	Child was asked to return a fun toy after a brief period of play

The PSRA Assessor Report Examiner Rating Scale is the final section of the PSRA protocol (Smith-Donald et al., 2007). It was adapted from the Leiter-R Social-Emotional Rating Scale and the Disruptive Behavior-Diagnostic Observation Schedule (DB-DOS) coding system. This assessment portion is a designated space for the assessor to evaluate the child's emotional reactions, attention level and behavior based on assessor-child interaction. Of the 28 items in the PSRA Assessor Report Examiner Rating Scale, 15 were selected from the attention, impulse control, activity level, sociability level, emotion and energy sub-scales of Leiter-R Social Emotional Rating Scale. Two more items that do not map on the original items were adapted from the Leiter-R Social Emotional Rating Scale. The other nine items were selected from the Disruptive Behavior-Diagnostic Observation Schedule coding system. These items assess compliance-noncompliance, intensity and frequency of negative and positive affect, and existence or nonexistence of physical or verbal aggression. Lastly, there

are two additional items that assess anxiety of the child during the assessment. The PSRA Assessor Report Examiner Rating Scale provides a rating scale for the items between zero and three with zero indicating the lowest score and three being the highest. Some items were reverse-coded to reduce an automatic response patterns and to ensure reliability from the assessor. In this study, Cronbach's α=.93, *M*=31.89, *SD*=10.11, *range*=3-45 for Impulse/Attention Control and α=.81, *M*=14.63, *SD*=3.30, *range*=4.88-19 for Positive Emotion. Raw scores from these two subscales were standardized then summed to create an Assessor Report Total *M*= 46.64, *SD* =12.14, *range*=13.75-64.00. Instructions for scoring the protocol can be found in Appendix B. Higher scores on the PSRA Assessor Report indicate a higher rating of child self-regulation.

Children were administered the PSRA by study-trained assessors. The assessors were master's and doctoral level graduate students of psychology who had completed a minimum of one graduate level assessment course, showed good rapport and child interaction skills, as well as attended training on how to administer the full battery of tests. Training included studying the protocol, watching one being administered, practicing administering one, and finally being observed administering one. The use of double coding was utilized during the watch and observe phase of training to achieve at least a 90% agreement prior to the trainee being allowed to give assessments on their own. In addition to supervision by a licensed Clinical Child Psychologist, scoring questions and scenarios were regularly discussed in lab meetings.

Maternal Caregiving Self-Regulation

To capture the mothers' overall beliefs about their self-regulatory abilities regarding their caregiving, mothers completed the measure Me as a Parent scale (MaaP; Hamilton,

Matthews, & Crawford, 2015). The MaaP scale is a 16-item scale that consists of four domains that are believed to capture parental caregiving self-regulation: self-efficacy, personal agency, self-sufficiency, and self-management. The MaaP asks the caregiver to indicate their agreement with statements about parenting based on a 5-point Likert scale ranging from strongly disagree to strongly agree. Higher scores (maximum 80) indicate higher ratings of maternal caregiving self-regulation. The final form of the MaaP scale showed good internal consistency with Cronbach's α=0.85 for the total score and adequate internal consistency for the subscales (Hamilton, Matthews, & Crawford, 2015). In this study, Cronbach's α=.83, *M*=71.22, *SD*=5.57, *range*=59-80.

Maternal Interactive Behavior Coding

Play interactions were transcribed verbatim and checked for accuracy. The mothers were instructed with the following prompt before the play interaction:

> *Please play with your child with the toys available to you for the next five minutes. Your play interaction will be video recorded. We will tell you when the video turns on and then when it is being turned off. We will be outside of the room while you play with your child.*

The play interactions were coded for mother-generated content using the Behavioral Coding System (BCS) from McMahon & Forehand (2005) which is designed to identify six parent behaviors and three child behaviors during play. In this study, we coded for total frequency of three of those parent behaviors: *labeled praises* ("You're good at cutting."; *M*=.21*, SD*=.49*, range*=0-2*), questions* ("Is that where the cow goes?"*;* *M*=30.16*, SD*=13.14*,* range=10-68 *,* and *beta commands* ("here let me try"; *M*=10.59*, SD*=6.58*, range*=2-33). Per the coding scheme instructions, each rater read applicable

training excerpts to gain familiarization with the general framework of the coding system. Following the coding of each transcript, the raters compared their recorded frequency of occurrence of the behavior. Agreements and disagreements were discussed, and differences were rectified by consensus to calibrate scoring. The subsequent behaviors (i.e., questions and commands) were learned in similar manner. This coding protocol was initially intended for in-vivo coding of direct observation of the play interaction through a one-way observation mirror. Due to the nature of the data we have available, we coded from a transcribed audio and video-recorded interaction. We believe this method can produce just as reliable, if not more reliable coding results due to the reduction in distraction that can occur during real-time behavioral observation. A master coder and one additional reliability coder were trained to code the play interactions. The master coder coded each transcript and 20% of transcripts were coded by the reliability coder. Once acceptable inter-rater reliability was achieved, defined as interclass correlations above .75 (Hallgren, 2012), only the master coder's codes were used. Interclass correlations among coders for labeled praise was .91, .99 for questions, and .91 for beta commands.

Data Analysis

First**,** data were examined for missingness using Little's MCAR and determined that data were likely missing at random. Next, missing data were resolved using Multiple Imputation, and variables were inspected for normality and assumptions of linear regression were established prior to analysis. Log transformation was performed on the income variable to correct for normal distribution. Then zero-order correlations between key variables were conducted to see a) which covariates should be included in the regression models and b) if it

was advisable to combine subscales of the PSRA into a PSRA Total score and likewise, subscales of the DECA-C into a "total" DECA-C self-regulation score.

Lastly, to examine the unique contribution that caregiving self-regulation and caregiver play behaviors have on child self-regulation, hierarchical multiple regressions were performed. The first regression was conducted to determine the associations between the independent variables caregiving self-regulation and caregiver play behaviors and the dependent variable PSRA rating of child self-regulation, with covariates in the first block, caregiving self-regulation in the second block and maternal play behaviors in the third block. The second regression was conducted to determine the associations between the independent variables caregiving self-regulation and caregiver play behaviors and the dependent variable DECA-C rating of child self-regulation, with covariates in the first block, caregiving self-regulation in the second block and maternal play behaviors in the third block.

CHAPTER 4

RESULTS

Preliminary Analyses

Missing Data & Multiple Imputation

Of 157 variables in our total dataset, the percentage of missing values was 23.9% from 10 cases resulting in an overall missingness of values of 1.02%. Data were primarily missing due to item nonresponse on the PSRA record form. This means that 10 participants in the sample would have been omitted from analysis under the traditional listwise deletion method. Listwise deletion has been a commonly utilized method to address missing data, yet Manly and Wells (2015) suggest that Multiple Imputation is now regarded as the "gold standard" by which to address missing data. The process of MI involves a statistical analysis using known information from the dataset while also including the uncertainty of missing information. It is worthwhile to note that MI will not inflate or improve data, rather it will consider all present data values to create inferences for the missing data values (Manly & Wells, 2015). MI for this analysis was completed using SPSS version 26. We address the problem of missing data using the Multiple Imputation (MI) technique including all analysis variables following confirmation from Little's Missing Completely at Random (MCAR) test that missing values are were indeed missing completely at random (χ^2= 238.16, *df*=243, p=.58). Default MI options were chosen except for asking SPSS to generate 10 imputed datasets; an increase from the default of 5. This selection was based in accordance with advice provided in the paper by Manly and Wells (2015) that suggests a "rule of thumb that *[imputations]* should be at least equal to the percentage of incomplete cases." Analyses run on each dataset were pooled according to Rubin's (1987) rules. A visual inspection of

imputation values compared reasonably to observed values, so imputed results are presented and utilized in the following analysis.

Assessing Outliers/Normality Assumptions

Histograms were evaluated as well as descriptive statistics (e.g., kurtosis, skewness) for all variables and indicated that income was not normally distributed and highly positively skewed. The untransformed results of income ranged from $9,600-400,000 (*M*=$100,423, *SD*= $68,297), with skewness of 2.06 (SE=.314) and kurtosis of 6.304 (*SE*=.618). A base 10 log transformation was performed using SPSS version 26 resulting in a transformed income range of 3.98-5.60 (*M*=4.06, *SD*=.312). The transformed income was normally distributed, with a skewness of -.748 (*SE*=.314) and kurtosis of 1.075 (*SE*=.618). Analyses were carried out utilizing the log transformed variable for income.

Correlation of Covariates

Spearman correlations between income, age, gender, and IQ were conducted. There were no significant correlations for income (beyond an arbitrary significance with gender) so only age, gender, and IQ were included as covariates.

Correlations of Self-Regulation Assessment Variables

A Spearman correlation was conducted to assess the relationship between the subscales of the assessor's report of child self-regulation (Attentive Impulse Control and Positive Emotion). Results of the Spearman correlation indicated that there was a significant positive association between the two subscales of Attentive Impulse Control and Positive Emotion $r(57) = .368$, p. < 01. Raw scores from these two subscales were scored according to the manual, standardized, with higher scores indicating higher ratings of child self-regulation then summed to create the composite score, PSRA Assessor Report Total. Higher scores on

the composite variable indicate higher ratings of child self-regulation. We then created a composite score of caregiver-reported child self-regulation using the sum of standardized Attentive Impulse Control & Positive Emotion subscales from the PSRA Assessor Report Examiner Rating Scale.

A Spearman correlation was conducted to assess the relationship between the subscales of the maternal report of the child's self-regulation (DECA: Self Control, Emotional Control Problems, and Attention Problems). Results of the Spearman correlation (Table 3) indicated that there was a significant positive association between the three subscales of the DECA: Self Control $r(57)= .493$, $p <.01$, Emotional Control Problems $r(57)=.556$, $p <.01$, and Attention Problems $r(57)=.479$, $p <.01$. Each DECA-C subscale was scored according to the manual, standardized, with lower scores on the composite variable indicate higher ratings of self-regulation. We then created a composite score of caregiver-reported child self-regulation using the sum of standardized Self-Control, Attention Problems, and Emotional Control Problems subscales of the DECA-C.

Table 3

Correlation between DECA-C subscales

Measure	1	2
1. Self-Control	--	
2. Emotional Control Problems	.493**	--
3. Attention Problems	.556**	.479**

**Correlation is significant at the .01 level

A Spearman correlation between DECA-C subscales (e.g. self-control, emotional control problems, and attention problems) and PSRA subscales (e.g. attentive impulse control and positive emotion) indicated that there was no significant correlation (Table 4) between the two unique methods of measuring child self-regulation; therefore, each of these measures

might be providing unique information about child self-regulation. In addition, the total PSRA and DECA-C self-regulation measures were uncorrelated (Table 5).

Table 4

Correlation between DECA-C & PSRA

Measure	1	2	3	4
PSRA				
1. Attentive Impulse Control	-		.	
2. Positive Emotion	.368**	-		
DECA-C				
3. Self-Control	-.059	.004	-	
4. Emotional Control Problems	-.209	-.082	.493**	-
5. Attention Problems	-.232	.011	.479**	.556**

**Correlation is significant at the .01 level

Bivariate correlations between all model predictors (see Table 5) indicate that age (r = .264, p < .05), gender (r = .378, p < .01), IQ (r = .405, p < .01), questions (r = -.336, p < .05), and beta commands (r = -.321, p < .05) are associated with assessor report of self-regulation. Specifically, the older the child, the higher their rating of self-regulation. Being female and having a higher IQ were associated with higher scores of self-regulation. Fewer maternal questions and commands were also associated with higher self-regulation.

Table 5

Bivariate Spearman Correlations between predictors

Variable	1	2	3	4	5	6	7	8	9
1. Income	-								
2. Age	.084	-							
3. Gender	-.273*	.045	-						
4. IQ	-.078	.534**	.121	-					
5. MaaP	.050	.053	-.248	.193	-				
6. Labeled Praise	.023	.032	.160	.116	-.183	-			
7. Questions	-.086	-.414**	-.334*	-.251	.152	-.018	-		
8. Beta Commands	.134	-.248	-.223	-.418**	.110	-.068	.074	-	

9. PSRA Total	.007	.264*	.378**	.405**	-.213	.003	-.336**	-.321*	-
10. DECA-C Total	.075	-.034	.024	-.114	-.321*	-.182	-.111	-.157	-.125

* Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

Hierarchical Linear Regression

A sensitivity power analysis was conducted using G*Power3 (Faul, Erdfelder, Lang, & Buchner, 2007). The sensitivity power analysis offers the minimum effect size necessary to find statistical significance. Given a sample size of 58, an alpha level of .05, and minimum power of .80, there is an 80% chance of detecting a small effect size of $f = .28$ with six predictors, assuming statistical significance and such an effect size exists (Balkin & Sheperis, 2011). Thus, given that we are including six predictors in our model, we were sufficiently powered to detect a small effect size if it exists.

Prior to conducting a hierarchical multiple regression, the relevant assumptions of this statistical analysis were tested. First, a sample size of 58 was deemed adequate given six independent variables to be included in the analysis. The assumption of singularity was also met as the independent variables (age, gender, IQ, Me as a Parent, questions, and beta commands) were not a combination of other independent variables. An examination of correlations (see Table 5) revealed that some independent variables were moderately correlated. However, as the collinearity statistics (i.e., Tolerance and VIF) were all within accepted limits, the assumption of multicollinearity was deemed to have been met (Coakes, 2005; Hair et al., 2009). Extreme univariate outliers identified in initial data screening were modified as above through log transformation. Residual and scatter plots indicated the assumptions of normality, linearity and homoscedasticity were all satisfied (Hair et al., 2009).

Two, three-stage hierarchical multiple regressions were conducted, each with one of two dependent variables, PSRA Assessor Total and DECA-C Total. Child age, gender, and IQ were entered in block one of each regression to control for variance explained by significantly associated demographic variables. Maternal caregiving self-regulation was entered in block two. The number of labeled praises, questions and beta commands from the play interaction were entered in block three. All regression analyses were completed using SPSS. Correlations between the PSRA Assessor Total multiple regression variables and DECA-C multiple regression variables are reported in Tables 6 and 7 and results of the regression statistics are in Tables 8 and 9 respectively.

Table 6

Correlation between predictor variables for the PSRA Assessor Total

	1	2	3	4	5	6	7
Age	-						
Gender	.05	-					
IQ	.534**	.121	-				
MaaP	.05	-.248	.193	-			
Labeled Praise	.032	.160	.116	-.183	-		
Questions	-.414**	-.334*	-.251	.152	-.018	-	
Beta Commands	-.248	-.223	-.418*	.110	-.068	.074	-
PSRA Assessor Total	.264*	.378**	.405**	-.213	.003	-.336**	-.321*

* Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

Table 7

Correlation between predictor variables for the DECA-C Total

	1	2	3	4	5	6	7
Age	-						
Gender	.045	-					
IQ	.534**	.121	-				
MaaP	.053	-.248	.193	-			

Labeled Praise	.032	.160	.116	-183	-		
Questions	-.414**	-.334*	-.251	.152	-.018	-	
Beta Commands	-.248	-.223	-.418**	.110	-.068	.074	-
DECA-C Total	-.034	.024	-.114	-.321*	-.182	-.111	-.157

* Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

Hypothesis One: PSRA Assessor Total

The hierarchical multiple regression examining the predictors of the PSRA Assessor Total revealed that in block one, the control variables of age, gender, and IQ were significant contributors to the regression model, $F(3,54) = 10.35$, $p < .001$ and accounted for 37% of the variance in assessor rating of child's self-regulation. Introducing the Me as a Parent variable in block 2 explained an additional 5% of variation in PSRA scores and this change in R^2 was significant, $\Delta F(1,53) = 9.52$, $p = .03$. Finally, in block 3 adding labeled praise, questions, and beta commands to the regression model explained an additional 4% of the variation in PSRA Assessor Total scores and this change in R^2 was not significant, $\Delta F(2,51) = 5.97$, $p = .35$. When all seven independent variables were included in block three of the regression model, gender, IQ, remained significant positive predictors while Me as a Parent remained a negative significant predictor of the dependent variable, PSRA Assessor Total.

Results from the hierarchical regression analysis lend support for Hypothesis 1, where we hypothesized that maternal report of caregiving self-regulation would be associated with the PSRA Assessor Total of child's self-regulation; however, it was not in the direction we expected. Caregiving self-regulation was inversely related to PSRA Assessor Total of child's self-regulation. Regarding play related behaviors such as labeled praise, questions, and beta

commands, results indicate that these variables did not significantly contribute the model, contrary to predictions.

Table 8

Summary of Hierarchical Regression Analysis for Variables predicting PSRA Assessor Total

Variable	ß	*t*	*p*	*R*	R^2	ΔR^2
Block 1				.60	.37	.37
Age	-.02	-.09	.93			
Gender	.33	3.10*	.02			
IQ	.49	3.65*	.01			
Block 2				.65	.42	.05
Age	-.03	-.23	.82			
Gender	.28	2.55	.01			
IQ	.54	4.16	.01			
MaaP	-.24	-2.19*	.03			
Block 3				.67	.45	.04
Age	-.08	-.574	.57			
Gender	.26	2.18	.03			
IQ	.55	4.17	.01			
MaaP	-.26	-2.28	.02			
Labeled Praise	-.16	-1.40	.16			
Questions	-.09	-.722	.47			
Beta Commands	-.08	-.73	.47			

Note. *p < .05

Hypothesis Two: DECA-C Total

For the DECA-C Total, the hierarchical multiple regression revealed that in block one, age, gender, nor IQ were insignificant to the regression model, $F(3,54) = 1.21$, $p = .31$ and only accounted for 6% of the variance in caregiver rating of child's self-regulation. Introducing the Me as a Parent variable in block 2 explained an additional 10% of variance in maternal ratings of child self-regulation and this change in R^2 was significant, $\Delta F\ (1, 53) = 2.66$, $p < .05$. Finally, in block 3 adding labeled praise, questions, and beta commands to the regression model only explained an additional 7% of the variance in DECA-C Total scores resulting in an R^2 change that was not significant, $\Delta F(2, 51) = 2.23$, $p = .25$. When all seven

independent variables were included in block three of the regression model, only Me as a Parent remained a significant predictor of child self-regulation as measured by the DECA-C. Regarding directionality of the DECA-C Total, lower scores indicate higher ratings of child self-regulation therefore the negative beta (ß) and *t*-score (see Table 9) indicate higher ratings of self-regulation, unlike the PSRA Assessor Total where higher scores indicate higher ratings of child self-regulation.

Results from the hierarchical regression analysis lend partial support for Hypothesis 2, where we hypothesized that maternal report of caregiving self-regulation was expected to be positively related to DECA-C report of child's self-regulation, which it was. Regarding play related behaviors such as labeled praise, questions, and beta commands, results indicate that these variables did not significantly contribute the model, contrary to predictions.

Table 9

Summary of Hierarchical Regression Analysis for Variables predicting DECA-C

Variable	ß	*t*	*p*	*R*	R^2	ΔR^2
Block 1				.25	.06	.06
Age	-.03	.24	.81			
Gender	.04	.37	.71			
IQ	-.26	-1.70	.09			
Block 2				.41	.17	.10
Age	.01	.23	.93			
Gender	-.04	2.55	.78			
IQ	-.18	4.16**	.24			
Maap	-.34	-2.19**	.01			
Block 3				.49	.24	.07
Age	-.01	-.04	.97			
Gender	-.04	-.28	.78			
IQ	-.17	-1.12	.27			
MaaP	-.34	-2.57	.01			
Labeled Praise	-.17	-1.33	.19			
Questions	.04	.30	.76			
Beta Commands	-.22	-1.68	.09			

Note. *p < .05, **p < .01

CHAPTER 5

DISCUSSION

The goal of this study was to identify caregiver-related factors that are potentially modifiable (i.e. could be improved in treatment) that are associated with child self-regulation. To achieve this, we utilized two measures of self-regulation to explore whether maternal predictors, specifically, caregiving self-regulation and maternal behaviors during caregiver-child play (i.e. labeled praise, questions, commands), were related to child self-regulation.

In general, few bivariate associations between sociodemographic, maternal behaviors, and ratings of child self-regulation were identified. Regarding child predictors, IQ was the prominent factor with a moderate association with age, beta commands, and PSRA Total. This means that older children in our sample generally scored higher on the test of IQ. This is consistent with research that suggest sound biological reasons why children's intelligence increases as they mature (Eliot, 2000). There was also a moderate, negative correlation between IQ and frequency of beta commands that mothers directed toward their children during the play. This suggests that children with higher IQs were given fewer beta commands from their mothers while they played. And lastly, there was a moderate, positive association between IQ and PSRA Total. This suggests that children with higher IQ appear to have better self-regulation when rated by the assessor; however, there was no association between IQ and caregiver report of child self-regulation on the DECA-C. A moderate, negative correlation existed between age and frequency of questions that the mother asked her child during play, suggesting that the younger the child, the more questions they were asked. This could be the mothers attempting to elicit engagement or to prompt language expression from the child. Not surprising was the absence of income as a predictor in our analysis. This will

be discussed further below, as we expect this could be attributed to the high mean and mode of our income variable.

Finally, regarding maternal predictors, caregiving self-regulation did not reveal an association with assessor ratings of child self-regulation on the PSRA Assessor Report and was only weakly associated with caregiver report of child self-regulation on the DECA-C. However, the play related behaviors of questions and beta commands had a small negative association with child self-regulation when the child was rated by the assessor but not on ratings by the caregiver. Though the associations were not robust, this begs further question about bias and reporting characteristics that may be present by either one or both reporters.

We first predicted that maternal caregiving self-regulation and maternal play behaviors would be associated with assessor report of child self-regulation on the PSRA Assessor Total. Specifically, that maternal report of caregiving self-regulation was expected to be associated with a higher degree of self-regulation. Our findings from the first hierarchical regression did support an association between maternal caregiving self-regulation and the PSRA Assessor Total of child's self-regulation, it just was not in the direction we expected. Rather, our results indicated that the higher the caregiver rated her caregiving self-regulation, her child was rated to have lower self-regulation when assessed by the researcher. Regarding maternal play interactions, we expected that they would account for variance in PSRA Assessor Total of child self-regulation above and beyond the variance explained by maternal caregiving self-regulation; specifically, the number of labeled praises given during play was also expected to be associated with a higher degree of self-regulation on the PSRA Assessor Total, whereas questions asked and commands given during play were expected to predict a lower degree of PSRA Assessor Total of child's self-regulation.

However, our results showed that the contribution of play related behaviors such as labeled praise, questions, and beta commands did not end up being significant predictors of assessor-rated child-self-regulation.

We also predicted that maternal caregiving self-regulation and maternal play interactions would be associated with caregiver report of child self-regulation on the DECA-C. Specifically, that maternal report of caregiving self-regulation would be associated with a higher degree of self-regulation. Our findings from the second hierarchical regression did support our expectation that there would be an association between maternal caregiving self-regulation and the child's self-regulation. This can be interpreted to suggest that mothers who consider themselves to have high levels of caregiving self-regulation also rate their child as highly regulated as well. Regarding maternal play interactions, we expected that they will account for variance in DECA-C caregiver report of child self-regulation above and beyond the variance explained by maternal caregiving self-regulation. Specifically, the number of labeled praises given during play was also expected to be associated with a higher degree of self-regulation on the caregiver report DECA-C, whereas questions asked and commands given during play were expected to predict a lower degree of DECA-C caregiver report of child's self-regulation. Our findings were contrary to our hypothesis and showed that the contribution of play related behaviors such as labeled praise, questions, and beta commands were not significant predictors of child-self-regulation.

In both regression models, regardless of who was rating the child's self-regulation, we learned that a mother's caregiving self-regulation mattered. What is perplexing, and worthy of further exploration, is the discrepancy between how the two reports of child self-regulation were associated with caregiving self-regulation. Are mothers rating their child's

self-regulation based on social desirability? Or is their rating rooted in her belief that since she is regulated they also have children who are regulated? Accurate reporting requires a caregiver to have insight and willingness to be vulnerable with strangers in something as personal as parenting beliefs and practices. Given the brevity of the relationship between the research team and the mother, this may have had an impact on variability in responses since she may not have felt comfortable in disclosing potential limitations in her parenting. Social desirability may also have also been a factor in her rating of her child's behaviors on the DECA-C resulting in potentially underreporting of behaviors. The larger study that this sample was derived from did not examine caregiver depression or other mental health variables, but future studies seeking to replicate this methodology would benefit from including a caregiving mental health component as caregiver mental health, specifically depression, has been shown to effect caregiver reporting of her child's behaviors (Herbers, Garcia, & Obradović, 2017). On the other hand, it is also possible that there may have been assessor bias. Our results showed that girls and children with higher IQ were more likely to have higher ratings of self-regulation. It is possible that some children had stereotypical behavior of being well-behaved and compliant, ergo the research assessor rated them as being more regulated. One test of this would be to have a both caregiver and researcher utilize the same measurement tool and then compare ratings of child self-regulation. However, this author is unaware if such measure exists.

Parents who have higher self-efficacy, a component of self-regulation, have been shown to be more engaged in their child's education resulting in better student outcomes (Shumow & Lomax, 2002). Addressing caregiving confidence and supporting them through brief training/education involving the key components of their own self-regulation (self-

efficacy, personal agency, self-sufficiency, and self-management; Hamilton, Matthews, & Crawford, 2014), may help strengthen their caregiving skills as they work toward nurturing their child's self-regulatory abilities. Caregivers are often reminded that their child is watching them, but when a child sees their caregiver handle frustration, disappointment, and/or fear in the face of a stressful situation, they are modeling acceptable ways to handle big emotions for their child. It is from this place of their own awareness that caregivers can act as a guide for their child.

Though we did find that mothers caregiving self-regulation was predictive of the child's self-regulation, we had also hoped that we would find a relationship between mothers behavior (e.g. giving labeled praise, asking questions, or giving commands) during play and her child's self-regulation; however, these behaviors were not significant in any of our models for either measure of child self-regulation. Though they did not have any significant predictive power, some of our findings were interesting, nonetheless.

Results from the coding of play interactions showed that labeled praises, the descriptive and specific form of praise, were sparse in our sample with just ten of the 58 mothers using one or two labeled praises during play with their child. For example, one mother praised her child during play by telling them "Good job cutting it." While it is disappointing that so few numbers of Labeled Praises were used in our sample of play interactions and that they did not statistically contribute to our results, we believe the absence of this skill can give us a snapshot into areas where caregivers may benefit from competence building. Perhaps this is not a characteristic parents were raised with in their own childhood or maybe cultural norms and expectations do not embrace the use of praise in child rearing (Zevallos, 2018). This is pertinent for those who work in

behavioral parenting training therapy programs so they may be informed in how to manage barriers, such as when parents are having trouble reaching mastery of *Do* skills, as those difficulties may have cultural or historical underpinnings.

Asking questions during play is likely not ideal as the goal in play is to allow the child the opportunity to explore their environment and use their imagination. We know that teaching parents this skill helps when used with clinical populations, but we know less about the impact of question asking in daily life in populations where behavior concerns are well-managed. All mothers in this study asked questions during the play task with their child. The average number of questions asked was 30, but there were some participants that asked more than 60 questions during their five minutes of play. Nearly 87% of the questions asked were play-related, meaning the mothers were primarily asking questions of their child about their play (i.e. "what does the cow say?"). This could indicate they were trying to relate and engage with their child during the task or it could indicate feelings of control. Parent training programs note that when caregivers ask a lot of questions in play it can result in taking over control of the interaction (Brestan-Knight & Salamone, 2011) which over time may have an impact on the child's ability to self-regulate.

Strengths, Limitations, & Future Directions

The present study had several strengths including bimodal measurement (e.g. caregiver report and assessor report) of child self-regulation as well as a unique study design that involved measures of caregiver beliefs about their caregiving, a semi-structured parent-child play situation that mimicked everyday play, as well as task-based assessment of child self-regulation. Still, there are some limitations to this study. Most notable is the small

sample size, which increases the risk of type II error. The homogeneity of our sample may explain the lack of variability in our findings as our sample was primarily white, well-educated, two-caregiver, upper-middle class families. We recognize the absence of diversity within our sample and the meaningful information that we are missing in order to generalize our findings among traditionally underrepresented ethnic and cultural populations. The literature also suggests that socio-economic status and household income is likely to be a predictor of a child's self-regulation (Backer-Grøndahl & Naerde, 2016; Mathis & Bierman, 2015). Thus, because our sample had an income that may be disproportional to the community norm, this may explain why income was not a significant factor in our analysis. Additionally, this study solely considered the female caregivers thereby limiting the generalizability of the findings across all caregivers. Future studies should explore paternal and other caregiver (e.g. foster parents, adoptive parents, and kindship placement) data to examine caregiver-related predictors of self-regulation in young children. Consideration for how caregiver behaviors (like praises, questions, and commands) may guide or even stimulate child self-regulation growth is still warranted perhaps including other caregiver factors, such as mental health and trauma histories, in addition to increasing the number of participants.

We also acknowledge that this objective assessment of the child is based on a single point in time, which may not fully capture the full range of a child's self-regulatory abilities, and may inadvertently be skewed due to environmental novelty, demand characteristics, and overall unfamiliarity with assessor. Another time point has since been collected with these participants so future studies could look at changes in self-regulation over time and it is our hope to explore how these factors may have changed in the subsequent visit.

Despite caregiver use of labeled praises, questions, and commands not having a significant contribution to child self-regulation in this sample, the results do provide important information into how parents and children interact (i.e. caregivers may take part in more *Don't* skills than they intend: e.g. asking a lot of questions in a short period of time). We have learned that caregiver confidence in their ability to handle a multitude of parenting stressors (i.e. caregiving self-regulation) does matter when it comes to their child's ability to express and understand their emotions, overcome challenges, abide by social rules so they can understand and be understood by others, and effectively communicate (i.e. self-regulation). Yet, there remains much to be learned about the role of caregiver level factors in bolstering a child's self-regulation capacity, so that ultimately, caregivers can know how to best support the development of self-regulation in their child.

APPENDIX A

Caregiver Demographics

1. Your relationship to this child?
   - ☐ Biological parent
   - ☐ Adoptive parent
   - ☐ Stepparent
   - ☐ Foster caregiver
   - ☐ Grandparent (including step or adoptive grandparent)
   - ☐ Other

2. Your age in years: _____

3. Estimated gross income of family (all income sources): _____

4. Your gender?
   - ☐ Male
   - ☐ Female
   - ☐ Trans Male
   - ☐ Trans Female
   - ☐ Genderqueer
   - ☐ Prefer not to answer
   - ☐ Other
5. Your Race/Ethnicity (select all that apply):
   - ☐ American Indian or Alaska Native
   - ☐ White
   - ☐ Black or African American
   - ☐ Asian
   - ☐ Native Hawaiian or other Pacific Islander
   - ☐ Hispanic or Latinx
   - ☐ Multiracial
   - ☐ Prefer not to answer

6. Your Highest Level of Education Obtained:
   - ☐ None
   - ☐ Preschool
   - ☐ Kindergarten
   - ☐ Elementary School
   - ☐ Middle School
   - ☐ High School Graduate
   - ☐ GED
   - ☐ Some college credit but less than 1 year
   - ☐ One or more years of college at a 2-year program, no degree

☐ One year of college at a 4-year program, no degree
☐ Two years of college at a 4-year program, no degree
☐ Three years or more of college at a 4-year program, no degree
☐ Associates degree (e.g., AA, AS)
☐ Bachelor's degree (e.g., BA, AB, BS)
☐ Master's degree (e.g., MA, MS, Meng, Med, MSW)
☐ Professional degree (e.g., MD, DDS, DVM, LLB, JD, PsyD)
☐ Doctorate degree (e.g., PhD, EdD)

7. Does your child attend daycare/preschool in a structured "school" setting?
☐ Yes
☐ No

7a. If so, how often do they attend?
☐ Full time (approx. 40 hrs/wk)
☐ Half time (approx. 20 hrs/wk)
☐ Approx. 10 hrs/wk or less

8. Do you consider yourself to be a "stay at home" caregiver to your child on a full or part-time basis?
☐ Yes
☐ No

8a. If so, how frequently?
☐ Full time (approx. 40 hrs/wk)
☐ Half time (approx. 20 hrs/wk)
☐ Approx. 10 hrs/wk or less

9. Is there another caregiver in the home in addition to yourself (e.g., spouse, partner)?
☐ Yes
☐ No

Child Demographics

1. Child Date of Birth _____

2. Child Gender
☐ Male
☐ Female
☐ Trans Male
☐ Trans Female
☐ Genderqueer
☐ Prefer not to answer
☐ Other

3. Child Race/Ethnicity (select all that apply)
   - ☐ American Indian or Alaska Native
   - ☐ White
   - ☐ Black or African American
   - ☐ Asian
   - ☐ Native Hawaiian or other Pacific Islander
   - ☐ Hispanic or Latinx
   - ☐ Multiracial
   - ☐ Prefer not to answer

4. Is your child potty or toilet trained?
   - ☐ No, and we are not currently training
   - ☐ No, but we are currently training
   - ☐ Somewhat, we are still doing some training
   - ☐ Yes, but naptime and nighttime accidents are common
   - ☐ Yes, except the occasional accident

Devereaux Early Childhood Assessment Clinical Form (DECA-C)

Instructions: This form describes a number of behaviors seen in some young children. Read the statements that follow the phrase: ***During the past 4 weeks, how often did the child…*** and place a check mark in the box underneath the word that tells how often you saw the behavior. Please answer each question carefully. There are no right or wrong answers. If you wish to change your answer, put an X through it and fill in your new choice as shown below. Please do not skip any items.

Never	Rarely	Occasionally	Frequently	Very Frequently
☒	☑			

Item #	*During the past 4 weeks, how often did the child…*	Never	Rarely	Occasionally	Frequently	Very Frequently
1	Show little or no emotion?	☐	☐	☐	☐	☐
2	Do things for himself/herself?	☐	☐	☐	☐	☐
3	Withdraw from or avoid children/adults?	☐	☐	☐	☐	☐
4	Choose to do a task that was challenging for her/him?	☐	☐	☐	☐	☐
5	Fail to show joy or gladness at a happy occasion?	☐	☐	☐	☐	☐
6	Participate actively in make-believe play with others (dress-up etc.)?	☐	☐	☐	☐	☐
7	Have temper tantrums?	☐	☐	☐	☐	☐
8	Act overwhelmed or cry when asked to do simple things?	☐	☐	☐	☐	☐
9	Get easily frustrated?	☐	☐	☐	☐	☐
10	Keep trying when unsuccessful (act persistent)?	☐	☐	☐	☐	☐
11	Become upset or emotional if she/he did not get what she/he wanted?	☐	☐	☐	☐	☐

12	Wander around aimlessly?	☐	☐	☐	☐	☐
13	Have no reaction to children/adults?	☐	☐	☐	☐	☐
14	Refuse to speak?	☐	☐	☐	☐	☐
15	Sulk or pout?	☐	☐	☐	☐	☐
16	Try different ways to solve a problem?	☐	☐	☐	☐	☐
17	Try or ask to try new things or activities?	☐	☐	☐	☐	☐
18	Resist or refuse to participate in group or home activities?	☐	☐	☐	☐	☐
19	Start or organize play with other children?	☐	☐	☐	☐	☐
20	Get overly upset if he/she made a mistake?	☐	☐	☐	☐	☐
21	Focus his/her attention or concentrate on a task or activity?	☐	☐	☐	☐	☐
22	Become upset or cry easily?	☐	☐	☐	☐	☐
23	Say positive things about the future (act optimistic)?	☐	☐	☐	☐	☐
24	Have a blank facial expression?	☐	☐	☐	☐	☐
25	Ask other children to play with him/her?	☐	☐	☐	☐	☐
26	Show decreased interest in or enjoyment of play or activities?	☐	☐	☐	☐	☐
27	Make decisions for himself/herself?	☐	☐	☐	☐	☐
28	Overreact to changes in the environment or her/his routine?	☐	☐	☐	☐	☐
29	Set or threaten to set a fire?	☐	☐	☐	☐	☐
30	Say negative or critical things about herself/himself?	☐	☐	☐	☐	☐
31	Threaten or attempt to hurt herself/himself?	☐	☐	☐	☐	☐
32	Hurt or abuse animals?	☐	☐	☐	☐	☐
33	Act in a way that made adults smile or show interest in her/him?	☐	☐	☐	☐	☐

34	Grab things from other children?	☐	☐	☐	☐	☐
35	Have difficulty following a routine?	☐	☐	☐	☐	☐
36	Have difficulty sitting quietly (for example, when listening to a story)?	☐	☐	☐	☐	☐
37	Tease or bully others?	☐	☐	☐	☐	☐
38	Listen to or respect others?	☐	☐	☐	☐	☐
39	Control her/his anger?	☐	☐	☐	☐	☐
40	Squirm or fidget?	☐	☐	☐	☐	☐
41	Respond positively to adult comforting when upset?	☐	☐	☐	☐	☐
42	Show affection for familiar adults?	☐	☐	☐	☐	☐
43	Handle frustration well?	☐	☐	☐	☐	☐
44	Destroy or damage property?	☐	☐	☐	☐	☐
45	Act happy or excited when parent/guardian returned?	☐	☐	☐	☐	☐
46	Blame others for her/his actions?	☐	☐	☐	☐	☐
47	Show patience?	☐	☐	☐	☐	☐
48	Have a short attention span (difficulty concentrating)?	☐	☐	☐	☐	☐
49	Ask adults to play with or read to him/her?	☐	☐	☐	☐	☐
50	Fight with other children?	☐	☐	☐	☐	☐
51	Share with other children?	☐	☐	☐	☐	☐
52	Trust familiar adults and believe what they say?	☐	☐	☐	☐	☐
53	Accept another choice when her/his first choice was unavailable?	☐	☐	☐	☐	☐
54	Seek help from children/adults when necessary?	☐	☐	☐	☐	☐
55	Hurt (hit, bite, kick), push, or physically threaten children/adults?	☐	☐	☐	☐	☐
56	Cooperate with others?	☐	☐	☐	☐	☐

57	Calm herself/himself down when upset?	☐	☐	☐	☐	☐
58	Have difficulty following directions?	☐	☐	☐	☐	☐
59	Fail to show sorrow or regret for wrong things she/he had done?	☐	☐	☐	☐	☐
60	Get easily distracted?	☐	☐	☐	☐	☐
61	Show an interest in what children/adults are doing?	☐	☐	☐	☐	☐
62	Need constant reminders to do things?	☐	☐	☐	☐	☐

PSRA ASSESSOR REPORT
EXAMINER RATING SCALE

Circle a single number indicating child's behavior during testing.

A1. Pays attention during instructions and demonstrations.

3 Child looks closely at pictures to distinguish between them; child attends to and complies with interviewer.

2 Child's attention occasionally drifts, particularly at the end of activities, but is responsive to prompt.

1 Child's attention frequently drifts and examiner provides frequent prompts.

0 Child spends most of time off- task, inattentive.

A2. Careful, interested in accuracy; not careless.

3 Child takes the time to look and appears to make thoughtful choices, particularly on hard items.

2 Child is generally careful but interest flags, particularly at end of testing session.

1 Child is careless at times.

0 Child is frequently haphazard and unfocused when answering items.

A3. Sustains concentration; willing to try repetitive tasks.

3 Child able to concentrate and persist with task, even toward end of tasks and with distractions.

2 Child occasionally distracted but generally persistent but does not require prompt from assessor.

1 Child frequently distracted, requires multiple prompts from assessor.

0 Child not able to concentrate or persist on much of the assessment.

A4. Daydreams, has trouble focusing on assessment.

3 Child appears to "space out" during large portions of assessment.

2 Child occasionally "spaces out" and requires prompts from assessor to look, point, focus.

1 Child shows brief periods of inattention but returns to task after brief lapse of attention.

0 Child does not have problems focusing attention on tasks.

A5. Distracted by sights and sounds.

3 Child is frequently distracted by nearby noises or materials, and has trouble focusing even with assessor help.

2 Child occasionally becomes distracted but returns to task with several prompts.

1 Child occasionally distracted but refocuses attention with only one prompt.

0 Child does not become distracted by sounds and sights in room.

B1. Is careless or destructive with test materials.

3 Child gets too "rowdy" with materials and breaks or damages test materials.

2 Child is repeatedly careless but does not damage materials, paper. Needs repeated reminder.

1 Child is careless or slightly destructive one time (can include kicking, dropping object on floor "by mistake").

0 Child is not careless and is not destructive.

B2. Thinks and plans before beginning each task.

3 Child appears to consider instructions and task before responding to interviewer.

2 Child usually waits for and follows instructions but occasionally leaps into task before instructions completed.

1 Child needs frequent reminders to " wait until I say …" before beginning task.

0 Child misses many of the instructions and does not slow down with reminders from assessor.

B3. Refrains from indiscriminately touching test materials.

3 Child shows self-restraint even with interesting toys and does not prolong holding cleanup toys or other items.

2 Child generally shows self-control but reaches for attractive objects once or twice during assessment.

1 Child needs multiple reminders not to touch objects, and/or reminders to put toys up when it is time.

0 Assessment often interrupted by child's difficulty with grabbing, touching materials.

B4. Lets examiner finish before starting task; does not interrupt.

3 Child waits before pointing to materials, reaching for blocks, etc.; is not impulsive.

2 A few instances of impulsive behavior.

1 Child is often impulsive across multiple tasks or highly impulsive during one activity.

0 Child is impulsive throughout assessment, needing lots of boundary- setting.

B5. Child has difficulty waiting between tasks.

3 Transitions between tasks made difficult because of child's activity level/impulsivity.

2 Child needs multiple prompts to wait while assessor gathers materials for new task.

1 Child sometimes shows anticipation for interesting task materials but rarely needs reminder.

0 Child waits patiently for new tasks to begin, shows relaxed body posture during transitions.

B6. Remains in seat appropriately during test.

3 Does not climb, open closets, grab objects (occasional adjustment in body position is appropriate).

2 Gets out of seat once (including sliding off chair), returns to seat when prompted.

1 Needs multiple reminders to return to seat, sit up but listens and responds to prompts.

0 Out of seat frequently or difficult to manage (e.g. runs around room, climbs on furniture).

C1. Alert and interactive; is not withdrawn.

3 Child participates in interaction; body posture suggests relaxed engagement with the interviewer.

2 Child generally interacts, but at times turns away, lowers head, takes "break" from interaction.

1 Child repeatedly withdraws from testing situation and needs encouragement to finish task.

0 Child seems "shut down" and difficult to engage in starting task.

C2. Cooperates; complies with examiner's requests.

3 Child attempts to do task as instructed even if task is difficult.

2 Child shows minor indications of resistance, boredom (e.g. sighs, frowns) but completes tasks.

1 Child shows significant resistance, noncompliance and needs multiple prompts to get through assessment.

0 Child does not cooperate with tasks that are easy.

C3. Actively attempts to engage interviewer.

3 Child frequently initiates conversation by asking questions, sharing information.

2 Child initiates conversation on occasion and is responsive to interviewer through eye contact, talking, or smiling.

1 Child does not initiate conversation, is slow to warm up.

0 Child ignores assessor's conversational remarks (social bids), even during positive tasks.

D1. Shows pleasure in accomplishment and active ask mastery.

3 Child appears happy after completing task; may show excited body movements (e.g. "alright!", clapping).

2 Child appears slightly pleased in completing tasks.

1 Child is neutral when getting task right.

0 Child makes negative comment or negative expression when completing task.

D2. Confident.

3 Child shows confidence by comments such as "I know this one"; child is eager, energetic.

2 Child is diligent, straightforward in answering assessor's questions; may seem like "work".

1 Less confident child shows repeated hesitation or asks questions that indicate a lack of confidence.

0 If child shows hesitation or reluctance on easy items, gives up easily (e.g. "I can't do this").

E1. Defiant.

3 Child actively, directly refuses to comply with assessor's request or direction.

2 Child tests limits but responds to examiner's prompt or restatement of request.

1 Child says "no" but then follows examiner's initial request; assessor does not have to "say it again".

0 Child never exhibits active defiance.

E2. Passively noncompliant.

3 Child appears not to hear instruction, even when assessor repeats request.

2 Child ignores examiner but responds to prompt when assessor repeats request/directive.

1 Child seems slow to comply. Assessor does not restate request but wonders if child heard.

0 Child hears requests and responds appropriately.

E3. Modulates and regulates arousal level in self - keeps "an even keel".

3 Child highly regulated. Never becomes sad, frustrated, or silly.

2 Child becomes briefly sad, frustrated, OR silly, but quickly calms without help from adult assessor.

1 Child becomes sad, frustrated, OR silly, and needs prompt from assessor but is able to calm down.

0 Child becomes very sad, frustrated, OR silly, and has difficulty regaining self-control.

E4. Child shows intense angry/irritable feelings and/or behavior.

3 Intensity of anger is high with tantrum, yelling, angry tone, throwing or banging object.

2 Child shows clear signs of frustration, irritation, including whining, pushing away from table, crossing arms.

1 Child is sullen, annoyed, includes pouting, sighing, frowning.

0 Child shows no frustration, irritation, or annoyance.

E5. Child shows frequent feelings of anger/irritation.

3 Child shows anger, irritation throughout the NRS and CSRP tasks.

2 Child shows anger, irritation, even if mild forms, on more than one occasion.

1 Child shows anger, irritation only once during testing.

0 Child shows no evidence of anger, irritation.

E6. Child shows intense apprehensive, sad, or worried feelings during session.

3 Child is upset, cries, or whimpers during testing. Code if assessment ended due to child distress.

2 Child appears close to tears during testing.

1 Child sometimes appears sad or worried. Furrowed brows, face in hands, frown.

0 Child does not appear apprehensive, sad, or worried during assessment.

E7. Child frequently shows feelings of sadness, worry.

3 Child appears sad or worried throughout assessment.

2 Child appears sad or worried during more than one task.

1 Child is initially sad or worried but warms up.

0 Child does not appear sad or worried.

E8. Child shows intense positive emotions or behaviors.

3 Child is very positive, exhibiting laughter and/or prolonged giggle, broad smiles, or clapping.

2 Child gives repeated smiles, positive vocalizations, brief giggle.

1 Child maintains positive demeanor, pleasant expression.

0 Child does not show positive emotions during assessment.

E9. Child shows frequent positive emotions and behaviors.

3 Child expresses prolonged positive feelings (laughter, smiles) in two or more assessment episodes.

2 Child expresses positive feelings in one episode (not including treat/candy).

1 Child expresses positive feelings when receiving treat/candy only.

0 Child does not express positive emotions, even when receiving gift or candy.

Child does the following at ANY TIME during the NRS or PSRA?

Aggress towards objects
(this includes throwing, tearing up paper, breaking things, banging, spitting).

Yes

No

Verbal aggression
(curse even if in storytelling, use curse words or gestures, threaten).

Yes

No

Physical aggression
(hit, scratch, throw, spit, using object as weapon to shoot at assessor, grab, shove).

Yes

No

"Me as a Parent" Questionnaire

The following Questions are about parenting:
How strongly do you agree or disagree with these statements (please tick):

	Item	Strongly disagree	Disagree	Mixed feelings	Agree	Strongly Agree
1.	When something goes wrong between me and my child, there is little I can do to fix it	☐1	☐2	☐3	☐4	☐5
2.	I know how to solve most problems that arise with parenting	☐1	☐2	☐3	☐4	☐5
3.	I have confidence in myself as a parent	☐1	☐2	☐3	☐4	☐5
4.	My child usually ends up getting their own way, so why try	☐1	☐2	☐3	☐4	☐5
5.	I have the skills to deal with new situations with my child as they arise	☐1	☐2	☐3	☐4	☐5
6.	When changes are needed in my family I am good at setting goals to achieve those changes	☐1	☐2	☐3	☐4	☐5
7.	I can find out what's needed to resolve any problems my child has	☐1	☐2	☐3	☐4	☐5
8.	I meet my expectations for providing emotional support for my child	☐1	☐2	☐3	☐4	☐5
9.	I often feel helpless about my child's behavior	☐1	☐2	☐3	☐4	☐5
10.	I am good at making plans and arranging fun and educational activities for my child to engage in	☐1	☐2	☐3	☐4	☐5
11.	I have all the skills necessary to be a good parent to my child	☐1	☐2	☐3	☐4	☐5
12.	I know I am doing a good job as a parent	☐1	☐2	☐3	☐4	☐5
13.	I know how to work out which situations my child is likely to be happiest in	☐1	☐2	☐3	☐4	☐5

14.	I can stay focused on the things I need to do as a parent even when I've had an upsetting experience	☐1	☐2	☐3	☐4	☐5
15.	My parenting skills are effective	☐1	☐2	☐3	☐4	☐5
16.	How my child turns out is mainly due to luck	☐1	☐2	☐3	☐4	☐5

APPENDIX B

Scoring

PSRA Assessor Report

A total score for the PSRA Assessor Report was created using the following scoring advice from Smith-Donaldson et al. (2007).

Attentive Impulse Control Short: A1, A2, A3, A4(reversed), A5(reversed), B1(reversed), B2, B3, B4, B5(reversed), B6, C2, E1(reversed), E2(reversed), E3 and "extreme physical aggression".

Positive Emotion Short: C1, C3, D1, D2, E8, E9 and positive effects items from the PSRA.

DECA-C Composite Score

The following subscales of the DECA-C: Self-Control, Emotional Control Problems, and Attention Problems were scored according to the manual (LeBuffe & Naglieri, 2003). Self-control was then reverse coded to match directionality of emotional control problems and attention problems, then the three subscale scores were summed to create a composite total score.

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